Transport Action Network

Submission for:

Deadline 8 – response to Examining Authority's Third Written Questions

for

A428 Black Cat to Caxton Gibbet Improvement Scheme Examination 2021

1 Introduction

1.1 The Examining Authority's Third Written Questions ask a number of questions about climate change (Q3.4.1.1, Q3.4.1.2 and Q3.4.2.1) and ask for a response from TAN on a number of these:

Q3.4.1.1

Assessment of effects for the Proposed Development alone and cumulatively at a local and regional level

a) Applicant, your response to [REP4-037, WQ2.4.1.1] and your position at ISH4 [EV062] is unclear to the ExA. Indicate what level of emissions would be considered significant in this context, for the Proposed Development alone and for cumulative and in-combination effects. In particular, with reference to Paragraph 5.18 of the NPS NN, what increase in carbon emissions would be considered "so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets"?

b) Paragraph 5.17 of the NPS NN requires applicants to "provide evidence of the carbon impact of the project". This is addressed at various locations within the examination library, including [APP-254 paragraph 4.4.7]. Applicant, the GHG emissions of the Proposed Development of -£127.0 million in discounted 2010 prices is a greater negative sum than the combined accident and journey time reliability benefits [APP240 Table 4-4]. Explain how environmental effects of such a scale are not considered to be significant.

c) Applicant, TAN, would the changes to the Green Book and increased carbon values adopted by BEIS and DfT in September and October 2021 [REP6-134] [REP6-135] affect the assessment of cumulative effects?

d) BBC and the Cambridgeshire Councils, evidence to show carbon budgets for Bedford [REP6-134 Annex 1], Huntingdonshire and South Cambridgeshire [REP6-063] produced by the Tyndall Centre has been provided. However, for all cases the Carbon Budgets are described as "Energy Only". Confirm whether this would include transport emissions such as would be produced by the Proposed Development during construction and operation. Applicant and TAN may comment.

e) TAN, BBC and the Cambridgeshire Councils, what would be the effect on these local and regional carbon budgets [REP6-134 Annex 1] [REP6-063] of the Proposed Development over the 60-year project lifetime, with particular regard to the apportionment of carbon emissions for road transport used by BEIS [REP6-121]? Applicant may comment.

f) *Applicant and LAs, in what way would the Proposed Development affect the ability of LAs to meet any locally or regionally adopted carbon reduction targets?*

g) *Does the cancellation of the Oxford Cambridge Expressway project in March 2021 in any way change the need for the Proposed Development and, or, effect the economic justification and the BCR for the scheme?*

Q3.4.1.2

Legislation, policy and international obligations

a) *Applicant, do any UK Government obligations made at the United Nations Climate Change Conference (COP26) affect the assessment of carbon emissions of the Proposed Development? Given a climate emergency has been declared what additional measures would the Applicant propose are adopted to reduce the anticipated carbon emissions of the Proposed Development.*

b) *The UK is committed to achieving net-zero carbon emissions by 2050 and has established carbon budgets to both inform and measure progress. Applicant, what assurance can the ExA have that carbon emissions up to and beyond 2050 will be satisfactorily mitigated, in light of forecasts in the Decarbonising Transport Strategy [REP6-131] and by the Climate Change Committee [REP6-118] [REP6-119]?*

Q3.4.2.1

Climate change resilience

Applicant, with reference to the Green Book advice referenced by TAN at Deadline 6 [REP6-113], what assessment has been made of the resilience of the Proposed Development to a global temperature increase of 4 degrees Celsius?

1.2 TAN answers these questions below.

2 Response to Q3.4.1.1

2.1 Response to Q3.4.1.1, parts a, b and c

2.1.1 This section responds to Q3.4.1.1 sections a, b and c but is also relevant to Q3.9.4 and Q3.11.1, particularly 3.11.1.1

New Carbon Values

2.1.2 The test NH has used to determine significance relates to para 5.18 of the 2014 National Policy Statement for National Networks which states:

"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."

2.1.3 Note that this relates to the case where increase in carbon emissions is considered as an issue *in itself* as a reason for refusing consent. (The wording of the ExA's question is a good one in relation to (a) and should provide insight and be subject to comment). However (b) indicates that the 'ability… to meet carbon reduction targets' is not the **only** test of importance, since there is a legal obligation to report significant carbon effects in the context of the Environmental Impact Assessment and the calculation of the business case for a scheme. Logically in this case the significance of carbon costs (as of any other element of costs or benefits, such as values of time savings or costs of construction) is determined by whether each element is big enough to make a difference to the overall value for money. This is why sensitivity tests are carried out for each substantial element, including carbon values.

2.1.4 Therefore *even if* the 2014 test is being applied in the right way, and with the right figures, and the right principle, it is still absolutely relevant to test whether the total cost of carbon, calculated in accordance with the Government's values, is sufficiently large to influence the business case in addition to how it might impact on local and regional targets.

2.1.5 It is quite clear that application of the new values is large enough to affect the business case for the scheme, very materially. This arises because the revised values, recommended by BEIS (the responsible Department) in September 2021 and incorporated into the TAG data-book by the DfT in Nov 2021 [REP6-135], were so very much larger than the previously used figures.

2.1.6 Advance warning had been given by the DfT that an increase was likely in July 2020 and May 2021. (This is recorded in the 'update history' commentary in the DfT data book). The advice at that time was that:

*"TAG users should continue to use the existing high carbon values series for sensitivity testing **until** the values are updated, in accordance with the July 2020 forthcoming change notice"* [our emphasis]

2.1.7 National Highways did indeed carry out that calculation, as a sensitivity test, but the problem that has now arisen is that the increased values, now they have been updated, are much higher than the test, using the previous 'high' values, had foreshadowed. The equivalent recalculation implied is that the new 'medium' figures should replace the

previous NH base calculation, and the new 'high' values should replace the previous NH sensitivity test. When this is done it shows that the carbon costs, considered as a business cost in the business case (labelled as a 'negative benefit' but this means cost) are so large that they outweigh all the estimated benefits of the scheme [paragraph 2.4.13, REP6-134].

2.1.8 There is then a potential issue about whether there are circumstances which justify *not* using the updated figures: in general, both the 2014 policy statement and all successive versions of TAG advice express a preference for using 'the latest available figures' wherever feasible. In this case there is no feasibility problem since the recalculation is a very straightforward application of simple arithmetic to already estimated quantities. One might think that an argument for not using the new values might be that this would require a 'retrospective' reassessment, but this does not apply in this case, since all the recalculations are about future impacts, and decisions yet to be made, not past ones.

2.1.9 The ExA's specific question asks about the effect of the new values on the calculation of cumulative or combination effects. As discussed above, it certainly affects the appraisal of carbon effects in combination with other costs and benefits: that is at the heart of the change. But it does not seem to change anything about the nature of the relationship between carbon effects of one scheme with other schemes, or with aspects of the carbon calculations which have been omitted (such as effects of land use on long term behavioural choices). It simply makes them quantitatively more important. If carbon costs are genuinely so small as to be not even within sight of 'significance' then the omission of synergy and cumulative impacts might not make much difference. Where they are sufficiently large to be within sight of significant in terms of the ability of Government to meet its carbon objectives, or the robustness of the business case, or both, then the omission of combined and cumulative effects will itself be even more material.

Green Book Changes

2.1.10 The changes made to the Green Book will be important in either case. This is particularly because consideration of climate change scenarios of 2°C or 4°C will not only affect the risk registers for flooding, etc for specific locations, but also economic growth and population location, with big effects on demand forecasts. This relates to the issues in Q3.9.4 (on which 'no further questions at this stage' are stated), and Q3.11.1 (yet to be incorporated in the DfT data book, but will surely be amended along the lines suggested).

Note on cumulative impacts

2.1.11 We are concerned as to how transparent the traffic and emissions modelling has been particularly with respect to cumulative impacts. From the Transport Assessment [part 1, Table 4-2, page 44, APP-241] developments described as 'near certain' or 'more than likely' have been included in the core scenario. The assessment also states (para 4.3.4, page 47) that "*schemes being planned in the Roads Investment Strategy (RIS) period 1 have been included in the 'core' scenario".* This would suggest that this document is rather older than the date on the cover suggests (February 2021), given this was a year into the RIS2 period. This presents a risk to the conclusions in that it won't necessarily have the latest list of schemes that should be included in the assessment.

2.1.12 In terms of cumulative impacts, we can find very few mentions of this within the documentation, but equally it is difficult to navigate around 400 - 700 page documents when no paragraph or page numbers are given when the applicant references the document. From what we can see, the Do Minimum scenarios include developments described as 'near certain' or 'more than likely'. Similarly, the Do Something contains all of these developments but with the scheme added in.

2.1.13 By including these projects in the modelling both with and without the scheme, it is not possible to assess the cumulative effects of the scheme with these developments - we only know the effects it would have as a standalone scheme. To ascertain cumulative effects as prescribed by the EIA regulations, the traffic model would need to be run <u>without</u> these developments for a both a Do Minimum (without scheme) and a Do Something (with scheme) future, with a third run of Do Something with these developments included.

2.1.14 Otherwise, it is not possible to determine the cumulative change being imposed on the area, particularly with regards to carbon emissions. There's also the need for an up-to-date list of developments to be considered in these calculations to ensure that the cumulative impact is not understated.

2.1.15 Related to this point, there are discussions about the implications of the revised carbon values in relation to many schemes up and down the country. It is likely that as a result there will be many recalculations of value for money in different proposals before they are implemented. It cannot be assumed that every scheme thought of as certain or nearly certain when this appraisal was carried out, will in fact be implemented. This will have a consequential effect not only on the carbon costs, but also on the congestion impacts, values of time, and induced traffic. For these reasons also it is necessary to carry out an appraisal on the basis of the scheme alone. Therefore, we recommend the ExA request the applicant produces up to date traffic and emissions modelling, and submits an up-to-date list of developments that are to be assessed for cumulative impacts.

2.2 Response to 3.4.1.1, part d

2.2.1 The Tyndall budgets are indeed energy only budgets for the local areas and are developed by removing "global 'overheads' for land use, land use change and forests (LULUCF) and cement process emissions related to development" (see Annex 1 for a full explanation). They also exclude international aviation, shipping and military transport which are taken off at a national level.

The remaining budget allocated to Bedford *"include[s] emissions from fossil combustion within the region and a share of the emissions from national electricity generation (relative to the Bedford area's end-use electricity demand)."* (Step 6, Method, see Annex 1). This includes all fuel emissions associated with transport use in construction and operation. It should be noted that as it stands, National Highways does not include emissions associated with the use of electric vehicles, which arise through electricity generation, as well as the embedded carbon in the manufacture of electric vehicles and the accelerated disposal of old ones.

2.3 Response to 3.4.1.1, part e

2.3.1 We stated in section 2.7 [REP6-134], that the local and regional targets are already very challenging, before extra emissions from the new road are added in. For Bedford, the level of emissions associated with road transport in 2019 is 290,330 tCO2e [from REP6-121]. Given that we estimated the emissions associated with the new A428 within Bedford were around 40,304 tCO2e in the 5th carbon budget (about 5% of its total local budget) and higher for the 6th carbon budget (11.3% of its total local budget) [paragraphs 2.7.8 and 2.7.9 REP6-134] on an annual basis this represents 2.8% - 3.1% of the existing transport emissions.

2.3.2 While this might seem low, that it is because these are future emissions projections being compared to 2019 emissions values. During the 5th and 6th carbon budgets, when transport emissions should have fallen, the actual percentages of these projected emissions as a proportion of Bedford's total transport emissions will be significantly higher and therefore will represent a serious challenge for Bedford's ability to achieve its 2030 target, which is half way through the 5th carbon budget.

2.3.3 Obviously at a regional level the impact will be more diluted but when taken together with wider development and road building plans in the region, it will severely hamper England's Economic Heartland's ability to reduce private car traffic by 5% by 2030.

2.4 Comment on National Highways' response [REP6-035] to our REP5-025

REP5-025a

2.4.1 National Highways have failed to address the points we raise about the need to assess carbon impacts against local and regional targets. Aside from repeating that they only need to meet the NPSNN 'test' against UK wide carbon budgets they also claim that these are not legally binding and therefore should be ignored. They also confuse what we have said about economic benefits being assessed against UK GDP and instead appear to suggest that we said that it should be done in the context of greenhouse gas emissions. They state that: "*NPSNN does not require a specific test against economic benefits of the scheme in the context of GHG emissions"* (page 12)

2.4.2 This is quite true but we never stated this either. What we said was that if you assessed economic benefits against UK GDP they would be a tiny percentage, much smaller than the percentage of UK carbon budgets that the scheme's emissions would represent, yet the latter are dismissed as "insignificant" by National Highways.

REP5-025b & c

2.4.3 On the local and regional targets, they do not provide any evidence as to why these should be dismissed. Stating they are not legally binding (pages 14 & 15) is not a strong argument, given that many other policy statements or positions are not necessarily legally binding but nonetheless are given careful consideration in decision making processes. Secondly, they fail to comment on the EIA guidance that specifically talks of the need to address this issue in the Environmental Impact Assessment. The need to consider local and regional carbon impacts is not overruled by the NPSNN as National Highways seem to be inferring.

2.4.4 National Highways says that it has undertaken a high sensitivity test but as we explained in REP6-134 and in this submission, this is no longer valid as it hugely underestimates the values of carbon that should be used. Therefore, National Highways can no longer suggest that the carbon emissions associated with the scheme only have a marginal impact on its viability and value for money (pages 15/16).

2.4.5 It is worth bringing to the Examining Authority's attention to the Secretary of State's consultation letter on the redetermination of the A38 Derby Junctions, dated 7 January, 2021, addressed to National Highways and Network Rail (Annex 2), which states:

> *"The Secretary of State invites the Applicant to update its response of 31 August 2021 to the Statement of Matters to provide (or, to the extent that it has already been provided, identify) its assessment of the cumulative effects of Greenhouse Gas emissions from the scheme with other existing and/or approved projects on a local, regional and national level on a consistent geographical scale (for example an*

assessment of the cumulative effects of the Road Investment Strategy ('RIS') 1 and RIS 2 at a national level).

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

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

2.4.6 It would suggest that if local and regional targets are irrelevant, as National Highways are suggesting within this Examination in Public, why is the Secretary of State asking questions about local and regional targets in addition to national targets for the redetermination of the scheme? He is also asking for specific comment as to how the assessment complies with the Environmental Impact Assessment Regulations, and not the NPSNN as NH exclusively focusses on.

REP5-025d

2.4.7 National Highways fails to respond to the concern that it is the short to medium impact of carbon emissions that are most critical as there is an urgent need to reduce emissions as quickly as possible. Therefore, just reiterating that overall land use change and sequestration represents a *net increase in carbon stocks* is missing the point. Also, while these might form a minor part of the construction emissions, they are not an insignificant amount when considering the impact in the early years. As we demonstrated in REP5-025 (paragraph 5.3) the reported construction emissions are understated by around 15% during the critical early period, not counting losses from soil disturbance which may or may not be recovered.

Annex 1

Sections 1 and 2 of the full Tyndall report for Bedford to show how the local budget was calculated and what was excluded

Setting Climate Commitments for Bedford
Quantifying the implications of the United Nations Paris Agreement for Bedford

Date:	January 2022
Prepared By:	Dr Jaise Kuriakose, Dr Chris Jones, Prof Kevin Anderson, Dr John Broderick & Prof Carly McLachlan

NB: All views contained in this report are solely attributable to the authors and do not necessarily reflect those of the researchers within the wider Tyndall Centre.

Key Messages

This report presents climate change targets for Bedford that are derived from the commitments enshrined in the Paris Agreement [1], informed by the latest science on climate change [2] and defined in terms of science based carbon setting [3]. The report provides Bedford with budgets for carbon dioxide (CO_2) emissions and from the energy system for 2020 to 2100.

The carbon budgets in this report are based on translating the "well below 2°C and pursuing 1.5°C" global temperature target and equity principles in the United Nations Paris Agreement to a national UK carbon budget [1]. The UK budget is then split between sub-national areas using different allocation regimes [4]. Aviation and shipping emissions remain within the national UK carbon budget and are not scaled down to sub-national budgets. Land Use, Land Use Change and Forestry (LULUCF) and non-CO_2 emissions are considered separately to the energy CO_2 budget in this report.

Based on our analysis, for Bedford to make its 'fair' contribution towards the Paris Climate Change Agreement, the following recommendations should be adopted:

1. Stay within a maximum cumulative carbon dioxide emissions budget of 4.8 million tonnes ($MtCO_2$) for the period of 2020 to 2100. At 2017 CO_2 emission levels, Bedford would use this entire budget within 6 years from 2020.

2. Initiate an immediate programme of CO_2 mitigation to deliver cuts in emissions averaging a minimum of -13.7% per year to deliver a Paris aligned carbon budget. These annual reductions in emissions require national and local action, and could be part of a wider collaboration with other local authorities.

3. Reach zero or near zero carbon no later than 2041. This report provides an indicative CO_2 reduction pathway that stays within the recommended maximum carbon budget of

4.8 $MtCO_2$. At 2041 5% of the budget remains. This represents very low levels of residual CO_2 emissions by this time, or the Authority may opt to forgo these residual emissions and cut emissions to zero at this point. Earlier years for reaching zero CO_2 emissions are also within the recommended budget, provided that interim budgets with lower cumulative CO_2 emissions are also adopted.

1. Introduction

This report presents advisory climate change targets for Bedford to make its fair contribution to meeting the objectives of the United Nations Paris Agreement on Climate Change. The latest scientific consensus on climate change in the Intergovernmental Panel on Climate Change (IPCC) Special Report on 1.5°C [2] is used as the starting point for setting sub-national carbon budgets [3, 4] that quantify the maximum carbon dioxide (CO_2) associated with energy use in Bedford that can be emitted to meet this commitment. This report translates this commitment into;

1. a long-term carbon budget for Bedford;
2. a sequence of recommended five-year carbon budgets;
3. a date of 'near zero'/zero carbon for the area.

The United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement commits the global community to take action to "hold the increase in global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C" [1]. Cumulative emissions of CO_2 from human activity are the principle driver of long-term global warming. It is the relationship between CO_2 and global temperatures which means that staying within a given temperature threshold requires that only a certain total quantity of CO_2 is released to the atmosphere. This is the global carbon budget.

In addition to setting global average temperature targets, the UNFCCC process also includes foundational principles of common but differentiated responsibility [1]. This informs the fair (equitable) distribution of global emissions between nations at different stages of economic development. Industrialised nations are expected to show leadership towards a low carbon future, while it is acknowledged that a greater total share of future emissions will be associated with other countries as they develop (though their emissions per capita will remain low). Any sub-division of the global carbon budget must therefore account for the development needs of what the Paris Agreement refers to as "developing country Parties" in setting a fair/equitable national or sub-national carbon budget.

The carbon budgets presented here apply to CO_2 emissions from the energy system only. Although all greenhouse gas (GHG) emissions, such as methane and other forcing agents, such as aircraft contrails, affect the rate of climate change, long term warming is mainly driven by

CO_2 emissions [5]. Furthermore the physical or chemical properties of each GHG vary, with different life-times causing warming in different ways, and with subsequent, and often large, uncertainties in their accounting [6]. As such the global carbon budgets in the Intergovernmental Panel on Climate Change (IPCC) Special Report on 1.5°C (SR1.5) [2], relate to CO_2-only emissions. In this report we have discussed non-CO_2 emissions and CO_2 emissions associated with land use, land use change and forestry separately.

Ultimately staying within a global temperature threshold (e.g. "well below 2°C") requires limiting cumulative CO_2 emissions over the coming decades. Carbon budgets can be an effective way to understand the amount of CO_2 emissions that can be released into the atmosphere in order to do this. End point targets such as 'net zero' by 2050, with very clear assumptions, can be useful indicators of ambition, but it is ultimately the cumulative CO_2 released on the way to that target that is of primary significance to achieving climate change goals. Whereas end point focused targets can be met with varying levels of CO_2 emissions (and therefore varying global temperature with consequent climate impacts) depending on their reduction pathways, carbon budgets specify the limits to CO_2 emissions within the period of the commitment. This is a reason why the UK Climate Change Act has legislated 5-year carbon budget periods, as well as a long term target, to keep CO_2 emissions consistent with the framing goal of the climate change commitment. It is also the reason why we recommend a carbon budget based approach.

1.2 Wider UK Policy Context

The UK Climate Change Act now legislates for a commitment to net zero greenhouse gas emissions by 2050[v], with five yearly carbon budgets to set actions and review progress [7]. The carbon budgets for this target were not available at the time of our analysis for direct comparison, however the recommended budget in this report will most likely be more stringent. This is primarily due to two key differences between our approach and the current recommendations of the UK Government's advisory body the Committee on Climate Change (CCC) that inform the revised UK net zero target:

1. The equity principles of the Paris Agreement and wider UNFCCC process are explicitly and quantitatively applied. Our approach allocates a smaller share of the global carbon budget to the 'developed country Parties', such as the UK, relative to 'developing country Parties'. Moreover the approach is also distinct in including global 'overheads' for land use, land use change and forests (LULUCF) and cement process emissions related to development.

2. Carbon dioxide removals via negative emissions technologies (NETs) and carbon offsets are not included. The UK Climate Change Act's 'net zero' framing means that the commitment is met when greenhouse gas emissions (debits) and removals (credits) from the UK's carbon 'account' balance at zero. Hence the 2050 target can be met using carbon dioxide removal technologies, including land use sequestrations, and potentially carbon offsetting. The CCC include a significant role for NETs such as bioenergy carbon

capture and storage and direct air capture in their analysis supporting the net zero target. Doing so theoretically increases the size of a carbon budget, but increases the risk of failing to deliver on the Paris global temperature target. The UK Government has also rejected the CCC's advice to explicitly exclude international carbon offsetting as an approach to meeting the net zero target. Allowing for future carbon dioxide removal technologies and international carbon offsetting ostensibly increase the size of the UK's carbon budget. However carbon removal technologies are at a very early stage of development and whether they can be successfully deployed at sufficient scale is highly uncertain. While they are an important technology to develop, it is a major risk to prematurely adopt a carbon budget that allows for additional CO_2 on the basis that future generations will be in a position to deploy planetary-scale NETs. Similarly, as the CCC note in their advice, the efficacy of carbon offsetting as a contribution to meeting global climate change commitments is not robust enough to incorporate into recommended carbon budgets.

We regard our UK carbon budget to be at the upper end of the range that is aligned with the Paris Agreement's objectives. Early results from the latest Earth system models suggest that the climate may be more sensitive to greenhouse gases than previously thought implying a smaller global carbon budget is required [8]. In addition, assuming that developing countries will, on aggregate, implement rapid emissions reduction measures in line with a 2025 peak year is far from certain. Therefore, we recommend that these budgets are taken as reflective of the minimum commitment required to deliver on the Paris Agreement.

2. Method

The Setting City Area Targets and Trajectories for Emissions Reduction (SCATTER) project [4] funded by the Department for Business Energy and Industrial Strategy (BEIS) developed a methodology for Local Authorities to set carbon emissions targets that are consistent with United Nations Paris Climate Agreement. This report uses the SCATTER methodology with revised global carbon budgets, based on the latest IPCC Special Report on 1.5°C and updated CO_2 emissions datasets, to downscale global carbon budgets to Bedford. This methodology has been successfully piloted with Greater Manchester Combined Authority and is being made available nationally to support all local authorities and groupings of local authorities.

Step 1: A global carbon budget of 900 $GtCO_2$ is taken from the Intergovernmental Panel on Climate Change (IPCC) Special Report on 1.5ºC [2]. This global carbon budget represents the latest IPCC estimate of the quantity of CO_2 that can be emitted and still be consistent with keeping global temperatures well below 2ºC with an outside chance of stabilising at 1.5 ºC. This budget assumes no reliance on carbon removal technologies.

Step 2: A 'global overhead' deduction is made for process emissions arising from cement production (60 $GtCO_2$) [9]. Cement is assumed to be a necessity for development [5]. We also

assume that there is no net deforestation at a global level (2020 to 2100) so none of the global carbon budget is allocated to this sector. This will require a significant global effort to rapidly reduce deforestation and significantly improve forestry management as well as increase rates of reforestation and potentially afforestation.

Step 3: A share of the global carbon budget is allocated to "developing country parties" assuming a trajectory for those countries from current emissions to a peak in 2025 then increasing mitigation towards zero emissions by around 2050. The remaining budget is allocated to "developed country parties" which includes the UK [10]. This approach of considering developing countries first, is guided by the stipulation of equity within the Paris Agreement (and its earlier forebears, from Kyoto onwards)[10].

Step 4: The UK is apportioned a share of the 'developed country Parties' budget after Step 3 to provide a UK national carbon budget. The apportionment is made according to "grandfathering" of emissions for the most recent period up to the Paris Agreement (2011 to 2016).

Step 5: Aviation and shipping emissions are deducted. Assumptions and estimates are made about the level of future emissions from aviation, shipping and military transport for the UK. These emissions are then deducted from the national budgets as a 'national overhead" to derive final UK energy only carbon budgets. Emissions from aviation including military aircraft are assumed to be static out to 2030, followed by a linear reduction to complete decarbonisation by 2075. The total CO_2 emissions of this path are >25% lower than Department for Transport central forecast followed by reduction to zero by 2075. Shipping emissions are based on Walsh et al [11] 'big world' scenario out to 2050 followed by full decarbonisation from this sector by 2075. These aviation and shipping emissions (1,518 $MtCO_2$) are then deducted as a 'national overhead' from the UK budget to derive the final carbon budgets for the UK, from which local authority budgets are subsequently derived [4]. The budgets provided are therefore aligned with "well below 2°C and pursuing 1.5°C" provided that aviation and shipping emissions do not exceed the pathway assumed in our analysis [4]. Failure to hold aviation and shipping emissions within the outlined allocation will reduce the carbon budget for UK regions, including for Bedford.

Step 6: Bedford is apportioned a part of the remaining UK carbon budget. Our recommended budget is based on sub-national allocation through 'grandfathering'. A grandfathering approach allocates carbon budgets on the basis of recent emissions data. The most recent annual CO_2 emissions for Bedford up to the Paris Agreement [12] (2011-2016) is averaged and compared to averaged data for the whole UK [13] over the same period. The carbon budget (2020-2100) for Bedford is then apportioned based on Bedford's average proportion of UK CO_2 emissions for the 2011-2016 period. CO_2 emissions in the carbon budget include emissions from fossil combustion within the region and a share of the emissions from national electricity generation (relative to the Bedford area's end-use electricity demand).

Step 7: Carbon emission pathways. The carbon budgets for Bedford are related to a set of illustrative emission pathways. These pathways show projected annual CO_2 emissions from energy use in Bedford and how these emissions reduce over time to stay within the budget. The energy-only CO_2 emissions for 5-yearly interim carbon budget periods are calculated in line with the framework set out in the UK Climate Change Act. It is the cumulative carbon budget and the 5 year interim budgets that are of primary importance as opposed to a long term target date. The combination of a Paris-compliant carbon budget and the projected emissions pathways can however be used to derive an indicative near zero carbon target year for Bedford. The near zero carbon year of 2041 is defined here as the point at which, on the consistent reduction rate curve, less than 5% of Bedford's recommended budget remains. Annual CO_2 emissions at this point fall below 0.03 $MtCO_2$ (CO_2 levels >96% lower than in 2015 – a Paris Agreement reference year).

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Annex 2

Letter from Secretary of State, dated 7 January, 2021, requesting further information from National Highways and Network Rail in relation to the A38 Derby Junctions scheme

(Note: on the PINS website, at the time of this submission, this is currently the latest letter and is described as being from 7 January 2022. However, when you click on the link the date in the letter is 7 January 2021. This is clearly an error, given it describes events that have happened after the date in the header)

Department for Transport

Great Minster House
33 Horseferry Road
London, SW1P 4DR

Telephone: [redacted]
e-mail: transportinfrastructure
Web: @dft.gov.uk
[redacted]

To: National Highways and Network Rail

Date: 7 January 2021

Dear Sir/Madam

Planning Act 2008 (as amended) and the Infrastructure Planning (Examination Procedure) Rules 2010

Application by National Highways ("the Applicant") for an Order granting development consent to construct grade-separated interchanges to replace three junctions on the A38 in Derby known as the Kingsway, Markeaton and Little Eaton junctions ("the Proposed Development")

REQUEST FOR COMMENTS FROM THE APPLICANT AND NETWORK RAIL

1. Request for comments from the Applicant on other responses to the Statement of Matters

The Applicant and a number of other parties have provided responses to the Secretary of State's Statement of Matters dated 2 August 2021, many of which contained comments in response to the Applicant's response to the Statement of Matters dated 31 August 2021.

Following this, the Secretary of State requests that **the Applicant** provides:

a. Any comments on the responses to the Statement of Matters. The Secretary of State in particular invites the Applicant to respond to comments regarding potential deficiencies or issues which other parties may have contended exist in respect of the Applicant's response to the Statement of Matters.
b. In so far as not specifically addressed in the comments provided under paragraph a) above:
   (i) in response to section 9.1 of the Report from Dr Boswell submitted on behalf of Mair Bain and Derby Climate Coalition, the definition of the study areas referred to as the 'whole traffic model study area' referred to in Environmental Statement ('ES') sections 5.6.9 [APP-043] and 14.6.3 [APP-052], and the

'entire modelled road network' referred to in ES sections 5.10.63 to 5.10.65 [APP-043]

(ii) clarification as to what assessments have been carried out in relation to the 'affected road network', the 'area of detailed modelling', the 'whole traffic model study area' and the 'entire modelled road network' and how they interact,

(iii) in light of section 3.1 of the Report from Dr Boswell submitted on behalf of Mair Bain and Derby Climate Coalition, the Secretary of State notes that the figures set out in Tables 14.15 and 14.16 of ES Chapter 14 [APP-052] regarding the impact of the Proposed Development on the carbon budgets are different to the figures set out in Table 2-2 of the Applicant's response to the Statement of Matters, and requests that the Applicant provides an explanation for this difference in the figures, including which set of figures the Applicant considers that the Secretary of State should rely at the point of making his decision on the scheme.

2. Request for comments from the Applicant following the Environment Agency's response to the Statement of Matters

The Secretary of State notes the Environment Agency's response of 26 October 2021 to the Statement of Matters, which states that new climate change allowances for flood risk assessments were published on 20 July 2021. The Secretary of State invites **the Applicant** to consider the Proposed Development against these new allowances and to confirm whether any updates are required in light of this.

3. Request for additional information from the Applicant on the cumulative assessment of climate impacts

The Secretary of State invites **the Applicant** to update its response of 31 August 2021 to the Statement of Matters to provide (or, to the extent that it has already been provided, identify) its assessment of the cumulative effects of Greenhouse Gas emissions from the scheme with other existing and/or approved projects on a local, regional and national level on a consistent geographical scale (for example an assessment of the cumulative effects of the Road Investment Strategy ('RIS') 1 and RIS 2 at a national level).

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

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

4. Request for an update on the Framework Agreement between the Applicant and Network Rail

The Secretary of State notes that the Applicant, in paragraph 8.2.7 of its response to the Statement of Matters, sets out that the Framework Agreement between the Applicant and Network Rail was still being progressed. The Secretary of State invites **the Applicant** and **Network Rail** to provide an update on this agreement.

The deadline for any response is 4 February 2021.

Responses to the matters outlined in this letter are best submitted by email to: A38DerbyJunctions@planninginspectorate.gov.uk. Postal responses should be sent to The A38 Derby Junctions Team, The Planning Inspectorate, Eagle Wing 3/18, Temple Quay House, Temple Quay, Bristol, BS1 6PN, however, please note that as a result of the ongoing Government guidance relating to Coronavirus (COVID-19) there are limited number of staff at Temple Quay House and therefore any submissions sent by post may be subject to delay. If you will have difficulty in submitting a response by the consultation deadline, or difficulty in submitting a response by email, please inform the Case Team.

The responses will be published on the project page for the A38 Derby Junctions DCO on the Planning Inspectorate's website as soon as possible after the above deadline at: https://infrastructure.planninginspectorate.gov.uk/projects/east-midlands/a38-derby-junctions/

This letter is without prejudice to the Secretary of State's decision whether or not to grant development consent for the A38 Derby Junctions, and nothing in this letter is to be taken to imply what that decision might be.

Yours faithfully, Natasha

Kopala

Head of the Transport Infrastructure Planning Unit

14 January 2022

Chris Todd
Director
Transport Action Network

Transport Action Network provides free support to people and groups pressing for more sustainable transport in their area and opposing cuts to bus services, damaging road schemes and large unsustainable developments

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