



## Greengauge 21 response to National Infrastructure Commission consultation on the *second National Infrastructure Assessment*

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Greengauge 21 is a not-for-profit transport think tank. At a national level we have made the case for high-speed rail and we have set out what a national rail plan could look like. We have also supported the case for rail re-openings at a more local level. Greengauge 21 wants to see a national high-speed rail network that is fully integrated with today's rail system. It also wants to see the existing rail network improved and extended to meet the strongly growing demand for sustainability in our national transport networks.

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### **Introduction**

We have responses to the questions raised in the consultation under the headings: **Introduction** (questions 1 and 2); **Climate resilience and the environment** (question 13); and **Levelling Up** (questions 16 and 17).

**Question 1: Do the nine challenges identified by the Commission cover the most pressing issues that economic infrastructure will face over the next 30 years? If not, what other challenges should the Commission consider?**

**A1** We believe there is a tenth challenge that the National Infrastructure Commission (NIC) should not ignore. As with our other consultation responses, our evidence comes from the transport sector.

The tenth issue is that of **behaviour change**. While the NIC may consider this to be beyond its remit, and in 'normal times' that might be appropriate, these are not normal times, given the climate emergency and the imperatives for change that the NIC has (rightly) acknowledged.

There are two fundamental reasons why behaviour change has to be considered in NIA2:

- (i) because of the need to consider modal shift within the policy mix
- (ii) because of the need to replace fuel/vehicle taxes in a suitable form for charging road use by electric vehicles.

### **Modal Shift**

Road transport accounts for 67% of greenhouse gas emissions, and it is clear there must be dramatic changes in travel behaviour to reach [Government's net zero target by 2050](#). There has been no net reduction in carbon from transport since 1990, as the NIC points out.

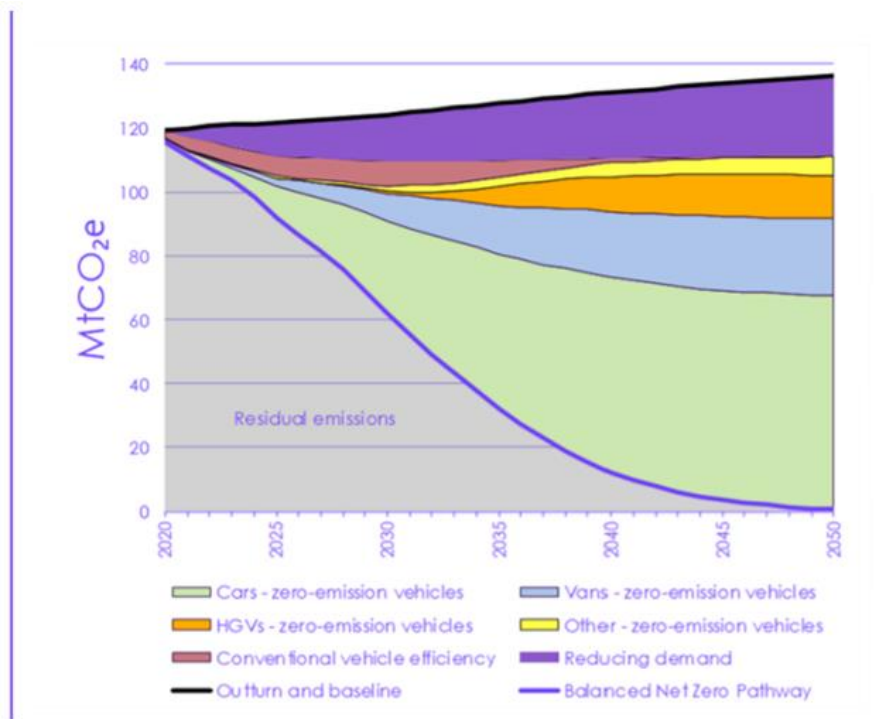
Consumers and businesses are going to need to change and this is acknowledged for example in DfT's Decarbonisation Plan of July 2021 which says it places a "heavy emphasis on modal shift". It notes too that is "essential to avoid a car-led recovery [from the Pandemic]."<sup>1</sup>

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<sup>1</sup> <http://www.greengauge21.net/wp-content/uploads/Modal-shift-matters-portrait-version.pdf> January 2022

But there are no plans to achieve the modal shift DfT calls for. When such plans emerge – as they must – it can be expected they would lead to a revision of the infrastructure needs and priorities to be set out in NIA2.

We detect some Government reluctance to engage in this area. Worryingly, the Committee on Climate Change summary conclusions on how to get the transport sector to net zero also excludes modal shift – see diagram below.



Source – *Unpacking the Sixth Carbon Budget – The transition for transport (page 12), The Committee on Climate Change, 2020*

As the NIC notes, the Climate Change Committee (CCC)'s balanced pathway scenario assumes emissions from surface transport will fall to 32 MtCO<sub>2</sub>e by 2035 and to 1 MtCO<sub>2</sub>e by 2050.

This is largely based on technical changes to vehicle fleets (mainly through a switch to re-chargeable battery power) although these changes are not enough to get to net zero by 2050.<sup>2</sup> So the Committee supposes that a straight-forward reduction in transport demand will be used to fill the gap: a demand reduction, coloured purple in the diagram, that will also be needed to meet national targets.

There is no discussion on how this will be achieved or what its consequences might be. Journeys are made for reasons (social, economic) and restraining them brings negative economic and social consequences. Not only that: the level of restraint and travel demand reduction the CCC envisages

<sup>2</sup> Recent evidence shows that the trend towards larger vehicles (especially SUVs) has outweighed, in emission terms, the switch to EVs. See: [People buying SUVs are cancelling out climate gains from electric cars | New Scientist](#)

would only be achievable by some form of financial instrument, such as road user charging or steep fares rises.

Road user charging has been long proposed by transport economists on the grounds that road vehicle users impose costs on others (noise, poor air quality, road traffic accidents affecting pedestrians and cyclists *etc*), costs that could be addressed through tax revenues raised from road user charges. This was described as a congestion charge in the London case when it was first introduced because with less traffic, congestion delays would be moderated both for buses/taxis and other 'essential' or charge-paying traffic.

The Climate Change Committee advises Government, and its chart reproduced above ignores the policy option of encouraging a switch from high-carbon to zero-carbon travel modes. This can become an easier choice for people to make if the zero-carbon option is made more attractive.

We think that the NIC needs through NIA2 to identify the extent to which some zero emission travel modes (e.g. cycling for short distances and rail for longer distances) can be improved through the provision of better infrastructure and thus the extent to which modal shift can be used to replace the 'purple gap' in the CCC diagnosis, with less negative impacts on the economy. This appears to be in line with stated DfT policy, albeit as yet there is no plan to achieve it. We call on the NIC through its NIA2 to provide it.

### ***Road User Charging with electric vehicles***

Useful evidence on the acceptability of charging and the need for attention to be given to the alternatives so that people are not 'forced to pay' comes from Manchester in 2008<sup>3</sup>. Here, a plan to charge road users first and then use the proceeds partly to fund public transport alternatives was thrown out by public poll: "give us the better alternatives first" is a fair summary of the post-poll assessment. For urban areas, better facilities for walking, cycling and bus and tram networks are likely to be needed before a London-style congestion charge is likely to gain public acceptance elsewhere.

Progressive implementation of these measures across urban areas, large and small, could form a basis on which to apply national-scale road user charging without penalising those living in rural areas, where travel distances are longer, active travel options are less realistic, and public transport is in short supply.

In any event, road use cannot continue to be offered at zero cost to consumers, for two reasons:

- 1) HM Treasury would lose around £40 billion a year (around 5% of government revenue), equivalent to about £750 per adult in the UK. Most of this comes from (fossil) fuel duties, which in 2019–20 was expected to raise £28 billion in their own right plus an additional £5.7 billion from the VAT payable on the duties. Another £6.5 billion comes from vehicle excise duty (VED).<sup>4</sup> Based on unchanged fuel duty and VED policies, the Office for Budget Responsibility's July 2021 report estimated an equivalent Treasury [loss of 1.5 per cent of GDP](#).
- 2) Any reduction in motoring costs – such as cheaper per mileage costs with electric vehicles, incentivizes more road use, more private car travel. Leaving aside the adverse safety and wider social and environmental impacts of more road traffic

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<sup>3</sup> <http://www.greengauge21.net/wp-content/uploads/Modal-shift-matters-portrait-version.pdf> January 2022

<sup>4</sup> <https://ifs.org.uk/publications/14407>

(even if 'electrified')<sup>5</sup>, this means more road traffic and economically damaging road congestion. Moreover, cheaper per mileage costs can only encourage the trend towards larger heavier vehicles (SUVs) and at the margins exacerbate the shortfall in electricity generation capacity.

We understand that no decisions have been taken on this key policy area of charging for road use. But the NIA2 will be mis-specified if there is no consideration of the likely need for active policies to encourage modal shift and if a 'reasonably likely scenario' on road user charging or other fiscal measure is ignored: say one that as a minimum generates the same tax revenues for future years as are currently obtained from the (very largely) petrol/diesel road fleets of today.

***Question 2: What changes to funding policy help address the Commission's nine challenges and what evidence is there to support this? Your response can cover any number of the Commission's challenges.***

**A2.** We know that, as incoming Chancellor of the Exchequer George Osborne found twelve years ago, there is little left available that is ready to be 'privatised' and return funds to the Exchequer. One such source he could identify at the time – and the only one of significant value – was High Speed One (formerly: the Channel Tunnel Rail Link). By auctioning a 30-year concession, HM Treasury was able to recoup a very significant proportion of its capital outlay on this project.

Could a similar position be taken with (say) HS2? Going forward there is no policy position on this, its absence driven by a DfT rationale that (while the possibility is now acknowledged) 'we don't have to decide on such matters now'. Maybe not with an eye to the short term, but the effect is that the rare reality of offsetting capital costs (as for instance will arise with HS2) is not being factored into decision-making on the costs of completing the project. The NIC operates within an agreed budget cap that takes no account of the differential prospects for asset sales across its portfolio, an avoidable distortion.

Unlike virtually every other form of major infrastructure capital investment, there exists in the UK the necessary regulatory mechanism to secure a major concession value from completed new rail infrastructure projects because they generate an income stream in the form of track access fees. Greengauge 21 pointed this out as long ago as 2012.<sup>6</sup>

There is here a key opportunity to fund a significant part of the multi-phased HS2 project (and Northern Powerhouse Rail) using concession income from early phases to fund successor stages in a rolling investment programme.

We argue that this should be taken into account in NIA2 budget setting. Doing so will have the effect of reducing the net budgets that need to be allocated to major new rail infrastructure and avoid unnecessary distortions in the financial case for such projects<sup>7</sup>.

***Question 13: In what ways will current asset management practice need to improve to support better infrastructure resilience?***

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<sup>5</sup> Electric vehicle emissions include health damaging particulates from tyres and brakes; most traffic noise is tyre/surface, not from engines.

<sup>6</sup> [https://pwc.blogs.com/press\\_room/2011/07/high-speed-2-on-track-for-delivering-a-return-on-government-investment-new-report-reveals.html](https://pwc.blogs.com/press_room/2011/07/high-speed-2-on-track-for-delivering-a-return-on-government-investment-new-report-reveals.html)

<sup>7</sup> Similar treatments of other capital projects could be made if they are capable of generating future income streams – in many other countries toll roads fulfil this requirement.

**A13** The need to allocate more resource to maintaining infrastructure in the face of increasingly problematic climate change and extreme weather events has been clearly identified by the NIC.

For rail, asset management practice currently is based on the existing rail network and risk assessments carried out across the 'regions' (routes) that comprise the rail network geography. For a long period it has been taken that the network will remain unchanged and resources are allocated within that context. Until recently, the way work was programmed presumed that weekday commuter periods were to be regarded as sacrosanct, with engineering works carried out at weekends and over extended bank holiday periods.

But today's network may be forced into changes. Outright route closures are probably unlikely (although if for any reason rail usage does not recover post-Covid, there might be a case or two to consider), and a major remedial cost (after flood damage for example) might trigger a line-specific review. A strategic and nationwide view needs to be taken, in part because the costs of resilience works are likely to run to multi-£bn. They will inevitably displace some expenditure on enhancement projects.

We suggest three areas of improvement are needed, all strategic in nature:

1. A core national rail network should be defined over which alternative routeings should be available to accommodate an appropriate level of diversions should the need arise to provide *resilience for key traffic flows* which could be defined around (i) key national logistics/freight flows and (ii) the need to maintain national rail passenger service continuity to all major cities and regions
2. Works needed for infrastructure resilience enhancement should make use of alternative routeing strategies in order to allow extended line possessions to carry out works cost-effectively
3. In exceptional cases and only where there is scope to do so, alternative routes should be created to provide the core national network for resilience, with the benefits arising from extended line possessions included in the re-instatement/line re-connection business case appraisals.

The case of Devon/Cornwall and the city of Plymouth provides a live example. There is only one railway connecting south Devon and Cornwall to the rest of the national rail network. No other county or major city is dependent on a single climate change-vulnerable rail link.

Re-instatement of a second line via Okehampton and Tavistock is a long term aim of the region.<sup>8</sup> The existing railway is subject to climate change-related threats. Eight years ago, the line was breached at Dawlish, and it had to be closed for 2 months. South Devon and Cornwall lost its national rail connections. In the years since then, service closures have been needed at short notice because the railway, built on an extended sea and estuary wall is subject to storm damage, especially at high tides. Major remediation works still lie ahead in a resilience programme that runs over multiple decades.

The resulting lack of network resilience is damaging confidence in the economy and reducing the value of rail in this part of the country.

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<sup>8</sup> The reinstatement of the rail line to Tavistock is identified in the 20-year plan of the Peninsula Rail Task Force, highlighting it as a key second phase for the Northern Route between Plymouth and Exeter via Tavistock, following on from the reinstatement of services between Okehampton and Exeter.

The business case to complete the second line as an alternative route for South Devon and Cornwall depends on identifying a more cost effective, extended-possession, approach to remedial works on the existing line. But Network Rail is under no compunction to consider such opportunities under its 5-year regulatory assessments. So, an investment with significant local and strategic benefits and the opportunity to cut the cost of resilience works is being overlooked. NIA2 is an opportunity to bring about cost-beneficial policy change.

There is a further point here that flows from identifying a core national rail network and alternative routings. Upgrading and renewing the existing rail network can be re-thought when HS2 comes into being, changing what is available in terms of alternative routes. HS2 is being built to much higher resilience standards than the 19<sup>th</sup> century rail network it is designed both to relieve and strengthen. While HS2 does not have the interfaces with the existing network to accommodate diverted freight flows, it will remove the need to operate fast intercity trains on some existing lines, creating the opportunity for extended remedial resilience work without such significant loss of network capability and passenger revenues.

***Question 16: What evidence is there of the effectiveness in reducing congestion of different approaches to demand management used in cities around the world, including, but not limited to, congestion charging, and what are the different approaches used to build public consensus for such measures?***

**A16** Please see our answer to Question 1 above. We believe that the issue of behavioural change (and measures such as road user charging) is so important to NIA2 that we have raised it as an area needing to be added as part of the suggested additional (tenth) key challenge. Our answer to Q1 also applies to Question 16.

The case for road user charging is altered by Electric Vehicles (EVs), for which there are currently no fuel duties payable and no vehicle taxes either. This of course fundamentally changes the variable costs of driving and discourages mode shift choices away from road use. The road network risks being swamped by unpriced use by EVs.

***A three stage programme is needed***

The additional electrical power generation and grid capacity needed for EVs will be very significant and should be paid for starting in 2022 by an initial charge applicable to all EVs on a per vehicle basis (possibly differentiated by size/weight of vehicle). This would be the first of three stages needed to contain the impact on Treasury debt levels and to ensure the national highway network continues to offer a good level of service.

The transparency of the first stage of this approach is important in building public support for the new charge. It needs to be additional to the new vehicle tax which should cease to have an exemption for EVs, otherwise it will not represent a new revenue stream in comparison with the normal Treasury income from car/van fleet turnover.

The evidence available from around the world is that people are comfortable with road user charging provided they share the reasoning for it and it is judged to be fair. Most new highways globally are tolled. New, (relatively) uncongested, highways where there is a 'free' alternative – the older, slower, lower quality road – have widespread public acceptance.

The second stage in charging for road use is likely to be a development of city-based schemes. These, experience shows, work best as part of a package that includes provision of better, attractive public transport facilities. This means a much larger commitment to the NIC's planned 'catch-up'

investment in urban public transport. Britain is now seriously out of line with other European countries in the scale of its provision of zero-carbon LRT systems.

The third stage would see charging systems applied to the national strategic highway network, including motorways. In Britain, there is a timely opportunity to align their introduction with the advent of HS2 services – i.e. when a better alternative is made available to longer distance car travel.

**Question 17: What are the barriers to a decision making framework on interurban transport that reflects a balanced approach across different transport modes?**

**A17** The barriers are:

- (i) Institutional
- (ii) The absence of a modal shift programme.

Interurban transport suffers by its absence from the decarbonisation debate because it is little realised that longer distance journeys by road account for a significant percentage of national vehicle miles and so a significant percentage of national greenhouse gas emissions too. Evidence on this subject, drawing on case studies in relation to the value of high-speed rail investment has been recently published.<sup>9</sup>

#### ***Institutional barriers***

The Department for Transport is very largely organised along modal lines, as are its executive agencies. DfT's last attempt to establish priorities on a multi-modal basis (the multi-modal corridor programme of 20 years ago – essentially strategic road studies with a multi-modal veneer), while well-intended, was not regarded as a success.

The largest executive agencies (Highways England and Network Rail) remain cast as rivals (although now with a common Regulator). But they co-operated well in a recent study of the Southampton-Midlands Corridor and agreed areas where each mode could play a leading role in overcoming identified challenges.<sup>10</sup> Further such exercises should be encouraged.

#### ***The absence of a modal shift programme***

This has been documented in recent Greengauge 21 work.<sup>11</sup> This point is connected to the institutional points above. There is no basis for Highways England and Network Rail, for instance, to work up a modal shift programme for DfT, yet clearly they could do so if so instructed/asked.

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<sup>9</sup> <http://www.greengauge21.net/wp-content/uploads/Modal-shift-matters-portrait-version.pdf> January 2022

<sup>10</sup> <https://www.railadvent.co.uk/2021/07/network-rail-and-highways-england-publish-the-first-phase-of-the-solent-to-the-midlands-multimodal-freight-strategy.html>

<sup>11</sup> Greengauge 21 *Modal Shift Matters*, January 2020