

Portishead Branch Line – MetroWest Phase 1

Re: Request by the Secretary of State for Transport for further information from North Somerset District Council in relation to its Carbon Budget Assessment

**Submission from
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**IP Written Reps to Planning Inspectorate, DCO for the Portishead Branch Line,
Ref nos: 20025229 (PGV) & 20025232 (BC)**

We wish to bring to the Ministers attention the following facts

Electrification

The Sixth Carbon Budget: The UK's path to net zero (2020) Committee on Climate Change, p 100, states: 'The Government has set an ambition to phase out diesel trains by 2040.'

Two tunnels on the Portishead-Bristol rail-line would have to be modified to enable electrification. Phase 1 of the project is costed at £116m; this does not include modifying the tunnels. Phase 2 costs an additional £55m and includes modifying the tunnels. Were electrification to go ahead as well, additional funding would be needed for the electrification. As far as we can tell, additional funding has not been requested since there is no decision to progress to Phase 2.

Unwarranted increase in greenhouse gases: Summary

Phase 1 of this scheme would cause an unjustified ongoing increase in greenhouse gases. Any net increase of CO₂ breaches legally binding policy and the 2016 Paris Climate Agreement. The estimated 942 tonnes p.a. net increase in CO₂ and 11.8 tonnes of NO_x far outweighs savings by reduced car commutes. This substantial net increase in greenhouse emissions will be caused mainly by trains carrying very few passengers, and since there are already far less polluting buses, without purpose. Moreover, if car travel to and from stations is not factored in (as it appears), estimated net increases are too low.

There is also a 340 kg p.a. increase in PM₁₀. A primary school is 60 metres downwind from the proposed Portishead station; for 180 metres the railway runs 10 metres from the playing field boundary, and the school building is only 25 metres away. Diesel particulates and NO_x cause and aggravate health problems, and before pulling away at full power, trains will stand at the terminus with idling engines.

The Environment Statement concludes 'the magnitude of CO₂ change is negligible on the national scale...' This was written before Cop26, and fails to acknowledge the climate crisis. The increase in NO_x is also said to be 'negligible'. However, it is no longer defensible to propose any increase in greenhouse gases not compensated by equal or greater reductions elsewhere.

WECA, North Somerset Council and Bristol City Council each declared a climate emergency and intentions to reduce carbon footprint. The contribution to global warming resulting from this scheme compromises local and national policy, legal requirements and international agreement.

None of these issues are addressed in the DCO.

Argument:

Reinstating the Portishead-Bristol railway would result in an unjustified ongoing increase in greenhouse gases and needless building on green spaces: the global-warming (and financial) costs are too high and the benefits negligible.

The pointlessness of this project - which would increase commuting greenhouse gas emissions by nearly 1000 tonnes p.a. - has been highlighted by the pandemic: rail commuter passenger numbers plummeted and are not expected to recover to anything like their former levels for the foreseeable future. Taking into account all travel - peak, off-peak and weekend - according to the official estimates, on average these trains will initially run at only just over 12% of capacity (12.1%) i.e., 87.9% empty.¹ Two weekday 'rush hour' trains - one to Bristol, one back - might be quite full. But only six other trains each 'busy' weekday would carry 50 or more passengers (18.5% of capacity/81.5% empty). The schedule has 224 departures per week, but 180 trains (80%) will carry fewer than 30 passengers: not even one small bus-load. Even on the busier days² only 15% of the available seats will be taken; i.e, on average, trains on 'busy days' will run up and down the line 85% empty.³ This is forecast to improve by 2036, but only to 20% of capacity (80% empty).⁴

But those are pre-pandemic estimates. According to Rail Delivery Group (RDG), in mid-October 2021 train commuter numbers were only 45% of those seen in autumn 2019. If this becomes the new normal, then initially only 5.4% of all scheduled seats will be taken, i.e., on average, these trains will be 94.6% empty (after fifteen years: 7.2% of all seats taken/trains 92.8% empty). Passenger numbers might pick up but, in the realistic view of the RDG, for the foreseeable future commuting by rail will not return to anywhere near the pre-pandemic levels.

Meanwhile, the estimated net increase in greenhouse gas emissions (CO₂ and NO_x) far outweighs savings: the *Outline Business Case* says that running the scheduled trains will result in a net yearly increase in CO₂ emissions of 942 tonnes, with NO_x at 11.8 tonnes. However, as suggested above (in the Summary), these are almost certainly underestimates. On the face of it, whether or not the estimates are reliable so far as they go, the published net increase of CO₂ already breaches legally binding policy and international agreement (i.e., the Paris Climate Agreement, ratified by the UK Government in 2016).⁵ Moreover, the substantial extra production of greenhouse gases is an issue that was not adequately addressed in the DCO.

(i) The *Outline Business Case* states that by reinstating trains along this route there will be an initial reduction of 580 vehicles (two-way trips) per day,⁶ and that removing those cars from the roads will help reduce greenhouse gas emissions. Accepting that estimate of a reduction in road traffic, and the subsequent calculations, reinstating the railway will cut CO₂ emissions by 266 tons a year. But the scheduled 224 diesel train journeys each week will emit 1,208 tons of CO₂ p.a.⁷ As a result, 'as shown in Table 7.18, CO₂ emissions in the opening year of the DCO Scheme are predicted to increase overall by 942 tonnes/year compared with the DM [Do-Minimum]. This is despite the scheme resulting in reductions in regional road CO₂ emissions of 266 tonnes/year.'⁸

1 With 11,424 train journeys in one year, and 270 seats per train, carrying capacity over the year = 3,084,480 passengers; initially with 374,525 passengers carried p.a., on average each train will therefore run at $374,525/3,084,480 \times 100 = 12.1\%$ of seat capacity.

2 *Metrowest Phase 1 Outline Business Case* (2017) Appendix 2.1 Forecasting report, Fig 3.6:

'Capacity analysis represents a busy weekday (Tuesday to Thursday) in a nonschool holiday period.'

3 Weekday passenger capacity: 34 trains, each with 270 seats = 9,180; number travelling on a 'busy weekday': 1,375; $1,375/9,180 \times 100 = 15\%$.

4 *Ibid.*, pp 35-38, figs 3.9-3.12.

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6 DCO Document Reference 8.4 part 2 of 3 *Outline Business Case*: Economic Case Table 2.4, Chapter 2, pp 2-5. The NSC project manager says this has since been re-estimated at 600-750 (James Willcock: email to P Virden, 16 October, 2020). However, the upper end of this new estimate is not credible since there will only be a total of 687 commuters (1375 passengers divided by 2) on a 'busy' midweek day in the first year; also, many commuters will have switched from bus travel.

7 Portishead Branch Line DCO Scheme *Environmental Statement*, Vol 2, Chapter 7 Air Quality and Greenhouse Gases, 7.50, Table 7-18.

8 *Ibid.*

But what is not mentioned is that many commuters will have to get some distance to or from a station, and will no doubt use a car - hence the planned Portishead railhead and Pill carparks. In the calculations of emissions saved and created by this project, there is no mention of greenhouse gasses emitted from the cars commuters use to travel to and from their station at the beginning and end of the day. If these are not included, the figure for CO2 saved by removing commuters' cars from the roads (266 tonnes/year) must be an overestimate; in other words, the figure for net CO2 created (942 tonnes/year) is too low.

A glance at the map shows that about half of Portishead's residents live 1km or more from the Quays Avenue railhead (2/3rds of a mile, a 10-12 minute walk). Those commuters will most likely travel to and from the station by car; say, an average of 2km for each journey. If we ignore the likelihood that some passengers will be dropped off and picked up at the station (with twice as many round-trips per commute, i.e., cars travelling 8km rather than 4km), that in bad weather more rail passengers will begin and end their journeys by car but some cars may carry more than one commuter, and also take Pill out of the equation since most local residents live within 1km of the station, a conservative 'ballpark' estimate may be derived for the total distance in one year that all the cars travel between home and station.

In 2015, the average car on the road emitted 153gm/km.⁹ If one-half of Portishead's rail commuters travel to and from the station by car, at an average distance of 2km, that would produce more than 43 tonnes of CO2 p.a. (See calculation in footnote.)¹⁰ While the fuel consumption of cars may have improved slightly since 2015, it will not have been enough to make a substantial difference to the estimated extra tonnes of CO2 p.a. This factor is not mentioned in the published estimate; including this calculation elevates the net production of atmospheric CO2 under the trains scheme to 985 tonnes p.a.

(ii) NOx is a less publicised but equally potent greenhouse gas: 'The catalytic role of NOx in the production of tropospheric ozone provides the most prominent contribution. The global warming potential is...comparable to that of methane.... We estimate an additional 5-23% for [an industrial country's] contribution to the anthropogenic greenhouse effect as a result of the indirect greenhouse effects stemming from NOx. Furthermore, a small...amount of the deposited NOx which has primarily been converted into nitrates is again released from the soil into the atmosphere in the form of the long-lived greenhouse, gas nitrous oxide (N2O). Thus, anthropogenically induced NOx emissions contribute to enhanced greenhouse effect and to stratospheric ozone depletion in the time scale of more than a century.'¹¹

Under this scheme, estimates for Nox are, for the opening year, road NOx to reduce by 465.9 kg, rail NOx to increase by 12,287 kg. The net total NOx created will therefore be 11,821 kg, i.e., 11.82 tonnes p.a.¹² Again, there is no indication that NOx emissions from the many commuters' cars travelling to and from their stations are factored into the published calculation. If they are not, as seems the case, the total net production of NOx will be higher than the published estimate.

(iii) How far the scheme will increase the production of particulates is estimated as follows: Road PM10 (kg/year) -59.1, rail PM10 (kg/year) +406; net total PM10 (kg/year) +340.¹³ Again, cars travelling to and from stations do not seem to be factored into the estimate.

While a 340 kg net increase of PM10 p.a. is hardly welcome, there is no greenhouse effect, and aside from parts of St Phillips, Bedminster and Pill close to the railway, this pollutant will probably not affect many people. Except, that is, the children and staff at Trinity

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10 Emissions are calculated as follows: projected Portishead passengers: 321,014 p.a; half get to and from their station by car, travelling an average 2km per journey = 321,014 kms; 321,014 x 153 (gm/ km) = 43,336,890gms = 43.34 tonnes of CO2; stated net increase in CO2 942 tonnes p.a. + 43 tonnes p.a. = actual net increase in CO2 985 tonnes p.a.

11 G & H (1995) Greenhouse effect of NOx *Environ Sc Pollution Research Inst* 2 1 40-45.

12 *Environmental Statement*, Vol 2, Ch 7, op. cit. (n. 16), Table 7-18.

13 *Environmental Statement*, Vol 2, Ch 7, op. cit. (n. 16), Table 7-18.

Primary School, Portishead, located 60 metres downwind from the proposed Portishead terminus; for 180 metres the railway runs 10 metres from the playing field boundary, and the school building is only 25 metres away. Before pulling away at full power, trains will stand at the station with their engines idling between trips, and it is known that diesel particulates and NOx cause and aggravate many health problems, including asthma and brain-development. Surely this is hazardous?

(iv) Commuters will almost certainly add to local traffic problems by driving to and from the station; or, having got into their cars, they might think it more convenient and quicker (or as quick) to skip the train and drive all the way from home to destination. What with cars still being driven to work, 'wasteland' tarmacked and built on when best left to nature as carbon sinks, and diesel-thirsty trains¹⁴ running to an unwanted schedule, there will be little improvement in overall congestion and a significant increase in overall pollution, including CO₂, NOx and particulates.

Nor does it register in the documents that the proposed net increase in emissions will be caused mostly by trains carrying very few passengers, and therefore, since there is already an adequate bus service, without real purpose. Against all types of fossil fuel use, a full bus is by far the most efficient and least polluting form of transport.¹⁵ Given the political will, at comparatively little cost the local authorities could provide the conditions for substantial improvements to the bus service. (See below: four paragraphs on bus alternatives, including a viable busway, in ss (iv) of section: Compromised legal and policy requirements.)

(v) The above quote from the *Environmental Statement (ES)*, with regard to the net increase in the main greenhouse gas, continues: 'The magnitude of change is negligible on the national scale as it is only 0.003% of the total CO₂ emitted nationally.'

But no matter how 'negligible on the national scale' the increase in CO₂ emissions may appear to the authors of the *ES*, this judgement fails to acknowledge the escalating global climate emergency. Surely it is no longer defensible to propose any increase in CO₂ not compensated by an equal or greater reduction elsewhere? The *Outline Business Case* has two brief paragraphs, in which 'traded emissions' are mentioned.¹⁶ This seems to refer to carbon offsetting. However, many environmental scientists doubt the effectiveness of that commercial device.

As mentioned, NOx is also an important greenhouse gas. While the *ES* registers an overall increase in NOx emission, the summary of the assessment of the DCO Scheme on air quality and greenhouse gases states that 'NOx and carbon contribute to global warming and climate change' but 'Magnitude - Negligible.'¹⁷

On the contrary, while projected increases in greenhouse gases may be a small proportion of the national total, any net increase is significant and should be avoided since it adds to the global accumulation of greenhouse gases driving the climate crisis. No matter how 'negligible' it may seem to the authors of the *ES*, according to national policy, legal requirement and international agreement, the Inquiry must consider the contribution this scheme would make to global warming.

(vi) Needlessly increasing greenhouse gases is both unconscionable and contrary to policy and law. Atmospheric CO₂ had already risen about 28ppm from the pre-industrial level to 311 in 1950; by 1990 it was 354, and in November 2021 it was 415. At the current rate of increase, by 2025 levels will be higher than at any time in the last 3.3 million years.

'The atmosphere now has 415 parts of CO₂ per million... [W]e are already at levels when global temperatures were 3 °C warmer than the pre-industrial average, and the sea level

14 Fuel consumption for a 3-car train type 166DMU = 2 mpg. [REDACTED]
[REDACTED]; at average passenger loads, diesel buses average 6.1 mpg [REDACTED]
[REDACTED]

15 Chester MV & Horvath, A (2009) Environmental assessment of passenger transportation should include infrastructure and supply chains *Environmental Research Letters* 4 2.

16 *Outline Business Case*, Chapter 2: Economic Case, 2.7.3: Greenhouse Gases p14.

17 *Environmental Statement*, Vol 2, Ch 7, op. cit, (n. 16), 7.59 Table 7-22.

was 20 metres higher than at present. CO2 levels are currently rising at 2.5 ppm per year... by 2025 we will have exceeded anything seen in the last 3.3 million years.¹⁸

Both WECA and NSC declared a climate emergency and an intention to reduce their carbon footprint. In November 2018, Bristol City Council (BCC) declared a climate emergency and committed to reducing the use of carbon-burning energy, to the extent of making the city carbon neutral by 2030.¹⁹ Two years ago the government ordered BCC to produce a plan for bringing the area's NO2 levels to within legal limits. From March 2021, privately-owned diesel vehicles were supposed to have been prevented from entering Bristol central zone between 7am and 3pm, and commercial vehicles *would* have to pay.²⁰ And yet, with this scheme, for no good reason, more diesel trains would be running in and out of the city, emitting significant quantities of CO2, NOx and particulates.

Compromised legal and policy requirements:

In the light of the above points, this plan compromises both policy and legal requirements in a number of ways.

(i) In February 2020 the UK's Appeal Court ruled that when deciding for a third runway at Heathrow Airport the Government did not take into account its commitments under the legally binding Paris Climate Agreement, and cannot stand.²¹ The Portishead railway scheme does estimate a carbon impact, but neither the documentation nor the decision to go ahead deal adequately with the fact that the prevention of a small amount of CO2 emissions by removing some cars from the roads will be substantially outweighed by trains creating a far greater amount of greenhouse gas. (See Argument, above.) The scheme breaches the Paris Climate Agreement.

(ii) In February 2019, North Somerset Council (NSC) declared a climate emergency and set a target for its area becoming carbon neutral by 2030.²² In July 2019 West of England Combined Authority (WECA) also declared a climate emergency and committed to carbon neutrality by 2030.²³ By endorsing this scheme, both authorities compromise their policy on greenhouse gas emissions.

(iii) Several paragraphs in the *National Networks National Policy Statement (NN NPS)*²⁴ set goals (all involving carbon impacts) which, on the face of it, this scheme fails to meet. Viz (by reference to the Argument, above):

(a) Meet legal requirements and not entail greater costs than benefits. *NN NPS* p 5, 1.2: 'Under section 104 of the Planning Act the Secretary of State must decide an application for a national networks nationally significant infrastructure project in accordance with this NPS unless he/she is satisfied that to do so would: lead to the UK being in breach of its international obligations; be unlawful; lead to the Secretary of State being in breach of any duty imposed by or under any legislation; result in adverse impacts of the development outweighing its benefits.'

(b) The need for lower carbon transport choices. *NN NPS* p 25, 3.6: 'Transport will play an important part in meeting the Government's legally binding carbon targets and other environmental targets. As part of this there is a need to shift to greener technologies and fuels, and to promote lower carbon transport choices.'

(c) Support the switch to ultralow emission transport. *NN NPS* p 25, 3.7: 'The Government is committed to supporting the switch to the latest ultralow emission vehicles.'

18 Mehar, P (2020) By 2025, CO2 level in atmosphere will be higher than at any time in the last 3.3 million years. [redacted] July 11

19 [redacted] [27s+Climate+Emergency+Action+Plan+](#) 2019+FINAL

20 [redacted]

21 Carrington, D (2020) Heathrow third runway ruled illegal over climate change *The Guardian* 27 Feb.

22 [redacted] actions-tackle-climate-emergency# 19 Nov

23 *West of England Combined Authority & West of England Joint Committee report: Summary update on climate emergency planning* 31 Jan, 2020, p1.

24 *National Policy Statement for National Networks* Department for Transport, 2014.

- (d) Improve air quality, reducing CO2 emissions. *NN NPS* p 25, 3.8: 'Impacts of road [sic] development need to be seen against significant projected reductions in carbon emissions and improvements in air quality as a result of current and future policies to meet the Government's legally binding carbon budgets and the European Union's air quality limit values.' Mentioned are CO2, NOx and PM10 [particulates, mainly from diesel engines].
- (e) Reduce costs and environmental impacts. *NN NPS* p 27, 3.14: recommends 'innovative transport technologies [which] have the potential to revolutionise the way we travel, improving the safety and reliability of journeys, while reducing costs and environmental impacts.'
- (f) Reduce carbon emissions by providing sustainable door-to-door journeys. *NN NPS* p 27, 3.15: 'The Government is committed to providing people with options to choose sustainable modes and making door-to-door journeys by sustainable means an attractive and convenient option. This is essential to reducing carbon emissions from transport.'
- (g) Investment in cycling and pedestrian environments. *NN NPS* p 27, 3.16 & 3.17: 'As part of the Government's commitment to sustainable travel it is investing in developing a high-quality cycling and walking environment to bring about a step change in cycling and walking across the country... The Government expects applicants to use reasonable endeavours to address the needs of cyclists and pedestrians in the design of new schemes. The Government also expects applicants to identify opportunities to invest in infra-structure.'

Cycling and pedestrians are not mentioned in this scheme. While walking might be encouraged for the many potential passengers who live some distance from their station, so is car use (and associated greenhouse gas emissions) by the provision of new car parks. Most of Portishead's more distant housing is up a steep hill from the station, so it is doubtful that cycling is encouraged. On the other hand, a busway would provide the opportunity to fit a cycleway alongside.

- (h) Integrate sustainable transport modes, facilitate better travel to stations. *NN NPS* p 27 3.18: 'On the rail network, Station Travel Plans are a means of engaging with station users and community organisations to facilitate improvements that will encourage them to change the way they travel to the station. Train operators will also be asked to consider the door-to-door journey in new... specifications that will aim to facilitate enhanced integration between sustainable transport modes.' Car travel to the station (and hence emissions) is encouraged by neglect of this requirement.

- (i) Cut greenhouse emissions. *NN NPS* p 49 5.16: 'The Government has a legally binding framework to cut greenhouse gas emissions by at least 80% by 2050.' Deliberately increasing greenhouse gases in the meantime (as with this scheme) is not a responsible option.

- (j) Legal requirement to meet carbon budgets. *NN NPS* p 50 5.18: 'The Government has an overarching national carbon reduction strategy (as set out in the Carbon Plan 2011)... 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.'

Since 2014, when *NN NPS* was published, we have learned much more about the urgency of the escalating climate crisis. Any increase in CO2 is now known to be significant, and a project which needlessly causes an ongoing net increase in greenhouse gases of nearly 1000 tonnes p.a. is surely questionable.

- (iv) On the grounds that they disregarded objectivity, accountability, openness, and honesty, did not act solely in the public interest, did not make choices based on all the necessary evidence, and did not strive to ensure value for money to the local community or to avoid legal challenge (e.g., with regard to CO2 emissions), WECA and NSC breached local authority Codes of Conduct.

The Civil Service Code includes the following directions: 'You must carry out your fiduciary obligations responsibly (that is make sure public money and other resources are used properly and efficiently)... You must provide information and advice, including advice to ministers, on the basis of the evidence, and accurately present the options and facts... You

must not ignore inconvenient facts or relevant considerations when providing advice or making decisions.²⁵

WECA's *Code of Conduct for Local Enterprise Partnership* (LEP) Board Members, Ss 2, 3 and 4 state that 'Council members... shall have regard to... objectivity, accountability, openness, honesty... You must act solely in the public interest... must make all choices... based on evidence.' North Somerset Council's *Code of Conduct* states that 'Employees must ensure that they use public funds entrusted to them in a responsible and lawful manner... They should strive to ensure value for money to the local community and to avoid legal challenge to the authority.'²⁶

Alternatives to the trains project were not examined and, in fact, were rejected out of hand; objectivity, the evidence, acting in the public interest, and avoiding legal challenge were all compromised by the failure to explore any possible solutions to the traffic problem other than reinstating trains, and by choosing a scheme which cannot serve the public well and has financial and environmental costs that far outweigh any benefits; other than admitting that there would be only one train per hour (with no extra trains at the times of peak demand), accountability, openness, honesty were compromised by the failure to make the public aware of the many drawbacks to the trains scheme - not least the substantial and ongoing increase in greenhouse gases. Information about the many deficiencies of the official plan has not been made public, but must be painstakingly dug out and deduced from the long and technical Funding Bid document.

Just as the scheme's environmental costs have not been announced, nor have the full financial costs. On the (pre-Covid) passenger estimate, a subsidy of £1.5million p.a. will be needed to run the trains. And whereas a commuter's return bus-fare is currently £4, to cover normal repayments on the £116m capital outlay would require a return train-fare of £35.

Alternative to this trains plan were never examined. For local journeys, buses are at least twice as energy-efficient as trains; they offer a more convenient service by passing close to most homes and residents' actual destinations (in effect making full journeys quicker), especially if enhanced by priority bus lanes, restricting cars from Bristol centre, etc. The proposed train schedule is rigid, and demand is such that the great majority of the scheduled trains will carry very few passengers and therefore be highly inefficient/uneconomical. By contrast, a bus company is easily able to adjust its schedules to run more frequent services at times of peak demand, and fewer off-peak.

Better still, introduce eco-buses (green-electric, biogas, hydrogen).

Even better, and for very little cost, install a dedicated busway along the 3.5km derelict Portishead rail spur up to the M5 (Junction 19), thereby avoiding the Portbury Hundreds (A369) bottleneck; buses would join the motorway, come off at Junction 18 (Avonmouth), and take the Portway priority bus-lane into Bristol; from there they could either join the new prioritised Metro system or take any other route. To facilitate a frequent service avoiding the main bottleneck, buses would flow one-way (from Portishead) along the busway during the morning 'rush hours', and the other way (into Portishead) for the afternoon/evening peak.

With no need for new stations and car parks, a short busway to the M5 would cost under £10m - and save £106m. And if just some of that saving were put into running ecobuses, the substantial and ongoing net increase in greenhouse gases embodied in the trains scheme would be replaced by significant and ongoing net reductions, and perhaps even carbon neutrality.

Further information, including sources, data and calculations, available from [REDACTED]@btinternet.com

²⁵ *The Civil Service Code*-GOV.UK [REDACTED]

²⁶ [REDACTED]

[REDACTED] NSC Code of Conduct temporarily unavailable.