Portishead Branch Line – MetroWest Phase 1 Project Team. Ref: TR040011
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Interested Party Written Representation to Planning Inspectorate: Development Consent Order for the Portishead Branch Line, MetroWest Phase 1

Under six main headings, I argue that the WECA and NSC decision to reinstate the Portishead railway should not be endorsed. This is on the grounds that it does not rest on a properly examined case, will not best serve commuters, will scarcely touch the problem of the 'rush-hour' road traffic, is financially and environmentally reckless, and compromises a number of legal and policy requirements.

1: Insufficient demand

(i) Along with many other branch lines, in 1964 the Portishead line was axed due to the huge rise in car-ownership during the decade before. Passenger numbers had fallen to an economically unsustainable trickle. The official documentation offers no evidence to indicate that commuters would now prefer to give up the point-to-point and low-cost convenience of their cars, or switch from the existing, relatively cheap and convenient bus service.

Analysis of forecasted passenger numbers shows that initially, even on the busiest midweek days[1] only 15% of all the available seats will be occupied; i.e, on average, 'busy' trains will run up and down the line 85% empty.[2] This is forecast to improve by 2036, but only to 20% of capacity (80% empty).[3] Taking into account all travel - peak, off-peak and weekend - on average the trains will initially run at only just over 12% of capacity (12.1%) i.e., 88% empty.[4]

Just two trains each weekday are expected to run at anywhere near capacity, i.e., only 10 of the 224 trains up and down the line each week: the 8am from Portishead, initially with 220 passengers on a 'busy' weekday, and the 5pm from Bristol Temple Meads, with 201. Only six other trains each 'busy' weekday will carry 50 or more passengers (18.5% of capacity), and only one of them will carry more than 100 passengers (140 on Portishead's 7am). It is expected that on a 'busy' weekday, 7 of the 34 scheduled trains will carry fewer than ten passengers; the 10pm from Portishead will carry no passengers at all. Numbers are expected to increase by 2036, but not spectacularly: passengers for the peak departures will rise to 327 from Portishead (57 standing) and 286 from Bristol (16 standing).

Focussed narrowly on removing cars from the rush-hour traffic - in the event, a fairly modest number - and on whether or not peak demand will exceed a train's carrying capacity, it seems that the planners took no interest in how little purpose would be served by the great majority of all the other scheduled trains. Passenger/capacity computations are not disclosed in the *Outline Business Case*, but calculations may be derived from the proposed schedule, a train's carrying capacity, and projected passenger numbers.[5] From those figures there are various ways of computing the serious drawbacks to the scheme, financial, logistical and carbon.

According to the modelling, the annual number of journeys will initially be 321,014 to and from Portishead, and 53,511 to and from Pill = 374,525.

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1 *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.'
2 Weekday passenger capacity: 34 trains, each with 270 seats = 9,180; number travelling on a 'busy weekday': 1375; 1,375/9,180 x 100 = 15%.
3 Ibid., pp 35-38, figs 3.9-3.12.
4 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 x 100 = 12.1% of seat capacity.
5 Ibid., pp 26, 35-38, figs 3.9-3.12.

34 trains are scheduled each day (17 each way), except 20 Sundays (10 each way);
34 x 6 = 204 + 20 = 224 trains per week;
224 x 51 (weeks, with winter and Easter breaks) = 11,424 trains p.a.

The average number of daily passengers may be derived thus: 374,525 (passengers p.a.) divided by 358 (days in the year minus one week) = 1046.

Since Mondays and Fridays are less busy, Saturdays even less busy and Sundays very quiet, although the estimate is for 1,375 passengers on a 'busy midweek day', the daily average is for only 1046 passengers or 12.1% of carrying capacity.

However, there are vital ambiguities and apparent incongruences in the *Outline Business Case*. First, a note says 'all forecasts assume shuttle services between Bristol Temple Meads and Portishead, two-way journeys, annual totals.'[6] Under this rubric, each 'journey' is a two-way trip, i.e., not - as the dictionary defines it - 'an act of travelling from one place to another', but two such journeys. Until just before the deadline for Written Representations, NSC's project manager assured Barry Cash that this is what is intended, and that this yields a total of 749,050 passengers/occupied seats per annum. Then, on 20th November, Mr Cash received an email saying that the 'doubling-up' specified in the *Outline Business Case* was indeed a mistake; consequently, in the initial year there will be half the number previously advised: not 749,050 but 374,525 seats occupied.[7]

Very significant consequences may have issued from this mistake. If the doubled-up passenger statistics were believed for the last three years - ever since they were intimated in the *Outline Business Case* - how many planning, council planning committee and full council decisions have been made on the back of grossly misleading figures? If it was believed that the reinstated railway would certainly help with the problem of 'rush hour' road traffic and also provide an acceptable level of service for the rest of the day, the scheme may have seemed reasonable. The doubled-up p.a. passenger number of 749,050 gives an unrealistic average of the trains running at 24.3% of seat capacity and, given the benefits of quicker commutes and removing some cars from the 'rush hour' traffic, that might have seemed good enough - although it would still have meant, on average, trains running three-quarters empty. But with the genuine estimates, average seat occupancy is a very poor 12%. This is the difference between running expensive and polluting trains which at least benefit a fair number of commuters, and benefitting not many commuters at all.

There are two other confusing ambiguities or anomalies. The first is that per annum passenger numbers do not refer only to those travelling to and from Portishead or Pill; they include passengers between Bedminster and Bristol TM. It is not clear how this relates to the bar charts at figures 3.9-3.12. The second (related) anomaly is that Pill passenger numbers are apparently double-counted: 'Maximum train load for the Portishead line service is assumed to be between Bristol Temple Meads and Bedminster, including all demand identified for Portishead and Pill stations (by direction) *and 50% of additional demand generated at* Bedminster *and Pill.*'[8]

Not only are there these mistakes and ambiguities, but we are given no numeric details of any projected ratios of passengers to capacity. Anyone reading the *Outline Business Case* – an interested citizen, a councillor on a planning committee or voting on the scheme - is left in the dark. That is to say, he or she cannot easily judge the real-world utility or futility of the scheme, and the mistakes and ambiguities in these points of information hardly encourage great faith in the integrity of any of the other statistics offered in the *Outline Business Case*.

In sum up, it seems that the best to be said for this scheme is that 40 of the 224 trains per week serve to reduce the 'rush-hour' road traffic, marginally. That is, less than one in five (18%) of all the trains - and only 15 of those 40 trains will be more than 30% full. Meanwhile, few of the other 184 trains a week will carry as many as 30 passengers (11% of capacity) - not even a single-decker busload. Again, numbers are expected to rise by 2036, but not by a great deal. One wonders if, when they endorsed this scheme, WECA and NSC councillors

6 *Outline Business Case*, op. cit. (n. 3), p 26, table 3.1: New stations demand forecast.
7 James Willcock, email to Barry Cash, 20 November, 2020.
8 *Outline Business case*, op. cit. (n. 1), p 35 (my italics).

were aware of how little use will be made of the trains, and how little impact they will have on road traffic.

(ii) Post-pandemic commuter numbers are very likely to be considerably lower than the published estimates. Whether or not restrictions on movement and association due to the current pandemic extend beyond 2021, it would be reckless to assume that commuting will return to previous patterns or levels. This will not happen - neither soon nor for the foreseeable future. The high risk of contracting an airborne disease encourages the use of private cars and discourages travel by any sort of public transport. Most economists agree that, in the wake of the pandemic and Brexit, business activity will be depressed for a number of years.

Since March 2020, every business which can do so has encouraged working from home, with as many employees as possible travelling to the organisation's hub only once or twice a week, if that. Anecdotally, productivity has not suffered (in fact, it may well have improved), and apparently most employees are happy to work at home. This substantial alteration in the locus of work has badly affected ancillary services in city centres (sandwich bars, cafes, pubs, etc.), with a consequent threat to jobs in those businesses - and a further decrease in commuting. Since organisations now realise that significant savings in rents and other overheads can be made by cutting-back on city centre office space, and online shopping is now normal, there is no reason to suppose that the pronounced changes in commuting registered in 2020 will be anything near fully reversed when the current pandemic is over.

In which case, validity can no longer be claimed for the estimated passenger numbers on which the proposed scheme is predicated. While it would already be irresponsible to judge the utility, financial viability and environmental safety of the scheme while ignoring the very low ratio of passengers to capacity outlined in Section 1.i (above), it would be equally wrong to ignore the fact that the official estimates are outdated and rendered excessively optimistic by the Covid-19 pandemic. It is clear that commuters are now even less likely to abandon their cars for any kind of public transport, and the capital and running costs of the trains far outweigh the possible benefit to a much reduced number of commuters or from a slight reduction in the volume of road traffic.

Changes in commuting during 2020 are registered in the official statistics.[9] Compared to the first week of February, car use began to decline in early March, was down to 64% by 23rd, and had fallen to 23% by the end of the month. The numbers hovered in the 30s and 40s through to 14th May, and between summer and autumn they slowly climbed back to the 80s. Between March 8th and October 26th, only five (weekend) days registered 100% or slightly above. Just before the second national lockdown, Monday November 2nd registered 87%

From the end of March through to the end of May, national rail passenger numbers were below 10%. Numbers slowly increased to reach just over 40% in first part of September, but had fallen back to 32% by 2nd November.

The slump for national bus passengers mirrors that for trains. Numbers fell to the lowest point (10%) on April 8th, remained very low from March, managed to exceed 35% by 24th July, and exceeded 50% by the beginning of September; they peaked at 61% on September 29th, but had fallen back to 59% by November 2nd.

As a metro-type journey, the Portishead-Bristol rail commute can be compared to the London tube. Numbers there were down to 9% by 24th march and did not reach 10% again until June 1st; they reached 21% by July 10th, and 30% by 17th August; after that they remained in the 30s, and stood at 37% on November 2nd.

It is uncertain how long there is immunity after contracting Covid-19, and there is no guarantee that any vaccine will work more than a few months. It is therefore unlikely that the current pandemic will soon be defeated. In addition, ever since the HIV/AIDS pandemic, and especially since SARS CoV, epidemiologists and environmental scientists have constantly warned of an increased risk of pandemics, mainly due to globalised human contacts, climate

9 Use of transport modes: Great Britain, since 1 March, 2020 www.gov.uk/government/ statistics/ transport-use-during-the-coronavirus-covid-19-pandemic

change, and the escalating destruction and degradation of natural habitats. Responding to the current pandemic, researchers for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (*IPBES*) concluded that: 'Complex links between climate change, increased human disturbance, land-use change, habitat loss/degradation and biodiversity loss have all been linked to increases in the prevalence and risk of animal-borne disease for a variety of pathogens… Future pandemics are likely to happen more frequently, spread more rapidly, have greater economic impact and kill more people if we are not extremely careful about the possible impacts of the choices we make today.'[10]

In light of the fact that a good proportion of the office work previously conducted in towns and cities has effectively shifted into employees' homes, and of the distinct possibility of further pandemics in the near future, it would be irresponsible to rely on current estimates of passenger numbers for the proposed railway. Even with the relaxing of 'lock-down' and offices and businesses re-opening, passenger numbers for buses and metro-type trains were down by more than two-thirds compared to pre-pandemic levels. Covid-19 forced a radical shift in the locus of work for many employees, and it would be over-optimistic to assume that commuting by public transport will get back to even two-thirds of the previous level any time soon, or in the foreseeable future.

2: Trains are inconvenient

(i) *Trains tend to take you from where you aren't to where you don't quite want to go*.[11] Trains are not very convenient for short journeys such as to Bristol. Whereas most of Portishead's residents live within a few minutes' walk of a bus stop, only about half live within 1000 metres (10-12 minute walk) from the proposed station (Quays Avenue). It is therefore likely that the great majority of those living any distance from the station will begin and end their commute by car; also, many more commuters are likely to use a car to get to and from the station in winter or bad weather.

As discussed in Section 4 (below), it is not apparent that those costs are factored into the calculations, but ferrying commuters to and from stations must add to the scheme's estimates of pollution and greenhouse gases; it is known that fuel consumption peaks in the first few minutes of starting a vehicle and, due to a cold catalytic converter, nearly all the harmful emissions from a car journey occur immediately after starting.[12] Getting passengers to and from the stations will also add to traffic problems; it also creates the need for new carparks (and yet nearby roads may still be obstructed by overflow parking).

(ii) The schedule of one departure an hour, 17 hours a day, takes a very expensive sledge-hammer to crack just the two daily nuts of peak demand. While there will be no extra trains when they are most needed - i.e., 7-8.30am (Portishead) and 4-6pm (Bristol) - the demand for the other 'rush hour' trains around those peaks is so low as to take up only one-quarter of the seats, at most. Every other train throughout the day will run with very few passengers at all. (See Section 1, above)

3: Costs far outweigh benefits

(i) With a capital outlay of £116m and running costs bound to exceed those for buses, the documentation provides no convincing evidence for an overall benefit.

(ii) As well a high capital cost, the official report estimates running costs at up to £5m more than revenues in the first three years, but claims that the trains 'could break even after 5 years and thereafter the revenue should cover scheme operating costs'.[13] However, it is not clear (in the section on Financial Profiles) how the authors arrive at that conclusion, especially since passenger numbers are not expected to suddenly increase dramatically after five years. The combination of a huge debt from the high capital cost and much higher

10 Settele, J et al (2020) Stimulus measures must save lives, protect livelihoods, and safeguard nature to reduce the risk of future pandemics. https://ipbes.net/ covid19stimulus

11 *Cambridge guided bus reviewed by Robert Bond* youtube: OfPcU9s0&ab_channel=NoelGarner

12 www.greencarcongress.com/ 2016/08/20180622-coldstart.html

13 Forecasting Report, op. cit. (n. 1), p 39.

running costs than commuting by car or bus will ensure that travelling on these trains will always be expensive and/or heavily subsidised.

(iii) Taking into account capital as well as running costs, research finds that buses are at least twice as efficient as trains.[14] There seems to be no convincing financial case for not examining possible improvements to the bus service rather than rebuilding the railway. For example, there could be considerably higher energy efficiency/much lower financial and carbon costs by investing in eco-buses (renewables-electric, biogas or hydrogen) rather than highly polluting diesel trains; road changes could also be made so as to prioritise buses, and bus use could be encouraged by subsidising fares and/or a congestion charge and more parking charges in Bristol city centre. (See the argument in Section 5.i, below.)

4: Unwarranted increase in greenhouse gases

This scheme results in an unjustified ongoing increase in greenhouse gases and needless building on green spaces. Only one in six of the diesel-guzzling scheduled trains will carry as much as a single-decker busload of passengers, while many commuters will have to get some distance to or from a station - probably by car, hence the planned Portishead railhead carpark. The estimated net increase in greenhouse gas emissions (CO2 and NOx) 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 NOx at 11.8 tonnes. However, as suggested in Section 2 (above), these may be underestimates. On the face of it, whether or not the estimates are good, 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.[15] Moreover, the substantial production of greenhouse gases is an issue that is not adequately addressed.

(i) The *Outline Business Case* states that by reinstating trains along this route there will be an initial reduction of 580 vehicles (one-way trips) per day,[16] 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. Unfortunately, the scheduled 224 diesel train journeys each week will emit 1,208 tons of CO2 p.a.[17] As a result, '[a]s 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.'[18]

However, 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 clear sign of including the 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 emissions 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) will be 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). Commuters will most likely travel to and from the station by car; say, an average of 2km for each journey. If

14 www.energyskeptic.com/2016/What is the most energy efficient mass transit mode: bus, rail or auto?

15 www.gov.uk/government/news/uk-ratifies-the-paris-agreement

16 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 PG 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 surely switch from bus travel.

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

18 Ibid.

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.[19] 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.)[20] 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 Germany'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.'[21]

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.[22] 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 somewhat 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.[23] Again, cars travelling to and from stations do not seem to be factored into the estimate.

While 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, for staff and children at Trinity Primary School, Portishead. The plan is to locate the terminus perhaps 60 metres from the school, and for 180 metres the railway runs parallel to the playing field at the school boundary, and only 10 metres from it; the nearest part of the school building is 25 metres from the line. Surely this is hazardous? 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 cause and aggravate many health problems, including asthma and child brain-development.

(iv) Commuters will almost certainly add to local traffic problems by driving to and from the station (see, Section 3.i, above). 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, 'wasteland' tarmacked and built on when best

19 www.lightfoot.co.uk/news/2017/10/04/how-much-co2-does-a-car-emit-per-year/

20 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.

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

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

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

left to nature, and diesel-thirsty trains[24] running to an inappropriate schedule, there will be little improvement in overall congestion and a significant increase in overall pollution, including CO2, NOx and particulates.

(v) 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. Whereas the proposed train schedule is rigid, at least a bus company is able to adjust its schedules according to demand. Besides, given the political will, at comparatively little cost the local authorities could provide the conditions for substantial improvements to the bus service (as suggested in Section 3.iii, above, and elaborated in 5.i, below).

(vi) The above quote from the Environmental Statement (ES), with regard to the net increase in the main greenhouse gas, continues: '…[T]he 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.[25] 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.''[26]

On the contrary, while projected increases in greenhouse gases may be a small proportion of the national total, any net increase is significant and ought to be avoided since it adds to the global accumulation of greenhouse gases that drives 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.

(vii) Needlessly increasing greenhouse gases is unconscionable. The Inquiry panel ought to be aware that atmospheric CO2 had already risen about 28ppm from the pre-industrial level to 311 in 1950; by 1990 it was 354, and by 2019 it was 411. 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 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. Having surpassed Pliocene levels of CO2 by 2025, future levels of CO2 are not likely to have been experienced on Earth at any time for the last 15 million years, a time of even greater warmth than the Pliocene. We don't yet see Pliocene-like temperatures and sea-levels because it takes time for Earth's climate to fully equilibrate to higher CO2 levels. But due to human emissions, CO2 levels are still climbing…[27]

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

24 Fuel consumption for a 3-car train type 166DMU = 2 mpg. www.railforums.co.uk/threads/how-far-on-a-tank-of-fuel.103693/

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

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

27 Mehar, P (2020) By 2025, CO2 levels in atmosphere will be higher than at any time in the last 3.3 million years. www.techexplorist.com/2025-co2-levels-higher-time-last-million/33709/ July 11

making the city carbon neutral by 2030.[28] 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 will be prevented from entering Bristol central zone between 7am and 3pm, and commercial vehicles will have to pay.[29] And yet, with this scheme, more diesel trains would be running in and out of the city, emitting significant quantities of CO2, NOx and particulates for no good reason.

5: No alternatives were properly examined

No alternatives to trains were seriously considered.

In particular, WECA and NSC could have examined ideas for improving bus travel. Several bus services run from Portishead and Pill to Bristol, and the proposed trains would certainly 'poach' some (perhaps many) commuters from them. While it might seem a good idea to have trains compete with buses, each route runs through districts not close to either station, and significant sectors of the public - senior citizens, school children, anyone without a car - would be seriously disadvantaged were current bus services rendered unviable due to a loss of custom. While peak demand for the Bristol commute might ideally be better served by trains (for those who live near a station), the off-peak trains (when road traffic is not a problem) would further lower the overall demand for buses. Were such competition to make a bus route unviable to the extent of services being discontinued, the local population would be deprived of a public transport connection to many nearby localities besides Bristol.

In 2001 The Portishead to Bristol Corridor Study Stage 2 concluded: 'It is not possible to achieve journey time between Portishead and Bristol equal to rail options, but buses have a considerable advantage in respect of route and frequency enhancements and in 'penetration' of Portishead and Bristol.'[30] However, a busway would precisely 'achieve journey time between Portishead and Bristol equal to rail options'.

In 2007, The Greater Bristol Public Transport Corridor Options Study 'considered Bus Rapid Transit on the operational rail line or via A4 Portway between Portishead and Avonmouth. It identified significant deliverability issues with both options [showing] that highway based modes (car, bus, etc.) are uncompetitive in terms of journey times compared with a passenger train service… This is because any highway based mode would have to overcome the strategic bottle necks at both ends of the corridor, with Junction 19 of the M5 at the Portishead end and systemic congestion at the Bristol city centre end…'[31] But the last sentence is a bizarre non sequitur: a bus rapid transit (busway) along the defunct railway line out of Portishead and joining the extant line just before Pill would not be a 'highway based mode'; its precise purpose would be to overcome the bottlenecks at M5 Junction 19 and Bristol city centre.

Be that as it may, circumstances and the technology have moved on significantly since both studies. For instance, neither buses powered by efficient lithium batteries nor the use of AI for traffic control could have been considered before 2007. The urgency of the climate crisis surely trumps any other issue, and what a decade and a half ago was unthinkable is now not only certainly possible by the application of new technologies, but necessary.

(i) Improve bus travel: In order to reduce bus journey times and encourage bus use, measures could be introduced to discourage or prevent so many cars getting into Bristol City centre. The Government is already committed to the twin policies of reducing the currently illegal rates of pollution by city traffic and encouraging pedestrians and cyclists; a radical reduction of city traffic would also help to achieve those aims. Apart from a blanket day-time

28 www.bristol.gov.uk/documents/20182/33379/ Mayor%27s+Climate+Emergency+Action+Plan+2019+FINAL

29 www.autocar.co.uk/car-news/ industry/bristol-city-council-approves-first-uk-ban-diesel-cars

30 Portishead Branch Line (MetroWest Phase 1) TR040011 Applicant: North Somerset District Council 6.6, *Environmental Statement*, Volume 2, Chapter 3 Scheme Development and Alternatives Considered Table 3.1: Brief history of the DCO Scheme, p 3-4.

31 Ibid, pp 3-4.

ban or selective permission for particular vehicles to enter the city centre (e.g., on certain days), a congestion charge could be introduced (already under discussion), and there could be more parking fees for the city centre (on- and off-road). Parking and congestion charges could help fund a bus subsidy to make fares fully competitive with the costs of commuting by car. By reducing the amount of road traffic, these measures would reduce bus travel time between Portishead and Bristol.

Perhaps the worst traffic problem is the morning rush-hour out of Portishead. By far the easiest and cheapest way to relieve this bottleneck would be to encourage bus travel by introducing a dedicated bus lane along the Portbury Hundreds, and another up from the M5 junction and past Pill. There is already a bus lane into Bristol along Portway, and instead of taking the A369, 'express' buses could run along that route.

To cut running costs and harmful emissions, eco-buses (renewable electric, biogas or hydrogen) should be introduced, and diesel engines phased-out.

Time has run out. A combination of ever-increasing health hazards from traffic pollution (especially affecting children) and the critical, ever-increasing levels of global greenhouse gases means that fossil-fuel vehicles will have to be drastically curtailed very soon, and there will have to be a radical rethink of public transport options.

(ii) A busway: Whereas *trains take you from where you aren't to where you don't quite want to go*, a busway combines the ubiquity of bus routes with the unimpeded travel of trains, i.e., over a whole journey, greater convenience and equal or greater rapidity. A busway could have a substantial impact on the amount of 'rush hour' road traffic. Not only would it remove many more cars from the roads than the planned trains, but it could also remove all the 'rush-hour' buses between Portishead and Bristol.

It is surprising that a dedicated single-track busway is not already in use from the defunct railhead at Quays Avenue Portishead, with a 3.5km roadway along the line. This would remove single-decker buses from the Portbury Hundred and speed them to Junction 19 and the M5 northbound; coming off the M5 at Avonmouth, the priority bus lane on Portway would then take commuters in to Bristol. The flow on this Portishead-M5 busway could be reversed at midday to take buses returning in the afternoon/evening 'rush hour'.

In 1992 a type of guided bus system (Guided Light Transit) was considered but rejected as an alternative to light rail transit (LRT) along the Portishead line.[32] However, both technology and circumstances (the climate emergency) have developed considerably since then, and with the advent of eco-buses it is surely time to revisit the idea of a busway all the way from Portishead to Bristol. This would remove far more cars from the roads than the proposed trains, and not create nearly 1,000 tonnes of greenhouse gases every year.

With a Strail roadway abutting existing rail track, buses would run onto, along and then off the line; at each end, they would simply re-join the roads and circulate dropping-off and collecting passengers as normal. Consisting of hard blocks of recycled vulcanised rubber (mainly old tyres), strail is already fitted at more than 30,000 level-crossings, and has been problem-free for forty years. With no need to renew track, the few Portbury Docks trains would be able to run as normal over a strail busway - outside the commuting rush hours, of course, when no buses are on the line.

The trains scheme is for an absurdly rigid all-day service: one train an hour, no extra trains for the 'rush hours', and nearly all off-peak trains close to empty. By contrast, the schedule for a busway with a reversible one-way flow primarily serving each 'rush-hour' (actually 3 hours or so) could be tweaked to accommodate a bus every few minutes at times of peak demand.

In the proposed scheme, few passengers will start their journeys or reach their destinations within only a few minutes' walk of a station (Quays Avenue Portishead/Pill/ Bedminster/Bristol Temple Meads). Whereas the rail plan fails to meet the National Policy Statement for National Networks (NPS NN) requirement for 'door-to-door journeys enhanced integration', a busway would do so, and thereby deliver a far superior service. Coming off the rail-line, buses circulating on routes at each end and using normal roadway stops would

32 Ibid, pp 3-3.

pass close to the starting points or destinations of *most* travellers. Over the Portbury Hundreds footbridge, the busway could be easily accessed by Portbury's residents via a short platform reinstated at or near the site of the old Portbury station, near the junction of Sheepway and Portbury Hundreds. Locally, this would leave only perhaps half of the Pill and Easton-in-Gordano residents more than a few minutes' walk from a bus on the busway - although most homes are within 1km (10-12 minute walk) of the station.

Taking into account capital and running costs, research finds diesel buses twice as efficient, per passenger-mile, as trains (see Section 4, above). A busway would therefore have much lower capital and running costs, especially if it ran eco-buses. Compared to a busway, train journeys are bound to be expensive and/or highly subsidised due to far higher capital costs (much bigger debt repayment) and much higher running costs; with much lower capital and running costs, busway fares could be lower than train fares.

The environmental costs (greenhouse gases, pollution, unnecessary land use) would be low for a busway, but they are unacceptably high for trains, especially since *most* of the trains will be nearly empty and *most* passengers will have to get some distance to or from a station (probably by car, thereby requiring the new carparks at Portishead and Pill).

Having consulted with Strail UK Ltd, Barry Cash estimates the cost of purchasing and installing 13.15km of strail 'roadway' from Portishead to Bristol at £45m (not including administration, planning, and project management). Obviously there would be significant other infrastructure costs due to the co-existence of railway and busway, but it seems likely that while the estimated capital outlay for the train scheme is £116m, a busway is likely to have substantially lower capital and running costs, and would be a far more user-friendly and non-polluting mode of transit.

For these reasons, a busway could appreciably mitigate rather than aggravate the climate crisis, as will be the case with the trains plan. The latter fails to achieve many of the goals set out in the NN NPS (see Section 6, below), but a busway would do so.

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There are a number of successful bus-on-railway systems; trains (or trams) are not obstructed and there is no need to renovate track. Often, tiny lateral-pointing sensor wheels are fixed into the buses' wheel-arches and guidance kerbs run along each side of the track (although adapted buses could surely by now be 'locked on' to the track by means of electronic sensors and AI technology). A busway has run between Cambridge and Huntingdon since 2011; in its first year it carried 40% more passengers than expected.[33]

The solution for Portishead-Pill-Bristol would not require a complete makeover of the rail-line, and therefore not such a high capital outlay as the Cambridge busway; lessons could also be learned from that pioneering project, such as by using more sophisticated guidance and safety devices (e.g., guidance-sensors and electronically controlled gates at both ends of the line). Eco-buses using both the normal roads and a busway along the rail-line would provide a much better service: more convenient, better scheduled, cheaper capital and running costs, and environmentally benign.

In this case, the line would be dedicated to running weekday buses into Bristol during mornings, and then the flow would reverse for the afternoon/evening rush. Having rolled off the line at one end, and circulated to deliver or pick up roadside passengers, a bus could either return by road or serve that locality for a while before running back along the line during the next peak period. The busway would run between the Portishead's Quays Avenue railhead and Cumberland Basin; at that point, buses could either enter Bristol's 52 km of newly built Metrobus routes[34] or travel anywhere in Bristol, e.g., follow a normal high-demand route through the city - to the centre, bus station, Cabot Circus, Temple Meads

33 See: *Cambridge guided busway*, op. cit. (n. 6); *Guided busway, Cambridgeshire, UK* www.youtube.com/watch?v=10UY3WC4nDY&ab_channel =LondonistLtd; Cambridgeshire Guided Busway https://en.wikipedia.org/ wiki/ Cambridgeshire_Guided_Busway

34 Nearly 2km of the Metrobus network is already a dedicated busway, along a new path from Long Ashton Park & Ride to Ashton Avenue Bridge.

Station, and back to Portishead by road or onto the strail/railway line via the metro route or Southville.

Although there is permission to run more, there are currently very few docks trains on the line - perhaps ten per week? This has been the case for years, and there are no signs of an imminent increase; these trains could run at night or off-peak in the day.

(iii) A busway would also facilitate a segregated cycleway alongside. This would be 4km shorter than the present Portishead-Bristol route. A new path would be required only between Portishead and Pill. To avoid the tunnel at Ham Green (Pill), the cycleway would come off the rail/busway line and take an existing path across The Green to Chapel Pill Lane, down to the River Avon towpath, and along to the edge of Bristol centre (Ashton Avenue Bridge).

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Barry Cash had been approaching national and local politicians with the idea of a busway since 2015; the idea was also aired in three local papers in the run-up to the decision to reinstate the trains. However, no politician ever expressed any interest. In 2017 the public was invited by the council to participate in 'a consultation' on the traffic problem. Mr Cash made a detailed submission of his ideas, but received no response. Clearly the decision to reinstate trains was already taken. It seems from the documents produced by the MetroWest Phase 1 team that the idea of running buses along the track was never examined - nor was any other alternative to reinstating diesel trains.

NSC has consistently refused to explore the idea of a busway. At the last time of asking, a spokesperson told Mr Cash: 'Changing the scheme from rail is not under consideration giving the funding is now in place and the DCO application process is in.' Yet when this was asked the DCO was at least eighteen months away, so there would have been time to make at least a provisional evaluation of the idea of a busway.

Meanwhile, Strail UK have been privately approached with the idea of a busway along the railway line and, in principle, they find it both interesting and possible. Their response takes the idea seriously, and while they acknowledge various technical issues, they do not consider them insurmountable or prohibitively expensive, and they suggest solutions.[35]

James Willcock, Project Manager for Portishead Branch Line MetroWest Phase 1, has more recently communicated objections to the idea.[36]

In response to Barry Cash's objection that the authorities refused to consider a busway in combination with the railway, Mr Willcock pointed out a number of technical and safety difficulties. Without exhaustively reiterating the project manager's objections, they may be answered as follows:

1: Strail is not 'lightweight rubber mats'.
Response: strail consists of heavy-duty composite blocks, and has been successful and problem-free in many locations (mainly level crossings) for decades.

2: Freight trains operate on the line: 'Up to 20 per day in each direction are permitted... although the current actual volume…is lower than this.'
That is why a busway has to be overlaid on the existing track; for many years there have very few docks trains - perhaps only ten per week; these could run at night or off-peak.

3: 'Neither the Office of Rail and road (ORR) nor the Rail Safety and Standards Board (RSSB) currently approve the use of buses on railways (except at level crossings).'
Approval could be sought. If strail functions for level crossings, why not for a busway?

4: Guided buses are excluded from the Railways and Other Guided Transport Systems (Safety) Regulations (ROGS).
Would it not be possible to change the ROGS to include them?

35 Portishead Branch Line (MetroWest Phase 1) STRAIL UK Comments on the Permanent Way section of the Response to Mr Barry Cash Relevant Representation, 06/07/2020. Email to Barry cash, 29 July, 2020.

36 James Willcock, Responsible Officer/MetroWest Phase1 Project Manager: Response to Barry Cash's Relevant Representation, 12th June 2020, PINS ref no. with issue ref 41-2.

5: ‘It is difficult to contemplate how a safety case for running public buses through the Avon Gorge (and including through several tunnels) would be acceptable…’
No bus would be on the line at the same time as a freight train, and the tunnels would require no modifications to accommodate single-deck buses.
6: Problems with ballast and ride quality.
Since buses are lighter than trains, on the face of it this should not be a problem; if it were, would a technical solution be impossible? Strail UK already restrains ballast by sinking a reinforced concrete wall 1 metre deep; if the busway had a kerb that could serve as a bus-guide and as well as restrain the ballast.
7: Problems with safety, critical routine inspections of track formation and easy access to the railway for routine maintenance.
Strail UK suggests constructing the busway in detachable segments. Could there not also be electronic x-ray-type scanning?
8: Problems with load-bearing on sleepers.
Sleepers would not fail were the ballast restrained as described in (6), above. Besides, the load on the 6 wheels of a 13-18 ton bus is surely less than that on the wheels of a 120 ton train.
9: Kerbs would impede the trains, equipment and cables.
At 2.55m, bus width is wider than railway track (2.4m), and guidance kerbs would be outside the track. With electronic sensors and AI there could be no need for guidance kerbs above the level of the rails. Would it not be possible to relocate track equipment - communication cables, axle counters, switches, power supplies, etc.?
10: The ‘very significant cost’ of installing kerbs to restrain 2m ballast for the 9 km of the working railway.
Compared to the £116m train scheme, would the cost be so very significant?
11: It would not be possible to operate safety critical maintenance equipment.
See (7) above.
12: Due to the additional infrastructure for a busway, trains would have ‘significantly less impact’ than buses on the protected Avon Gorge Special Area of Conservation and Site of Special Scientific Interest, and therefore more likely to secure the required consent under the Conservation of Habitats and Species Regulations, 2017.
There is no sense to the idea that, due to the additional infrastructure for a busway, running some (or even many) weekday buses would have significantly more overall environmental impact than running 34 diesel trains every day.
13: Safety and Systems Integration - the problem of ‘a 2,300 tonne diesel train hitting an 18 tonne bus on a single track railway’; the need for significant additional costs and regulatory approval; and for communication equipment in every bus for direct communications with signalling.
Buses would not be on the line at the same time as a train. Railway lines are already managed for road traffic passing over them at level crossings. Install a failsafe system, such that trains are automatically stopped when the busway is in use, and buses automatically excluded when a train is on the line. A busway would of course require regulatory approval, and the regulations would have to be redrafted. Would the costs for communication equipment be higher than the savings from not reinstating the old railway and upgrading the current track?

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It is not up to members of the public to demonstrate how a busway might be delivered. Rather, instead of assuming that the answer to traffic problems must be trains, it is legally incumbent on the authorities to explore all reasonable possibilities and to deliver the most beneficial, economical and least environmentally harmful solution. One possibility might be a busway.

James Freeman is MD of First Bus (West of England). Replying to an enquiry from Barry Cash, he agreed that the feasibility of a busway along the old railway line and joining the extant line (at Pill) deserves proper examination. He wrote that he was

'…involved in a project… strikingly similar to your proposal, in the early-1990s. I was then working for the Badgerline Group plc… and our scheme was called the "Avon Gorge Expressway".

At that time our proposition was to use the kerb-guided busway principal that much more recently was adopted for the m2 metrobus route between Cumberland Road and Long Ashton P & R. Like your proposal, this envisaged fitting the busway around the existing single track railway and using the highway system for off-peak and contra-flow movements. Your system is broadly similar in concept though the actual runway that you are envisaging would, I take it, not involve any material alteration to the buses themselves, which would be equally at home on the STRAIL as on the ordinary road.

…The challenge is that WECA is committed to heavy rail. Much of their upcoming planned investment is in the Metrorail project, of which the Portishead route is one of the flagships. Furthermore, I am quite certain that every vested interest in the book would emerge to tell the world why a train is the only sensible solution to Portishead's problems - even though a legitimate concern is that an hourly train service is only going to scratch the surface of this opportunity.

So, much as I am delighted… by your proposition, I cannot believe that it would prosper…, as plans for the heavy rail scheme are so well-embedded. The objection will be that only trains can recruit people out of their cars (although I am not sure that this is actually true) even though your intriguing proposal is likely to be cheaper to create, and to be considerably more cost-effective than anything which is going to be provided under current plans…'[37]

6: The Portishead railway scheme compromises policy and legal 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.[38] 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 the trains creating a far greater amount of greenhouse gas. (This is shown in Section 4, above.) Therefore the scheme breaches the Paris Climate Agreement.

(ii) In February 2019, North Somerset Council (NSC) declared a climate emergency and set a target for North Somerset becoming carbon neutral by 2030.[39] In July 2019 West of England Combined Authority (WECA) also declared a climate emergency, and committed its area to carbon neutrality by 2030.[40] By endorsing this scheme, both authorities compromise their policy on greenhouse gas emissions.

(iii) Several paragraphs in the NN NPS set goals which this scheme fails to meet.[41] Viz: (a) Meet legal requirements and not entail greater costs than benefits: 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.'

37 James Freeman, email to Barry Cash 13 March, 2020.

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

39 www.n-somerset.gov.uk/news/ actions-tackle-climate-emergency# 19 Nov

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

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

On the face of it, my main Sections 3, 4 and 5 (above) indicate failures to abide by these requirements.

(b) The need for lower carbon transport choices: 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.’

See Sections 4 and 5, above.

(c) Support the switch to ultralow emission transport: p 25, 3.7: ‘The Government is committed to supporting the switch to the latest ultralow emission vehicles.’

See Sections 4 and 5, above.

(d) Improve air quality, reducing CO2 emissions: 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].

See Sections 4 and 5, above.

(e) Reduce costs and environmental impacts: p 27, 3.14 recommends ‘[i]nnovative 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.’

See Sections 3, 4 and 5, above.

(f) Reduce carbon emissions by providing sustainable door-to-door journeys: 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.’

See Sections 2, 3, 4 and 5, above.

(g) Investment in cycling and pedestrian environments: 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 infrastructure…’

See Section 5, above.

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 by the provision of new carparks. 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 (see 5.iii, above).

(h) Integrate sustainable transport modes, facilitate better travel to stations: 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.’

See Section 5, above; this scheme addresses neither integration nor sustainability.

(i) Cut greenhouse emissions: p 49 5.16 ‘The Government has a legally binding framework to cut greenhouse gas emissions by at least 80% by 2050.’

See Sections 4 and 5, above.

(j) Legal requirement to meet carbon budgets. 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.’

See Sections 4 and 5, above.

For any official or authority wishing to break the law with impunity, the last sentence in the above quote ('Therefore… targets.') is a most convenient circumlocutory non sequitur. Rather than discouraging planners from breaching legal requirements to not increase carbon emissions, it invites them to do so - just a little, as it were. Interpretation of this directive hinges on the phrases 'so significant' and 'material impact' - as if not every net increase in CO2 is significant and does not add to the global total. Since 2014, when NPS NN was published, we have learned much more about the urgency of the escalating climate crisis, and should know that *every* unnecessary net increase in CO2 emissions is significant.

(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 (especially 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.'[42]

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.'[43]

Objectivity, the evidence and acting in the public interest were 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 involves financial and environmental costs that far outweigh any benefit; other than admitting that there would be only one train an 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 (as indicated in Sections 1-4, above). Information about the many deficiencies of the official plan has not been made public, and has to be painstakingly dug out and deduced from the long and technical Funding Bid document.

42 The Civil Service Code-GOV.UK www.gov.uk/government/publications/civil-service-code/the-civil-service-code.

43 www.westof england-ca.gov.uk/wp-content/uploads/2019/02/Code-of-Conduct-for-LEP-Board-Members-2018.pdf; NSC Code of Conduct temporarily unavailable.