



Transport Action Network

Response to:

**The Examining Authority's Written
Question: Q1.4.1.2 Emissions**

for

**A428 Black Cat to Caxton Gibbet
Improvement Scheme Examination 2021**

1. Introduction

Transport Action Network (TAN) submitted a Relevant Representation (RR) on the draft DCO application for the A428 Black Cat to Caxton Gibbet scheme and registered as an Interested Party (IP).

TAN has been asked to respond to the Examining Authority's Written Question Q1.4.1.2 on carbon emissions:

A number of Interested Parties make reference to the Proposed Development increasing carbon emissions by over 3 million tonnes, and to being the third worst scheme in the RIS2 such as [RR-116].

Provide evidence to support your claims of GHG emissions for the proposed scheme, including relative to other RIS2 schemes.

What sources of GHGs are considered to be missing from the applicant's approach?

What would be the implications of the scheme on carbon emissions given the ban on the sale of new petrol and diesel vehicles from 2030 and the expected increased future use of electric or non-GHG emitting vehicles in the future?

The response to the various elements of the question is as follows, along with some other relevant observations and information:

2. Provide evidence to support your claims of GHG emissions for the proposed scheme, including relative to other RIS2 schemes.

The source of the carbon emissions caused by this scheme is at paragraph 4.4.7 (page 36) of the Combined Modelling and Appraisal Report, Appendix D: Economic Assessment Report (EAR).

Paragraph 4.4.7 of the EAR says:

It is predicted there would be an increase of approximately 3,313,499 tonnes in emissions of carbon dioxide (CO₂) associated with the affected road network over the 60 year appraisal period. This equates to a present value of -£127.0 million in discounted 2010 prices.

The emissions caused by the construction of this scheme total 208,380 tonnes and are at Table 14-9, page 24 of Chapter 14 of the Environmental Statement on Climate.

Table 14-9: Emissions breakdown by construction activity

Reporting category	Emissions (tCO ₂ e) (approximate)	% construction emissions ³
Land clearance (loss of carbon sink)	-5,850	-3%
Embodied carbon in raw materials and transportation of materials to site ⁴	163,230	78%
Fuel used on site	45,210	22%
Worker travel	4,430	2%
Transport of construction waste	1,180	1%
Disposal of construction waste	180	0%
Total	208,380	100%

Transport Action Network has gained the figures for the increases in carbon for 45 (90%) of the 50 major listed schemes in the RIS2 roads programme (for the 60-year appraisal period). These were from Environmental Statements where available, or through Freedom of Information requests to Highways England (now National Highways). These carbon figures from National Highways are contained in a table on the Transport Action Network website¹. All of the figures are hyperlinked to the source data.

From this table it can be seen that the A428 Black Cat to Caxton Gibbet scheme is the third largest carbon emitting road in RIS2, behind only the Lower Thames Crossing (combined emissions from extra traffic and construction totals 5.2 million tonnes) and the M6 Junction 21a-26 Smart Motorway scheme (combined emissions from extra traffic and construction totals 4.6 million tonnes).

It can also be seen that the total tailpipe and construction emissions (often not including land use change) for RIS2 is over 36 million extra tonnes of carbon dioxide emissions over the 60 year appraisal periods, for the schemes for which data is held. Therefore, the true total will be higher, particularly as wider synergistic impacts are not considered. With the same reservations about the source data as outlined in this document it is also highly likely that emissions over the next 10 – 15 years are understated, possibly significantly so, and

¹ RIS2 carbon table – TAN website

overstated for later years, further undermining the Government's ability to cut emissions quickly enough.

3. What sources of GHGs are considered to be missing from the applicant's approach?

In giving evidence to our challenge on the second Roads Investment Strategy (RIS2), Professor Phil Goodwin outlined that²:

increasing road capacity increases CO2 emissions in five main ways:

- 1. during the construction period itself, notably in land clearance and preparation, embodied carbon used in the production of concrete and other materials, and tailpipe emissions from contractors' vehicles and other activities;*
- 2. during operation from road maintenance, servicing, lighting etc;*
- 3. from road users during its lifetime of the scheme particularly the tailpipe emissions of that proportion of its expected traffic which has actually been generated or 'induced' by the presence of the road itself, including the effect of changes in traffic speed;*
- 4. consequential effects of the roads on settlement and activity patterns, notably when they enable developments of housing, workplaces and retailing, increasing car-dependent lifestyles, increasing car ownership (and increasing the embedded carbon from vehicle manufacturing) and new patterns of warehousing and freight logistics; and*
- 5. synergetic effects such that the impact of each single road improvement on its own may be small but the combined effects of many, in the context of prevailing transport policies, pricing and management, give a greater total than the sum of their parts.*

Examining these in turn it will be obvious what has or has not been included in National Highways' assessment.

1) it is clear that the construction element described in section 1 has been included as described previously. However, there is an issue with the way that the applicant has considered emissions from land use clearance and loss of habitat. This is presented as overall being negative in the table, i.e. the carbon locked away by biodiversity improvements over the lifetime of the project more than outweigh the carbon lost from land clearance and initial biodiversity destruction³. This equates to some 5,850 tCO₂e and is presented as an overall benefit and keeps the overall construction emissions to around

² Section 6, First Witness Statement of Professor Phil Goodwin, March 2021

³ Table 14-9, page 24 of Chapter 14 of the Environmental Statement on Climate

208,380 tCO₂e. However, there is an error in this calculation or with the figures presented later on in the report in Table 14-11.

Table 14-11, shows that from construction there are 52,090 tCO₂e in the 3rd carbon budget and 156,280 tCO₂e from the 4th carbon budget. Together these total 208,370 tCO₂e, which is virtually the same as the figure in Table 14-9, the difference probably being down to rounding errors.

Given that National Highways is claiming that over 60 years there will be a net gain in carbon from land use changes, the totals in table 14-11 cannot be correct. The 3rd and 4th carbon budget only extend to the end of 2027 and probably only a few years at most after any compensatory land use changes have been implemented. It is highly unlikely that any significant positive changes (carbon sequestration) would have materialised by then. Therefore, the impact on the 3rd and 4th carbon budgets is understated and should show a higher short – medium term negative impact from land use change.

However, without knowing the impact for the land-use clearance for the scheme and any temporary construction sites, as it isn't detailed, it is impossible to tell by how much these figures are wrong. This needs to be known because it is the impact on carbon emissions now that is most urgent to address, not in 30 or 60 years' time when it will be rather academic, as we will already need to be at zero emissions by then.

2) It is stated that operational emissions are included⁴ but these don't appear to be separated out from user emissions. The information in Table 14-11 could be more clearly presented and the numbers don't appear to add up in addition to the concerns raised in the previous section.

3) User emissions from fossil fuelled vehicles are included (although see below), but not those from battery electric vehicles - i.e. the emissions associated with electricity production and transmission losses to fuel electric vehicles⁵. While it is expected that the electricity grid will decarbonise over time, there are concerns around how quickly that will take place. There are also questions as to whether wood-fired power stations such as Drax should really be counted as zero carbon when they are burning wood and from sources that will take a long time to regenerate as well as potentially suffering land use losses.

There may also be issues with the fuel efficiency assigned to plug-in electric vehicles (PHEVs) or hybrids as research has shown that official figures for carbon emissions per kilometre can be rather optimistic. In fact, for most PHEVs real world emissions are over two and a half

⁴ Paragraph 14.9.23, page 27, Environmental Statement, Chapter 14: Climate

⁵ Paragraph 14.9.15, page 25, Environmental Statement, Chapter 14: Climate

times more than official figures⁶. However, without the data and assumptions used in the calculations it is difficult to tell how much of an issue this is.

The key concern with the calculation of user emissions are the premises upon which it is based. This involves predicting a future with and without the road. Most of the time, the do minimum scenario (the one without the road), which is based on traffic forecasts, overstates the traffic levels a particular road would have experienced. This is because traffic will more often than not be constrained by the existing road capacity shown by the fact that forecasts have traditionally exceeded the observed background traffic growth. This higher level of traffic growth forecast then helps understate the level of growth caused by the road⁷.

If it appears less growth is caused by the road, then fewer carbon emissions will be attributed to it, this masking its true impact on climate change. This is an area that requires closer scrutiny.

4) The consequences of increasing car use are more dispersed and low-density development, greater car use and car ownership. This results in increased manufacturing emissions associated with this greater car use, which are considerable even for electric vehicles. None of these aspects are included within the impact assessment. Life-cycle costs should be included in any calculations of the carbon generated by the increased use and numbers of people using the road.

5) Wider synergetic effects are not modelled and so the sum of the whole RIS2 programme and RIS23 which is being planned will be to increase car use and emissions beyond the immediate impacts of any one scheme on its own.

4. What would be the implications of the scheme on carbon emissions given the ban on the sale of new petrol and diesel vehicles from 2030 and the expected increased future use of electric or non-GHG emitting vehicles in the future?

Depending on what assumptions have been made, it could be possible that the current modelling has overstated the carbon emissions from users if it assumes a high level of fossil fuelled vehicles up to 2050 and beyond. However, as we have flagged up in the previous section, there are many areas which are not counted and most importantly the accuracy of

⁶ Page 2, UK briefing: The plug-in hybrid con, September 2020

⁷ Section 5.5, pages 54-55, The Impact of Road Projects in England – Transport for Quality of Life, March 2017

the do-minimum scenario could have overstated traffic levels without the road which significantly undermines the real increase in carbon emissions arising from the scheme.

The outcome of all of these factors could be to understate the short to medium term emissions while overstating longer term emissions. Given the urgency of the need to tackle climate change, as brought home by the Intergovernmental Panel on Climate Change's (IPCC) recently published report⁸, the critical period for action is now and over the next ten years, during which time, electric vehicles will be in the minority. Even with the CCC's more optimistic assumptions on EV take-up, it still estimates that the majority (57%) of cars/vans on the road in 2030 will be fossil fuelled⁹. Others estimate higher numbers.

This scheme will clearly increase emissions over the next 20 years or more by not insubstantial amounts, however, they are presented. It therefore should not be given permission to be built and lower carbon solutions sought instead. These do not appear to have been properly assessed or consulted upon.

5. Other issues

A key issue that is not really picked up in question 1.4.1.2 is the one of timing. The UK Government has committed to a Nationally Determined Contribution of a 68% reduction in carbon emissions by 2030 on 1990 levels. So far, road transport emissions that make up around 22% of total UK emissions have risen from 109 Mt CO₂ in 1990 to 115 Mt CO₂ in 2019¹⁰. So rather than reducing they have gone in the wrong direction and as a consequence a greater cut is required to get them back on track.

Therefore, while reaching net-zero by 2050 is important, the crucial thing is how we get there. With the latest IPCC report highlighting the seriousness of the situation¹¹, as seen with melting roads in the UK, various countries suffering severe heat waves and fires, while others faced devastating floods, the time for action in reducing carbon emissions is now, not in 5, 10, or 15 years' time. Anything that increases carbon emissions in the current climate emergency, is making that job even harder, regardless of its relationship to the UK's carbon budgets. Transport isn't the only sector that is failing to deliver the pace of change required, so relying on future action or other sectors to pick up the baton is increasingly untenable (see below).

⁸ AR6 Climate Change 2021: The Physical Science Basis - Intergovernmental Panel on Climate Change (IPCC), (August 2021)

⁹ Figures calculated from data in Sixth Carbon Budget: Committee on Climate Change, December 2020

¹⁰ Atmospheric emissions: road transport – Office for National Statistics, June 2021

¹¹ AR6 Climate Change 2021: The Physical Science Basis - Intergovernmental Panel on Climate Change (IPCC), (August 2021)

5.1 Committee on Climate Change

The joint foreword of the Climate Change Committee's latest progress report states¹²:

The UK's Climate Change Act had extraordinary foresight. It laid the groundwork for the nation's escalating climate ambition. It anticipated, correctly, the need to cajole governments into climate plans that would not otherwise fit the political cycle. It has kept UK climate policies rooted in the scientific realities and the technical feasibilities.

That framework now faces its sternest test, as demand grows to see Net Zero delivered; as the urgency becomes more obvious; and as the inadequacies of our planning for the impacts of climate change become clear.

The rigour of the Climate Change Act helped bring COP26 to the UK, but it is not enough for Ministers to point to the Glasgow summit and hope that this will carry the day with the public. Leadership is required, detail on the steps the UK will take in the coming years, clarity on tax changes and public spending commitments, active engagement with people and businesses across the country. These steps are essential, so people can see opportunity in climate-positive choices. We cannot rely on good will alone.

This demands a step change in Government action, but it is hard to discern any comprehensive strategy in the climate plans we have seen in the last 12 months. There are gaps and ambiguities. Climate resilience remains a second-order issue, if it is considered at all. We continue to blunder into high-carbon choices. Our Planning system and other fundamental structures have not been recast to meet our legal and international climate commitments. [our emphasis]

In section 1 of the report about progress in reducing emissions it states on page 60:

Surface transport is off track, and since 2015 has been the highest-emitting sector in the UK. Emissions have been broadly flat over the past decade, falling only 1% between 2009 and 2019. Improvements to the efficiency of cars have been lost to a trend towards both driving larger vehicles and driving more miles.

Table 6: cross-cutting recommendations for the Department for Transport on page 206:

¹² Progress in reducing emissions: 2021 Report to Parliament - Committee on Climate Change (June 2021)

*Decisions on **investment in roads** should be contingent on analysis justifying how they contribute to the UK's pathway to Net Zero. This analysis should demonstrate that the proposals would not lead to increases in overall emissions.*

This makes it ever more difficult for National Highways or the Government to continue to peddle the line that it's ok to continue to invest in high carbon infrastructure because other areas can take up the slack. Those other areas increasingly look vulnerable themselves and the pace and scale of change mean we simply cannot continue business as usual which is what the current roads programme represents.

It's also difficult to see how investment in roads, either singularly, as in this application, or within the RIS2 programme 'contributes to the UK's pathway to Net Zero' when it is taking us in the other direction and actively increasing emissions at the most critical moment that we need to reduce them.

5.2 Transport Decarbonisation: A Better, Greener Britain

This long overdue publication was finally published in July this year. In it the Secretary of State Rt Hon Grant Shapps states that¹³:

But we cannot, of course, simply rely on the electrification of road transport, or believe that zero emission cars and lorries will solve all our problems, particularly for meeting our medium-term carbon reduction targets to 2035.

This acknowledges that in order to decarbonise we cannot rely on electrification of the vehicle fleet alone. The job is too big for that, a point that has been reinforced by a number of studies¹⁴. He then goes on to say that the Government wants to see walking, cycling and public transport the natural first choice and that this and the pandemic offers opportunities to stabilise, if not reduce traffic levels:

As I said in "Decarbonising Transport: Setting the Challenge" in March last year, we must make public transport, cycling and walking the natural first choice for all who can take it.

We want to reduce urban road traffic overall. Improvements to public transport, walking and cycling, promoting ridesharing and higher car occupancy, and the changes in commuting, shopping and business travel accelerated by the pandemic,

¹³ Extracts from foreword, page 6, Decarbonising Transport: A Better, Greener Britain (July 2021)

¹⁴ Slide 4, Getting Carbon Ambition Right – presentation to Local Government Association, by Professor Jillian Anable

also offer the opportunity for a reduction or at least a stabilisation, in traffic more widely.

There is also an acknowledgement that pricing has pushed people into their cars and that needs to be reversed, which will also help reduce and possibly reverse the growth in car use:

Over the last twenty years, in real terms, the cost of motoring fell by 15 per cent. Over the same period the cost of rail fares went up by over 20 per cent and bus and coach fares by over 40 per cent.² Gradually, we will change this. Starting with buses outside London, we want simpler, cheaper, often flat fares that you can pay with a contactless card, with daily and weekly price capping across operators. We must make buses and trains better value and more competitively priced.

Also, that planning needs to better integrate with transport and through better development, the levels of car use that are being used to justify new and bigger roads should be less:

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

One of the key commitments most relevant to this examination is to review the National Policy Statement on National Networks¹⁵, particularly in relation to traffic forecasts and carbon emissions.

Therefore, it is clear that the current environment is already very different to the one that led to the setting of RIS2 and the supposed need for this new road. Not only are future traffic levels uncertain, the Government position seems to have shifted to seeing previous high levels of traffic growth now as undesirable for all sorts of reasons. At the same time new carbon reduction targets, such as through the UK's NDC have increased the urgency and severity of cuts required. All these point to a road proposal, no longer fit for purpose.

With a review of the National Policy Statement (NPS) on National Networks now accepted as necessary by the Government, the policy basis which has been used to justify this new road is also questionable. It cannot be right in a climate emergency that for the 18 months (at least) that it will take to review the policy, the existing approach to carbon emissions from new roads is tenable.

¹⁵ Summary of commitments, Part 2a, page 10, Decarbonising Transport: A Better, Greener Britain (July 2021)

5.3 Ridiculous carbon test

To highlight how ridiculous and out of touch the existing NPS is it is worth looking at how carbon is treated to other metrics that are used to assess the impact of new roads. Carbon is the only one where a value is compared to a UK total, which is then defined as being so small as to be irrelevant. In effect, it rules out any substantive consideration of carbon emissions which during a climate emergency is perverse or irrational and we believe undermines environmental regulations to properly assess the impact of a scheme.

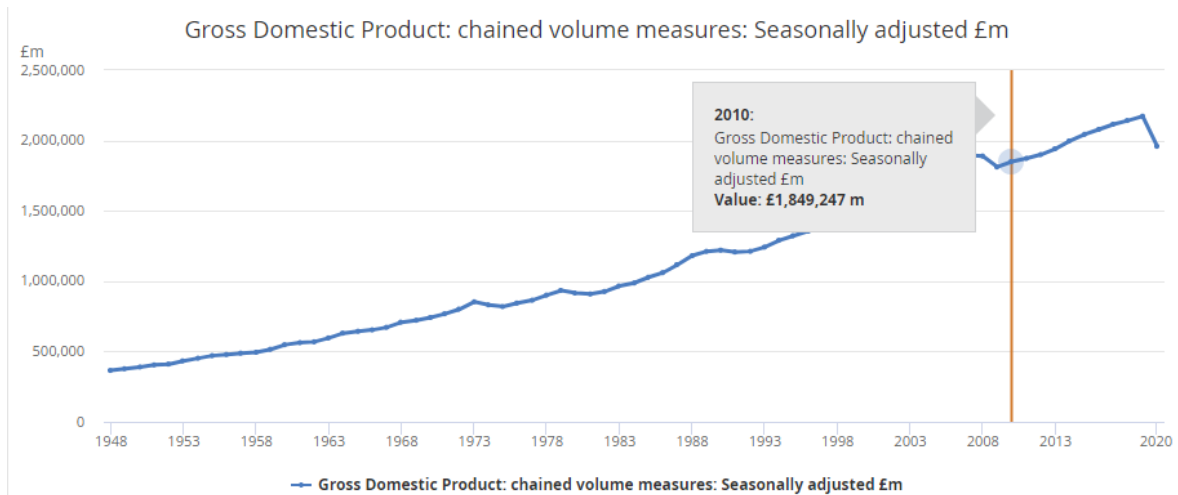
In contrast, much is often made of the economic benefits of a new road, even when these are made up of many small, time savings which are so insignificant as to have no real meaning or value. Time savings are clearly the majority of the benefits as can be seen in Table 4-22, page 50 of the Combined Modelling and Appraisal Report, Appendix D: Economic Assessment Report (EAR).

The annual Transport Economic Efficiency (TEE) benefits of the road are set out in Table 4-3, page 29 of the same report. That gives total TEE benefits over 60 years and shows a fairly consistent spread of benefits across those years.

From Table ES-1, page 3, again of the same report, the total net economic benefits of the scheme are approximately £420 million over 60 years at 2010 prices, so dividing that figure by 60 gives an approximate value of £7 million pounds a year of net benefits from the scheme. This is a reasonable assumption given the relatively even distribution of TEE benefits.

In 2010, the GDP was £1,849,247 million¹⁶ (see table below). Therefore, this scheme would provide annual benefits (setting aside any dispute as to the value of the benefits) of 0.00038% of UK GDP.

¹⁶ Data from ONS website



In comparison, the Environmental Statement Table 14-11 says that the scheme will generate 229,850 tCO₂e, a figure we believe is likely an underestimate as detailed previously, and likely more so with more construction and land use change emissions happening in the 4th carbon budget due to delays in starting the project. The 4th carbon budget is 1,950 MtCO₂e, so as a percentage of the 4th carbon budget, this scheme will increase emissions by 0.012%.

Therefore, this scheme will have at least over 30 times more impact on climate change than it will have on the UK economy. Yet carbon emissions are dismissed as inconsequential¹⁷, while the economy is presented as being an important consideration for needing the road. Given the huge uncertainty about future traffic levels and the Government's recognition of the need and desirability to constrain traffic, future economic benefits could be further undermined.

The rapid shift in public policy and tightening of legally adopted targets in the last two years to reduce carbon emissions, means that far more weight needs to be given to carbon emissions than the existing NPS currently suggests. Grant Shapps has acknowledged that zero emission vehicles will not get us where we need to get to on their own as shown above. Other measures are needed, which would suggest we don't have the luxury of building more roads and making things worse, especially with such a big and damaging scheme as this one.

¹⁷ Paragraph 14.9.27, page 27, Environmental Statement, Chapter 14: Climate

31 August 2021

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

254 Upper Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 6BF

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