

Author Details	
Name	Dr Andrew Boswell
Position	Independent Scientist & Consultant
A57 Link Roads Registration	20029126
Organisation	Climate Emergency Policy and Planning (CEPP)
Examination Principle Issues	<ul style="list-style-type: none"> • Climate Change • Scope of Development and Environmental Impact Assessment • Benefit cost ratio (BCR) and case for scheme

DEADLINE D9 SUBMISSION

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.

SUMMARY

The Intergovernmental Panel on Climate Change (IPCC) has published three recent reports (all part of its 6th Assessment Report, AR6), and the Government is a drafter and signatory to the policy statements associated with each of these reports. These form the latest scientific knowledge on Climate Change, and represent a massive scientific endeavour, and underwritten for their policy implications by our own government. As has been widely reported, these reports make a clear and unanimous case for very urgent action on Climate Change actioned the immediate and rapid reduction in carbon emissions – not over decades, but over years in the very near future (45% cuts by 2030).

At the same time, climate change legislation and policy has moved forward rapidly since 2019 and the Net Zero 2050 target, the Net Zero Strategy being the latest policy document (which is actually the legal delivery mechanism for net zero under section 13 of the Climate Change Act).

The application, its Environmental Statement, and its carbon assessment methodology is stuck in a pre-2019 world. Despite these changes to the legal and policy framework, the Environmental Statement does not acknowledge all the new targets, and has not been correspondingly updated to fully comply with them.

This submission provides a response to the applicant’s written Summary for ISH3. The applicant’s written summary just demonstrates further this lack of meeting, or even attempting to meet, the new framework and the requirements of the NN NPS more generally.

Contents

DEADLINE D9 SUBMISSION	1
SUMMARY	1
Contents	2
1 INTRODUCTION	3
1.1 Deadline 9 (D9)	3
2 RESPONSES TO REP8-019, SECTION 6 “CLIMATE CHANGE”	3
2.1 Carbon budgets and targets	3
2.2 Carbon budgets and targets in the NN NPS	5
2.3 REP8-019/9.75.78 corresponding to EV-039/Item 6/a) Cumulative effects/local and regional policies and budgets	6
2.4 REP8-019/9.75.79 corresponding to EV-039/Item 6/b) Response deferred	9
2.5 REP8-019/9.75.80 corresponding to EV-039/Item 6/c) Cumulative emissions	9
2.6 REP8-019/9.75.81 corresponding to EV-039/Item 6/d) De-minimus emissions	10
2.7 REP8-019/9.75.82 corresponding to EV-039/Item 6/e) Electrification	11
2.8 REP8-019/9.75.83 corresponding to EV-039/Item 6/f) “so significant”	11
2.9 REP8-019/9.75.84 corresponding to EV-039/Item 6/g) DMRB/NN NPS	12
2.10 REP8-019/9.75.85 corresponding to EV-039/Item 6/h) Weight of DMRB	12
2.11 REP8-019/9.75.86 corresponding to EV-039/Item 6/i) IEMA assessment	12
2.12 REP8-019/9.75.87-91 corresponding to EV-039/Item 6/j)-6s) Response deferred	13
3 CONCLUSIONS	13
4 APPENDIX A: LOCAL DECARBONISATION TARGETS, PARLIAMENTARY QUESTION	14
4.1 Local Transport Plans: Carbon Emissions, Question for Department for Transport, UIN 151053, tabled on 31 March 2022	14
5 APPENDIX B: WHAT IS A CARBON BUDGET AND HOW DOES IT POINT TO THE TRUTH?	15
5.1 Science-based carbon budget assessment of compliance against UK obligations under the Paris agreement	17
5.2 Relevant carbon budgets/targets derivable from the Climate Change Committee	17

1 INTRODUCTION

1.1 *Deadline 9 (D9)*

1 This is my submission for Deadline 9.

2 I will comment on:

A. A57/REP8-019, “9.75 Applicant's written Summary of Issue Specific Hearing 3”

3 IEMA guidance refers to the February 2022 guidance “Assessing Greenhouse Gas Emissions and Evaluating Their Significance”, previously supplied at REP8-032.

2 RESPONSES TO REP8-019, SECTION 6 “CLIMATE CHANGE”

2.1 *Carbon budgets and targets*

4 As precursor to responding to REP8-019, it is helpful to clarify the difference between carbon budgets and targets as these are conflated in the applicant’s narrative.

5 When the Climate Change Act 2008 (CCA) was established, it specified an overall target to reduce UK carbon emissions¹ by 80% from 1990 levels by 2050. It also created the rolling 5-year carbon budgets, as legally binding budgets for the Government to deliver, as a way of achieving the target.

6 With the net-zero target in 2019, the overall target was changed to 100% (net) emissions reduction by 2050 from 1990, and then with the 6th Carbon budget in 2020, a target of 78% reduction by 2035 (from 1990 levels) was introduced.

It should be noted that as the latter was set in 2020, it effectively approximately **doubled the rate of legislated reductions**, and corresponding UK national “climate ambition”, for the decades from 2020: as 80% by 2050, 30 years from 2020, was replaced with 78% by 2035, 15 years from 2020.

7 When the UK set a National Determined Contribution (NDC) under the Paris agreement, prior to the Glasgow UN Climate conference, COP 26, a further legislated target was set at 68% (from 1990) by 2030.

8 In July 2021, the Government published its Transport Decarbonisation Plan (TDP) which as described at REP2-064/13 requires “*ambitious quantifiable carbon reductions in transport*” to be defined by Local Transport authorities in local transport plans (LTPs). This requirement is linked to future central government funding. Whilst these targets have yet to be developed,

¹ This is a general description, and for the purposes of simplicity, it spares the detail on exactly which carbon emissions (eg: aviation, shipping, military, transport, energy) are including in the UK carbon account, and also the different types of greenhouse gases (eg methane, nitrous oxide) which tend to be measured in CO2 equivalents.

the Government confirmed its commitment to local transport decarbonisation in a response to a parliamentary question on March 31st 2022 (see Appendix A).

9 In October 2021, the Net Zero Strategy (NZS), which is a legally binding policy document under the CCA Section 13, was published. As described at REP2-064/18, this introduced a delivery pathway for road transport in NZS, Figure 21 with targets for carbon reduction in the sector of 34-45% by 2030 and 65-76% by 2035 **from 2019**.

10 A spreadsheet² is given on the NZS webpage, from which the annual targets (reductions from 2019) for each year from 2020 to 2037 may be derived. I have made this calculation, which shows the reductions in the NZS Figure 21, and present it below for the upper bound and lower bound figures.

<i>Reductions from 2019</i>	2020	2021	2022	2023	2024	2025	2026	2027	2028
NZS (Upper)	-10.79%	-0.41%	-3.52%	-4.74%	-5.89%	-7.36%	-11.37%	-15.37%	-21.67%
NZS (Lower)	-17.09%	-7.93%	-11.45%	-13.16%	-14.72%	-16.52%	-20.85%	-25.18%	-31.73%

<i>(Continued)</i>	2029	2030	2031	2032	2033	2034	2035	2036	2037
NZS (Upper)	-27.64%	-34.51%	-40.80%	-47.42%	-56.26%	-61.00%	-65.58%	-69.09%	-72.20%
NZS (Lower)	-37.94%	-44.97%	-51.43%	-58.22%	-67.21%	-72.12%	-76.86%	-80.54%	-83.89%

11 At REP8-029/29, I made the point that the surface transport decarbonisation targets in the Net Zero Strategy and the Transport Decarbonisation Plan are for all intents and purposes the same, with NZS Figure 21 being a more refined version, but same trajectory, as TDP Figure 2.

12 Together, the TDP and the NZS provide, first, annual sectorial targets for surface transport (as above), and a requirement for local transport decarbonisation targets to be developed which align to them.

13 All of these changes to the legal and policy framework on climate change, including the doubling of the rate of climate ambition and carbon reduction, have gone on the statute **after** the case for the scheme was developed. Whilst the Environmental Statement may have been adjusted to refer to some of them, genuinely substantive changes have not been made to the ES, and the carbon assessment, as a result of them.

In particular, a number of new binding targets have been introduced to law, but the carbon assessment still only assesses against national carbon budgets. Crucially, the applicant has not renewed its concept of what compliance with the NN NPS means in response to the new climate targets since 2019. This is now explained further.

² 

2.2 Carbon budgets and targets in the NN NPS

14 At REP8-029, I pointed out that the NN NPS requires a carbon test, not just against budgets, but also against the “*carbon reduction plan targets*”. The carbon reduction plan targets in the NN NPS refer to the Net Zero Strategy targets, since the publication of the NZS.

15 NN NPS 5.17 makes the statement “*It is very unlikely that the impact of a road project will, in isolation, affect the ability of Government to meet its carbon reduction plan targets.*” This statement was drafted with reference to the predecessor the carbon reduction plan, the now-defunct Carbon Plan 2011, but now refers to the Net Zero Strategy by virtue of NN NPS footnote 69 [REP8-029/38(A)].

NN NPS 5.17 has not been reviewed, nor reassessed, by the SoS against the NZS. Therefore, the above statement is no longer legitimate³. It has not been demonstrated whether the impact of a road project will, or will not, in isolation, affect the ability of Government to meet its carbon reduction plan (NZS) targets, and it remains to be evaluated.

However, the applicant often makes reference to this, now out-dated and unproven, statement to support their case. Further, legal cases such as TAN v RIS2 (2021), which again are used by the application to support their case predate the Net Zero Strategy, and do not change the fact that the broad, and actually vague, statement in NN NPS 5.17 has not been tested against the NZS.

16 The applicant has not updated their assessment following the NZS to test NN NPS 5.17, nor have they tested the scheme against the targets in the NZS more generally: the applicant’s case falls down on this point alone.

17 Further, for the decision-making test at NN NPS 5.18 “*The Government is legally required to meet this plan. Therefore, any increase in carbon emissions is not a reason to refuse development consent, unless the increase in carbon emissions resulting from the proposed scheme are so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets.*” This also has not been tested, both in the context of a) whether the statement above from NN NPS 5.17 holds post-NZS (as above, it has not been demonstrated to hold in the context of the NZS), and b) whether it is true for the scheme.

18 Determining an answer to a) is a pre-requisite to being able to test b) as an understanding of the national situation of the likelihood of a road project affecting the ability of the Government to meet the NZS is required as context before any individual scheme may be assessed against the NZS. However, in any case, the applicant has not attempted to make the NN NPS required assessment of the scheme against the NZS, and so has not met the NN NPS.

19 The crucial point here is that the SoS will be seeking to ensure that he is satisfied that the material provided by the Applicant is sufficient for him to reach a reasoned conclusion on the

³ It is not clear that the statement was ever verified in the first place, and **independent transport experts generally have not agreed with it**, and contested it, even before the NZS provided the reference “carbon reduction plan targets”.

significant effects of the proposed development on the environment. Without an assessment of the scheme against the targets in the NZS, the SoS cannot make a reasoned conclusion, not least because he will not have before him an assessment of the test of the scheme against the Government carbon reduction plan targets as required by his own NN NPS.

20 To be clear, the applicant has only made an assessment against national carbon budgets, not the carbon reduction plan (NZS) targets. Notwithstanding, my other objections, such as there being no cumulative assessment compliant with the EIA regulations, and that the very data being used, for what assessment that there is, is derived from the wrong (solus) calculation [REP8-029], the lack of this fundamental NN NPS test requires a major extension to the Environmental Statement.

2.3 REP8-019/9.75.78 corresponding to EV-039/Item 6/a) Cumulative effects/local and regional policies and budgets

21 The applicant's response at 9.75.78 confuses the issue of scale with respect to carbon budgets, and ignores relevant guidance and policy.

22 The source of the applicant's confusion concerns how scale and locality is applied to two very different entities (both referred to by the acronym GHGs). The first entity is GHGs as an environmental receptor and the second is GHGs as a quantifiable, assessable, and accountable environmental pollutant. The IEMA guidance, page 12, is helpful with respect to the first:

“GHG emissions are not geographically limited. They have a global effect rather than directly affecting any specific local receptor to which a level of sensitivity can be assigned. The receptor for GHG emissions is the global atmosphere. The receptor has a high sensitivity, given the severe consequences of global climate change and the cumulative contributions of all GHG emission sources.”

It is correct then that the scale and locality of the GHGs as an environmental receptor is the global atmosphere.

However, the applicant then takes this to suggest that, when quantifying and assessing the carbon emissions associated with the scheme against carbon budgets (and carbon targets), that scale and locality of that assessment is not relevant to determining significance. This leads to the false, and straw man, argument in the applicant's response at REP8-019/9.75.78 that the quantification, assessment and accounting of GHGs is adequate, if restricted, to a single benchmark provided by the UK Government carbon budgets.

Notwithstanding that the assessment does not comply with the NN NPS as no assessment against the NZS targets have been made, the applicant still depends upon a narrow interpretation of the NN NPS which is at odd with current best practice guidance. The NN NPS invokes the EIA Regulations [REP2-064/section 4.1], and therefore the best guidance on EIA practice, as per IEMA and the EIA guidance itself, should be followed to comply with the NN NPS.

23 The applicant's notion of the sufficiency of a single test against national carbon budgets is totally at odds with the IEMA guidance which advises that scale, locality and context are meaningful, and add value to determining significance in Environmental Impact Assessment when considering GHGs.

The IEMA guidance states that the UK national carbon budget is **only** a starting place for contextualising carbon on a project, and is of "limited value". The IEMA guidance provides substantive advice on contextualising a project's carbon footprint, including with local policies and carbon budgets, as I outlined at REP8-029/19-21, which the applicant ignore in their presentation of IEMA.

24 Despite the application being an EIA application, the applicant is also ignoring the EIA guidance documents which I described in REP2-064, section 3.1 (see especially quotes from guidance at REP2-064/33-34,37) which provide a strong steer towards assessment against the "*relevant greenhouse gas reduction targets at the national, regional, and local levels*", and spatial scales for assessment being "*local, regional or global*".

25 The applicant's response at REP8-019/9.75.78 states that "an assessment against them [local/regional targets] cannot be undertaken". This statement of the applicant's intention is certainly "can't do" rather than "can do", and 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 as outlined above.

26 This intentionally negative approach goes against the guidance outlined above, and any technical innovation to meet it as outlined below. Further, the applicant appears to consider that deriving, by black-box methodology, some percentage or number would be the only purpose of such an exercise.

However, local and regional assessment may be pursued more qualitatively too. The overall objective is to ensure that the SoS is 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. Well-reasoned, qualitative assessment can provide useful information to the SoS. Failing to even attempt it goes against the IEMA and EIA guidance.

27 Further, the applicant list various local budgets including the ambitious ones from the GMCA. A qualitative assessment could easily be generated against these, including looking at individual policies within the transport planning documents, and assessing compliance, but the applicant has not attempted it.

28 However, a more quantitative approach may be undertaken too, based upon two readily available sets of data, beyond local authority set targets themselves. The first is the BEIS UK local authority and regional carbon dioxide emissions national statistics⁴ which are published annually. These provide the actual recorded carbon footprint, currently for each year from

⁴

2005 to 2019, and are broken down into sector and sub-sector, so that for transport the road transport total may be easily calculated. The second is the SCATTER local authority budgets from the Tyndall Centre at the University of Manchester. Whilst these do not directly provide a transport sector budget, it may easily be derived for a starting year (eg: 2019) based on the BEIS transport proportion for the same area. In each case, budgets for a benchmark area may be derived by summing the relevant, constituent local authority areas. Both these data set have been available for several years now, but the applicant has not bothered to investigate their potential.

The SCATTER budgets are science-based and have been developed with the objective of providing a measure of what emission reductions should be made in UK local authority areas to make a ‘fair’ contribution⁵ towards the Paris Climate Change Agreement. They are simple, clear and easy to use budgets. SCATTER was developed under a grant from BEIS, and the IEMA guidance recommends it as a budgeting method for EIA appraisal. The difference between the Climate Change Committee (CCC) and Manchester Tyndall Carbon budgets is explained in Appendix B, along with a fuller explanation of carbon budgets.

The applicant has not followed IEMA and EIA guidance for local and regional contextualisation and assessment of the carbon associated with the scheme. This is not acceptable when perfectly applicable budgets for the purpose have been around for years.

29 A third quantitative approach may also be undertaken based on the existing data in the Environmental Statement, and making the assumption that the traffic model study area represents a proxy for a notional local and regional area. This would not be the same as the full transport carbon budget for the relevant local authority as the traffic model is configured to include only those network links of most interest. And the study area may also extend beyond the relevant local authorities out into the Strategic Road Network. However, working with this assumption it provides an image of the transport network in the local and regional area which provides a self-scaling model⁶ for further carbon budget and target assessment.

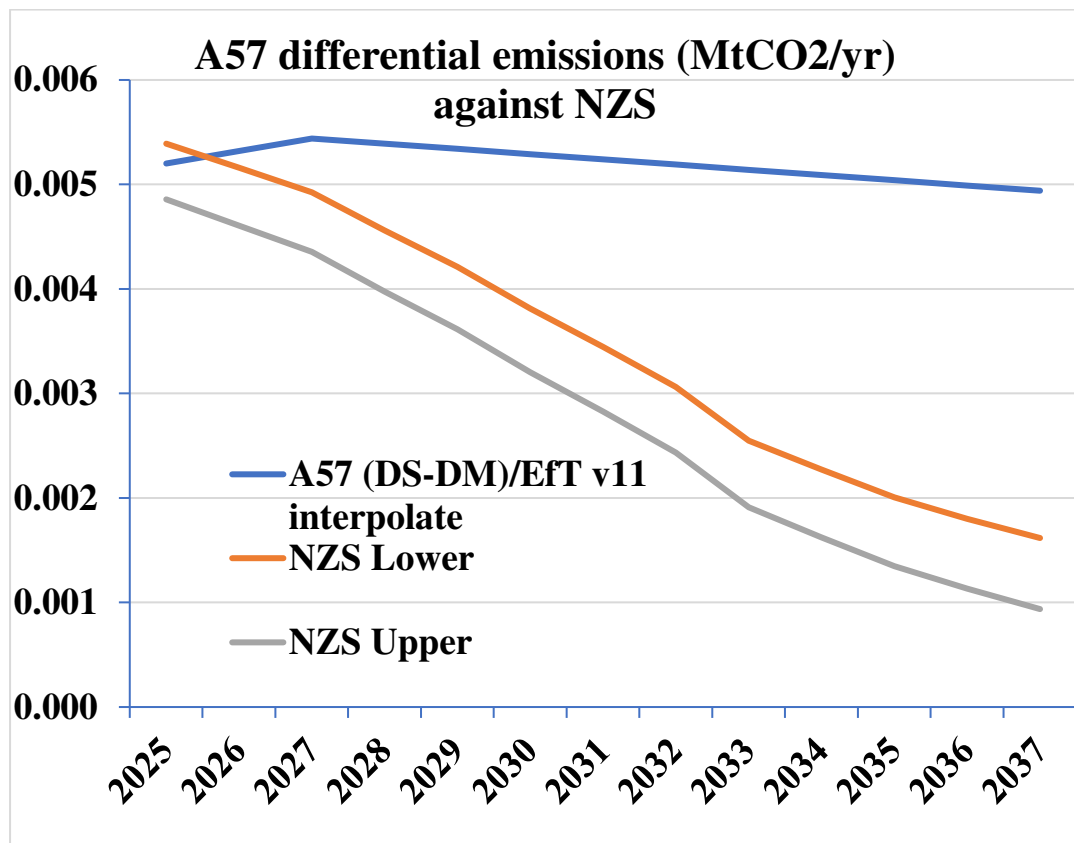
30 For an indicative sense of this third approach, the graph below is presented with assumptions in the footnotes⁷.

⁵ ‘fair’ meaning equitable under the Paris Agreement equity principles between developing and developed nations, known as Common but Differentiated Responsibilities and Respective Capabilities (CBDR–RC) [REDACTED]

⁶ For example, it can be considered as local/regional area to test against the NZS transport sector trajectory

⁷ A. The “operation (d)” emissions, which correspond to the Eft v11 road user emissions from REP5-026/Table 1 have been interpolated to produce approximate annual figures for DS-DM (wrong solus calculation). The exact peak and gradients are not precise, but fit adequately for the purpose.

B. The NZS upper and lower bound figures corresponding to the 2025 figure for the road user emissions have been scaled to MtCO2 and calculated using the spreadsheet on the NZS webpage. This is essentially scaled projections calculated on the basis of the study area as a local/regional area.



31 Notwithstanding that I contest the source data as being the wrong solus quantification [REP8-029], this shows that the DS-DM traffic model output with the EfT v11 does not fit the bounds of the NZS trajectory. It is clear from the graph that this is a significant deviation from policy and targets, and I posit a significant enough deviation to show that the scheme does not meet the carbon reduction targets implied by the NZS, and the deep decarbonisation required by new climate targets outlined above.

A preferable comparison would use the absolute carbon emissions (ie DS from the traffic model with the EfT v11 toolkit) which would show the trajectory including all the developments in the traffic model. This is not possible as the applicant has not provided the DS and DM data for the EfT v11 run of the traffic model (the applicant should make this available).

2.4 REP8-019/9.75.79 corresponding to EV-039/Item 6/b) Response deferred

2.5 REP8-019/9.75.80 corresponding to EV-039/Item 6/c) Cumulative emissions

32 The statement “*The cumulative assessment of different projects (together with the Scheme) is inherent within the greenhouse gas emission methodology through ..*” is false. It is a variation of the applicant’s ‘the traffic model is “inherently cumulative”’ assertion made in REP5-026 and elsewhere, and rebutted by me at REP8-029, sections 7.1 – 7.8.

33 The second paragraph in REP8-019/9.75.80 on geographical limits is also a variation of the applicant's confusion, explained above, on how scale and locality are applied to the two very different entities: GHGs as an environmental receptor and GHGs as a quantifiable, assessable and accountable environmental pollutant.

34 Further the third sentence of the second paragraph does not make sense. There is nothing in the EIA regulations which states that GHG emissions as a receptor should be treated differently for cumulative assessment.

35 As above, the IEMA guidance advises contextualisation of GHG emissions to local level assessment, and on cumulative assessment it states "*The contextualisation of GHG emissions, as discussed in Section 6.4, should incorporate by its nature the cumulative contributions of other GHG sources which make up that context. Where the contextualisation is geographically – or sector-bounded (e.g. involves contextualising emissions within a local authority scale carbon budget, or a sector level net zero carbon roadmap), then the consideration of cumulative contributions to that context will be within that boundary.*"

36 The applicant has not made an EIA regulation compliant cumulative carbon assessment, nor has it extended it to the local or regional level.

2.6 REP8-019/9.75.81 corresponding to EV-039/Item 6/d) De-minimus emissions

37 In my view, "De-minimus" with respect to carbon emissions is no longer a valid, or helpful, concept. This is abundantly obvious following the recent reports from the Intergovernmental Panel on Climate Change, which indicate that rapid reduction of emissions is necessary for continued life and security on earth, and also the IEMA guidance at page 23:

*"When evaluating significance, **all new GHG emissions contribute to a negative environmental impact**; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible."*

38 However, even if "De Minimus" were to be accepted, and I don't accept it, the "De Minimus" referred to by the applicant results from the comparison of a differentiated emissions value compared against an absolute national carbon budget. The "*carbon emissions from sources in isolation*" in the ExA's question derives from this calculation and comparison. However, as explained above, the NN NPS requires more than just this comparison against national carbon budgets. It requires a carbon test against carbon reduction plan targets, which means the new targets since 2019, and including the NZS targets.

39 The question requires the quantification and assessment of carbon for the scheme to be made against the new targets, and for the concept of "De Minimus" to be revaluated against the IPCC reports, the Policy report of which, the UK Government is a contributing editor and signatory.

2.7 REP8-019/9.75.82 corresponding to EV-039/Item 6/e) Electrification

40 The indicative graph above shows that even with the EfT v11 that emissions from the scheme do not align with the Net Zero Strategy. It is clear that the impact of electrification is slow on the figures, and this is evidence that the increases in GHG emissions with the scheme are not substantially outweighed by the benefits of electrifying the national fleet. The IPCC reports, and the NDC 2030 target of 68% reductions make it clear that reducing emissions is urgent and paramount now, and electrification, largely through lack of sufficient penetration into the total vehicle fleet, does not contribute significantly this, or even the next, decade.

41 It should be noted that the applicant has provided figures purporting to come from a sensitivity test against policies in the TDP. No explanation has been given. I have raised a concerns at REP8-029/97/10 that the benefits of electrification may be double counted in this analysis.

2.8 REP8-019/9.75.83 corresponding to EV-039/Item 6/f) “so significant”

42 The use of “target” is the first sentence is misleading. The comparison done is against carbon budgets. No quantification and assessment of carbon emissions from the scheme has been done against carbon reduction plan targets, including the NZS, to comply with the NN NPS.

43 My comments on “De minimus” in my response to REP8-019/9.75.81 above apply.

44 Further, on what “so significant” means in “so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets” in NN NPS 5.18. The term “material impact” is not defined in the NPSNN. I submit that material means anything non-negligible, and no increases in carbon emissions is non-negligible, as already outlined due to the IPCC reports, and new and urgent national targets.

45 The applicant has not made any evaluations of what it means to “*impact on the ability of Government to meet its carbon reduction targets*”, if a project’s carbon impacts will make it considerably harder for the Government to meet its carbon reduction targets. For example, because the scheme increases emissions, the Government will have to significantly offset (via carbon sequestration and offsetting measures) the additional carbon produced by the Scheme elsewhere in the economy, or it will require further reductions in emissions output elsewhere in the economy on top of the NZS trajectory for that sector, to still meet the targets. There are significant economic costs for such offsetting measures or deeper reductions in other sectors. The additional costs, and policy overheads, associated with some remedial action must qualify as a “*material impact*” of the Government’s ability to meet the target, and also must qualify as being “so significant”.

46 In other words, if the scheme’s carbon impacts make it considerably harder (but not impossible) for the Government to meet its carbon reduction targets, then it will have had a “material impact” which is “so significant”. There is also the risk of failure of such an approach which amounts the failure of the Government to meet it carbon budgets and targets which are legally binding: this would be catastrophic to national climate ambitions. This is

the case with the scheme which increases emissions when they are meant, by all policy and legislation to be decreasing, and does not provide an explanation how resulting short falls against carbon budgets and targets are to be corrected.

2.9 REP8-019/9.75.84 corresponding to EV-039/Item 6(g) DMRB/NN NPS

47 The “assessment methodology” section of DMRB LA114, the relevant part for carbon emissions, comprises 5 pages, and is very thin.

48 DMRB LA 104, 3.19 states that “cumulative effects in accordance with the requirements of the EIA Directive 2014/52/EU”. This is in agreement with the NN NPS [REP2-064/section 4.1] but has not been done by the Applicant [REP8-029].

49 With respect to the sentence in REP8-019/9.75.84 “*While the IEMA guidance is not clear on what constitutes this baseline .. This will give some assurance that the DMRB LA 114 approach of comparison with national carbon budgets is sound.*”, the comments above on the IEMA guidance apply. First, the IEMA states that assessment against national budgets is only a starting place and of “limited value”. Second, IEMA and the EIA guidance advise contextualising carbon assessment with local and regional budgets, and I have above indicated three ways this may be done which the applicant has not even considered.

2.10 REP8-019/9.75.85 corresponding to EV-039/Item 6(h) Weight of DMRB

50 As above, DMRB LA 114 is a thin document and, frankly, extremely disappointing as a guide to making environmental assessment of a receptor described by IEMA, page 12, as:

*“The receptor has a high sensitivity, **given the severe consequences of global climate change** and the cumulative contributions of all GHG emission sources.”*

51 Weight should be given to complying in full with the NN NPS and the EIA regulations and guidance: the DMRB does not add value in doing this. Numerous extensions to the Environmental Statement are required to do this including:

- EIA compliant cumulative carbon assessment
- Assessment against carbon targets including the NZS
- Local and regional assessment

2.11 REP8-019/9.75.86 corresponding to EV-039/Item 6(i) IEMA assessment

52 I do not agree with any conclusion that the carbon emissions associated with the scheme are “a minor adverse residual effect”.

53 The applicant continues to ignore the IEMA guidance that national budgets is only a starting place and of “limited value”.

54 I have outlined “emerging policy requirements” above. In fact, these are new parts of the legal and policy framework which are on the statute including the 6th Carbon budget 78% 2035 target, the NDC 68% 2030 targets, and the Net Zero Strategy. As above, the applicant has not demonstrated that the scheme is consistent with them, despite the NN NPS requirement to assessment against extant carbon reduction targets.

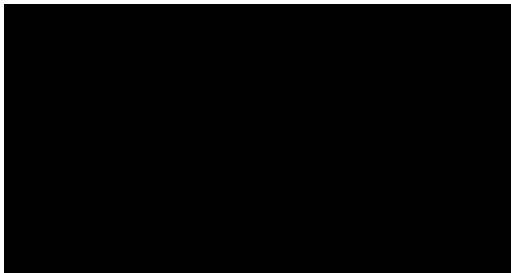
2.12 REP8-019/9.75.87-91 corresponding to EV-039/Item 6(j)-6s) Response deferred

55 I am not responding to these sections at this deadline.

3 CONCLUSIONS

56 At deadline D8, I respectfully suggested that a Rule 17 letter or suspension of the examination under EIA Regulation 20 are options to obtain an update of the Environmental Statement which is becoming necessary and urgent. There were many grounds for this in that submission, and there are further grounds elaborated in this submission.

57 The issues found by myself, and other IPs, are manifold and I believe EIA Regulation 20 is the preferable option to ensure that the SoS can 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.



Dr Andrew Boswell,
Climate Emergency Policy and Planning, April 27th, 2022

4 APPENDIX A: LOCAL DECARBONISATION TARGETS, PARLIAMENTARY QUESTION

4.1 *Local Transport Plans: Carbon Emissions, Question for Department for Transport, UIN 151053, tabled on 31 March 2022*

Online Hansard: [REDACTED]

Question:

To ask the Secretary of State for Transport, with reference to (a) the Transport Decarbonisation Plan and (b) the Net Zero Strategy, how local transport authorities which are developing Local Transport Plans should proceed with developing locally based transport sector decarbonisation targets. (151053)

Tabled on: 31 March 2022

Answer (19 April 2022):

Trudy Harrison:

The Transport Decarbonisation Plan committed to drive decarbonisation and transport improvements at a local level by making quantifiable carbon reductions a fundamental part of local transport planning and funding. Following a public consultation, the updated Local Transport Plan guidance will be published in 2022. Alongside this, we will publish additional guidance on quantifiable carbon reductions, to help local authorities make decisions on local transport interventions from quantitative assessment of carbon impacts at a strategic planning stage.

5 APPENDIX B: WHAT IS A CARBON BUDGET AND HOW DOES IT POINT TO THE TRUTH?

58 A financial budget is defined as ‘a plan to show how much money a person or organisation will earn and how much they will need or be able to spend’⁸. A carbon budget is similar, but instead of money, it sets out “the cumulative amount of carbon dioxide (CO₂) emissions permitted over a period of time to keep within a certain temperature threshold⁹.” **Unlike money, for carbon budgets, there are no overdraft facilities, nor national deficits, not quantitative easing mechanisms from central banks.** Once a CO₂ budget is spent, it cannot be recovered, and the laws of physics determine the consequences for the planet and for humanity¹⁰. Carbon budgets reveal the truth of this situation.

59 The “laws of physics” can now provide increasingly accurate modelling of the global and local carbon budgets. In the last five years the reports of the Intergovernmental Panel on Climate Change (IPCC) have highlighted that our political institutions, businesses, and society have not started to respond to the climate emergency with the urgency required. Simply put we are living outside of our budget.

60 Collectively, we now know that this decade is the most crucial decade for reversing 200 years of carbon polluting activities, reversing the rash, profligate spending of our collective carbon budget, and building a new future based on a non-polluting global society. It is crucial that we address this emergency using every tool possible, and this includes carbon budgets and their capacity to point to the truth of where we are not doing enough, **and what we may be unable to do or build consequently.**

61 The Paris Agreement 2015 is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016¹¹. The UK is a signatory to the agreement. Its goal is to limit global heating to well below 2°C degrees, preferably to 1.5 °C, compared to pre-industrial levels.

62 Scientists have established models that calculate how much more carbon dioxide¹² may be emitted globally into the atmosphere before breaching various temperatures of global overheating – eg: how many billions of tonnes (or Gigatonnes, GtCO₂) before breaching 1.5 degrees, how many billions of tonnes before breaching 2.0 degrees etc. These are referred to

⁸ [REDACTED]

⁹ [REDACTED]

¹⁰ Greenhouse gas removals (GGR) and negative emissions technologies may provide extremely costly, speculative, and unproven at scale methods which proxy for an “overdraft facility”. Even if these work, they would be like paying back a loan at a huge interest rate. See, Kevin Anderson , John F. Broderick & Isak Stoddard (2020): A factor of two: how the mitigation plans of ‘climate progressive’ nations fall far short of Paris-compliant pathways, Climate Policy, DOI: 10.1080/14693062.2020.1728209, Appendix A “*However, there is wide recognition that the efficacy and global rollout of such technologies are highly speculative, with a non-trivial risk of failing to deliver at, or even approaching, the scales typically assumed in the models. ... Whilst the authors of this paper are supportive of funding further research, development and, potentially, deployment of NETs, the assumption that they will significantly extend the carbon budgets is a serious moral hazard (Anderson & Peters, 2016).*”

¹¹ [REDACTED]

¹² In fact, the models assess a variety of Greenhouse Gases, but for simplicity I restrict this document to CO₂ (carbon dioxide) carbon budgets

as carbon budgets, and I have previous explained them above as a bank account analogy but with no overdraft, deficit, or quantitative easing facilities available.

63 It is important to understand the difference between science-based carbon budgets and political targets like the net-zero target in the UK. Net-zero by 2050 can be achieved by many different paths or trajectories of annual carbon emissions, and the carbon emitted is basically the area under the curve. Annual emissions cuts may be applied late (not as “backloaded”) or early (known as front loaded). Backloaded, or less steeply front-loaded, cuts will have a much greater quantum of carbon emissions emitted under the curve, and therefore also use much more of the carbon budget. Science-based carbon budgets by contrast aim to define a trajectory which meet a criterion – in the examples here, the path necessary to meet the temperature target in the Paris agreement. The UK Committee on Climate Change publish paths and budgets, but their ability to meet the criteria of the Paris temperature target has not been demonstrated scientifically – although CCC may claim, and genuinely, endeavour to meet that criterion. In fact, the CCC budgets, and assumptions, and hence UK carbon budgets, are increasingly challenged by scientists, see below.

64 It is further worth noting that a recent report¹³ from Climate Crisis Advisory Group (CCAG) has recently said that there is no remaining carbon budget and policy should be directed towards net-negative carbon emissions as soon as possible. The report says:

“The CCAG is clear that the current shift in global emissions is not sufficient to avoid global disaster, and there is no ‘remaining Carbon Budget’. If proper account is taken of all greenhouse gases, and their CO2 equivalence, the 450ppm threshold has already passed, contradicting the widespread notion of a ‘carbon budget’ that could still be spent whilst remaining below 1.5°C temperature rise.”

The CCAG was founded, and is chaired, by the eminent scientist Professor Sir David King, Fellow the Royal Society (FRS), and former UK Government's Chief Scientific Advisor from 2000 to 2007. CCAG comprises prominent climate scientists. It was created in response to the Climate Emergency in 2021, as a new advisory group to help inform the public, governments and financial institutions providing them with the most comprehensive science, and more crucially, guiding them towards action for climate repair. CCAG’s important scientific commentary on the climate crisis can be made by their small group on a faster cycle than the IPCC.

¹³ CCAG report, August 2021, “The final warning bell”,

5.1 Science-based carbon budget assessment of compliance against UK obligations under the Paris agreement

65 To understand what emission reductions should be made in UK local authority areas to make a ‘fair’ contribution¹⁴ towards the Paris Climate Change Agreement, scientists at Manchester Tyndall centre have taken IPCC global carbon budgets and produced the so-called SCATTER budgets for UK local authorities. SCATTER stands for Setting City Area Targets and Trajectories for Emissions Reduction project and was funded by the Department for Business Energy and Industrial Strategy (BEIS). It developed a methodology for Local Authorities to set carbon emissions targets that are consistent with United Nations Paris Climate Agreement¹⁵. The Tyndall budget for the East Midlands area is given in Appendix F.

66 These budgets translate the “well below 2°C and pursuing 1.5°C” global temperature target, and the equity principles enshrined in the United Nations Paris Agreement, to a national UK carbon budget which is then split between sub-national areas using different allocation regimes.

67 The assumptions for this transformation from global to local budgets in given in two sources:

- a) a 2020 Climate Policy paper¹⁶, widely referred to as the “Factor of Two” paper
- b) the “full” report from the Tyndall Carbon Budget Tool for UK Local Authorities¹⁷, widely referred to SCATTER budgets

These two sources are authored by the same research group and are internally consistent. The “Factor of Two” paper is a landmark in 2020 in appraising national carbon budgets.

5.2 Relevant carbon budgets/targets derivable from the Climate Change Committee

68 The Climate Change Committee (CCC) has recently published its sixth Carbon Budget (6CB) report. Its headline recommendation is for the UK to deliver a reduction in net annual emissions of 78%, against a 1990 baseline, by 2035. Previous UK ambition was targeting an 80% reduction against 1990 figures by 2050 under the original Climate Change Act, so this represents a halving of the time to get to around 80% emission cuts (against 1990 baseline) from 2020.

69 However, the CCC do not show anywhere how the 6th Carbon Budget (6CB) can be derived directly by a stepwise downscaling from a scientifically established global carbon budget (in

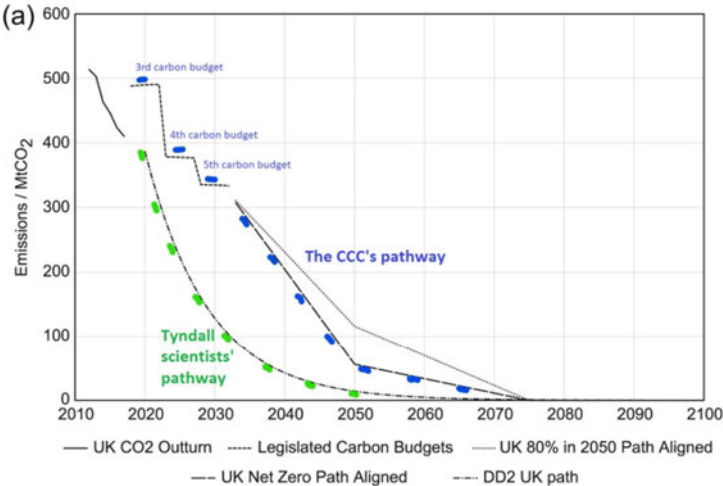
¹⁴ ‘fair’ meaning equitable under the Paris Agreement equity principles between developing and developed nations, known as Common but Differentiated Responsibilities and Respective Capabilities (CBDR-
[REDACTED]

¹⁵ [REDACTED]

¹⁶ Kevin Anderson, John F. Broderick & Isak Stoddard (2020): A factor of two: how the mitigation plans of ‘climate progressive’ nations fall far short of Paris-compliant pathways, Climate Policy, DOI: 10.1080/14693062.2020.1728209

¹⁷ [REDACTED]

contrast to the Manchester Tyndall references above which do demonstrate this). The derivation of the 6CB is focussed more on meeting the national, politically set, net zero-target of 2050 via an array of policy interventions rather than fitting to a specific carbon budget (relating to the back-loading and front-loading point above). The point here is that are many possible pathways to reach net-zero, and each will have different accumulated carbon emissions under the curve – so one can reach net-zero having added more or less emissions to the global atmosphere, some pathways may blow our carbon budgets. The science-based carbon budget approach is designed to specify a pathway which keeps within the carbon budgets.



This graph is from the [Factor of Two paper](#) by climate scientists at the Tyndall centre. People & Nature added the highlights. The pathway for UK carbon emissions highlighted in green is one that, the scientists argue, is compatible with the Paris agreement. The pathway highlighted in blue is one they have plotted to reflect the CCC's emissions reductions proposals: it implies cutting emissions at about half the pace that the scientists' pathway implies

Figure 2

70 Generally, the difference between the Tyndall and CCC carbon budgets is that the Tyndall ones are 2 – 3 times smaller (and tighter). As shown above, the Tyndall budgets have rapid decarbonisation from 2020 in order to meet the overall budget (area under the curve). The Tyndall trajectory is derived from the IPCC budget for 1.7°C, supporting the point from CCAG that there is no remaining budget for 1.5°C.

71 The graph above is taken from¹⁸ and illustrates the difference between CCC and Tyndall carbon budgets. In simple terms, the carbon budget is the area under the annual emissions trajectory curve. Issues such the shape of the curve, front-loading or back-loading emissions reductions can produce vastly different curves and corresponding *areas under the curve*. So it is possible for the UK to meet net-zero at 2050 via vastly different overall carbon budgets.

¹⁸ [Redacted]

Therefore “net-zero”, in itself, is not a good measure of compliance with the Paris agreement temperature target whereas a science-based carbon budget is.

72 Further, the details of the carbon accounting differ, so it is not easy to get a like-for-like comparison between the science-based carbon budget from Manchester Tyndall and the Climate Change Committee budgets. For further information, see footnotes¹⁹.

¹⁹ “How the UK Climate Change Committee steals from the carbon budget”, blog post by Professor Peter Somerville, 8th July 2021, [REDACTED] and “Calculating a fair carbon budget for the UK”. blog post by Professor Peter Somerville, 8th July 2021, [REDACTED]