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DEADLINE D9 SUBMISSIONS

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). An updated resume is provided at Appendix A.

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.

SUMMARY

- 1 Section 2 outlines the two key issues for the ExA, and SoS, need to consider on carbon assessment - how will the scheme's carbon emissions be quantified, and how they will be assessed. The best practice in carbon quantification and assessment is required to determine if the scheme has a material impact on the Government's ability to achieve its carbon reduction targets
- 2 Section 3 reviews the carbon assessment and the transport assessment, and notes that the ExA's cross-examination at ISH4 proved **without doubt** that the Applicant has not carried any quantification or assessment of cumulative carbon emissions of the A47BNB scheme. I also highlight statements which confirm this from the Applicant's written summary of the ISH4.
- 3 **Since an assessment of the cumulative GHG emission impacts of the Scheme is legally required under the EIA Regs, this failing alone renders the environmental assessment unlawful.**
- 4 Section 4 provides shows that there are two key errors in carbon quantification in the Applicant's Transport Assessment, traffic modelling and carbon assessment. First, a significantly underestimated carbon quantification is made for the differential solus emissions for scheme: this error is then carried forward into the carbon assessment stage. Secondly, no cumulative carbon quantification is made, (and therefore no assessment). I then show how the introduction of three new configurations of the traffic model will produce differential quantities which are correct for both solus and cumulative

assessment, compliant with the EIA Regs. I explain how the Applicant's error has been made, and its remedy. I then respond to the Applicant's comments in REP7-025 and the ISH4 Hearing points.

- 5 Section 5 discusses Carbon Assessment, particularly with respect to "material impact" on the UK carbon reduction targets, and sensitivity of assessment in benchmarking impacts. The Applicant's singular approach falls at the extreme lowest sensitivity of the sensitivity spectrum possible in assessing carbon. The ExA and SoS should appreciate that a full range of assessment values is required to properly assess whether the Scheme will have a material impact on the Government's ability to meet its carbon reduction targets.
- 6 Despite this, it is clear that the scheme will have a material impact on the Government's ability to achieve its carbon reduction targets and **this impact represents a clear reason for refusal.**
- 7 Section 6 discusses transparency of algorithms and the traffic models used in making carbon quantification and assessments. As well as breaching the Aarhus Convention, a fuller explanation of how the traffic models used by the Applicant for the Environmental Assessment function and link together is required, and will become necessary soon under the Algorithm Transparency Standard being introduced by the Government for public bodies.
- 8 **I conclude by respectfully asking that the ExA determines that the EIA Reg 20 process to suspend the examination is now followed in relation to this matter. This is required so that new configurations of traffic models can be run which are EIA Regs compliant, a new carbon assessment performed, and the Environmental Statement reworked.**
- 9 I request again for the examinations of the A47BNB, A47NTE and A47THI to be considered together, and for a joined-up response to be considered by the three ExA's on the fact that cumulative carbon assessment has not been carried out.

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1 INTRODUCTION

1.1 *Deadline 9 (D9)*

10 This is my submission for Deadline 9. It follows REP5-019 (and appendices REP5-020 – REP5-022) at D5, and REP6-008 at D6. I intend, in this submission to tie up loose ends and bring my submissions together.

11 I will comment on:

- A. REP5-015, and the Applicant’s response my D4 submission REP4-057 within it.
- B. REP6-006, and the Applicant’s response my D5 submission REP5-019 within it.
- C. EV-044, recording¹ of Issue Specific Hearing (ISH4), November 9th - Session 1
- D. REP7-025, and the Applicant’s Applicants Written Summary of Oral Submissions at Hearings (ISH4, Session 1)
- E. [REP8-014] TR10040-000838-9.28, the Applicant’s response to Ms Eleanor Laming’s D7 submission [REP7-027]

12 I thank the ExA for his consideration of my October 27th letter [REP6-008] advising of late submissions due my complete absence from the internet for the month of November.

13 In this introduction, CEPP specify other documents to which we make reference from schemes beyond Norfolk as listed below. I provide some definitions at section 1.3. An INDEX of documents previously submitted by CEPP is given at Appendix D.

1.2 *Recent changes to relevant policy*

14 Since the examination opened on 22nd June 2021 (and before that date), there have been a significant number of changes to national policy and guidance.

- (a) The Government’s Transport Decarbonisation Plan² (TDP) which requires ambitious quantifiable carbon reductions in transport at the local level was published on the 14th July 2021.
- (b) The Government’s Net Zero Strategy³ (NZS) backing the urgent need for ambitious quantifiable carbon reductions in transport, at the local level was published on 19th October 2021.

¹ Direct link, [REDACTED]

[REDACTED]

[REDACTED]

- (c) HM Treasury Green Book supplement providing specific guidance on how analysts should quantity and value emissions of GHGs⁴ was published in October 2021.
- (d) Government policy paper⁵ setting out a revised approach to valuing GHG emissions, and revised carbon prices, in policy appraisal was published on 2nd September 2021
- (e) An updated version of the DfT’s WebTAG guidance⁶ and TAG data book, including changes to emissions factors, was published on 29th November 2021
- (f) Highways England Carbon Reporting Tool⁷ was used to assess the GHG emissions for scheme construction and maintenance was withdrawn on 21 September 2021. It was replaced with the National Highways Carbon emissions calculation tool⁸.

15 I raise the above as further issues which the Applicant needs to make clear the implications for, or any amendments needed to, the application or Environmental Statement.

1.3 Relevant documents from other DCO schemes beyond Norfolk

16 In addition to those listed previously in REP5-019, I draw the ExA attention to these recent submissions on the A38 Derby Junctions scheme [TR010030]:

- Derby Climate Coalition, “Response to the Secretary of State's Consultation of 23 September 2021”, 27th, October 2021, legal letter⁹
- Derby Climate Coalition, “Response to the Secretary of State's Consultation of 23 September 2021”, 27th, October 2021, Expert Report of Dr Boswell¹⁰

⁴ “Valuation of energy use and greenhouse gas: Supplementary guidance to the HM Treasury Green Book on Appraisal and Evaluation in Central Government”

[REDACTED]

⁵ “Valuation of greenhouse gas emissions: for policy appraisal and evaluation”; [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

1.4 Definitions

17 The word “cumulative” is used in different senses by the Applicant in different places. At REP5-019, section 4, I presented a detailed description of the usage of the word “cumulative” in both relevant guidance, and the Environmental Statement. This is core to the Applicant’s legal error, and I will discuss this later. Suffice to say here that definitions, usage and application of the word “cumulative” are a very important issue.

18 For scientific precision, I use the following additional definitions. My definitions are:

- **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.*

1.5 Absolute and differential emissions

19 With respect to differential emissions, the applicant sometimes refers to these as “net” emissions. For example, Chapter 14, Table 14-10 of the ES [REP2-002] labels a column “*Net change in Carbon over 60-year appraisal period (tCO_{2e}) (DS vs DM)*”, other columns and the table similarly use “*net change*”.

20 “Net” is usually used to mean the quantitative change of some physical parameter because of some process. The EIA Regulations refer to environmental factors at EIA Reg 5 (2), and the Design Manual for Roads and Bridges refers to receptors at “LA 103¹¹ [Page 6, PDF 7] with respect to cumulative impacts. “Net-ness” depends upon the factor/receptor being assessed for environmental impact. For road-use emissions in a transport system, changes in carbon dioxide in the global atmosphere is the relevant factor/receptor. The net change to the atmosphere, and consequential global heating, is given by the absolute emissions emitted from the transport system. So net change to the atmosphere, and the environmental impact, arises from the total absolute emissions, given in this case by the Do Something (DS) traffic modelling output (and not from the “net” DS - DM quantity).

- 21 The usage of “net” by the Applicant in Chapter 14, Table 14-10 and other places is misleading as it used to suggest that a quantum of differential emissions is all that is of concern for assessment of the environmental factor. Differential is clearer word to use (than “net”) as it indicates that each figure being used in the Environmental Assessment is derived by a differentiation of two large absolute carbon emissions figures in the traffic model. The underlying **absolute** carbon emissions figures are actually the real measure of impact on the environmental factor/receptor (ie the global atmosphere and global heating), and therefore the metrics of primary concern.
- 22 **This is important** – is the purpose of assessment to quantify the impact on the environmental factor, or to quantify changes to the measuring system (in this case, the transport model)? It must be to quantify the impact on the environmental factor, in this case GHGs in the global atmosphere, and therefore absolute emissions are the preferable quantification.
- 23 Differential emissions data, being a small number derived from two large numbers, is also very sensitive to changes in one of the large numbers used to calculate it. For example, if assumptions in how the baseline is modelled for the DM figure increases that figure, then the DS-DM will be consequential smaller.

2 CARBON QUANTIFICATION AND ASSESSMENT

- 24 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?
- 25 My previous submissions have described the key parameters on carbon quantification (KQ-1) as:
- **Carbon emission types** (eg: construction and operations, the PAS2080 types, and my simplified seven-type typography¹²) [eg: REP4-057, section 2.6]
 - **Baseline, solus¹³ and cumulative emissions** [eg: REP4-057, section 1.3] - this will be explained in more detail later in the next section

¹² REP04-057, Table 1 and narrative

¹³ Solus means, here, “alone; separate” as in the first definition in the Collins on-line dictionary

- **Spatial scales of quantification** (local, regional and national) [eg: REP4-057, section 1.2]
- **Short-term, medium-term and long-term of quantification**, for example, carbon budgets like the 5th carbon budget or long-term periods like the period 2050-2085 (the post net-zero “2050” year part of the 60 year appraisal) [eg: REP4-057, section 2.9]

26 My previous submissions have described the key parameters on targets and budgets (KQ-2) as:

- **Absolute v differential emissions** [eg: REP5-019, 10 and 11, and section 8.1, REP4-057, 95], and definitions above
- **Local, regional and national** carbon budgets and targets [eg: REP4-057, sections 2.2 and 2.3]
- **Other targets and budgets** from national, and international, policy and law

27 From these questions and parameters, important questions arise within the legal framework which includes the EIA Regulations, eg:

- “Should both the Scheme’s construction and operational emissions be considered?”
- “Should the Scheme be considered in isolation, or in the context of other cumulative developments, or both?” etc

3 CARBON QUANTIFICATION AND THE TRANSPORT ASSESSMENT

28 I return to the first fundamental question (KQ-1) which the ExA and SoS need to consider of how the scheme’s emissions should be quantified and prior to the assessment stage. A pre-requisite of the EIA regulations is that carbon is quantified in the correct way, so that both solus and cumulative assessment can be later carried out, and the NPS NN also requires this through its invocation of the EIA Regs, as described in previous submissions [eg: REP4-057, section 1.1].

29 For the EIA Regulations, it is necessary to clearly distinguish solus and cumulative assessment. Solus¹⁴ being the impacts of the scheme in isolation. Solus and cumulative

¹⁴ Solus means, here, “alone; separate” as in the first definition in the Collins on-line dictionary

impacts in the context of EIA assessment are clarified in Pearce v BEIS [2021] EWHC 326 (Admin).

3.1 *Solus and Cumulative Quantification of GHG Emissions*

30 A key issue is whether the A47BNB scheme has been assessed both in “solus” and in “cumulative” for carbon emissions, and whether each of these assessments is quantified correctly, and whether the assessment of each is compliant with the EIA Regulations. **The question as to how carbon is quantified depends upon the configurations of the traffic modelling.**

31 I now investigate this and show no cumulative carbon quantification is made, and the solus carbon quantification, which is made, is significantly underestimated.

3.2 *The situation following Issue Specific Hearing (ISH4), November 9th - Session 1*

32 The ExA cross-examined the Applicant in detail on cumulative quantification and assessment (watch EV-044 from 50:40 in the recording), and the Applicant has provided in REP7-025 its written summary (page 29 - 36) and response to Action Points 7, 8, and 9 (Appendix A, page 47-50). I note that the Applicant’s response on APs 7, 8 and 9 has not provided a direct answer each action point, but a longer, and entangled narrative.

33 The cross-examination **proved without doubt** the point that I have made since my Relevant Representation onwards that **the Applicant has not carried any quantification or assessment of cumulative carbon emissions** of the A47BNB scheme, particularly with three other major road schemes: the A47NTE, A47THI and NWL.

This is confirmed by the Applicant in REP7-028 by the statement on page 30 (key sentences emphasised):

*“For the development of the traffic model, the Applicant has followed the DfT TAG guidelines. This guidance requires the Applicant to develop a core scenario. The DM core scenario includes all developments including transport and land use developments which will more than likely be approved. An uncertainty log is developed to capture all the developments in the area and classify their likelihood of being approved. **In this case, the DM scenario includes the NWL and the other A47 projects. Similarly, a DS core scenario is developed which includes the scheme in addition.** The Applicant has also carried out sensitivity test to consider different development.”*

34 I will return to other aspects of the quote above. The key point at this stage is that the DM scenario includes the three other major road schemes, and the DS scenario includes the scheme “in addition”. **This is a solus only assessment, and not a cumulative assessment.**

35 Since an assessment of the cumulative GHG emission impacts of the Scheme is legally required under the EIA Regs, this failing alone renders the environmental assessment unlawful.

36 Further confirmation that this is only a solus assessment comes from the cross-examination, and the clear statement from the Traffic Modeller that **the only incremental change** being modelled and quantified in the applicant's model configuration is the A47BNB scheme. Between 1.03.14¹⁵ and 1.05.39, Mr Batterskill, the Transport Modeller explains, and key statements are:

“.. as part of the DM scenario, it includes the A47 projects and the NWL project ..”

“.. then a DS core scenario is created which is the additional scheme on top **so the difference between the two is the scheme** ..”

37 The statement of REP7-025, page 29:

*“**There is a cumulative assessment** in that the assessment takes into account the other schemes that the ExA has mentioned on the A47 and the NWL.”*

contradicts the evidence given in the ISH4, and is false.

3.3 Other statements confirming only a solus carbon assessment has been done

38 The Applicant states on REP7-025, page 31:

“The Applicant is not using the other projects included in the DM baseline to assess the significance of the scheme's carbon impact.”

This is in direct contradiction to the EIA Regs, Schedule 4, Para 5(e) which requires by law “the cumulation of effects with other existing and/or approved projects” to be assessed for each environmental factor, including GHGs under climatic impacts.

39 The Applicant states on REP7-025, page 32:

“The DM scenario in Table 14-9 shows the situation if the scheme wasn't built.”

This confirms that the only difference between the Applicant's DM and DS configurations is the existence or not of the A47BNB.

40 The Applicant states on REP7-025, page 33:

¹⁵ Direct link: [REDACTED]

“What has been modelled in Table 14-9 is the scenario if the Applicant didn't build the project (DM) and the scenario if the Applicant did build the project (DS).”

- 41 The sentence which follows *“If the baseline didn't include those other projects, there would be mismatch of information.”* is a non sequitur, and no explanation is given of it. The applicant elsewhere refers to sensitivity tests, although they appear not to have done any for the Environment Statement (see below). Sensitivity testing is based on the inclusion or removal of various parts of the traffic model configuration. The quoted statement above would suggest, if true, that the common technique of sensitivity testing is not possible.

3.4 Sensitivity tests

- 42 The Applicant says at REP7-025, page 30:

“The Applicant has also carried out sensitivity test to consider different development.”

This is quoted exactly, and it is not clear if the Applicant means one sensitivity test or multiple sensitivity tests. However, the Environmental Statement does not include any such sensitivity test(s), and they are not referred to the Transport Assessment APP-122, and Chapter 14, Climate REP2-002. In APP-122, under “Forecast Year Networks” 6.3.19 – 6.2.21 and Table 6-2, only the singular modelling configuration, as described by Mr Batterskill above is given. **In short, the Applicant has not demonstrated that they have performed any sensitivity tests, and therefore the statement above is false based on the information in the Environmental Statement.**

- 43 Table 1 in section 4 shows what other modelling configurations should be carried out, not just as sensitivity tests, but as a key modelling, and carbon quantification, to comply with the EIA Regulations.

3.5 Uncertainty Log v Cumulative Effects Assessment (CEA) screening

- 44 The Uncertainty Log is not published in the Environmental Statement, although it is referenced indirectly in the Transport Assessment for example, the map at Figure 6-6 shows the NATS DM (land use) Development locations and section 6.3.17 indicates the three major highway schemes are in the uncertainty log.
- 45 However, the Uncertainty Log is inconsistent with the CEA screening (“Appendix 15.1 – CEA Stage 2 Screening” [APP-113] and “Appendix 15.2 – CEA Short List: Development Type” [APP-114]) produced for the Cumulative Effects Assessment in Chapter 15 [APP-053]. The key difference is that whilst the A47NTE, A47THI and NWL are in the Uncertainty Log, they are not listed in either APP-113 or APP-114. To add to the confusion, an NSIP DCO road scheme project, the “Third River Crossing” in Great Yarmouth is listed in APP-113 and APP-114, but apparently not in the Uncertainty Log (and therefore not included in traffic modelling).

The Applicant has frequently used the term “inherently cumulative” to refer to the DM and DS traffic model core scenarios. It is therefore astounding that the traffic modelling has not used the Cumulative Effects Assessment lists which are published as appendices and which relate to cumulative assessment. I strongly suspect that the authors of the Traffic Assessment and the Cumulative Effects Assessment have worked in silos, and not communicated, which has resulted in two completely different sets of data being generated which purport to serve the same purpose. **The Applicant must provide an explanation of this.**

3.6 The EIA Regulations

46 The Applicant presents their position on the EIA Regulations at REP7-025, page 30, as follows:

*“The Secretary of State (SoS) will look at the test that has been defined as set out in the NNNPS. In accordance with EIA Regulations, the information that it is necessary for the SoS to take into account in determining the significance of carbon emissions is that at a national level in the context of carbon budgets. **The EIA Regulations do not dictate to parliament the level at which a particular significance is to be determined; that is a matter for the decision maker in accordance with the legal framework which is the NNNPS and section 104 of the Planning Act 2008.** There are no other carbon budgets that are material in the determination of this application because, the NNNPS does not identify any other method to assess the carbon impact of a project.”*

47 The highlighted sentence introduces the peculiar notion of the EIA Regulations “dictating to parliament”. 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 **and-and**).

48 As I have explained¹⁶, the NPS NN **directly invokes** the EIA Regulations (“EIA Regs”) at NPS NN 4.15 and 4.16: the NPSNN, therefore, fully accepts that the EIA process must be followed in full. The NPSNN cannot, as a matter of law¹⁷, 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):

¹⁶ For example, REP5-019, section 13.2, and REP4-057, section 1.1

¹⁷ I am grateful to the recent legal submission to A38 Derby Junctions scheme, here [REDACTED]

“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.”

49 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]).

50 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 Regulation 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?

The EIA Regulations are clear that two quantifications (KQ-1), and associated assessments, are required: solus and cumulative. As above, the cross-examination at ISH4 has demonstrated without doubt that only a solus quantification and assessment has been made by the Applicant.

4 CARBON QUANTIFICATION AND THE TRANSPORT ASSESSMENT

51 I return to the first fundamental question (KQ-1) which the ExA and SoS need to consider of how the scheme’s emissions should be quantified and assessed. The EIA regulations require both solus and cumulative quantification and assessment, and the NPS NN does through its invocation of them.

52 The Applicant has laid out how it has configured DM and DS core scenarios (ie **two** model configurations) in the Transport Assessment [APP-122] and this is reflected by its narrative in [REP7-025]. The Applicant says that it has followed the Transport Appraisal Guidance (TAG). It is more accurate to say that the Applicant has followed its own particular interpretation of TAG, which is appropriate for operational/performance evaluation of the network, but which is not fit for purpose for cumulative carbon assessment, as I will discuss further below.

However, as in the previous section, the configurations of the transport model in the Environmental Statement ONLY generates a single quantification of the scheme which is solus (and, as I show below, this is not the only solus quantification that is possible, and

this one in fact is a significant underestimate), and therefore the assessment based on it is also only solus. This **only partially** meets the requirements of the EIA Regulations which also require cumulative assessment.

53 Below I lay out **three** additional traffic model configurations which generate carbon quantification of the scheme in cumulation, and therefore enables a cumulative assessment of carbon emissions for the scheme and would complete the requirements of the EIA Regulations.

4.1 *The overall picture*

54 The Applicant describes the Assessment Methodology and how forecast year scenarios are configured in section 6 of APP-122.

55 In REP5-019, Table 1, I previously showed configurations for including the A47NTE, A47THI and NWL for solus and cumulative assessments. I now extend this description to cover the aspects described in APP-122.

56 First, it is necessary to understand that the TAG approach, and the knowledge and skills developed by traffic modellers, pre-date the current time when assessment of carbon emissions has become an important factor in planning policy and law. The **two** traffic model configurations (ie: DS and DM) which are deployed are geared to assessing operational performance. I accept that performance is an important design issue, and is necessary to test aspects of the transport network of interest to highways engineering¹⁸, and therefore that these configurations have a value for that purpose. My submission does not seek to address the success, or not, of this aspect of the transport assessment. The performance issues that this approach to the modelling is designed to answer are described in APP-122.

57 However, the concern for cumulative carbon assessment is that this performance-oriented transport modelling configuration, derived for the historical context explained above, does not even allow the assessment of cumulative impacts of GHGs of the Scheme (when differential emissions (ie: DS-DM) are extracted). **Put simply, and as explained below, an additional complementary approach to the modelling is needed to properly assess carbon impacts, both solus and cumulative, when differential emissions are being used.**

¹⁸ As an aside, it is concerning to read on page 1, executive summary, of APP-122 that it is assumed that traffic growth will continue into the future.

“Highways England has identified in their Road Investment Strategy that there is a requirement to increase traffic capacity along the A47 between Blofield and North Burlingham to reduce the traffic congestion and delay, which is forecast to increase in the future due to traffic growth.”

The assumption is peppered throughout APP-122 and is in contradiction to the SoS’s own department policies of modal shift to public transport, cycling and walking, and of freight from road to more sustainable alternatives, such as rail, cargo bikes and inland waterways, as in the Transport Decarbonisation Plan (TDP) and the Government’s Net Zero Strategy.

58 Although, it is not the direct concern of this submission, this failure of the performance-oriented transport modelling to assess cumulative carbon impacts, may well extend to other environmental factors, such as noise, especially where a differential quantification of environmental factors based on DS - DM assessment is fed into assessment process. **I request that the ExA seeks to determine whether there are other situations, with different environmental factors, where only a solus assessment has been made, and the wrong solus assessment, and which are therefore also in breach of the EIA Regulations. The Applicant should be required to provide evidence that it has carried out both solus and cumulative assessment on all environmental factors scoped-in in the EIA scoping report.**

59 Table 1 shows the different complementary approaches which are needed to derive differential solus and cumulative GHG impact assessment. A ✓ in Table 1 means that a feature (eg: a road) is included in the traffic model configuration whilst a ✗ means it is not included.

Model configuration name	Performance-oriented (ie as in APP-122)		EIA Regs compliance-oriented (eg: for impact assessment of GHGs)			Example sensitivity test
	<i>DM (Perf, baseline)</i>	<i>DS (Perf, all)</i>	<i>DM (GHG, baseline)</i>	<i>DS (GHG, scheme)</i>	<i>DS (GHG, all)</i>	<i>DS (ST1)</i>
2015 Baseline Highway network	✓	✓	✓	✓	✓	✓
A47BNB scheme	✗	✓	✗	✓	✓	✓
A47NTE	✓	✓	✗	✗	✓	✗
A47THI	✓	✓	✗	✗	✓	✗
NWL	✓	✓	✗	✗	✓	✗
Land-use changes (uncertainty log)	✓	✓	✗	✗	✓	✓
Forecast changes in trip demand (VDM)	✓	✓	✓	✓	✓	✓

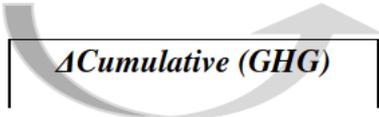
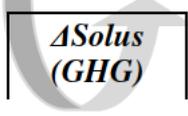
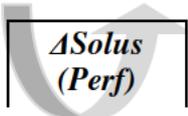


Table 1

60 In Table 1, I identify **six** Traffic Model configurations and give each a name eg: *DM (Perf, baseline)*. *DM (Perf, baseline)* and *DS (Perf, all)* are the two presented by the Applicant as in APP-122.

61 I introduce **three** EIA Regs compliance-oriented configurations. There are many potential configurations. For example, I bundle the three roads schemes (A47NTE,

A47THI and NWL) and land-use developments together between *DS (GHG, scheme)* and *DS (GHG, all)*. Sensitivity tests could be done with any combinations of these included, and as an example I give configuration *DS (STI)* which would test the existing road network and the A47BNB scheme *DS (GHG, scheme)*, against planned land-use developments (but with no other new road schemes introduced).

- 62 The crucial point here is that for EIA Regs compliance-oriented assessment, the bundling of road and land-use developments as shown in Table 1 would be the logical configuration to generate the correct carbon quantification for solus and cumulative assessment. Each of the **five** models would be run at 2025 Opening Year, and 2040 Design Year, as in the Applicant's Traffic modelling.
- 63 Each of the **five** models in Table 1 will produce a carbon quantification output for the different carbon budget periods which is expressed as **an absolute value of carbon emissions**. For example, for the fifth carbon budget (5CB), *DM (Perf, baseline)* corresponds to the Applicants DM value of 5,182,172 tCO₂e as in Chapter 14, Table 14-9, whilst *DS (Perf, all)* corresponds to the Applicants DS value of 5,196,307¹⁹ tCO₂e. I emphasise again that differences such as *DS (Perf, all) - DM (Perf, baseline)*, and its associated Chapter 14, Table 14-10 5CB value of 14,135²⁰ tCO₂e are a further derivation of the data, and are expressions of **differential quantities of carbon emissions** for the vehicle emissions.

4.2 Differential emissions and the semantics of increments

- 64 The arrows underneath the Table 1 show the different differential carbon emissions which can be derived. It is clear straightway that two different solus values can be calculated. $\Delta Solus (Perf)$ corresponds to the Applicant's 14,135²¹ tCO₂e figure (for 5CB) which takes all the possible developments (three A47 schemes, NWL, planning developments) for the DS and removes the A47BNB for the DM. By contrast, $\Delta Solus (GHG)$ introduces the A47BNB on top the baseline network (**ie the current environmental situation**), with the cumulative impacts of the other road schemes and land-use developments being calculated as a further step, indicated by $\Delta Cumulative (GHG)$.
- 65 $\Delta Solus (GHG)$ and $\Delta Solus (Perf)$ will calculate different quantities of carbon. $\Delta Solus (GHG)$ will be a larger value than $\Delta Solus (Perf)$ because there will be a significant number of journeys which will exist in *DM (Perf, baseline)* and attributed in that configuration to the road and land-use developments. Some of these journey would happen without the other developments, and with the A47BNB alone, for example from induced traffic effects, and in this case these journeys would be assigned to the A47BNB

¹⁹ The figure in Table 14-9 is 5,196,417 tCO₂e, but this needs to be adjusted for non-vehicle operational emissions (eg: lighting) as shown in REP4-057, Table 4 and text narrative adjacent to the Table.

²⁰ The figure in Table 14-9 is 14,245 tCO₂e, but this needs to be adjusted for non-vehicle operational emissions (eg: lighting) as shown in REP4-057, Table 4 and text narrative adjacent to the Table.

²¹ The figure in Table 14-9 is 14,245 tCO₂e, but this needs to be adjusted for non-vehicle operational emissions (eg: lighting) as shown in REP4-057, Table 4 and text narrative adjacent to the Table.

itself in *DM (GHG, scheme)*. **In other words, the $\Delta Solus (Perf)$ carbon quantification used by the Applicant for its solus carbon assessment is an underestimate of the real carbon impact of the scheme.**

66 $\Delta Solus (GHG)$ and $\Delta Cumulative (GHG)$ are the carbon quantifications, are more accurate, and are the quantities which should be carried forward into any EIA compliant assessment based on differential carbon quantities.

67 Just to link this to the variables in REP4-057, Table 4 in my Written Representation, DS^{A47BNB} corresponds to *DS (Perf, all)*. As stated above, whereas the EIA Regs compliant **solus** assessment should be based on *DS (GHG, scheme)*. The EIA Regs compliant cumulative assessment is provided by DS^{ACCU} corresponds to *DS (GHG, all)* and as Table 4 says requires calculation as the traffic model configurations for this have yet to be provided by the Applicant.

68 There are therefore more than one “increment due to the scheme”. $\Delta Solus (GHG)$ and $\Delta Solus (Perf)$ are each increments, where the only difference is the introduction of the schemes, but they will each have different carbon quantifications. This is why I prefer the term differential emissions, as it is neutral in meaning, and defined purely the difference of two quantities: **it is the nature of the model configurations producing those quantities which gives the semantics of the differential quantity**.

69 In summary, **for carbon assessment**, the wrong solus differential quantity has been used by the Applicant [$\Delta Solus (Perf)$ instead of $\Delta Solus (GHG)$], and the cumulative differential [$\Delta Cumulative (GHG)$], has not been calculated, or used, at all. **This error also requires that the transport models are run in the EIA Regs compliant configurations, and that the carbon assessment and Environmental Statement is reworked.**

70 It is, however, preferable to compare carbon budgets and targets, which are expressions of absolute values of carbon emissions, with absolute carbon emission quantifications of the scheme, as provided by *DS (GHG, scheme)* and *DS (GHG, all)* as I have described above. Absolute carbon emission quantities are more directly comparable with the real geophysical impact on the global atmosphere (effectively, the receptor for carbon emissions in the EIA Regulations), and they also provide greater sensitivity in assessing solus and cumulative impacts.

4.3 “Inherently cumulative” and the nub of the applicant’s error

71 I previously unravelled the multiple definitions of “cumulative” that have been used by the Applicant in REP5-019, section 4.

72 I now introduce a subtle issue which gets to the nub of **the error** in the Applicant’s oft stated notion that their assessment is “inherently cumulative”. This error results from the fact that “solus” and “cumulative” are terms which may be applied to quantifications of both **absolute emissions** and **differential emissions**.

- 73 The issue is apparent from Table 1 above. The applicant’s argument is that its DS model (ie *DS (Perf, all)* in Table 1) contains everything (ie: the A47BNB, the land-use changes, and the A47NTE, A47THI and NWL), and therefore it is “cumulative”. I accept this although I have referred to this as the “**all**” scenario, as above. In unravelling the Applicant’s confusion, here, I developed a nomenclature for Table 2 in which **only** differential emissions quantities are referred to as either solus or cumulative. This is because it is by referring to both absolute emissions (and the traffic models from which they are derived) and differential emissions as being solus or cumulative that the Applicant has confused the issue. DS is a carbon quantification expressed in **absolute emissions**, derived from a traffic model configuration containing **all** possible elements.
- 74 Similarly, the applicant’s DM model (ie *DM (Perf, baseline)* in Table 1) contains everything except the A47BNB, and the applicant refers to it as “cumulative”. Again, output of *DM (Perf, baseline)* is a carbon quantification expressed in **absolute emissions**, derived from a traffic model configuration containing **all** possible elements except the A47BNB.
- 75 However, it is the differential *ΔSolus (Perf)* which the applicant takes forward into its carbon assessment. As we have shown above, and as the ExA’s cross-examination at EV-044 proved **without doubt**, this differential carbon quantification [*ΔSolus (Perf)*] **results in a solus assessment** as it is derived from two absolute quantities [*DS (Perf, all)* - *DM (Perf, baseline)*] whose only difference is the existence or not of the A47BNB.
- 76 The Applicant confuses the configurations of the traffic models which, when computed, express absolute vehicle kilometres, and absolute emissions, with the differential emissions which the Applicants feeds into its carbon assessment. In the case of the DS and DM traffic model configurations, they are both “all” (or “cumulative, or even “inherently cumulative”) traffic model configurations, but the differential between them produces a solus carbon quantification, and therefore produces a solus carbon assessment.
- 77 This is the nub of the Applicant’s error. They have taken traffic model configurations which may be reasonably to described as “inherently cumulative”, but through a process of differentiation have produced from them a solus carbon quantification, and therefore a solus assessment of carbon emissions.

4.4 Remedy for the Applicant’s error

- 78 First, for clarity, I should emphasise again that I am not saying that the performance-oriented models should not be run: I am aware of the importance of them for understanding the wider transport issues, and operational performance relating to the A47BNB.
- 79 However, I am saying that, if differential emissions that are derived from different model runs, are to be used for carbon assessment, then the three additional models, which I identify in Table 1 as EIA Regs compliance-oriented, need to be run in order to capture both the true solus impacts and the cumulative impacts of the scheme.

80 Overall as I stress elsewhere, assessment of absolute carbon emissions is a far more reliable and sensitive approach, and I would not advocate using differential emissions-based assessment, and certainly not as the only assessment benchmark given the low sensitivity of assessments based on it (see later).

81 The remedy for this is that the additional transport modelling (EIA Regs compliance-oriented), as specified in Table 1, namely configurations *DM (GHG, baseline)*, *DS (GHG, scheme)* and *DS (GHG, all)* should be computed. **As only a solus assessment (and as we described above the wrong solus assessment) has been attempted in the Environmental Statement, it is unlawful and does not comply with the requirements of the NPS NN and the EIA Regs.**

4.5 EIA Regulation 20

82 Reg 20 of the EIA Regs provides for a set procedure²² to be followed in cases where an “applicant has submitted a statement that the applicant refers to as an environmental statement” (reg 20(2)(a)) and “the Examining authority is of the view that it is necessary for the statement to contain further information” (reg 20(2)(b)).

83 “Further information” is defined in reg 3 as meaning:

“additional information which, in the view of the Examining authority, the Secretary of State or the relevant authority, is directly relevant to reaching a reasoned conclusion on the significant effects of the development on the environment and which it is necessary to include in an environmental statement or updated environmental statement in order for it to satisfy the requirements of regulation 14(2);”

84 Reg 20(1) and (3) essentially requires that – where further information is considered necessary (under Reg 20(2)) - the applicant must provide that “further information” and, subsequently, there must be a new public notification and consultation process, which allows interested parties (not limited to those interested parties who have already been involved in the examination process) to consider and comment on the environmental statement and “further information”.

85 It is clear that the Environmental Statement does not comply with the requirements of the NPS NN and the EIA Regs. I have requested previously that the ExA consider this under EIA Reg 20 (at REP04-057, SUMMARY, non-compliance issue N_C-1; and at REP5-019, 26; and in AS-030, my joint letter to A47BNB, A47NTE and A47THI ExA’s).

²² I am grateful to the recent legal submission to A38 Derby Junctions scheme, here and in subsequent paragraphs

Following the demonstration without doubt that no cumulative carbon assessment has been made in the Environmental Statement, by the ExA’s cross-examination, and as described above, I now ask that the ExA now determines that the Reg 20 process needs to be followed in relation to this matter. I respectfully suggest that it would be preferable, for all parties, to do this now rather than to delay until a later consultation process as in the case of A38 Derby Junctions application.

4.6 *Transport Appraisal Guidance (TAG)*

- 86 The Applicant refers to the requirement in TAG to generate “with scheme” and “without scheme” scheme scenarios. For example, TAG UNIT A3 on Environmental Impact Assessment, 4.2.14 states “*Having calculated the carbon dioxide equivalent (CO₂e) emission levels for each year, the change between the ‘with scheme’ and ‘without scheme’ cases for each year can be calculated.*”
- 87 The EIA Regs compliance-oriented traffic models, which I have described, are entirely consistent with this. There are in fact two possible solus calculations of the change between “with scheme” and “without scheme” in Table 2 - *DS (Perf, all) - DM (Perf, baseline)* **AND** *DS (GHG, scheme) - DM (GHG, baseline)*. As we have said, the former performance-oriented differential underestimates the true carbon impact of the scheme, and the latter EIA Regs compliance-oriented differential should be used. Then there is the cumulative calculation *DS (GHG, all) - DM (GHG, baseline)* – in this case, one is “with scheme” and the other is “without scheme”, with *DM (GHG, baseline)* also without other road schemes and land-use developments, enabling an EIA Regs compliant cumulative assessment of the “scheme with other developments” to be made.
- 88 Sensitivity testing is encouraged by TAG to test alternatives, and the EIA Regs compliance-oriented configurations, and the sensitive test *DS (STI)* introduced at Table 1 is just a further variation.
- 89 Apart from being unlawful as they do not provide for cumulative carbon assessment, the Applicant’s performance-oriented model configurations are part of a paradigm which has evolved for historic reasons, as explained above. And it is entirely reasonable to continue to approach operational performance of a road scheme by this traffic model configuration, and paradigm. However, the range of traffic model configuration needs to be extended with the EIA Reg compliance-oriented configurations as described in Table 2, and narrative above, to meet the new paradigm of both solus and cumulative carbon assessment, and to comply with the EIA Regulations.

4.7 *Related Comments on the Applicant’s REP7-025*

- 90 The Applicant states on REP7-025, page 29:

“With regards to the traffic assessment, the Applicant has followed the DfT Transport Appraisal Guidance (TAG). As the carbon impact assessment was carried

out after the traffic assessment, it is necessary to first look at how the traffic assessment was undertaken.”

This statement reflects the key problem outlined above about the historic context in which carbon assessment is based on traffic models which were originally designed only with traffic operations performance in mind. National Highways quite clearly see carbon impact assessment as an add-on to the traffic assessment.

My point, as explained above, is traffic modelling and its configuration needs to be extended to properly, and lawfully, deal with carbon assessment which is relatively new endeavour. The existing performance-oriented modelling should continue, but new configurations of the traffic modelling, as specified in Table 1 are required to comply with the EIA Regs requirement for cumulative carbon assessment, and to correctly assess the solus impacts of a scheme.

91 The Applicant states on REP7-025, page 31:

“The intention of the wording "inherently cumulative" is to explain how our scheme would have an impact on other projects and change the traffic associated with those projects. The DM baseline includes the traffic moving as it would be taking into account those other projects. The DS scenario shows how our scheme would change the car movements from other projects traffic (through, for example, different speeds and different movements).”

This statement also is entrenched in the performance-oriented paradigm. As above, it is entirely reasonable to continue to approach operational performance of a road scheme by this traffic model configuration. However, the range of traffic model configurations needs to be extended (with the EIA Reg compliance oriented configurations as described in Table 1 and narrative above) to meet the new paradigm of both solus and cumulative carbon assessment.

92 The Applicant states on REP7-025, page 31:

“All the carbon emissions from other projects will be factored into the carbon budgets should all those schemes proceed.”

This statement is flawed in two ways. First, it has no bearing on the fact that the Environmental statement is unlawful, because the EIA Regs require cumulative carbon assessment, and that requires others schemes to be assessed in cumulation with the scheme itself. Secondly, it is hopeless “unicorn thinking” with its suggestion that the carbon emissions from other schemes will be “factored into the carbon budgets”. The implication is that carbon budgets are unconstrained and will ‘balance out somehow’: the reality is that the UK Carbon budgets are severely constrained and there is very little manoeuvring room in achieving them.

93 The Applicant states on REP7-025, page 32 that they will respond further at the next deadline (ie deadline D8). I am unable to find this additional submission.

4.8 Notification of various errors in the Applicant's statement at EV-044 and REP7-025

94 The applicant refers to percentage changes, based on the data at Chapter 14, Table 14.10, which are less than or equal to 0.001% (eg: REP7-025, page 30 and verbally in EV-044). I previously pointed out in REP4-057 (at Table 7, and bullets 137,144) that this statement is wrong, the 4th and 6th carbon budget comparisons being greater than 0.001%.

95 At EV-044²³, the Applicant refers to carbon budgets defined in the Planning Act. The UK carbon budgets are defined in the Climate Change Act.

4.9 Related comments of ISH4 Hearing Action Points 7, 8 and 9

96 The ExA specified three related Hearing Action Points 7, 8 and 9, and the Applicant purports to respond to them in REP7-025, Appendix A.

97 The sentence at the top of page 47:

“This approach is in alignment with the NNNPS (5.17 and 5.18) and with the Infrastructure Planning (Environmental Impact Assessment) Regulations (EIA Regulations).”

is quite clearly false, as the ExA cross-examination, and my narrative above, has demonstrated **without doubt** that **only** a solus carbon assessment has been attempted (ie no cumulative carbon assessment has been attempted), and then with **the wrong solus differential emissions**, all of which is in breach of the EIA Regulations.

98 The ECJ judgement *Marktgemeinde Strasswalchen v Bundesminister fur Wirtschaft, Familie und Jugend (C-531/13) [2015] Env. L.R. 26*, referred to at the top of page 48, that a project should **not** be considered in isolation entirely aligns with my position. It has been demonstrated without doubt that the Applicant has only done a solus (ie “in isolation”) carbon assessment. The Applicant say they have explained how other schemes have been incorporated in the traffic model – this is correct, and the analysis above in Table 1, and the narrative below it, shows that whilst the absolute carbon quantities may result from cumulation of schemes, **the derived differential carbon emission quantities which are input into the carbon assessment are only solus.**

99 *R. (Khan) v London Borough of Sutton [2014] EWHC 3663 (Admin)*, referred to on page 48, is irrelevant. All the information necessary to perform a cumulative carbon assessment for the A47BNB already exists, and is known. It is just a matter of

²³ Between 1.09:28 and 1.09:48

configuring the traffic model in different configurations, ie the EIA Regulation compliance-oriented configurations, to make the cumulative carbon assessment.

100The Court of Appeal *Preston New Road Action Group v Secretary of State for Communities and Local Government* [2018] Env. L.R. 18 referred to on page 48, is also irrelevant. I am not asking for “more information than is reasonably required”, and what I may be asking for, or not, is irrelevant anyway. The Environmental Statement does not comply with EIA Regulations, and is unlawful; therefore, it needs to be extended with the necessary cumulative carbon assessment so that it is made lawful.

101Once again, under the reference to DMRB LA 104 3.21(2) on REP7-025, page 48, the statement “*Inclusion of the project and other locally committed development within the traffic model*” does not address **how** “other locally committed development within the traffic model” is configured. I have shown above that the Applicant’s configuration is inherently solus, and only solus assessment has been attempted. No cumulative assessment has been done, and the Environment Statement is unlawful.

102Under the reference to DMRB LA 104 3.21(2) on REP7-025, page 48, the statement “*Consideration of the project against the UK carbon budgets, which are inherently cumulative as they consider and report on the carbon contributions across all sectors.*” is deeply flawed. First, we are concerned with whether carbon impacts of the scheme have been cumulatively assessed. It is the project being assessed not the carbon budget. Secondly, I dismissed the notion that the carbon budgets are inherently cumulative as a spurious truism at REP5-019, 97. Whether they are or not, it does not accrue, or follow, that the scheme’s **assessment** is “inherently cumulative”.

4.10 Related comments on Applicant’s Response to Deadline 7 Submissions

103In responding to Ms Eleanor Laming, the Applicant refers to *Gateshead MBC v Secretary of State for the Environment* [1995] Env. L.R. 37, and states “*In considering whether or not to grant consent for a development, a decision maker is entitled to assume that other regimes will operate effectively*”. The Applicant makes this statement in the context of whether policies like the Net Zero Strategy and the Transport Decarbonisation Plan can be assumed to offset additional emissions generated in the UK carbon budgets from the Scheme.

104The Gateshead case is not applicable to this issue. It is concerned about an incinerator planning application and whether the permit regime and controls under the Environmental Agency, at the time, were adequate to deal with the risks of potential pollution events from the incinerator. The case, therefore, concerns a specific piece of infrastructure (the incinerator) and a permitting, monitoring and control regime that could be applied specifically to that piece of infrastructure. The analogy would be that if the A47NTE was found in the future, by monitoring to be emitting too much carbon, then there exists a regime that could step in to reduce that the carbon being emitting so that it would meet a regulatory, and acceptable threshold. Such a regime would need to have powers to somehow reduce traffic on the road to bring the emissions below the acceptable threshold.

It is clearly the case that no such regime exists that can apply regulatory standards to an individual and already-built road scheme.

105The “other regime” mooted by the Applicant to assume this role is a set of policies (ie the NZT and TDP) which are not directed at monitoring and controlling individual pieces of infrastructure, and therefore do not have the necessary powers, or effect.

5 CARBON ASSESSMENT

106I quote NPS NN 5.16-5.18:

“Carbon emissions

Introduction

5.16 *The Government has a legally binding framework to cut greenhouse gas emissions by at least 80% by 2050. As stated above, the impact of road development on aggregate levels of emissions is likely to be very small. Emission reductions will be delivered through a system of five year carbon budgets that set a trajectory to 2050.⁵ Carbon budgets and plans will include policies to reduce transport emissions, taking into account the impact of the Government’s overall programme of new infrastructure as part of that.*

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.*

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.*

(my emphasis)

5.1 *Material impact and sensitivity of assessment*

107I note that the term “*material impact*” is not defined in the NPS NN. It must, therefore, be a matter of (rational) judgment²⁴ as to what having a “*material impact on the ability of Government to meet its carbon reduction targets*” means at NPS NN 5.18.

108I submit²⁵ that “*material*” means anything that is non-negligible ie: if a project’s carbon impacts will have a non-negligible impact on the ability of Government to meet its carbon reduction targets, then this can – according to the NPSNN – be a reason to refuse development consent.

109There is a very wide spectrum of sensitivity of carbon assessment depending on the variables used – both (i) how carbon is quantified (KQ-1) and (ii) against what budget/target the emissions is compared to (KQ-2).

110The Applicant has used the entire UK national carbon budget which **dilutes the effects** of the carbon emissions associated with the A47BNB into the entire economy.

The singular assessment benchmark which the Applicant has carried out is, anyway, based on **the wrong solus quantification** and overestimates the DM case, so that the DS – DM calculation underestimates the incremental effect of the A47BNB, as discussed above.

111The differential solus emissions reported for the Scheme in the 6th carbon budget are 12,287 tCO₂e, corresponding to 0.0013% [REP4-057, Table 7]. However, this carbon quantification is wrong and an underestimate as I have reported above (it results from the performance-orientated traffic models, rather than EIA Regulation compliance-orientated traffic models).

112In any case, even if it were correct and it is not, the figure is at the most extreme (lowest) end of the possible spectrum of carbon quantification. An assessment should be made using absolute carbon quantities to show the real impact of the road system including the A47BNB against the relevant carbon budgets.

113I have provided an indicative version of such an assessment at REP4-057, Table 7. For the 6CB, the absolute DS emissions corresponding to the A47BNB, the other roads, and the existing traffic system across the traffic modelling area is 5,049,193 tCO₂e and this corresponds to 0.52% of the entire UK 6th carbon budget. The percentage is 400 times greater than that the (**wrong**) solus percentage above.

²⁴ I am grateful to the recent legal submission to A38 Derby Junctions scheme, here and in subsequent paragraphs

²⁵ I am grateful to the recent legal submission to A38 Derby Junctions scheme, here and in subsequent paragraphs

114I have pointed out at REP4-057, 139, that there is a triple whammy operating with the Applicant's presentation of the carbon quantities which acts to suppress the carbon signal so it is "lost in the noise": (1) differential (delta) v absolute carbon quantification ; (2) national area v local area (3) whole economy v road transport sector. The 400 factor above derives just from Whammy (1). Whammy (2) will introduce another approximately another two orders of magnitude of dilution (ie around 100) depending on the study area size, and Whammy (3) will introduce a further 2 – 3 times dilution depending upon the percentage of transport emissions against the total economy (eg: REP4-057,137ii reports transport emissions as 40.13% of whole economy emissions, based on latest BEIS data, of the Broadland, Breckland, South Norfolk and Norwich in which the 3 A47 schemes and NWL are promoted). Taking all three whammy's into account, the sensitivity difference is around an indicative value of the order of 80,000 [=400*100*2].

115In other words, if the A47BNB scheme was assessed for the **absolute** carbon emissions which it generates within the **transport** sector in its **local** area, then the percentage impact on the 6th carbon budget would be of the order of 80,000 times greater than that reported by the Applicant in its assessment.

116The ExA and SoS should appreciate that a full range of assessment values is required to properly assess whether the Scheme will have a material impact on the Government's ability to meet its carbon reduction targets.

117 This is further supported by the EIA Regulation guidance to use more than one criterion in environmental assessment. **This is also wholly consistent with the usual approach of scientists which is to find as wide a variety of criteria as possible to confirm an assessment.** The EIA Guidance²⁶ advocates using more than a singular criterion for significance determination:

“At the same time, significance determinations should not be the exclusive prerogative of ‘experts’ or ‘specialists’: significance should be defined in a way that reflects what is valued in the environment by regulators and by public and private stakeholders. A common approach used in EIA is the application of a multi-criteria analysis. Common criteria used to evaluate significance include the magnitude of the predicted effect and the sensitivity of the receiving environment.”

118 The Applicant has not given regard to considering using multi-criteria appraisal which increases the sensitivity of assessment by, for example, making local, regional and national scale assessments, and absolute and differential quantities, for both solus and cumulative carbon emission.

119Much more information is required to make a rational and science-based assessment. The traffic models need to be run in the additional configurations which I have laid out at

²⁶ Paragraph 1.4.2, page 49, [REDACTED]
[REDACTED] – European Union

Table 2, and absolute as well as differential carbon emission quantities need to be taken forward to the assessment. Assessment should also be done against local, regional and sectorial carbon budgets.

120I request that ExA requires these computations are made by the Applicant as part of making the Environmental Statement legal under an EIA Reg 20 process.

5.2 What benchmarks? Carbon budgets and carbon targets

121Referring to NPSNN, para 5.18 quoted above, the reference in the NPSNN is to “*carbon reduction targets*”. It is not limited to considering carbon budgets²⁷, albeit para 5.17 correctly recognises that carbon budget allocations can be an appropriate reference point for assessing carbon impacts (essentially because carbon budgets are used to ensure the right trajectory is set to achieve the relevant carbon reduction targets). Where, however, there is no equivalent carbon budget set to achieve a “*carbon reduction target*” (or where carbon budgets that have been set are no longer considered to be effective in reaching the target), it may be necessary to assess carbon impacts by reference to their effects on meeting the target itself.

122The ExA and SoS need to consider all relevant carbon reduction targets that apply to the Scheme’s operation. This will require a consideration of the Net Zero target and the impact that the Scheme’s non-negligible emissions contribution will have on achieving that target. The ExA and SoS can only sensibly conclude that a Scheme of this size and impact *will* have a material impact on the Government’s ability to meet the Net Zero target (because it will make that target substantially harder to meet) even if the target can still technically be met (through compensatory action taken elsewhere). In other words, where a project’s carbon impacts will make it considerably harder (but not impossible) for the Government to meet its carbon reduction targets, then it will have had a “material impact”.

123The ExA and SoS must also consider any assessment of carbon impacts within the context of the parliamentary declared Climate Emergency, particularly in which a considerable amount of the Scheme’s expected emissions (including all its construction emissions) will take place within the next 10 years – a period which the scientific community now accepts will be crucial in addressing climate change.

124Notwithstanding the need to rework the Environmental Statement for the modelling configurations at Table 2 above so that EIA Regs compliance may be demonstrated, the ExA and SoS cannot rely on the limited, and extremely biased (being at the extreme end of the sensitivity range information, and based on an underestimate) information provided

²⁷ I am grateful to the recent legal submission to A38 Derby Junctions scheme, here and in subsequent paragraphs



by the Applicant in its Environmental Statement to conclude that the Scheme will not materially impact on the Government's ability to achieve its carbon reduction targets.

125I have shown that rather than a 0.0013% impact on the 6CB (as presented by the Applicant), when placed in its proper context of its local area, the transport sector and quantified in absolute emissions, the scheme has an approximately 80,000 times greater impact.

126In light of all of the above, and notwithstanding the need to rework the Environmental Statement by the Applicant, the Scheme clearly will have a material impact on the Government's ability to achieve its carbon reduction targets and **this impact represents a clear reason for refusal.**

5.3 Local assessment

127I have pointed out before that the Applicant has had no regard for the guidance which advocates multi-criteria assessment, and local and regional assessment of the impact on the scheme on carbon emissions, and targets, and budgets (see Appendix C on the EIA Guidance documents).

128The Applicant wants to ignore the guidance and, in a somewhat desperate move, it now suggests that, although the EIA Regulations transposed into UK law remain on our statute, the Guidance which was produced alongside the Regulations to “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” (see Appendix C on the EIA Guidance documents) has ceased to be relevant now that the UK is no longer part of the EU. See REP7-015, page 34, point 7, where in its Written Summary of Oral Submissions, the Applicant states:

“It is a guidance document which provided guidance when the UK was part of the EU.”

Despite the absurd suggestion that guidance, relating to law, fails to be relevant due to the passing some arbitrary political event, it is helpful that the Applicant acknowledges that before Brexit the guidance **did** provide guidance when the UK was part of the EU. The Applicant's EIA Scoping Opinion is dated March 2018²⁸ [APP-166] from before Brexit. Yet, the Applicant has given no regard to the Guidance in it.

129In REP2-002, Chapter 14, the Applicant reports that it referred to the IEMA document “Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance” (provided at Appendix E). This guidance aims to assist EIA practitioners with addressing greenhouse gas emissions assessment and mitigation. It outlines the process for undertaking the carbon assessment as it relates to the EIA stages.

²⁸ although a later front cover has been put on in the Application

IEMA best practice guidance states that all GHG emissions contribute towards climate change and are significant.

130The IEMA guidance states at section 6.2 under “Contextualising a project’s carbon footprint” and Figure 4 “Good practice approach for contextualising a project’s carbon budget” that a project’s carbon footprint should be assessed against the sector (eg road transport, local (eg local authority budgets) and national. It is concerning that the Applicant has failed to follow the IEMA guidance which they quote, by not even considering these additional assessment benchmarks which increase sensitivity.

131I have above referred to the sensitivity spectrum of carbon assessment, and that the Applicant has used just one assessment benchmark which is at the extreme lowest sensitivity of the spectrum²⁹. This is not credible scientifically, and following the IEMA guidance and the EIA guidance for local, regional and sectorial assessment would massively increase the robustness, trustworthiness and range of the assessment.

6 TRANSPARENCY OF COMPUTER MODELLING

6.1 The Algorithmic Transparency Standard

132The Government recently announced an "Algorithmic Transparency Standard" at [REDACTED] under the Central Digital and Data Office in the Cabinet Office. Under the new approach, government departments and public sector bodies will be required to explain where an algorithm was used, why it was used and whether it achieved its aim. There will also be an obligation to reveal the architecture behind the algorithm.

133This follows from the debate on computing, AI and data in public bodies where decision may be made by computer or based on computer outputs. It also applies to decision making and one of the scopes is software that "has a potential legal, economic, or similar impact on individuals or populations" which includes transport models used for decision making of carbon in planning.

134The need for such transparency was foreseen by Supreme Court judge Lord Sales in a 2019 speech³⁰ "Algorithms, Artificial Intelligence and the Law" which includes the key paragraph:

“The question then arises, how should we provide for ex ante review of code in the public interest? If, say, a government department is going to deploy an algorithmic program, it should conduct an impact assessment, much as it does now in relation to

²⁹ In REP4-057, section 6, I previously present some indicative assessments against local and sectorial budgets which expanded the range of sensitivity.

³⁰ [REDACTED]

the environmental impacts and equality impacts in relation to the introduction of policy. ...

Therefore, there seems to be a strong argument that a new agency for scrutiny of programs in light of the public interest should be established, which would constitute a public resource for government, Parliament, the courts and the public generally. It would be an expert commission staffed by coding technicians, with lawyers and ethicists to assist them.”

135The Applicant is already in breach of the Aarhus Convention in providing very limited description of the traffic models and how they are configured, meaning that limited scrutiny of this aspect of the Environmental Statement is possible. Quite clearly, the lack of transparent information and data about the traffic models on which operational carbon emissions are based does not allow any independent review and scrutiny of the high-level figures published in the Environmental Statement. The UK is signatory to the Aarhus Convention³¹ which at Article 4 grants the public rights regarding access to information, public participation and access to justice, in governmental decision-making processes on matters concerning the local, national and transboundary environment, and at Article 6 highlights the requirement for early public involvement. The applicant is clearly in contravention of the terms of the Aarhus Convention.

136I have made best endeavours to disentangle the information in the Environmental Statement, working in good faith, and following my statement of truth on page 1 of this document “**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”.** However, the current presentation of the material is largely opaque and hides much about the operation of the traffic models.

137The issues raised here on compliance with the EIA Regulations could be understood and better presented to the ExA and SoS if further information on the traffic models were released.

138The Algorithmic Transparency Standard is at a pilot stage and being tested by several government departments and public sector bodies in the coming months before being reviewed again and formally launched next year. Notwithstanding this, it is a standard that the Applicant as a public body, or publicly owned company, will be required to comply with in the future. It would be valuable to the examination if the Applicant were to provide more information of the architecture, and the configuration of, their traffic models. **For algorithmic transparency, I respectfully request that the ExA requires a fuller explanation of how the traffic models used by the Applicant for the Environmental Assessment function and link together.**

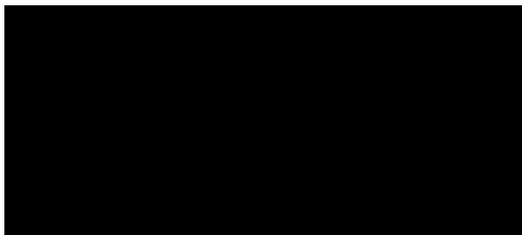
³¹ [REDACTED]

7 CONCLUSIONS

139 This submission has laid out carefully and precisely how the Applicant has failed to comply with the EIA Regulations in not carrying a cumulative assessment of carbon impacts. The evidence is compelling from the ExA's ISH4 cross-examination, and from the evidence in this document. **I now respectfully ask that the ExA determines that the EIA Reg 20 process to suspend the examination is now followed in relation to this matter. The Environmental Statement must be reworked, so that the missing data and non-compliances may be resolved.**

140 the Applicant has used just one assessment benchmark which is at the extreme lowest sensitivity of the sensitivity spectrum. A much wider range of assessment is necessary. Despite this, it is clear that the scheme will have a material impact on the Government's ability to achieve its carbon reduction targets and **this impact represents a clear reason for refusal.**

141 I request again for the examinations of the A47BNB, A47NTE and A47THI to be considered together, and for a joined-up response to be considered by the three ExA's on the fact that cumulative carbon assessment has not been carried out.



Dr Andrew Boswell,
Climate Emergency Policy and Planning, December 15th, 2021

8 APPENDIX A: Updated resume, Dr Andrew Boswell

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 at a consultancy called Climate Emergency Policy and Planning (CEPP).

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 work³², at Oxford University was supervised by Professor R J P Williams, FRS, and was in structural biology, protein binding sites and dynamics (DPhil³³, 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 software³⁴, and in the 1980s and 1990s were at the forefront of formal, mathematical based, methods in the verification of computer systems, both hardware and 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 time³⁵, 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 manged. 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

³² 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]

³³ DPhil title: “Nuclear Magnetic Resonance Studies of Modified Eukaryotic Cytochrome c”

³⁴ 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.

³⁵ One million was cutting edge at the time! Transistor counts now exceed two trillion on a single chip

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 Bill³⁶, 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.

■ [REDACTED]

9 APPENDIX B: EIA Regulations

142The A47BNB is an EIA development and the decision-making process, therefore, needed to comply with the EIA Regs.³⁷ As CEPP note above in Appendix A, the NPS NN Section 4.15 to 4.21 also requires compliance with the EIA Regs.

143Reg 4(2) prohibits the granting of development consent for EIA development “unless an EIA has been carried out in respect of that application”. The EIA is defined in Reg 5 as:

- (1) *The environmental impact assessment (“the EIA”) is a process consisting of—*
 - (a) *the preparation of an Environmental Statement or updated Environmental Statement, as appropriate, by the applicant;*
 - (b) *the carrying out of any consultation, publication and notification as required under these Regulations or, as necessary, any other enactment in respect of EIA development; and*
 - (c) *the steps that are required to be undertaken by the Secretary of State under regulation 21 or by the relevant authority under regulation 25, as appropriate.*
- (2) *The EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors—*
 - (a) *population and human health;*
 - (b) *biodiversity, with particular attention to species and habitats protected under any law that implemented Directive 92/43/EEC³⁸ and Directive 2009/147/EC³⁹;*
 - (c) *land, soil, water, air and **climate**;*
 - (d) *material assets, cultural heritage and the landscape;*
 - (e) *the interaction between the factors referred to in sub-paragraphs (a) to (d).*
- (3) *The effects referred to in paragraph (2) on the factors set out in that paragraph must include the operational effects of the proposed development, where the proposed development will have operational effects.*
(...) (our emphasis)

144The Environmental Statement, is further defined in Reg 14:

- (1) *An application for an order granting development consent for EIA development must be accompanied by an Environmental Statement.*

³⁷ Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

³⁸ Habitats Directive

³⁹ Wild Birds Directive

- (2) *An Environmental Statement is a statement which includes at least—*
- (a) *a description of the proposed development comprising information on the site, design, size and other relevant features of the development;*
 - (b) *a description of the likely significant effects of the proposed development on the environment;*
 - (c) *a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
 - (d) *a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;*
 - (e) *a non-technical summary of the information referred to in subparagraphs (a) to (d); and*
 - (f) *any additional information **specified in Schedule 4** relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected. (our emphasis)*

145Schedule 4 of the EIA Regs then sets out in more detail the information to be included in Environmental Statements. This includes, *inter alia*:

“Para 1:

A description of the development, including in particular—

... (c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity⁴⁰) used;

Para 4:

*A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, **climate (for example greenhouse gas emissions**, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.*

Para 5

⁴⁰ This is relevant to land-use and land-clearance emissions from roads infrastructure construction as discussed in main text

A description of the likely significant effects of the development on the environment resulting from, inter alia—

- (a) **the construction and existence of the development, including, where relevant, demolition works;***
- (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;*
- (c) **the emission of pollutants**, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;*
- (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);*
- (e) **the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;***
- (f) the impact of the project on **climate (for example the nature and magnitude of greenhouse gas emissions)** and the vulnerability of the project to climate change;*
- (g) the technologies and the substances used.*

*The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, **cumulative**, transboundary, **short-term, medium-term and long-term**, permanent and temporary, positive and negative effects of the development.*

*This description should take into account the **environmental protection objectives established at Union level** (as they had effect immediately before exit day) or United Kingdom level which are relevant to the project, including in particular those established under [the law of any part of the United Kingdom that implemented Council Directive 92/43/EEC and Directive 2009/147/EC.]” (our emphasis)*

146 Paragraph 5 of Schedule 4 above shows that the Environmental Statement must cover “the direct effects and any indirect, secondary, **cumulative**, transboundary, **short-term, medium-term and long-term**, permanent and temporary, positive and negative effects of the development”, taking into account the “**environmental protection objectives**” established both at EU and UK level. The “objectives” include relevant climate change targets set under UK law including:

- the UK’s Nationally Determined Contribution (NDC) under the Paris agreement
- the legally binding target under the Climate Change Act 2008 to meet net-zero carbon emissions by 2050
- the UK Sixth Carbon Budget (6CB), and other carbon budgets and policy within that
- the Governments recent Transport Decarbonisation Plan (TDP)

- NPPF 148 planning requirement to “radical reductions of greenhouse gas emissions”,
- the statutory duty on Highways England under the Infrastructure Act 2015 section 5(2) to have regard for the environment

147 Finally, EIA Reg 20 allows for an Examining Authority to suspend consideration of an application if the Environmental Statement is found to be inadequate:

a. “Reg 20(2)

This paragraph applies if—

(a) the applicant has submitted a statement that the applicant refers to as an Environmental Statement; and

(b) the Examining authority is of the view that it is necessary for the statement to contain further information.

b. Reg 20(1)

Where an Examining authority is examining an application for an order granting development consent and paragraph (2) applies, the Examining authority must—

(a) issue a written statement giving clearly and precisely the reasons for its conclusion;

(b) send a copy of that written statement to the applicant; and

(c) suspend consideration of the application until the requirements of paragraph (3) and, where appropriate, paragraph (4) are satisfied.” (*our emphasis*)

10 APPENDIX C: EIA Guidance documents

10.1 EIA Guidance documents

148 The EU Commission website hosts an official webpage for the EIA Directive⁴¹, which lists a number of Guidance documents.

149 Following the enactment of the reviewed EU EIA Directive “DIRECTIVE 2014/52/EU” in 2014, three guidance documents were published in 2017 on the screening⁴², scoping⁴³ and EIA report writing⁴⁴ stages.

150 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*”.

151 Under “Climate change mitigation: Project impacts on climate change” on page 39 of the report, 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 reductions, as well as identify opportunities to reduce emissions through alternative measures.”*

152 Whilst for cumulative effects⁴⁵ 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)

153 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.⁴⁶

⁴¹ [REDACTED]
■ [REDACTED]
■ [REDACTED]
■ [REDACTED]
■ [REDACTED] page 52

⁴⁶ See “HOW TO USE THIS GUIDANCE DOCUMENT” section

154 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 Commission⁴⁷. It reflects the view of the Commission services of the best EIA practice, including those with transposed national regulations like the UK.

155 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)*

The Applicant claims that the results of its appraisal of differential emissions against national budgets is an insignificant effect. Without prejudice to my position that the Applicant is wrong on this point, even if that is the Applicant’s view, the guidance rightly suggests that carbon emissions assessed at a local/regional scale may well be significant. Later, I show that appraisal of absolute emissions against both national budgets and sub-regional budgets is significant.

156 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.

157 The Applicant has ignored two separate guidance documents, hosted on the official EU Commission EIA Regs webpage, which each recommend assessment of carbon emissions at the local and regional level, as well as national level, within Environmental Statements.

⁴⁷ [REDACTED] 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”

In not even considering, nor giving regards to, this guidance, the Applicant has failed to comply with NPS NN 4.15 and 4.16 which invoke the EIA Regulations.

158 The EIA guidance advocates strongly that carbon assessment is done for the scheme itself and cumulation of effects of the scheme with other existing and/or approved projects, at the local and regional scale, as well as at the national scale. The guidance aims to ensure “*that the best possible information is made available during decision-making*”.

159 This is further supported by the guidance to use more than one criterion in environmental assessment. This is wholly consistent with the usual approach of scientists is to find as wide a variety of criteria as possible to confirm an assessment. The EIA Guidance⁴⁸ advocates using more than a singular criterion for significance determination:

“At the same time, significance determinations should not be the exclusive prerogative of ‘experts’ or ‘specialists’: significance should be defined in a way that reflects what is valued in the environment by regulators and by public and private stakeholders. A common approach used in EIA is the application of a multi-criteria analysis. Common criteria used to evaluate significance include the magnitude of the predicted effect and the sensitivity of the receiving environment.”

160 The Applicant has not given regard to considering using multi-criteria appraisal which increases the sensitivity of assessment by, for example, making local and regional scale assessments, for both solus and cumulative carbon emission.

⁴⁸ Paragraph 1.4.2, page 49, [REDACTED]
[REDACTED] 2017 – European Union

11 APPENDIX D: INDEX of documents previously submitted by CEPP

161 For reference an index of CEPP's previously submitted documents (latest first) is given here.

- a. [REP6-008] Procedural letter
- b. [AS-030] – joint letter to A47BNB, A47NTE and A47THI ExA's "Request for cumulative carbon emissions to be considered together for the A47BNB, A47NTE and A47THI examinations"
- c. [REP5-019] (and appendices REP5-020 – REP5-022) comments on documents submitted at D4 and D4a
- d. [REP4-057] Deadline 4 Submission. **This document revised my Written Representation (with change bars)**, and provided:
 - i. Written summary of oral submissions given at Issue Specific Hearing 2 (ISH2) as recorded [EV-026⁴⁹];
 - ii. Post-hearing notes from ISH2, based on the ExA's actions points document "TR010040-000551-TR010040_Action Points from ISH1, CAH1, ISH2 and ISH3.pdf" [NO-LIBRARY-CODE]⁵⁰; and
 - iii. Comments on Deadline 3 submissions (9.14 applicant's Response to Written Representations" [REP3-025])
- e. [REP2-018] Deadline 2 Submission - Written Representation
- f. [REP1-074] Deadline 1 Submission - Response to the ExA's request for further information under Rule 17
- g. [PDB-002] Submission for Procedural Deadline B - Written Responses to Matters Discussed at Preliminary Meeting Part 1
- h. [AS-030] Joint letter to Inspectors Hutson, Hunter and Shrigley requesting for the cumulative carbon emissions to be considered together for the A47BNB, A47NTE and A47THI examinations
- i. [AS-024] Letter in advanced of ISH2

⁴⁹ We refer to the recording, EV-026, at [REDACTED] as the transcript is not good enough quality when detailed technical points are being discussed.

⁵⁰ CEPP note that this document is on the website [REDACTED]

[REDACTED] but Is not listed in the Examination Library document of 11th October 2021

- j. [AS-023] Letter in advanced of ISH2
- k. [RR-012] Relevant Representation

**12 APPENDIX E: IEMA DOCUMENT “ENVIRONMENTAL IMPACT ASSESSMENT
GUIDE TO: ASSESSING GREENHOUSE GAS EMISSIONS AND EVALUATING
THEIR SIGNIFICANCE”.**

<Provided as a separate file: [REDACTED]
[REDACTED]