Author Details	
Name	**Dr Andrew Boswell**
Position	**Independent Scientist & Consultant**
A47NTE Registration	**20028338**
Organisation	**Climate Emergency Policy and Planning (CEPP)**
Examination Principle Issues	• **Climate Change** • **Scope of Development and Environmental Impact Assessment** • **Others as indicated in text**

DfT Consultation 15th June 2022

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

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

Contents

1 INTRODUCTION

1.1 Response to consultation, 15th June 2022

1 This submission responds to Item 8 in the SoST consultation letter of June 1st 2022. The matters relate to the assessment of carbon emission impacts from the A47NTE scheme.

1.2 Scope

2 I refer to these documents from the PINS website for this scheme and other schemes:

Reference in document	
DERBY-EXP-REP-1	My first expert report on the A38 Derby scheme, referenced on the PINS A38 Derby website as "*Derby Climate Coalition, Response to the Secretary of State's Consultation of 23 September 2021 - Expert Report of Dr Boswell, published 27/10/2021*".
A47NTE/REP10-005	"*9.35 Applicant's Response to the Rule 17 Request in February 2022*" submitted on the final day of the examination

1.3 Acronyms

AST	Appraisal Summary Table
EFT	Emissions Factor Toolkit
NDC	Nationally Determined Contribution
NPSNN	National Policy Statement for National Networks
NZS	Net Zero Strategy
TDP	Transport Decarbonisation Plan

1.4 Definitions

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

- **Absolute emissions** – *carbon emissions which are expressed in terms of **an absolute quantity** of emissions. The value of the absolute emissions, as released into the atmosphere, quantifies the real measure of the impact of greenhouse gases as an environmental factor (or receptor).*

- **Differential emissions** – *carbon emissions, with an associated value which has been **derived by differentiation of absolute emissions**. The differentiation is usually performed by the difference between two traffic scenarios, one with a transport intervention and one without. Differential values derived this way do not quantify the real impact of atmospheric greenhouse gases by the transport*

intervention within its transport system, and therefore do not represent the real global heating impact.

1.5 Overview of consultation submissions

4 I provide updates on matters that have arisen since the close of the examination, and which are relevant to Item 8, including:

- The NZS legal challenge at *section 2*;
- Decision letters on other NSIP DCO road schemes for the M54-M6 scheme, M25 junction 10, M25 junction 28 at *section 3* (and with expanded detail at Appendix A);
- The updated IEMA guidance published at *section 5*, and an overview of relevant sections from the EIA guidance, which also relates to the IEMA guidance, at *section 4*;
- The Norfolk Local Transport Plan 4 (LTP4) which is due to be adopted under the Transport Act 2000 in July 2022, at *section 6*.

5 I provide consultations responses, pertaining to item 8 of the consultation, on Traffic Modelling Inconsistencies at *section 7*, and Carbon Emissions in the A47NTE Environmental Statement at *section 9*. These are substantive sections highlighting the major flaws in the Environmental Statement.

6 At *section 8*, I provide material on the lack of transparency of data and computer modelling which relates to section 7 and sections 9.

2 THE LEGAL CLAIM AGAINST THE GOVERNMENT'S NET ZERO STRATEGY (NZS)

7 To avoid repetition, I refer to the material previously submitted on the legal claim against the Government's Net Zero Strategy (NZS) in the joint letter from Interested Parties of 10th May 2022 on which I was the lead author. I report **now** an update: this is that the three cases from Friends of the Earth, ClientEarth and the Good Law Project were rolled into one case which has now been heard by the Court at a hearing which took place on June 8th and June 9th. Therefore the judgement may be expected within a few months.

3 DECISION LETTERS ON M54-M6 SCHEME, M25 JUNCTION 10, M25 JUNCTION 28

8 On 21 April 2022, the Secretary of State for Transport (SoST) issued a decision on the M54 to M6 Link Road (decision letter referred to here as M54-M6-DL). The joint letter from IPs on May 10th previously provided comments on this.

9 Subsequently, two further decision letters were published on the M25 junction 10/A3 Wisley scheme on May 12th, and the M25 junction 28 scheme on May 16th. On carbon emissions, the decision letters make many of the same points in identical, or near identical paragraphs. I dispute many of the points made by the SoST to support his determination, and make comments on them below with reference to the paragraph numbers used in the M54 to M6 Link Road decision letter. I now lay the points out in further detail in Appendix A. The outline material below does repeat some material already presented in the joint IP letter for completeness, and in order to point to the detailed material in Appendix A.

3.1 Comments on the decision letter on the M54-M6 scheme

10 M54-M6-DL/31 incorrectly relies upon the inevitable success of the NZS (and TDP). As above, given the on-going judicial review, it is premature for weight to be given to any claims based on the notion that the NZS will inevitably succeed in securing the Government's carbon emissions reduction targets (see Appendix A, 11.1).

11 Similarly, M54-M6-DL/37 incorrectly relies upon the inevitable success of meeting the UK NDC (which itself depends upon the success of the NZS). Again it is premature for weight to be given to any claims based on the notion that the NDC will inevitably succeed, and the UK will deliver its international obligations (see Appendix A, 11.2).

12 Negative weight was given to increasing carbon emissions in the planning balance (M54-M6-DL/54); however, this was "offset" by the assertion that the Government could still meet their carbon reduction targets (ie under NPSNN 5.18). However, as above, it is premature to rely on this assertion (see Appendix A, 11.3).

13 The UK Government is a drafter and signatory to the policy statements associated with each of the recent Intergovernmental Panel on Climate Change (IPCC) 6th Assessment (AR6) reports. M54-M6-DL does not reflect the **scientific urgency** to deal with climate change, despite the Government being a signatory to the science summarised in the policy reports (see Appendix A, 11.4).

14 M54-M6-DL/32-35 discusses the IEMA guidance. It selectively quotes from it, and does not follow it (see Appendix A, 11.5). The IEMA guidance should be followed, and it has **not** been on the A47NTE.

15 The applicant has **not** made a cumulative assessment of GHG emissions for the A47NTE scheme. This is clearly laid out at section 9 of this submission, and the further issues below pertain (see Appendix A, 11.6). The A47NTE decision must be made on the merits of its own Environmental Statement (no cumulative carbon assessment), not by implications from another decision on another scheme.

16 The applicant has not followed the DMRB LA 104 on cumulative carbon assessment on the A47NTE, and therefore M54-M6-DL/40 cannot be relied upon (see Appendix A,

11.7). The A47NTE decision must be made on the merits of its own Environmental Statement.

17 The applicant relies upon the false "inherently cumulative" notion, and the applicant has **not** produced a cumulative carbon emissions assessment on the A47NTE scheme and cannot rely upon M54-M6-DL/42-43 (see Appendix A, 11.8). The A47NTE decision must be made on the merits of its own Environmental Statement

18 The applicant has **not** provided a cumulative carbon assessment in the A47NTE application. M54-M6-DL/45,47-48 cannot be relied upon within the recommendations for the decision on the A47NTE scheme (see Appendix A, 11.9). The A47NTE decision must be made on the merits of its own Environmental Statement.

19 The applicant has **not** provided local and regional carbon assessment in the A47NTE application. M54-M6-DL/46 does not comply with the best practice guidance for EIA and cannot be relied upon (see Appendix A, 11.10). The A47NTE decision must be made on the merits of its own Environmental Statement.

4 EIA GUIDANCE DOCUMENTS

20 The EU Commission website hosts an official webpage for the EIA Directive[1], which lists a number of Guidance documents.

21 Following the enactment of the reviewed EU EIA Directive "DIRECTIVE 2014/52/EU" in 2014, three guidance documents were published in 2017 on the screening[2], scoping[3] and EIA report writing[4] stages.

22 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"*.

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

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

[redacted]

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

24 Whilst for cumulative effects[5] 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)

25 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.[6]

26 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-Generals of the Commission[7]. It reflects the view of the Commission services of the best EIA practice, including those with transposed national regulations like the UK. This guidance is provided at Appendix C.

27 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)

---

[5] [redacted] PDF page 52

[6] See "HOW TO USE THIS GUIDANCE DOCUMENT" section

[7] [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"

28 The Applicant claims that the results of its appraisal of differential emissions against national budgets reveals an insignificant effect against national carbon budgets. The guidance rightly suggests that carbon emissions assessed at a local/regional scale may well be significant.

29 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. And in fact, the next section shows how the recent IEMA Guidance does entirely support the EIA Guidance in strongly recommending local and regional carbon assessment. It is 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 applicant's A47NTE Environmental Statement, is irrational.**

5 UPDATED IEMA GUIDANCE ASSESSING GREENHOUSE GAS EMISSIONS AND EVALUATING THEIR SIGNIFICANCE

30 Following the examination, in February 2022, IEMA released version 2 of their "Assessing greenhouse gas emissions and evaluating their significance" guidance, supplied at Appendix D. The Institute of Environmental Management & Assessment (IEMA) state that they are the professional home of over 18,000 environment and sustainability professionals from around the globe.

31 The guidance is geared towards best practice in EIA compliance:

> *"The aim of this guidance is to assist greenhouse gas (GHG) practitioners (hereinafter referred to as 'practitioners') with addressing GHG emissions assessment, mitigation and reporting in statutory and non-statutory Environmental Impact Assessment (EIA)."* [from the Introduction]

32 The IEMA guidance supports several broad issues which I have highlighted as missing in the applicant's Environmental Statement, as follows:

5.1 IEMA: Contextualising a project's carbon footprint

33 In the section above, I lay out how local, national and regional assessment of carbon emissions is supported by the guidance documents to the EIA Regulations. The IEMA guidance provides further support for this. The relevant section in this guide is section 6.4, "Contextualising a project's carbon footprint".

34 With respect to the applicant's Environmental Statement where only an assessment is made against the carbon budget for the entire UK economy, IEMA say:

> *"The **starting** point for context is therefore the percentage contribution to the national or devolved administration carbon budget as advised by the CCC. However, the contribution of most individual projects to national-level budgets will be small and so **this context will have limited value**."* [my emphasis]

35 The guide goes on to state:

> *"**It is good practice to draw on multiple sources of evidence** when evaluating the context of GHG emissions associated with a project."*
>
> And identifies "*local or regional carbon budgets developed by local authorities and researchers (e.g. the Tyndall Centre at the University of Manchester)*" as "***a more pertinent scale for individual projects** and local decision-making*", and reflective of "*regional factors such as concentration of industry*"). [my emphasis]

5.2 Local policies

36 The applicant has only undertaken the "starting point" in the IEMA guidance – assessment against national carbon budgets.

37 Therefore, local policies and carbon budgets should be considered, and assessment of carbon impacts made against them, when they exist. IEMA provide helpful elaboration as below in the diagram clipped below:

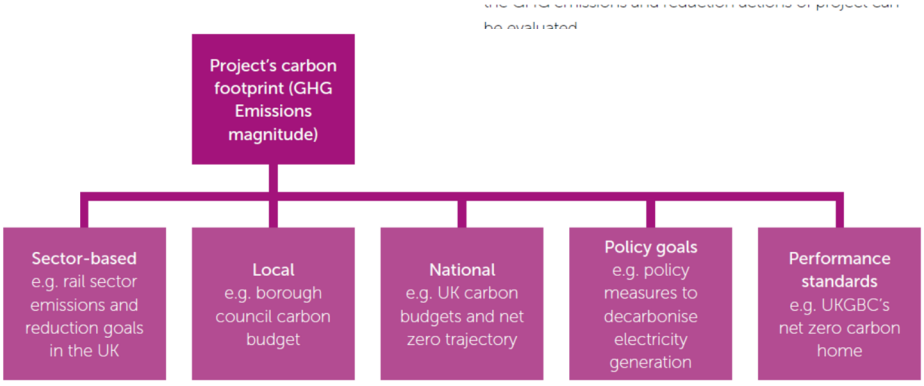

Figure 6: Good practice approaches for contextualising a project's GHG emissions

5.3 Aside on environmental factors under the EIA Regulations

38 At other NSIP DCO examinations (eg: A57 Links road) the applicant has introduced a confusion in the discussion on local and regional policies and targets.

39 The confusion is between the environment impacts themselves (in this case global GHG emissions) and the measurement of them, and assessment against budgets or thresholds. With GHGs, the environmental receptor is the global atmosphere and there is no local receptor in that sense. Indeed the IEMA guidance makes this clear.

40 However, that does not mean that quantified budgets, targets or thresholds at local and regional levels are not important. As the guidance says, it is good practice to have multiple sources of evidence to contextualise a scheme's carbon footprint, and local or regional carbon budgets provide a more pertinent scale for individual projects. Clearly assessment against local targets and budgets is also more precise – first, numerically, in essence the signal is less "hidden in the noise", and second, that unique local transport characteristics and policies may be considered as part of the assessment process. The applicant has failed to grasp this, and to provide this more precise benchmarking, despite the IEMA guidance on this for EIA practitioners.

6 NORFOLK LOCAL TRANSPORT PLAN 4 (LTP4)

41 In November 2021, Norfolk County Council (NCC) adopted a LTP4 Strategy document. When adopting the LTP4 Strategy, the council stated that they would provide carbon targets for the transport system, compliant with the TDP in an LTP4 Implementation Plan document. The NCC Cabinet meeting of 6 June 2022 resolved to approve and recommend to Full Council that the Local Transport Plan, comprising the Local Transport Plan 4 Strategy and Implementation Plan (IP) is adopted in July 2022 prior to the date for SoST decision on the A47NTE of August 12th 2022. The LTP4 (IP) sets annual decarbonisation targets for Norfolk transport between 2019 and 2037 (the end of the Sixth carbon budget).

42 The emergence of these local carbon targets for the transport sector in Norfolk within a statutory document under the Transport Act 2000 provides an indisputable set of local carbon budgets and targets against which the A47NTE should be assessed to comply with both the EIA guidance and the IEMA guidance.

43 I refer to the detailed consultation response being made to this SoST consultation from Mr Bryan Robinson, and support his conclusions. I refer to Mr Robinson's response for a detailed analysis on the carbon quantification of the A47NTE scheme in the context of the on the Norfolk Local Transport Plan 4 (LTP4).

44 Key points which are unaddressed in the A47NTE Environmental Statement, and therefore make it inadequate under EIA Regulation 20, include:

A. Despite the adoption of the LTP4 Strategy in November 2021, midway through the DCO examination, signalling that targets for local transport decarbonisation based on the TDP for Norfolk would be published soon, the applicant has failed to even mention them, let alone assess the compliance of the A47NTE scheme with this emerging policy.

B. The published LTP4 (IP) targets[8] follow the lower bound of the NZS transport decarbonisation trajectory (as per NZS Figure 21 and TDP Figure 2) which are for a

[8] Norfolk County Council cabinet papers, 6th June 2022

fall in residual emissions from domestic transport emissions (excluding aviation and shipping) by around **34%** (range 34-45%) by 2030 and **65%** (range 65-76%) by 2035, relative to 2019 levels.

C. The A47NTE scheme would introduce a significant one-off hit (increase) of construction and embedded emissions mid-decade, and then from 2025 would introduce *additional* year-on-year annual operation emissions. (Note, that as I explain later, the solus quantity of these additional operation emissions in the Environmental Statement is an underestimate). The context of these additional emissions is the local transport authority's policy to reduce transport sector emissions by 34% over 11 years, with annual year-on-year emission reductions of -4.32%, -4.52%, -7.44%, -7.62%, -9.49% in the 5 years 2026 – 2030, after the opening year, as in the table in Mr Robinson's consultation response, reproduced with his permission below:

Year	Target Emissions ($ktCO_2$)	Annual Reductions	
2019	Base 1,717.70	$ktCO_2$	%
2022	1,657.32	60.38	-3.52%
2023	1,636.25	21.07	-1.27%
2024	1,616.58	19.67	-1.20%
2025	1,591.30	25.28	-1.56%
2026	1,522.48	68.82	-4.32%
2027	1,453.66	68.82	-4.52%
2028	1,345.52	108.14	-7.44%
2029	1,242.99	102.53	-7.62%

Year	Target Emissions ($ktCO_2$)	Annual Reductions	
		$ktCO_2$	%
2030	1,125.01	117.98	-9.49%
2031	1,016.86	108.15	-9.61%
2032	903.10	113.75	-11.19%
2033	751.41	151.69	-16.80%
2034	669.95	81.46	-10.84%
2035	591.30	78.65	-11.74%
2036	530.90	60.40	-10.21%
2037	477.53	53.37	-10.05%

The annual carbon reduction targets in the Norfolk LTP4

D. **Put simply, the applicant has made no attempt to show how this "adds up". It is my view that it does not add up, and it is certainly quite clear that the applicant has not demonstrated in any form how the construction and operation of the A47NTE could comply with the carbon budgets and targets set in the LTP4.** As above, the Environmental Statement does not even mention these targets, and the applicant has made no attempt to engage with them since the imminent development of them became NCC policy in November 2021.

E. In the absence of a carbon emissions assessment in the Environmental Statement against the local targets in the LTP4, **the SoST cannot be satisfied** that the material provided by the applicant is sufficient for him to reach a reasoned conclusion on the significant effects of the proposed development on the environment.

F. Further, under NPSNN 4.3 and 4.4, "General Principle of Assessment":

> *"4.3 In considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and the Secretary of State should take into account:*
> □ *its potential benefits, including the facilitation of economic development, including job creation, housing and environmental improvement, and any long-term or wider benefits;*
> □ *its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.*
>
> *4.4* ***In this context, environmental, safety, social and economic benefits and adverse impacts, should be considered at national, regional and local levels. These may be identified in this NPS, or elsewhere."***

45 Here the NPSNN is requiring that environmental impacts (which include greenhouse gas emissions) should be considered at national, regional and local levels. The targets and budgets which should be considered for local carbon impacts assessment have been identified in the LTP4 but ignored by the applicant.

7 TRAFFIC MODELLING INCONSISTENCIES

46 I first pointed out in June 2021, in my Relevant Representation, "*Major discrepancies are observed between Norfolk County Council (NCC) NATS traffic models run [for] 2015 and 2019 baseline years for the NWL study area. At 2019-baseline, there is substantially lower (c. -30%) vehicle kilometres [redacted]) over the 2015-baseline [redacted]).*"

47 I then expanded on my concerns at section 4.2 of my Written Representation [REP1-023]. IPs, Mr Hawker and Mr Robinson, have also submitted detailed concerns on this issue.

48 Yet the applicant and Norfolk County Council blandly dismissed the issue at [REP4-003] with the statement "*It is agreed between Highways England and NCC that the differences between the 2025 NCC NATS model and the 2025 A47 NATS model are understood and acceptable*."

49 Mr Robinson, in response to this consultation, has produced further analysis which shows that when the two traffic models are compared at 2025 opening year and 2040 design year, there are major discrepancies. I reproduce the relevant data in Appendix E with Mr Robinson's permission. To quote Mr Robinson "*If this premise by both parties is true, an explanation is required why there are differing traffic forecasts for locations on strategic road network (SRN) and side roads.* ***These are not trivial, and in some cases differences of many thousands of daily vehicle trips have been reported between the A47NTE and NWL traffic models for what should be an identical scenario.*"**

50 National Highways and Norfolk County Council may think that losses of thousands of daily vehicle trips, apparently "into the ether" within their traffic models, are "understood and acceptable". **However, they clearly are not**. To ensure the integrity and soundness of any decision on the A47NTE, these large discrepancies must now be explained.

51 The outputs of the traffic model, ie the predicted traffic flows and their distribution, nature and composition, are fundamental to all the evidence about the scheme's effects on the transport networks, on road safety and on the environment and society. The model therefore occupies a central position for the SoST's decision on the A47NTE, and it follows that the SoST must have total confidence in these outputs.

52 Further, data from various sources was used to calibrate the model but how the data has been applied has not been fully explained or given in sufficient detail. Mr Hawker has serially asked for information about this, and has been denied it during the examination. Consistent, comprehensive baseline traffic flows from 2015 have not been supplied. Despite critical questions from Mr Hawker, no serious responses have been provided by the applicant, and nor has a full technical dialogue directly with the modellers ever been offered to Mr Hawker to resolve the issues. All this means that IPs have extremely limited and conflicting data with which to understand the model outputs. Blanket assurances of the confidence that the applicant has in its own work is no substitute for open, comprehensive and consistent presentation of data.

53 It should be noted that the requirements of EIA regulation 14(2) include the information set out in Schedule 4. Of particular relevance is the following provision at Schedule 4 (6):

> "*6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved*."

54 It is manifestly clear that an adequate description of the "forecasting methods" within the traffic model has not been provided. In the A47NTE case, this goes beyond "technical deficiencies", and "main uncertainties"; there are major inconsistencies and incoherencies which remain unaddressed by the applicant.

55 Put directly, the applicant has failed to meet the obligations placed on it as a participant in the examination by the Gunning and Nolan principles, the Aarhus Convention, and the EIA Regulations. Where the applicant has provided, or referred to evidence, it has not been open and fair to the public.

56 The situation is not acceptable: **the SoST cannot be satisfied** that the material provided by the applicant, without public access to the underlying data, is sufficient for him to reach a reasoned conclusion on the significant effects of the proposed development on the environment.

7.1 Traffic modelling: Three key requests to the SoST

57 I respectfully recommend to the SoST that the current unacceptable situation concerning the Traffic Modelling can be resolved as follows:

1 The traffic modelling and its application should be subject to independent assessment, and there should then be further consultation rounds.

2 Prior to further consultation rounds, a full technical dialogue should be established with the independent assessors, the Applicant, and interested parties to the satisfaction of all parties and in line with professional Codes of Conduct.

3 Prior to further consultation rounds, a full WebTAG compliant Transport Appraisal, with models which are coherent between the A47NTE and the NWL schemes, and agreed by the independent assessors should be supplied by the Applicant.

8 LACK OF TRANSPARENCY OF DATA AND COMPUTER MODELLING

58 The Application, Environmental Statement, and the applicant's subsequent submissions contain data on traffic modelling, and calculations of carbon emissions, and assessments.

59 Further I anticipate that in the consultation response from the Applicant, there will be a new data set derived by applying a nationally conglomerated "rate of improvement" based on TDP, Figure 2 (referred to by the applicant as "the TDP Sensitivity test").

60 In all cases, the full details of the assumptions, data and computer modelling underlying this data, and updates and changes to it, has not been provided. Further, the modelling behind TDP, Figure 2 has not been published. Consequently, the nationally conglomerated "rate of improvement" based on it, and as applied to the anticipated data figures from TDP Figure 2 have been applied as a black-box calculation. (More details on this are explained in Appendix C).

61 The lack of transparent information and data about the traffic models from which operational carbon emissions are calculated **places severe limitations on any independent review and scrutiny** of the high-level figures published in the Environmental Statement, and the applicant's anticipated consultation response. It is, therefore, not possible to fully respond to the current consultation, without publication of the full details of the assumptions, data and computer modelling involved.

62 This compounds the issues already laid out for the traffic modelling itself, and my three key requests above, for independent assessment of the traffic modelling.

63 **The applicant must provide the additional information required so that the SoS can, then, hold a further consultation round.**

64 The Government recently announced an "Algorithmic Transparency Standard" at https://www.gov.uk/government/collections/algorithmic-transparency-standard 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. Although, currently being piloted, it indicates the direction of travel for transparency on data, algorithms and modelling architectures. The current presentation of material falls far short of any standard of transparency.

9 CARBON EMISSIONS IN THE A47NTE ENVIRONMENTAL STATEMENT

65 On February 2nd, Inspector Hunter sent a Rule 17 letter to the applicant and IPs at the A47NTE examination which included a request for information relating to carbon emissions: the same request has been made on a number of schemes across the country by examiners on NSIP DCOs and by the SoST at post-examination consultations. **The applicant responded at deadline D10, February 12th which was the same day as the**

A47NTE Examination closed, not allowing IPs at the A47NTE examination to respond. The approach was prejudicial to IPs who may have wished to comment on this submission. I appreciate that the SoST consultation now allows comments to be made on this issue by all parties.

66 The response from the applicant was in document REP10-005 in the examination library. I refer below to the sections in this document in each section header.

67 It is noted that the Contents section of REP10-005 is inconsistent with the actual content, missed listing sections 3.5 and 3.6 which cause me some confusion initially.

9.1 REP10-005/2: Request for further information from the applicant on the cumulative assessment of climate impacts

68 REP10-005, section 2 summarised the Rule 17 letter request. The request has not been answered, even in the most general sense, and I lay the reasons why in the bullets below. The Rule 17 letter asked the Applicant [REP10-005/2.1.1] to:

> *"… **provide** (or, to the extent that any of the below has already been provided to the Examination, identify) its assessment of the cumulative effects of Greenhouse Gas emissions from the Proposed Development with other existing and/or approved projects on a local, regional and national level on a consistent geographical scale (for example an assessment of the cumulative effects of the Roads Investment Strategy RIS 1 and RIS 2 at a national level)."*

69 The invitation is two-pronged requesting existing information from before the Rule 17 letter, and new information in response to the Rule 17 letter. At a high-level, the applicant has failed to respond to both prongs of the invitation in REP10-005:

- It has not **identified** how it has already provided an assessment of the cumulative effects of Greenhouse Gas emissions from the scheme Prior to the Rule 17 letter). As explained below, it has only identified how a quantification and assessment of the **solus** effects of Greenhouse Gas emissions from the scheme has been provided. (Note, this is also wrong solus quantification and assessment, which as explained below is a severe underestimate of the real solus effects).

- By way of its response at REP10-005, which is in addition to material already provided to the examination before the Rule 17 letter, the applicant has not provided an assessment of the **cumulative** effects of Greenhouse Gas emissions from the scheme. REP10-005 only updates the numerical CO_2e data in the context of the original quantification and assessment of the **solus** effects of Greenhouse Gas emissions from the scheme.

  I note also that on a number of other schemes (eg: A303 Stonehenge) the Applicant has provided a new table of data which applies a nationally conglomerated "rate of improvement" based on TDP Figure 2 (referred to by the

applicant as "the TDP Sensitivity test"). The applicant has not provided this new data in REP10-005 but may do so in response to the consultation. If the applicant does, this new set of data would still be based upon the same data extraction of carbon quantities from the traffic modelling as in the Environmental Statement, which is only a **solus** quantification.

70 **The applicant has, therefore, failed in REP10-005 to provide the information requested.** I now provide the evidence for this, in detail, and I break down the sections below to reflect the structure of REP10-005. I also make some predictive comments based on the consultations responses that the applicant has made on other schemes, such as the A303 Stonehenge, and which I expect it to make to this consultation on the A47NTE.

9.2 REP10-005/3.2: "Assessment" of Cumulative Effects of Greenhouse Gas Emissions from the Scheme with other Existing and/or Approved Projects

71 Sections 3.2.1 to 3.2.4 provides history of the traffic modelling. The description of the Traffic model starts at section 3.2.5.

72 The applicant describes their traffic model as being "inherently cumulative" at 3.2.5 onwards, because it contains data about:

> *"1) The Scheme and adjoining Strategic Road Network and local road network;*
>
> *2) Other proposed developments promoted by Highways England in the near vicinity of the Scheme with high certainty that they are to be progressed (i.e. progressed beyond preferred route announcement stage);*
>
> *3) They are based on discussions with the relevant planning authority, of foreseeable developments promoted by third parties as likely to be developed in a similar timeline to the proposed Highways England Scheme. Knowing where the proposed third party development is to be sited, the extents and types of development, and the timescales of when it is to be completed are requirements to ensure that the third party developments can be reasonably described in the traffic model; and*
>
> *4) National government regional growth rates which include a representation of likely growth rates excluding known planning developments already included in the traffic model. This is represented by DfT's NTEM/TEMPRO5 growth factors for car usage, and growth in freight is derived from DfT's National Transport Model."*

73 I do not dispute that the applicant's traffic model contains all these elements.

74 The problem in the applicant's position is how it then quantifies and assesses the carbon for the scheme via its selection, and extraction, of data from the different possible configurations of the traffic model. The applicant essentially posits the following notion:

> **'If** the traffic model contains all known road and land developments in the study area, **then** it follows that any combination of data, and any differentiation of that data (eg DS-DM), extracted from the traffic model must also be "inherently cumulative".'

This is a defective notion as the latter does not universally follow the former, as I will demonstrate below.

75 Having configured a traffic model for the scheme with all the elements listed above within it, the applicant then describes at 3.2.6 how it quantifies the carbon for the scheme as follows:

> *"In terms of operational carbon, when Highways England evaluates the changes in CO2e emissions of their proposed developments, Highways England do so by comparing changes in the road traffic on the Strategic Road Network and local road network between the 'without proposed development scenario' and the 'with proposed development scenario'. This takes into account the assessment of the proposed development and all other developments likely to have an influence on the proposed road development and on the area the proposed road development is likely to influence."*
>
> At section 3.2.6 above, the applicant identifies a single calculation being made to quantify operational carbon- "*the changes in CO_2e emissions of their proposed developments*" -from the many possible calculations available. By the applicant's own advocacy, this is the only calculation which they perform in the Environmental Statement and subsequent documents, and the only calculation which they are saying is required. The calculation is the difference between the *'without proposed development scenario'* and the '*with proposed development scenario'*.

76 However, this calculation produces a differential quantity of carbon emissions for the scheme which is the difference (DS-DM), **solely**, of the all the elements of the network [ie: 1) to 4) above] as the DS case, and all the elements of the network except the scheme as the DM case. This is a **solus** quantification. Notwithstanding that it is the wrong solus calculation, it is also not the only quantification required; the EIA Regulations also require a cumulative quantification, and the SoS has invited the applicant to provide it.

77 This illustrates the calculation made.

	Performance oriented	
Model configuration name	DM (Perf, baseline)	DS (Perf, all)
Baseline Highway network (1)	✓	✓
A47NTE scheme (1)	×	✓
Other schemes promoted by National Highways (2)	✓	✓
Foreseeable developments promoted by third parties (3)	✓	✓
National government regional growth rates (4)	✓	✓

Table 1

78 The red ellipse indicates the only change in the configuration between the DM and DS scenarios is the presence, or not, of the A47NTE scheme in the modelling, as the applicant identifies in the quoted statement above.

79 The important point is that although the DS and DM traffic models in this case may be described as "inherently cumulative", **the quantification produced by the differentiation (DS-DM) is "solus" in the sense described by Mr Justice Holgate in Pearce v BEIS [2021] EWHC 326 (Admin)**. For the EIA Regulations, it is necessary to clearly distinguish solus and cumulative assessment, as Mr Justice Holgate does: solus[9] being the impacts of a scheme in isolation. In the Pearce case, Mr Justice Holgate ruled that the evaluation of (onshore) environmental impacts was required **both** for the windfarm in question (under DCO planning application) in isolation (**ie solus**), and also the windfarm in combination with another windfarm which was undergoing a parallel DCO planning application (**ie cumulative**).

80 I return to the last sentence of REP10-005/3.2.6:

> *"This takes into account the assessment of the Scheme and all other developments likely to have an influence on the Scheme and on the area the Scheme is likely to influence."*

81 It is a truism that the presence of all elements of different developments and growth (the scheme, adjoining SRN and local roads; other National Highway schemes in area; foreseeable third-party developments; and national growth rates) in the traffic model has an influence on its outputs, but it is not a particularly helpful truism in understanding the carbon impacts of the scheme and how to extract them from the model meaningfully. There are two key issues here:

- Fundamentally, the "influence" of all other developments **is not the same** as **quantifying** their environmental impact, in this case on the EIA receptor of global GHG emissions, which is what the EIA Regulations require. The presence of their influence on the data output is not the same as quantifying their environmental impact, as measured in tCO_2e, and is no substitute for it.

[9] Solus means, here, "alone; separate" as in the first definition in the Collins on-line dictionary

- The nature and quantification of the "influence" is not addressed. This can be understood by considering another possible **solus** quantification based also on a (DS-DM) differentiation but from different configurations of the traffic model, as shown below.

	EIA Regs compliance-oriented (eg: for impact assessment of GHGs)	
Model configuration name	*DM (GHG, baseline)*	*DS (GHG, scheme)*
Baseline Highway network (1)	✓	✓
A47NTE scheme (1)	×	✓
Other schemes promoted by National Highways (2)	×	×
Foreseeable developments promoted by third parties (3)	×	×
National government regional growth rates (4)	✓	✓

Table 2

82 Here, the quantification is made by considering the scheme when it is added, in isolation or solus, to the current environmental baseline. In this case, there is no influence from other developments which may follow after the scheme's implementation. This model provides a more accurate description of the journey trips which are attributable to the scheme itself as it quantifies the impact of building out the scheme into the current environmental baseline.

In the applicant's solus calculation (ie as specified by this document's Table 1 above) journey trips attributable to the scheme may actually be accounted for in the DM case. This raises the quantum of the DM, and reduces the DS-DM differential, making it an underestimate of the real solus impacts of the scheme. This shows how the effects of the other developments have an influence which distorts even the solus quantification. Further, the quantification of the tCO_2e associated with the other developments, required for the cumulative assessment, has not been made.

83 This shows that the by-far preferrable way to understand the carbon emissions of the scheme, in isolation, is to perform the solus quantification against the current environmental baseline (ie as specified by this document's Table 2 above), and then perform the applicant's version (ie as specified by this document's Table 1 above) as a sensitivity test on the "influence" that results from considering the other development.

84 Returning to the requirements of the EIA regulations, and the fundamental requirement, for **quantifying** the environmental impacts of the scheme with all other developments for cumulative carbon assessment. This may be done as illustrated below. The required calculation is *DS (GHG, all) – DM (GHG, baseline)* in my nomenclature which has been fully explained in my first expert report on the A38 Derby scheme [DERBY-EXP-REP-1]. Arrows have been added below the Table 3 to make the intended meaning of the two different solus carbon quantifications described above, and the cumulative carbon quantification, required by the EIA Regulations, entirely clear.

	Performance oriented		EIA Regs compliance oriented (for impact assessment of GHGs)		
Model configuration name	*DM (Perf, baseline)*	*DS (Perf, all)*	*DM (GHG, baseline)*	*DS (GHG, scheme)*	*DS (GHG, all)*
Baseline Highway network (1)	✓	✓	✓	✓	✓
A47NTE scheme (1)	×	✓	×	✓	✓
Other schemes promoted by National Highways (2)	✓	✓	×	×	✓
Foreseeable developments promoted by third parties (3)	✓	✓	×	×	✓
National government regional growth rates (4)	✓	✓	✓	✓	✓

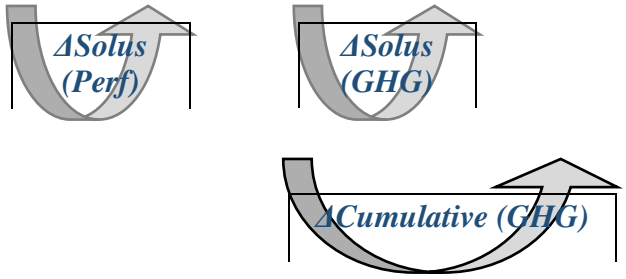

Table 3

85 In summary:

i. The applicant has identified that it has performed a single quantification of carbon. It is a **solus** quantification, and any assessment based on comparing it to benchmarks (such as the NZS and TDP delivery pathways, or carbon budgets) is consequently also only a **solus** assessment.

ii. The solus quantification is the wrong solus quantification. The carbon emissions of the scheme against the existing environmental baseline needs to be quantified, assessed and understood first (DS-DM as specified by this document's Table 2 above). The applicant's DS-DM (ie as specified by this document's Table 1 above) could be an interesting sensitivity test, but it should not be considered as the primary solus quantification (and assessment).

iii. The SoS has invited the applicant to identify its cumulative quantification and assessment of the carbon impacts of the schemes. **The applicant has been unable to do so.** Therefore, the Environmental Statement remains non-compliant with the EIA Regulations, and further work is still required by the applicant: a cumulative quantification of the carbon impacts of the scheme should be made, and an assessment based upon that. This would be based upon running the traffic model configurations, and calculating *DS (GHG, all) – DM (GHG, baseline)* as specified by this document's Table 3 above.

86 For absolute clarity, the narrative above applies to all data sets that have been provided by the applicant for the operational road-user emissions: that is, the original

Environmental Statement, and the new data in REP10-005. Each of these use the same traffic model configuration for the DS-DM quantification ie: as specified by this document's Table 1 above.

9.3 REP10-005/3.2.7 – PINS Advice Note 17

87 The applicant refers to, and quotes, PINS Advice Note 17 at section 3.2.7:

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

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

89 The first underlined sentence that the A47NTE carbon emissions assessment is "inherently cumulative" is false, as already shown. As demonstrated above, the quantification and assessment made by the applicant of carbon emissions in the Environmental Statement is simply and purely **a solus one**. I have shown above that it is a defective notion that including all likely developments and traffic growth factors in the traffic model necessarily generates a cumulative quantification and assessment of carbon impacts. The key is how the data is extracted as shown in Tables 1 to 3 above.

90 PINS Advice note 17 does not address cumulative carbon assessment. There is no reference to it in the quoted section, but furthermore there is no reference to cumulative carbon assessment in the entire document[10]. Whilst the PINS Advice note 17 is part of a suite of general, and often helpful, advice provided by the Planning Inspectorate, it has no statutory status, and the PINS website confirms this.

91 The writers of PINS Advice Note 17 used the word "may" in the first sentence of paragraph 3.4.4 indicating that they understood that it was not universally true that assessments would be "inherently cumulative" just on the basis of the traffic model including traffic data growth for future traffic flows.

[10] https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/, accessed 18th March 2022

92 I have unambiguously shown that the distinguishing feature on the applicant's approach is that it is based on calculating differential emissions, that is DS-DM where DS and DM are absolute carbon emission values output from the traffic model. The quantification and assessment are not inherently cumulative when differential emissions are calculated based on just "with scheme" and "without scheme" models (the inclusion of the scheme, or not, being the only element of difference). The reason is that even if planned changes to the highway network and foreseeable third-party developments are included in each model (input to the calculation), their effects ("influence") on carbon emissions are cancelled out by the subtraction process. This is also clear by considering Tables 1, 2 and 3 above.

93 The applicant appears to have taken this PINS Advice note which does not consider the issue of cumulative **carbon** assessment, and holds no statutory status, and tried to apply it to their case. In referring to its relevance "*in general terms",* the reality is that the note offers no support for the applicant's case.

94 I conclude that Planning Inspectorate's Advice Note 17 gives no support to the applicant's claims, and accordingly the Secretary of State should also inevitably conclude that no weight can be applied to the note in this context.

9.4 REP10-005/3.3 – The Appropriate Geographical Scale of Assessment of Greenhouse Gas Emissions

95 At section 3.3.4, the applicant fails to identify that the NZS now provides a sector-specific target for surface transport under UK Climate Change legislation, and has failed to withdraw its repeated assertion that there is no sector-specific target for transport.

96 The applicant states:

> *"Neither Parliament nor Government has identified any sectoral targets for carbon reductions related to transport, or any other sector. There is no requirement in the CCA 2008, or in Government policy, for carbon emissions for all road transport to become net zero."*

and refers to *R (Transport Action Network) v Secretary of State for Transport [2021] EWHC 2095 (Admin)* ("the TAN case"). However, the TAN case judgement was in July 2021 whilst the Net Zero Strategy was published in October 2021. The Net Zero Strategy has been laid before Parliament under section 13 and 14 of the Climate Change Act, and provides the up-to-date legal and policy framework (though as above not proven to be capable of delivering what it claims to deliver) to be considered within the context of the NPSNN.

97 The Net Zero Strategy (NZS) and the Transport Decarbonisation Plan (TDP) update the policy framework since the TAN case. Both documents provide the same sector-specific decarbonisation pathway, and implied targets, for the surface transport sector, and the NZS is legally binding policy under section 13 of the Climate Change Act 2008 (CCA).

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

99 Figure 21 of the NZS is a refined version of the Figure 2 of the TDP which is reproduced by the applicant later in REP10-005, and shows the linkage between the TDP and the NZS. Essentially the same indicative delivery pathway for domestic transport has been carried forward from the TDP to the NZS.

100 The applicant has claimed that there is no sector-specific target under UK Climate Change legislation. However, the NZS (and TDP) which is the delivery policy document for achieving the CCA targets and budgets has clearly laid out an indicative delivery pathway for surface transport as one of the 11 sectors under the Climate Change Act budgets. **This is a sector-specific target for surface transport under UK Climate Change legislation.**

101 Despite the very clear material relevance of the NZS to appraisal of carbon in road schemes under the NPSNN, as outlined above, the applicant has failed to mention the NZS targets, indicative delivery pathways, for surface transport.

102 The Climate Change Act is a material consideration for this scheme, and this is supported by NPPF 153, footnote 53, and NPSNN, footnote 69.

9.5 Local assessment and the emerging LTP4 carbon targets

103 At 3.3.7, the applicant states "*The Government sets carbon budgets at a national level in accordance with the CCA 2008. Carbon budgets are not produced at a local or regional level.*". This statement ignores the TDP requirement for quantified carbon targets for LTPs, and that Norfolk is planning to set carbon targets until 2037 at its July 2022 Full Council meeting. As above, there are now emerging local targets for carbon reduction from transport in Norfolk, and the applicant has completely ignored these where it should be providing an assessment of the scheme against the new targets. Further, I have laid out above, for the Environmental Statement to comply with the best practice guidance from IEMA and the EIA guidance, a local carbon assessment against the LTP4 targets now needs to be done. The SoST can have no confidence in the Environmental Statement, or that local and national policy and targets are complied with, until the applicant has produced this.

9.6 REP10-005/3.3.11 – admission that no cumulative assessment has been done

104 3.3.11 states "*Accordingly, National Highways is not in a position to provide an assessment of the cumulative effects of the greenhouse gas emissions for the Scheme for anything other than the national level carbon budgets.*"

105 This is a rather odd statement from the Applicant. The cumulative-ness of the carbon assessment does not depend upon benchmark carbon budget against which the carbon emissions from the scheme is compared, in the applicant's case whole economy national carbon budgets. The quantity of cumulative carbon emissions associated with the scheme depends upon the traffic model, its study area, the other land-based and road developments within it, and **crucially** how the data is extracted from it as I have explained above. Whether it is compared to a local/regional carbon budget, a sectoral carbon budget or the national carbon budget does not affect the quantity of carbon associated with the scheme.

106 I have already explained that the statement that the national carbon budget is cumulative is just a truism which has no relevance or significance in determining the cumulative impacts of carbon emissions associated with the scheme,

107 **The above statement is actually an admission that the Applicant has not done a cumulative carbon assessment** and is in breach of the EIA regulations. I do not agree that they are "not in a position" to do one – I have laid out above how it can be done. However, what is clear is that applicant has not done a cumulative assessment, and it admits this at 3.3.11.

9.7 REP10-005/3.4 – How the Assessment Complies with Various Carbon Budgets and Wider Carbon Policies

108 The applicant has failed to identify at section 3.4 that the NZS now provides a sector-specific target for surface transport under UK Climate Change legislation. It has also failed to withdraw its repeated assertion that there is no sector-specific target for transport.

109Despite the very clear material relevance of the NZS to appraisal of carbon in road schemes, as outlined above, the applicant has failed to mention the NZS (and TDP) targets, indicative delivery pathways, for surface transport. As described in the NZS section above, with the NZS, the Climate Change Act is a material consideration for this scheme, and this is supported by NPPF 153, footnote 53, and NPSNN footnote 69, as explained in previous sections.

110At 3.4.4, the applicant has also failed to identify emerging local targets for carbon reduction from transport in Norfolk. NPSNN 4.4, the IEMA and EIA guidance, all strongly recommend local and regional assessment of carbon. The applicant has

completely ignored the emerging LTP4 (IP) targets where it should be providing an assessment of the scheme against them.

9.8 REP10-005/3.5 – Missing TDP Sensitivity test

111 The applicant says nothing new in this two-paragraph section. However, in other consultations the applicant has provided new data at this point, with the so-called "TDP Sensitivity test". As I anticipate that the Applicant will now provide what it refers to as a TDP Sensitivity test in response to the consultation, I lay out below some preliminary comments of this unproven methodology in Appendix C.

9.9 REP10-005/3.5: Non-compliance with DMRB

112 On many schemes, the applicant discusses DMRB, and does so in REP10-005, 3.5.1. The applicant claims that it does follow DMRB. My view is that it does not.

113 DMRB LA 104 is clear how cumulative assessment should be done. First it provides a definition of "cumulative effects" on page 7:

> *"Impacts that result from incremental changes caused by other present or reasonably foreseeable actions together with the project.*
>
> *NOTE: For the purposes of this guidance, a cumulative impact can arise as the result of:*
>
> *a) the combined impact of a number of different environmental factors specific impacts from a single project on a single receptor/resource; and/or*
>
> *b)* ***the combined impact of a number of different projects*** *within the vicinity (in combination with the environmental impact assessment project) on a single receptor/resource."* (emphasis added)

114 The receptor in question here is greenhouse gas emissions under EIA Regulations Schedule 4.

115 Then under the "Cumulative effects" section of DMRB LA 104:

> *3.19 EIAs must include cumulative effects in accordance with the requirements of the EIA Directive 2014/52/EU [Ref 1.N].*
>
> *3.20 Non-statutory environmental assessments shall include cumulative effects.*
>
> *3.21 Environmental assessments shall assess cumulative effects which include those from:*

1) a single project (e.g. numerous different effects impacting a single receptor); and

*2) **different projects (together with the project being assessed)**.*

3.21.1 Cumulative effects should be assessed when the conclusions of individual environmental factor assessments have been reached and reported.

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

1) roads projects which have been confirmed for delivery over a similar timeframe;

2) other development projects with valid planning permissions or consent orders, and for which EIA is a requirement; and

3) proposals in adopted development plans with a clear identified programme for delivery.

3.22 The assessment of cumulative effects shall:

1) establish the zone of influence of the project together with other projects;

2) establish a list of projects which have the potential to result in cumulative impacts; and

3) obtain further information and detail on the list of identified projects to support further assessment."

116 **It is quite clear from both the definition, and the summary definition at 3.21 that the meaning of the "different projects", or cumulative quantification and assessment, is that the carbon emissions of all the relevant developments in the study area under 3.21.2 and 3.22 should be quantified by being assessed together.** In the case of carbon emissions, this requires running the traffic model to generate the DS and DM models as shown in Table 3: the quantified cumulative carbon emissions may then be extract by *DS (GHG, all) – DM (GHG, baseline)* on the Table 3 configuration.

117 Contrary to the guidance, the applicant at 3.5.1 attempts to claim that its solus quantification and assessment of the scheme somehow matches the DRMB guidance. This appears to be an attempt to retrofit its solus quantification and assessment of carbon to make it look like a cumulative assessment has been done. It has **not**, and the A47NTE Environmental Statement is therefore **not compliant** with DMRB.

9.10 REP10-005/3.5.2: Generalistic statement on significance

118 The generalistic statement at 3.5.2 referring back to REP3-014 proves nothing. The claims of REP3-014 have been rebutted here. In short, and not all-encompassing, the applicant has not made a cumulative carbon assessment compliant with the EIA regulations; the solus assessment made is based on an underestimate of the emissions and is not based on the proper environmental baseline; no assessment has been made against emerging local targets and policies in the LTP4; and there remain very significant and unexplained flaws in the traffic modelling.

9.11 REP10-005/3.6 – Comparison with national budgets

119 I have shown in previous sections that the Applicant has not quantified, nor assessed, the cumulative impacts of the development proposed together with those from other "existing and/or approved projects", so section 3.6 in its entirety, is redundant in any case. I also rebut the detailed statements in 3.6 below.

120 I have shown the statement at 3.6.3 that "the Scheme complies with the 2017 regulations" to be false. It does not comply with the EIA Regulations in several respects including that it is indisputable that no cumulative carbon assessment has been done, and that the traffic modelling has not been adequately described (under Schedule 4 (6)).

121 The applicant has been requested a lot of material on the basis that the Environmental Statement is currently inadequate and therefore does not comply with EIA Regulation 20. This is not "any other information" within the meaning of EIA Regulation 3(1). EIA Regulation 3(1) defines "any other information" as *"any other substantive information <u>provided</u> by the applicant in relation to the environmental statement or updated environmental statement*". The point here is that the information has **<u>not</u>** yet been provided by the applicant [REP10-005/3.6.4].

122 I have shown that the statement at 3.6.5 that "there is no reasonable basis upon which Highways England can assess the carbon emissions impact of the Scheme at a local or regional level" is false. The applicant has ignored the emerging local carbon targets and budgets in the Norfolk LTP4. The applicant has ignored the best practice guidance from IEMA and the EIA guidance for local carbon assessment, which provides a reasonable basis on why it should do a local carbon assessment. The presence of the targets in the Norfolk LTP provides the benchmark on which to meet the IEMA and EIA guidance. The applicant is also failing to comply with the NPSNN general principle of assessment, at NPSNN 4.4 which requires environmental adverse impacts to be considered at the national, regional and local levels.

123 Section 3.6.6 is clearly an incorrect statement. The applicant bases its assessment of differential quantities of carbon extracted from the traffic model, <u>not absolute</u> emissions. When combined with the failure to make the quantification from the real environmental baseline, the differential approach has generated the two issues of a) there has been no cumulative carbon assessment, and b) the solus quantification done is the wrong one and

an underestimate, as explained above. By stating that only national carbon budgets can be used as the assessment benchmark, the applicant fails to comply with the best practice advice of the IEMA and EIA guidance, and NPSNN 4.4 as above. The Norfolk LTP4 provides the required local benchmark, and it has been ignored by the applicant.

124I have laid out above how the applicant has not complied with DMRB (REP10-005/3.6.7).

10 CONCLUSIONS

125The A47NTE Environmental Statement is inadequate under EIA Regulation 20. Major issues are:

- no cumulative carbon assessment has been done in breach of the EIA regulations;
- the solus calculation made of the carbon emission impacts of the scheme, and used for the carbon assessment, is the wrong calculation, an underestimate, and not calculated against the real environmental baseline. The whole assessment is wrong as a result;
- there is an increase in carbon emissions resulting from the proposed scheme, although it is currently not calculated properly. Assessment has been based on an underestimate. It has, therefore, **not** been demonstrated that the scheme has no material impact on the ability of Government to meet its carbon reduction targets (NPSNN 5.18).
- no local carbon impacts assessment has been made against the best practice recommendations of the IEMA and EIA guidance, and the requirement of NPSNN 4.4;
- the applicant has ignored the emerging carbon targets and budgets for the Norfolk Local Transport Plan 4 which provide the benchmark data for a local carbon impacts assessment;
- there are many issues with the traffic model and it is inconsistent with the local transport authority traffic model for the same area, including representing traffic flows within the network at very different daily levels;
- there is a general issue of lack of data and algorithmic transparency, and lack of cooperation by the applicant to engage, relating to the traffic model issues.

126As well as resolution to the above issues under EIA Regulation 20, three further related actions are required:

1 The traffic modelling and its application should be subject to independent assessment, and there should then be further consultation rounds.

2 Prior to further consultation rounds, a full technical dialogue should be established with the independent assessors, the Applicant, and interested parties to the satisfaction of all parties and in line with professional Codes of Conduct.

3 Prior to further consultation rounds, a full WebTAG compliant Transport Appraisal, with models which are coherent between the A47NTE and the NWL schemes, and agreed by the independent assessors should be supplied by the Applicant.

127 **The SoST cannot be satisfied** that the material provided by the applicant is sufficient for him to reach a reasoned conclusion on the significant effects of the proposed development on the environment until all the above have been done.

128 Further consultations rounds are required as highlighted in the sections above. If these do not satisfactorily resolve the issues, then the application should be refused consent.

Dr Andrew Boswell,
Climate Emergency Policy and Planning, June 15th 2022

11 APPENDIX A: DECISION LETTER ON M54-M6 SCHEME

11.1 Incorrect reliance on the inevitable success of the TDP and the NZS

129 At M54-M6-DL/31, the Secretary of State declares the "*background"* against which the Secretary of State has considered the Proposed Development:

> *"The Secretary of State considers that the majority of operational emissions related to the scheme result from vehicle usage and that the Transport Decarbonisation Plan includes a range of non-planning policies which will help to reduce carbon emissions over the transport network as a whole over time (including polices to decarbonise vehicles and radically reduce vehicle emissions) and help to ensure that carbon reduction commitments are met. Beyond transport, Government's wider policies around net zero such as 'The Net Zero Strategy: Build Back Greener' ("Net Zero Strategy"), published by Government in October 2021 sets out policies and proposals for decarbonising all sectors of the UK economy to meet the net zero target by 2050. It is against this background that the Secretary of State has considered the Proposed Development."* (underline emphasis added)

130 It is clear from this statement that the SoS is predicating his decision on the basis of both overarching assertion and subsidiary assertion of success for both the TDP and NZS. However, it remains to be tested in Court whether the overarching assertion for NZS success is legitimate. It is, therefore, premature, and not legitimate, to predicate the decision on these assertions.

131 If the overarching assertion for NZS success is not legitimate, then the overarching assertion for the TDP success cannot be legitimate either. And the subsidiary scheme-specific assertions for the NZS and TDP are also not legitimate as a consequence.

132 It would also be premature for the SoS to make any reliance on overarching or subsidiary assertions of success for the NZS and TDP in deciding the A47NTE scheme.

11.2 Incorrect reliance on the inevitable success of meeting the UK NDC (Propositions 5 and 6)

133 At M54-M6-DL/37, the Secretary of State extends the overarching assertion of NZS success to an assertion of inevitable success in the UK meeting its NDC target of 68% carbon emissions reduction by 2030 compared to 1990:

> *"With regard to the Paris Agreement, the UK announced its Nationally Determined Contribution ("NDC") in December 2020. NDCs are commitments made by the Parties (including the UK) under the Paris Agreement. Each Party's NDC shows how it intends to reduce its greenhouse gas emissions to meet the temperature goal of the Paris Agreement. The UK's NDC commits it to reduce net GHG emissions by at least 68% by 2030 compared to 1990. This represents an increase of ambition on the fifth carbon budget, which covers the period 2028-2032. The Net Zero Strategy: Build Back Greener, published by Government in October 2021, sets out how the UK*

> *will therefore need to overachieve on the fifth carbon budget to meet its international climate targets and **stay on track** for the sixth carbon budget. This strategy sets out the action Government will take **to keep the** UK on track for meeting the UK's carbon budgets and 2030 NDC and establishes the UK's longer-term pathway towards net zero by 2050. The Secretary of State is content that consenting the Proposed Development will not impact on the delivery of this strategy and will not lead to a breach of the UK's international obligations in relation to the Paris Agreement or any domestic enactments or duties."* (emphasis added)

As the assertion of the inevitable success in the UK meeting its NDC target of 68% carbon emissions reduction by 2030 compared to 1990 is based upon the overarching assertion of NZS success, which is illegitimate, the conclusions in paragraph 37 are also premature, and are illegitimate. **From the evidence that the Government has made available, it is clear that the delivery of the NZS is not secured, and therefore, neither is the delivery of the NDC secured.**

134 Further, the bolded statements "stay on track" and "keep the UK on track" are perplexing as they do not agree with the assessment of the Government's advisors the Climate Change Committee who have advised that the UK is "off track" for meeting the 4th, 5th and 6th carbon budgets (see Appendix B).

135 It would also be premature for the SoS to make any reliance on overarching or subsidiary assertions of success for meeting the NDC in deciding the A47NTE scheme. There is no evidence that the NZS has been designed to secure its objectives, and the security of delivering the NDC is therefore compromised too.

11.3 Negative weight for increasing carbon emissions in the planning balance

136 M54-M6-DL/54 states:

> *"Given that the scheme will increase carbon emissions, it is given negative weight in the planning balance. However, the Secretary of State considers that weight also needs to be given to the Transport Decarbonisation Plan that will mean operational emissions reduce over time and that in relation to climate change adaption the Proposed Development attracts positive weight in the planning balance.*

137 However, there are a number of issues with this, and the SoS should not rely upon it for the A47NTE scheme. First, as above the SoS has already declared at M54-M6-DL/31, the background for the decision, and as in the previous section, the SoS is assuming the overarching and subsidiary assertions of success for the NZS, TDP and NDC. These assertions are not legitimate.

Second, the SoS then claims that weight needs to be given to the TDP. However, in terms of meeting national carbon budgets and targets, the Government have not demonstrated the overarching assertion of success for the TDP or NZS. Therefore, no weight can be given to the TDP against the negative impact of increasing emissions.

Third, the SoS claims positive weight should be given to climate adaptation. However, greenhouse gas emissions and the vulnerability of the project to climate change are specified as two distinct environmental factors, or receptors in the EIA Regulations (eg: see EIA Regulation Schedule 4 (4) and Schedule 4 (5)(f)). Therefore they are not transmutable environmental factors.

The seriousness of the negative weight of increasing carbon emissions can only be balanced against full security in delivering the carbon budgets and targets. To understand the full impacts of the scheme's carbon emissions is not a luxury, it is an absolute necessity. This full knowledge and appraisal are required not only by the law, but also by the global scientific evidence as endorsed by the UK Government <u>as below</u>, by the precautionary principle, and by the principle of sustainability.

However, neither the NZS or TDP has been quantitatively demonstrated to be designed to secure the carbon budgets and targets. Failure to meet carbon budgets and targets cannot be balanced by the notion, even if true, that the particular scheme may be slightly more robust against the physical impacts of climate change.

138 For the A47NTE scheme, the result of this is that the scheme will increase emissions, and this has negative weight in the planning balance. There is currently no legitimate way to demonstrate positive planning weight for carbon emissions.

11.4 The necessity of being led by the science

139 The sub-section is included for context on the previous section on the negative for increasing carbon emissions in the planning balance on the M54-M6-DL/54, which is also reproduced on the A47NTE scheme, and as above, cannot be "offset" in the way M54-M6-DL/54 claims.

140 It is important to understand that the full knowledge and appraisal of carbon emissions for the A47NTE scheme must be "led by the Science" *as the global scientific evidence on Climate Change is endorsed by the UK Government.* As background, the Intergovernmental Panel on Climate Change (IPCC) has published three recent reports (all part of its 6th Assessment Report, AR6): the UK Government is a drafter and signatory to the policy statements associated with each of these reports[11]. These form the latest scientific knowledge on Climate Change, represent a massive scientific endeavour, and are underwritten for their policy implications by our own government.

[11] The three latest Summaries for Policymakers are: August 2021 "Climate Change 2021: The Physical Science Basis", https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf; February 2022 "Climate Change 2022: Impacts, Adaptation and Vulnerability", https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_SummaryForPolicymakers.pdf; April 2022 "Climate Change 2022: Mitigation of Climate Change", https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf. Professor Skea is quoted from UN Press Release, "UN climate report: It's 'now or never' to limit global warming to 1.5 degrees", 4th April 2022, https://news.un.org/en/story/2022/04/1115452

141 The implications of this scientific consensus extend to all levels of government and administration in the UK having been authorised by our national Government. As has been widely reported, the IPCC reports make a clear and unanimous case for very urgent action on Climate Change to produce immediate and rapid reduction in carbon emissions – not over decades, but over years in the very near future (45% cuts by 2030[12]).

142 On April 4th 2022, Professor Jim Skea, OBE, CBE from Imperial College, London and Co-Chair of IPCC Working Group III said on the release of the latest report "***It's now or never, if we want to limit global warming to 1.5°C (2.7°F); without immediate and deep emissions reductions across all sectors, it will be impossible***". This means starting serious, evidence-based decarbonisation now in 2022 – not next year, nor the next, nor 2025, **but now**. The Application is not consistent with what the scientific consensus requires, as underwritten by our own Government. This is especially true when it is assumed, as it is in the A47NTE Environmental Statement, that increases in carbon emissions this decade from the A47NTE scheme can somehow be offset in the planning balance against policy documents (ie: the NZS and TDP), even though those documents have not been designed to secure the deep emission cuts required, as evidenced by the NZS legal challenge.

11.5 IEMA guidance

143 M54-M6-DL/32-35 discuss the latest IEMA guidance. There are a number of issues.

144 The SoS selectively quotes IEMA. The IEMA guidance (the latest February 2022 version) at section 6.4 on "Contextualising a project's carbon footprint" has been ignored. IEMA says 1) assessment of a project's carbon emissions against the carbon budget for the entire UK economy **is only a starting point of limited value** in the EIA process 2) local policies and budgets and targets should be used. This latter point is also in line with the EIA guidance (which itself is material guidance to the NPSNN as the NPSNN invokes the EIA Regulations).

The SoS decision at M54-M6-DL does not identify that local and regional assessment of carbon emissions has not been done, and therefore that the Application for that scheme is not consistent with the IEMA guidance, nor the EIA guidance.

145 M54-M6-DL/33 correctly quotes the IEMA guidance with respect to "significance" that "*that GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit and as such any GHG emission or reductions in these might be considered significant.*" However, the SoS then does not take the logical step that this statement from IEMA implies that securing the delivery of the NZS, TDP and NDC are vital. Simply we are near to the limit of carbon emissions which may be generated (the "remaining global carbon budget" in the scientific jargon). Instead the SoS assumes inevitable success in delivering the NZS, TDP and NDC, and therefore concludes that GHG emissions from the

[12] "Global net human-caused emissions of carbon dioxide (CO2) would need to fall by about 45 percent from 2010 levels by 2030, reaching 'net zero' around 2050", Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C, 2018.

project are not significant. However, assuming such inevitable success is false, the conclusion cannot depend upon them and is also false.

146 For the A47NTE scheme, it would be premature and incorrect for the applicant to use M54-M6-DL/32-35 to support claims such as:

- that comparisons of carbon emissions made solely against UK carbon budgets are in line with the NSPNN, and consistent with the IEMA guidance;

- that any assessment made on such a singular comparison is legitimate to conclude that the carbon emissions from the A47NTE scheme will not have a material impact on the ability of Government to meet its legally binding carbon reduction targets.

11.6 Overview - the (non) Assessment of Cumulative of GHG emissions from the A47NTE scheme

147 First, it is important to note that I have shown in detail in my submission that no cumulative carbon assessment has been made, and that the solus carbon assessment is based upon the wrong quantification which is an underestimate of the emissions. I have shown that the notion that the assessment made by the applicant is cumulative because the traffic model is "inherently cumulative" is false.

148 The SoS may be tempted to draw a comparison between the A47NTE scheme and the M54-M6 applications and claim that M54-M6-DL/39-51 would provide support. Apart from the fact that no cumulative carbon assessment has been made, I lay out below why this would be an incorrect comparison.

11.7 The applicant does not follow the DMRB

149 At M54-M6-DL/40, the SoS says "*the Secretary of State notes the Applicant's responses set out that the assessment of cumulative impacts of the scheme on climate was undertaken in line with DMRB guidance*".

150 DMRB LA 104 is clear how cumulative assessment should be done. First it provides a definition of "cumulative effects" on page 7:

> *"Impacts that result from incremental changes caused by other present or reasonably foreseeable actions together with the project.*
>
> *NOTE: For the purposes of this guidance, a cumulative impact can arise as the result of:*
>
> *c) the combined impact of a number of different environmental factors specific impacts from a single project on a single receptor/resource; and/or*

d) ***the combined impact of a number of different projects*** *within the vicinity (in combination with the environmental impact assessment project) on a single receptor/resource."* (emphasis added)

151 The receptor in question here is greenhouse gas emissions under EIA Regulations Schedule 4.

152 Then under the "Cumulative effects" section of DMRB LA 104:

3.19 EIAs must include cumulative effects in accordance with the requirements of the EIA Directive 2014/52/EU [Ref 1.N].

3.20 Non-statutory environmental assessments shall include cumulative effects.

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

1) a single project (e.g. numerous different effects impacting a single receptor); and

2) ***different projects (together with the project being assessed)****.*

3.21.1 Cumulative effects should be assessed when the conclusions of individual environmental factor assessments have been reached and reported.

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

4) roads projects which have been confirmed for delivery over a similar timeframe;

5) other development projects with valid planning permissions or consent orders, and for which EIA is a requirement; and

6) proposals in adopted development plans with a clear identified programme for delivery.

3.22 The assessment of cumulative effects shall:

3) establish the zone of influence of the project together with other projects;

4) establish a list of projects which have the potential to result in cumulative impacts; and

3) obtain further information and detail on the list of identified projects to support further assessment."

153 It is quite clear from both the definition, and the summary definition at 3.21 that the meaning of the "different projects", or cumulative quantification and assessment, is that the carbon emissions of all the relevant developments in the study area under 3.21.2 and 3.22 should be summed together.

154 The applicant is **correct** that the architecture of its DS traffic model potentially provides for this calculation. The applicant is **incorrect** that its selected architecture for its DS-DM quantification on the A47NTE, based on the outputs of this model, provides a cumulative quantification or assessment.

155 In summary, the applicant has not followed DMRB LA 104, nor complied with it with respect to making an EIA Regulations compliant cumulative assessment of carbon emissions. The applicant has not only not followed its own industry guidance, but it has also not met the legal requirements of the EIA Regulations.

156 The SoS, therefore, cannot rely upon similar arguments to M54-M6-DL/40.

11.8 The false "inherently cumulative" notion

157 M54-M6-DL/42 says: "*The Secretary of State notes that the Applicant's response of 26 January 2022 set out that the traffic model used to support the scheme assessment is inherently cumulative with regard to operational carbon emissions. This is because traffic models include data on the emissions resulting from the Proposed Development and the adjoining Strategic Road Network and the local road network as well as other schemes promoted by the Applicant in the vicinity of the scheme that have a high certainty of being progressed."*

158 M54-M6-DL/43 says: "*With regard to operational carbon, the Applicant's approach to assessing the impact on carbon emissions is to consider the changes in carbon emissions resulting from the Proposed Development by comparing changes in the road traffic on the Strategic Road Network and local road network between the 'without scheme scenario' and the 'with scheme scenario', with the former providing the baseline for assessment. The Applicant considers that this takes into account the Proposed Development and all other developments likely to have an influence on the Proposed Development and on the area the Proposed Development is likely to influence. The Applicant considers that as both the with and without scheme scenario includes all likely developments and traffic growth factors it is inherently cumulative.*"

159 On the A47NTE scheme, I have shown in section 4 of my main submission that the applicant has only made a solus quantification and assessment of carbon emissions from the scheme. The solus quantification is the wrong solus quantification and is an underestimate of emissions form the scheme in isolation. No cumulative assessment has been done.

160 At section 4.1 of my main submission, I explain that the "influence" of all other developments **is not the same** as **quantifying** their environmental impact, in this case on the EIA receptor of global GHG emissions, which is what the EIA Regulations require.

161 The applicant has not established for the A47NTE scheme what is claimed for the M54-M6, and therefore, cannot rely upon M54-M6-DL/42 and M54-M6-DL/43.

11.9 Cumulative assessment of the impact of carbon emissions

162 M54-M6-DL/45 starts: "*The Secretary of State considers that as there is no single prescribed approach to assessing the cumulative impacts of carbon emissions, there are a number of ways such an assessment can acceptably be undertaken and that this does not necessarily need to be done at RIS level.*" (underline emphasis added)

163 The applicant may seek comfort from the underlined sentence. However, the point is that no cumulative carbon assessment has been done at all for the A47NTE scheme, so whether a prescribed approach has been followed is academic.

164 M54-M6-DL/47 includes "*As well as being a requirement of the NPSNN, the Secretary of State considers that assessing a scheme against the carbon budgets is an acceptable cumulative benchmark for the assessment for EIA purposes with regard to both construction and operation.*"

165 M54-M6-DL/48 includes "*Overall, the Secretary of State considers that the information provided by the Applicant with regard to the impact of the scheme on carbon emissions (including the cumulative effects of carbon emissions from the scheme with other existing and/or approved projects in relation to construction and operation) is sufficient to assess the effect of the development on climate matters and represents the information that the Applicant can reasonably be required to compile having regard to current knowledge.*"

166 The applicant may seek comfort from the above quotes. However, the point is that no cumulative carbon assessment has been done at all for the A47NTE scheme, so these quotes are not relevant.

11.10 Local and regional carbon assessment

167 M54-M6-DL/46 says "*The Applicant considered that it was unable to produce a baseline at a local or regional scale and that there was therefore no reasonable basis upon which it can assess the effects of carbon emissions for anything other than at the national level. The Secretary of State accepts that the only statutory carbon targets are those at a national level and notes that neither the Applicant nor any other party has suggested that there are non-statutory carbon targets at any other level that may need to be considered.*"

168 The IEMA guidance, and EIA guidance, strongly advocates local and regional assessment of carbon emissions. The SoST statement here does not comply with the best practice guidance for EIA.

The applicant may claim that an assessment against local/regional targets cannot be undertaken for the A47NTE scheme. Such a claim reveals that the applicant's intention is "can't do" rather than "can do", and it would also suggest that the applicant has not looked

very far to find the relevant targets and to develop methods to assess against them, even despite the urgency implied by the rapidly changing landscape of climate legislation and targets. Such an intentionally negative approach goes against the IEMA and EIA guidance outlined above, and any technical innovation to meet it as outlined below.

The relevant targets and budgets are provided in the A47NTE case by the Local Transport Plan 4 for Norfolk.

12 APPENDIX B: Climate Change Committee, Advice on reducing the UK's emissions

Downloaded from [redacted] May 5th, 2022

Supplied as separate document

13 APPENDIX C: MISSING TDP SENSITIVITY TEST (actually TDP FACTOR TEST)

13.1 REP10-005/3.5 – Missing TDP Sensitivity test

169 The applicant says nothing new in this two-paragraph section. However, in other consultations the applicant has provided new data at this point, with the so-called "TDP Sensitivity test". As I anticipate that the Applicant will now provide what it refers to as a TDP Sensitivity test in response to the consultation, I lay out below some preliminary comments of this unproven methodology below.

170 The applicant has stated elsewhere (eg on A303 Stonehenge) that they have been advised by the DfT that "a sensitivity test based on the impact of the policy measures set out in TDP can now be undertaken for schemes", and that "the DfT has approved a sensitivity test based on the rate of improvement shown in Figure 2 of the TDP which can be applied to CO_2e emissions calculated for the Scheme assessment". The applicant then would provide numbers which they refer to as a "TDP Sensitivity test" in a table.

171 I first raise two issues with the overall method which the applicant refers to as the "TDP Sensitivity test".

172 The **first** is that what has been performed - applying the TDP Figure 2 rate of improvement to the CO_2e emissions calculated for the Scheme – is not what is normally understood as a sensitivity test. Sensitivity analysis is the study of how the uncertainty in the output of a mathematical or computer model can be understood and proportioned statistically to different sources of uncertainty in its inputs. In terms of traffic modelling, I have already described how the solus quantification of carbon emissions for the scheme, as specified by this document's Table 1 above (and that performed by the applicant), can be a sensitivity test of the preferable, and more accurate, solus quantification of carbon emissions for the scheme, as specified by this document's Table 2 above (and that has not

been performed by the applicant). This is an example of sensitivity analysis, in this case, testing the influence of adding other known developments to the traffic modelling on the differential carbon emissions associated with the scheme.

173 However, the so-called "TDP Sensitivity test", by contrast, applies numerical values from a graph of some desirable, future, but not proven, outcome (ie the TDP Figure 2) to existing data. This makes **no** test of how the carbon emission outputs change depending on inputs to the modelling[13]. Further, the "rate of improvement" represented by TDP Figure 2 is a conglomeration of national data, and therefore takes no account of the specific, and local, conditions which determine the carbon emissions in the traffic model study area.

174 The method is falsely called a "TDP Sensitivity test". It would be more accurately described as applying a "TDP policy factor", and I will use that descriptor from now on.

175 The **second** is that even **if** applying a TDP Policy factor was technically sound and reliable, and I don't agree that it is without the full publication and scrutiny of the method, **then** it could only be justified where the case for the scheme fully aligned with the TDP, and NZS, policies.

176 Further, as above, applying a TDP Policy factor assumes that the policies being applied are guaranteed to succeed. As explained above, there is no evidence that the policies in the Net Zero Strategy (NZS) have been designed to secure the outcome claims. The Court has heard, in the NZS legal case, how the NZS has not been fully quantified to demonstrate that it succeeds, nor designed to secure the Government's carbon targets and budgets under sections 13 and 14 of the Climate Change Act. The same is true for the TDP which is based upon the NZS projections.

177 Even if there was certainty of policy success (which there is not), the case for the A47NTE scheme was developed many years in advance of the TDP and NZS, and did not even foresee these key policy documents of the current legal framework, let alone attempt to align with them. Compliance and alignment with the TDP and NZS cannot just be retrofitted to the A47NTE scheme – a complete revisit of the scheme's design and rationale is required to align with the objectives of the TDP and NZS.

178 The applicant's case for the A47NTE is based on the needs of traffic and future traffic growth, and is not easily aligned with the policies in the NZS and TDP. For example, page 156 of the NZS states:

> *"We cannot simply rely on the electrification of road transport, or believe that zero emission cars and lorries will solve all our problems.* ***As we build back better from the pandemic, it will be essential to avoid a car-led recovery.*** *Alongside road*

[13] This is further demonstrated by the fact that the so-called TDP Sensitivity test is just a post-processing calculation applied to the **outputs** of the traffic model

vehicle decarbonisation, we must increase the share of trips taken by public transport, cycling and walking. We want to make these modes the natural first choice for all who can take them. As more journeys are cycled or walked, and taken by public transport, the carbon, air quality, noise and congestion benefits will be complemented by significant improvements in public health and wellbeing."

179 Whilst page 6 of the TDP says:

"Road traffic, even on pre-pandemic trends, was predicted to grow by 22 percent from 2015 to 2035 much of it in cities, where new roadbuilding is physically difficult and disadvantages communities.–
We cannot pile ever more cars, delivery vans and taxis on to the same congested urban roads. That would be difficult for the roads, let alone the planet, to tolerate. ***As we build back better from the pandemic, it will be essential to avoid a car-led recovery.****"*

180 The A47NTE scheme is predicated on increasing capacity of the strategic road network in response to the future needs of traffic. Whilst at the policy level, the TDP and NZS do not support unbridled increase of capacity and provide policy support against a car-led recovery from the pandemic. This is a clear example of how TDP compliance cannot be retrofitted to the A47NTE scheme, and therefore **it is clearly incoherent to attempt to apply a generic TDP factor to the carbon emissions for the scheme**, as the Applicant does.

181 When this discrepancy is taken to the numerical level of quantifying carbon emissions, as does with the TDP Policy factor, it is clear that the different data being applied is not internally consistent. First, there are the traffic models of the scheme which as enumerated contain the Baseline Highway network, the scheme itself, other schemes promoted by the applicant, foreseeable developments promoted by third parties, and national government regional growth rates. And second, the TDP policies which require avoiding a car-led recovery, a significant modal shift to non-motorised journeys, and a contraction of the overall need for vehicle movements. The different elements within the existing traffic model expand vehicles using the network and with the express intent of expanding capacity, and model the effects of this to produce a carbon quantification. The TDP Policy factor applies numbers based on very different, and in some cases quite opposing, policy directions to the carbon quantification output from the models. **The approach is simply incoherent.**

182 The **genuine TDP Sensitivity test** would be to apply the individual TDP policies in the local context of the study area in the traffic models themselves. For example, the "foreseeable developments promoted by third parties" could be remodelled to align with the policies in the TDP for modal shift in new developments[14]. This would give a clear

[14] See TDP, page 8 "We must also do better at joining up our transport, decarbonisation, and planning goals in both urban and rural areas. Too many new developments – not just by housebuilders, but by public-sector bodies – are difficult to reach without a car. But if we do development in a greener way, and if we join it to existing places, we can make it lower-carbon, lower-emission and lower-traffic – and more acceptable to local

indication of the effect of remodelling land-based developments for TDP compliant modal shift against the approach incorporated in the traffic model which is based on unconstrained traffic growth, and car-based development, as conceived quite a few years ago. This has not been attempted by the applicant, despite the TDP, and NZS, now being part of the policy and legal framework.

183 In summary, "TDP Sensitivity test" is a misnomer, and it is nothing more than a non-project specific TDP Policy factor that is applied post the traffic modelling to the carbon emissions data. However, the TDP policies - the basis for the TDP Policy factor - do not align with the assumptions in the existing traffic model. The result is an incoherent method which produces numbers to which no value, nor weight, can be given in determination of the DCO.

13.2 REP10-005/3.5 – Missing TDP Factor test – data issues

184 Where the applicant has presented the so called TDP Sensitivity test, here are two further fundamental problems with the new data introduced into Environmental Statements:

i. No explanation as to the assumptions and modelling used to generate TDP Figure 2 is provided, either in the data table produced, or elsewhere since the TDP was published. The same is true for NZS Figure 21 which is a refinement of TDP Table 2. This is despite various Freedom of Information requests[15] and a parliamentary question[16] being raised. Therefore, the anticipated application of a TDP Policy factor based on the rate of improvement shown in TDP Figure 2, is presented as a black-box calculation, and algorithmically untransparent. I present further questions on this below.

ii. Despite the new data table introduced to Environmental Statements, **no assessment or conclusions are made** by the applicant from the data. The data is left hanging. The presentations, seen so far for various schemes, relating to the so-called "TDP Sensitivity test" therefore fail to achieve what they set out to do which is to describe "how an assessment ..." was undertaken.

---

communities. We will also support local areas to decarbonise by linking local infrastructure funding to solutions that cut emissions – aligning billions of pounds of investment to our net zero mission.", and

TDP, page 156 "**We will embed transport decarbonisation principles in spatial planning and across transport policymaking**", and "The government wants walking, cycling or public transport to be the natural first choice for journeys. Where developments are located, how they are designed and how well public transport services are integrated has a huge impact on whether people's natural first choice for short journeys is on foot or by cycle, by public transport or by private car. The planning system has an important role to play in encouraging development that promotes a shift towards sustainable transport networks and the achievement of net zero transport systems. Traffic issues have often caused opposition to housebuilding. There is a legacy of developments that give people few alternatives to driving, are difficult to serve efficiently by public transport and are laid out in ways which discourage walking and cycling. Developments which are planned to minimise car use, promote sustainable transport choices, and are properly connected to existing public transport could help make new building more publicly acceptable."

[15] For example, by the New Scientist "UK refuses to release document showing Net Zero Strategy CO2 savings", 1 December 2021, [redacted]

[16] Kerry McCarthy, MP, 18th October 2021 to Trudy Harrison, MP [redacted]

185 On point i, I draw attention to my statement in my submission to the previous consultation on "Lack of Transparency of Data and Computer Modelling" and the Algorithmic Transparency Standard (see section above on this). When applying a nationally conglomerated "rate of improvement" based on TDP, Figure 2 to figures derived directly from traffic modelling without explaining how the TDP figures are derived, as on other schemes and expected for the A47NTE scheme, the applicant has made no attempt to explain the data, algorithms and method transparently. **For data and algorithmic transparency, a full explanation of how these figures are derived is required.** The presentation of this new material, and the lack of transparent information and data relating to it places severe limitations on the independent review by interested parties and other such as myself. A further consultation round following full data transparency, with independent assessment, is required.

13.3 REP10-005/3.5 – Missing TDP Factor test – further Data and algorithmic transparency issues

186 When making the TDP Factor test on other schemes, the applicant has **applied** a black box approach which it describes as "a sensitivity test based on the rate of improvement shown in Figure 2 of the TDP which can be applied to CO_2e emissions calculated for the Scheme assessment". All TDP policies are assumed to be working as a conglomerate mass, based on a model at the national level, the details of which have not been made public.

187 The approach of applying a nationally conglomerated "rate of improvement" to carbon quantities which are derived from a specific traffic model for a specific study makes no account of:

- **which** TDP policies are having an effect, and
- **how, and by how much,** they are having an effect on the transport carbon emissions associated with the scheme in the study area

188 As such, applying the TDP Policy factor is a blunt tool which eliminates the gathering of useful information rather than generating it.

189 **The applicant must provide a complete breakdown of the calculations behind TDP Figure 2**, showing for each policy how it has been modelled and what its contribution towards the decarbonisation path in TDP Figure 2 is. The applicant must provide any analysis, if there is any, on how each potential TDP policy may impact and apply **to the particular situation in the study area** of the A47NTE scheme.

190 **The applicant must also make available a wide range of data involved in the traffic modelling.** For the study area, this would include the highway and public transport matrices, changes in walking and cycling modelled, and automatic TUBA outputs for each of the three traffic models. These will also be useful in analysing how each potential TDP policy, for example those on modal shift in new developments, impacts the

study area. Further, the 60-year appraisal spreadsheets for GHGs should be provided for each of these traffic models. The Economics Table and new BCRs should also be calculated, including the new appraisal carbon pricing data from Government.

191 **As the TDP Factor test is applied to data after its extraction from the traffic model, it is not clear how a corresponding 60-year appraisal GHGs spreadsheet can be generated. This is contrary to the TAG Methodology.**

13.4 REP10-005/3.5 – TDP factor test - Potential double counting

192 Further, I have concerns that there may be **double counting** between emission reductions in the EFT v11 and the application of the TDP factor test. Data from EFT v11 traffic model runs will already have emissions outputs for the years 2031-2050 with updated fleet and engine efficiency adjustment factors. The DEFRA EFT webpage states "the 'Output CO2 Summary' sheet provides a summary of direct CO2 emissions from tailpipe and indirect CO_2e emissions associated with the charging of the batteries of electric and plug-in hybrid cars and LGVs, in tonnes/annum"[17].

193 As significant policies in the TDP relate to electric vehicle (eg: "A zero emission fleet of cars, vans, motorcycles, and scooters", and "Zero emission buses and coaches" in the "Summary of commitments", TDP, Part 2a, for "Decarbonising all forms of transport"), decarbonisation from electric vehicles can be expected to be part of the nationally conglomerated "rate of improvement" implied by TDP Figure 2".

194 This risk of double counting may extend to other policies too, such as modal shift: electric vehicles is just the most obvious example.

195 **The Applicant must provide a breakdown of all the adjustments for carbon reduction values made in the EFT v11 and the TDP Figure 2, and demonstrate that there is a clear demarcation of which contribute to the EFT v11 and which to the emission reductions implied by the TDP Policy factor.** There should also be a clear demonstration that DEFRA and DfT are working to ensure that this demarcation and apportionment of emissions reduction effects between versions of the EFT and the TDP modelling is fully understood. The resolution of this issue may require work between DEFRA and the DfT.

196 If as anticipated, the applicant presents carbon emission quantities calculated from model runs by first introducing the EFT v11 and second by the application of the TDP Policy factor, then **the applicant must provide a very clear explanation of, and demarcation between, the effects contributing to each of the reduction effects on their data.**

13.5 Missing TDP Factor test – All the data is based on solus, not cumulative, quantification and assessment

[17] https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/, "Emissions Factors Toolkit", accessed Mar 18th 2022,

197 I just repeat for emphasis and clarity that all of the data presented by the Applicant, on all the schemes which I have examined, from different traffic model runs (with different EFT versions, and with the TDP Policy factor) for operation emissions data are **only solus** quantifications, and the **wrong solus** quantifications, as described earlier.

198 On all schemes, no assessment is possible of the cumulative carbon impacts of the scheme with other developments, as these cumulative impacts have not been quantified as explained earlier. In making the TDP Factor test, **the applicant does not make the application, or Environmental Statement, EIA compliant**.

14 APPENDIX D: IEMA GUIDANCE, ASSESSING GREENHOUSE GAS EMISSIONS AND EVALUATING THEIR SIGNIFICANCE

Version 2, February 2022

Supplied as separate document

15 APPENDIX E: TRAFFIC MODELLING DATA REPRODUCED FROM MR ROBINSON'S CONSULTATION RESPONSE

In the following tables, we compare the figures from the two different traffic modes at the 2025 opening and 2040 design years for various locations on the SRN. In each table/location:

1. **column (e)** [the A47NTE DS1 sensitivity test with no NWL ie: should closely equate to NWL DM] and **column (f)** [NWL DM] should be similar, or identical; and
2. **column (d)** [A47NTE DS0 containing both the A47NTE and NWL] and **column (g)** [NWL DS containing both the A47NTE and NWL] should be similar, or identical.

Location: A47 West of Lyng Road (A47 Station 26)						
Base		A47NTE 2025[18]			NWL 2025[19]	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
2015 (A47)	2019 (NWL)	DM	DS0	DS1[20]	DM	DS
24,000	25,100	31,000	39,000	35,000	39,400	35,900
		A47NTE 2040			NWL 2040[21]	
		36,000	49,000	43,000	47,100	40,100

Evaluation: (e) to (f) 2025 – NWL assessment 12.6% greater
Evaluation: (e) to (f) 2040 – NWL assessment 9.5% greater
Evaluation: (d) to (g) 2025 – NWL assessment 7.9% lower
Evaluation: (d) to (g) 2040 – NWL assessment 22.2% lower

Location: A47 Between two junctions (A47 Station 8)						
Base		A47NTE 2025			NWL 2025	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
2015 (A47)	2019 (NWL)	DM	DS0	DS1	DM	DS
24,000	n/a	22,000	34,000	36,000	41,100	37,300
		A47NTE 2040			NWL 2040	
		23,000	44,000	45,000	49,500	44,800

Evaluation: (e) to (f) 2025 – NWL assessment 14.2% greater
Evaluation: (e) to (f) 2040 – NWL assessment 10% greater
Evaluation: (d) to (g) 2025 – NWL assessment 9.7% greater
Evaluation: (d) to (g) 2040 – comparable assessments

Location: A47 East of former Easton roundabout (A47 Station 14)						
Base		A47NTE 2025			NWL 2025	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
2015 (A47)	2019 (NWL)	DM	DS0	DS1	DM	DS
30,000	25,800	27,000	36,000	40,000	41,600	36,800
		A47NTE 2040			NWL 2040	
		32,000	46,000	49,000	50,400	43,400

Evaluation: (e) to (f) 2025 – comparable assessments
Evaluation: (e) to (f) 2040 – comparable assessments
Evaluation: (d) to (g) 2025 – comparable assessments

[18] Figures from TR010038/App/7.1 Figures 4.18

[19] Figures from Appendix D of NWL OBC Traffic Forecasting Report

[20] Figures from TR010038/App/7.1 Figures 4.27

[21] Figures from Appendix D of NWL OBC Traffic Forecasting Report

Evaluation: (d) to (g) 2040 – NWL assessment 6% lower

Location: NWL (A47 Station 6)						
Base		A47NTE 2025			NWL 2025	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
2015 (A47)	2019 (NWL)	DM	DS0	DS1	DM	DS
n/a	n/a	18,000	21,000	0	0	24,700
		A47NTE 2040			NWL 2040	
		20,000	28,000	0	0	34,600

Evaluation: (d) to (g) 2025 – NWL assessment 17.6% greater
Evaluation: (d) to (g) 2040 – NWL assessment 23.6% greater

There are also noticeable differences for some of the minor roads including;

Location: Sandy Lane (A47NTE Station 3)						
Base		A47NTE 2025			NWL 2025	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
2015 (A47)	2019 (NWL)	DM	DS0	DS1	DM	DS
800	70	0	300	1,700	100	60
		A47NTE 2040			NWL 2040	
		0	1,400	2,900	100	60

Location: Wood Lane (A47NTE Station 5)						
Base		A47NTE 2025			NWL 2025	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
2015 (A47)	2019 (NWL)	DM	DS0	DS1	DM	DS
2,500	4,600	2,100	2,300	5,400	6,000	1,400
		A47NTE 2040			NWL 2040	
		1,700	2,300	4,900	7,800	2,100

Location: Taverham Road (A47NTE Station 10)						
Base		A47NTE 2025			NWL 2025	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
2015 (A47)	2019 (NWL)	DM	DS0	DS1	DM	DS
600	250	0	200	5,400	1,800	1,100
		A47NTE 2040			NWL 2040	
		400	400	4,900	2,600	1,200

Location: Heath Road (A47NTE Station 2)						
Base		A47NTE 2025			NWL 2025	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
2015 (A47)	2019 (NWL)	DM	DS0	DS1	DM	DS
1,000	1,700	100	200	200	1,400	1,100
		A47NTE 2040			NWL 2040	
		100	200	300	1,700	1,100

<END OF DOCUMENT>