

## **Deadline 7 Submission**

A303 Stonehenge TR010025

### **Barry Garwood**

Reply to Highways England's Response to the ExA's Written Questions on Climate Change

Ref: REP6-025

### **Discussion**

The Government have recently adopted a target of reducing net Carbon emissions to zero by 2050.

This builds on previous targets to reduce emissions and is compatible with the recent IPCC Special Report (2018) that sets out a framework for limiting mean global temperature rise to 1.5 °C.

The IPCC Special Report is available at: <https://www.ipcc.ch/sr15/>

In response to **WQ – CC.2.2**, Highways England confirms their view that *"in the context of the overall UK GHG emissions the magnitude of the increase will not have a material impact on the government meeting its carbon reduction targets"*.

However, much of the argument is based on previous targets. They note that *"It will therefore not be possible to update the assessment of the CO2 impact of the Scheme against the new net zero carbon target until the revised carbon budgets are published"*.

There then follows an argument that the global atmosphere is a large receptor for greenhouse gas (GHG) and that, as Britain produces about 1% of global GHG, no individual scheme will make that much difference.

Unfortunately, if everyone takes the same view, GHG emissions will continue to increase with catastrophic consequences for our climate.

Highways England is a major contributor to GHG emissions. Emissions from concrete production alone can be around a ton of Carbon Dioxide per cubic metre, with the tunnel alone requiring around 400,000 cubic metres.

Then there is the increase in vehicle emissions that result from increased road capacity. Even switching to electric vehicles will have limited effect in reducing GHG emissions.

If we all switch to electric vehicles, there is hardly enough Lithium on the planet to make enough batteries. Certainly it would require extracting it from mineral sources, which is much more energy intensive than evaporating Lithium brine. Most of the Lithium brine is in the Atacama Desert and other arid parts of South America and needs water to be pumped in to extract it - a very precious resource in those parts.

Much of the battery production takes place in China, where coal is widely used for power generation. Once produced, batteries need to be charged with a low Carbon supply. Already we are seeing vast tracts of the country disappearing under solar farms, putting further pressure on agricultural land.

Instead of leaving the problem for others, the Government, including Highways England, should be setting out how the targets can be met, not assuming that it is somebody else's problem, nor transferring the source of emissions elsewhere.

In response to **WQ – CC.2.4**, Highways England have produced a table of projected temperature changes, based on UK Climate Projections 2018 and reproduced below:

Projections at the 50% probability level are shown, as well as projections at the wider range (10% and 90%) in brackets.

**Table 1: Projected changes to temperature variables (°C), as per UKCP09 and UKCP18 relative to 1961 – 1990 baseline.**

	<b>2020s (UKCP09)</b>	<b>2020s (UKCP18)</b>	<b>2050s (UKCP09)</b>	<b>2050s (UKCP18)</b>	<b>2080s (UKCP09)</b>	<b>2080s (UKCP18)</b>
Change in mean annual daily temperature (°C)	+1.45 (+0.79 to +2.15)	+1.1 (+0.5 to +1.8)	+2.85 (+1.81 to +4.10)	+2.3 (+1.2 to +3.5)	+4.43 (+2.93 to +6.34)	+4.1 (+2.3 to +6.1)
Change in mean summer daily temperature (°C)	+1.54 (+0.52 to +2.60)	+1.4 (+0.5 to +2.4)	+3.14 (+1.44 to +5.10)	+3.0 (+1.2 to +4.8)	+4.90 (+2.70 to +7.90)	+5.6 (+2.6 to +8.8)
Change in mean winter daily temperature (°C)	+1.20 (+0.54 to +2.19)	+1.0 (+0.1 to +1.9)	+2.30 (+1.34 to +3.50)	+2.0 (+0.6 to +3.5)	+3.40 (+2.10 to +5.10)	+3.4 (+1.3 to +5.6)
Change in mean daily maximum summer temperature (°C)	+1.96 (+0.67 to +3.57)	+1.6 (+0.5 to +2.8)	+4.18 (+1.80 to +7.10)	+3.4 (+1.1 to +5.8)	+6.53 (+3.00 to +11.26)	+6.3 (+2.5 to +10.4)
Change in mean daily minimum winter temperature (°C)	+1.47 (+0.64 to +2.38)	+1.0 (+0.1 to +2.0)	+2.73 (+1.31 to +4.40)	+2.0 (+0.6 to +3.7)	+3.95 (+1.65 to +6.70)	+3.5 (+1.1 to +6.1)

The first thing to note here is that the Government targets have moved on from here and are now in accordance with the IPCC report (2018), which seeks to reduce Carbon emissions to net zero by 2050 and limit global mean temperature rise to around 1.5 °C above the pre-industrial era of 1850 to 1900.

The second thing to note is that Highways England's figures are above a baseline of 1961 to 1990, around a century after the IPCC baseline. As such, at least half a degree should be added to these figures when comparing them with the IPCC equivalent.

The figures indicate a mean average daily temperature rise of around 2.3 °C by 2050 and 4.1 °C by 2080. Given the later baseline, this equates to around 3 °C above pre-industrial levels by 2050 and nearly 5 °C by 2080.

The summer figures are even worse, with a mean daily increase of around 3 °C by 2050 and 5.6 °C by 2080. Again with at least half a degree to be added before comparing with the IPCC report.

Life as we know it cannot sustain these kinds of changes.

We can expect the Greenland and Antarctic ice sheets to melt, with multiple metre sea-level rises.

Many low lying areas will be inundated with floods.

Most of Bangladesh, Holland, East Anglia and even London will be under water.

Arctic tundra will melt, releasing methane and further accelerating the warming.

Air-conditioning will be running flat out, producing even more emissions.

Crops will fail, mass extinction will occur and our planet will become increasingly inhospitable.

The environmental impact of continued road building is too great.

We need to change our ways now, before it is too late.

## **References:**

IPCC Special Report (2018) – Global Warming of 1.5 °C

<https://www.ipcc.ch/sr15/>

The Carbon Footprint of Reinforced Concrete (2013)

[https://www.researchgate.net/publication/274767152\\_The\\_carbon\\_footprint\\_of\\_reinforced\\_concrete](https://www.researchgate.net/publication/274767152_The_carbon_footprint_of_reinforced_concrete)

Lithium and development imaginaries in Chile, Argentina and Bolivia (2018)

<https://doi.org/10.1016/j.worlddev.2018.09.019>

Critical Issues in the Supply Chain of Lithium for Electric Vehicle Batteries (2015)

[https://www.researchgate.net/publication/276086697\\_Critical\\_Issues\\_in\\_the\\_Supply\\_Chain\\_of\\_Lithium\\_for\\_Electric\\_Vehicle\\_Batteries](https://www.researchgate.net/publication/276086697_Critical_Issues_in_the_Supply_Chain_of_Lithium_for_Electric_Vehicle_Batteries)