National Infrastructure Assessment

Response to the National Infrastructure Commission's Call for Evidence

04/02/2022

Introduction

This is the response of the Great British Railways Transition Team (GBRTT) to the Baseline Report & Call for Evidence, published by the National Infrastructure Commission in November 2021.

This response is in three parts:

- A brief introduction to GBRTT and, more specifically, the Whole Industry Strategic Plan (WISP).
- Comments on some of the key issues that the National Infrastructure Assessment (NIA) and the WISP will both have to address, and on which it may be particularly helpful for the NIC and GBRTT to work together.
- Responses to some of the Call for Evidence questions specifically posed by the NIC. Where appropriate we cross-refer to the response that we understand is being submitted by Network Rail, as the main railway infrastructure manager in the UK.

We would be happy to discuss any aspect of this response further, and look forward to working with the NIC as the NIA and the WISP progress.

GBR Transition Team and the Whole Industry Strategic Plan

Rail reform and the GBR Transition Team

The Williams-Shapps Plan for Rail announced fundamental structural reforms to the rail industry including:

- the creation of a new public body, Great British Railways (GBR), to run the rail network in the public interest and to be the single "guiding mind" for the railways. GBR will produce for ministers a 30-year strategy to provide clear long-term plans for the network; and
- the replacement of franchising by new Passenger Service Contracts, focusing train operators on meeting passengers' priorities and incentivising them to grow rail usage, as part of an integrated system.

The Plan for Rail also announced a new deal for passengers, with range of commitments such as the simplification of fares; changes to ticketing including the introduction of digital ticketing across the network; and better integration with other modes of transport.

The GBR Transition Team (GBRTT) has been set up to help drive forward reforms and create the railway's new guiding mind, on behalf of government.

The Whole Industry Strategic Plan and alignment with the NIA

Part of GBRTT's work is the preparation of the Whole Industry Strategic Plan (WISP), which will become the first 30-year strategy for the railway.

The WISP is based around a set of objectives defined by government for the railways:

GREAT BRITISH RAILWAYS TRANSITION TEAM

	Strategic Objectives	Ambition for rail
I	Meeting customers' needs	Meeting the needs of future passengers and freight customers by: a. Increasing value for money and improving the performance, reliability and convenience of rail, b. Meeting multi-modal expectations and reducing end-to-end journey time, c. Maintaining a safe railway as part of a safe transport system and widening accessibility.
II	Delivering financial sustainability	Ensuring rail is financially sustainable, efficient and value for money by: a. Reducing costs to government, b. Ensuring a sustainable balance of fare/fee and government funding, and c. Increasing the efficiency of operations, asset management and capital investment – delivering on time and on budget.
III	Contributing to long-term economic growth	Catalysing long term economic growth by: a. Reducing total journey time and cost for transport users, b. Connecting labour markets and realising agglomeration benefits, and c. Connecting places to markets, directly investing in skills, innovation and digital infrastructure, crowding-in foreign investment and facilitating the housebuilding & place-making agenda.
IV	Levelling up & connectivity	Reducing regional inequalities and improving connectivity between communities by: a. Contributing to long-term economic growth in areas in support of levelling up, b. Contributing to social benefits from improved connectivity, and c. Improving rail passenger and freight connectivity across the union.
V	Delivering environmental sustainability	Supporting government's environmental sustainability objectives by: a. Encouraging modal shift by increasing the attractiveness of rail, b. Delivering rail net-zero (traction and infrastructure), protecting biodiversity and addressing air pollution, and c. Protecting transport links by investing in climate adaptation.

Four of the five objectives of the WISP align closely to the themes of the second NIA, as defined by the NIC:

NIA Theme(s)	**WISP Objective(s)**
Net zero Climate resilience & the environment	Environmental sustainability
Levelling up	Economic growth Levelling up & connectivity
(NIC's fiscal remit / impact on bills)	Financial sustainability

The other WISP objective – meeting customers' needs – has no explicit counterpart in the NIA themes (although Annex F to the Baseline Report includes user satisfaction as one of the key measures of the transport sector's performance).

However, aside from user satisfaction being important in itself, it is also central to achieving all the other objectives, as these all depend on attracting passengers and freight users to the railway. Empty trains have no economic, social or environmental value. In considering priorities for investment in rail – and in public transport more generally – the NIA should take account of investments required to meet users' needs, for example by improving accessibility or delivering modern, integrated ticketing systems.

Key common issues for the NIA and the WISP

The similarities between the NIA and the WISP, in terms of objectives and long term planning horizon, are reflected in the fact that many transport issues to be considered in the NIA are also key issues for the WISP. We comment on some of these below.

Changes in travel behaviour post-covid

Compared to other modes, rail travel is particularly focused on cities and especially on city centres, which have a high proportion of workers in knowledge-based industries who are able, at least in part, to work remotely. Rail demand has therefore been particularly affected by the pandemic over the last two years, and it is likely that it will be affected more than other modes by any longer term changes in travel behaviour.

There is still significant uncertainty as to what the long term effects might be. By autumn 2021 leisure travel had all but returned to normal, being at 95%-100% of pre-covid levels (average across the network). Demand for rail commuting and business travel was recovering more slowly, having reached (on average) 50% and 40% of pre-covid levels respectively. The arrival of the Omicron variant then interrupted the recovery. It would be reasonable to regard these figures as being a lower bound on where a "new normal" might settle, but this still leaves significant uncertainty around the long-term effects on commuting and business travel.

However, it is not only the overall level of demand that is important. For commuting, in particular, it is also about the spread of demand across days of the week and across times of day. Accommodating additional peak (urban) rail demand has generally not been profitable in the past, even if only operating costs and revenue are considered, essentially because it requires leasing additional rolling stock that is only needed for an hour or two each weekday.

If reductions in commuting demand were evenly spread over the days of the week then, in the longer term, this might not be a net cost to the railway and might even save money. However, if reductions were concentrated on (say) Mondays and Fridays, the railway might need to provide almost as much peak capacity as before while earning significantly less revenue (although there might then be additional opportunities to develop leisure markets on Mondays and Fridays).

The need for a multi-modal approach

We agree with the NIC's emphasis on the need for a multi-modal approach to transport strategy and planning. Engagement with regional and other stakeholders who lead on multi-modal planning in their respective areas will be a key part of the development of the WISP.

Uncertainty around the technology and costs of decarbonisation, especially freight

As the Baseline Report notes, the best technology for decarbonising road freight is not yet clear. Even less clear is cost of decarbonisation; and to what extent, and by what mechanisms, those costs would be reflected in prices paid by users. Given the price-sensitivity of key parts of the rail freight market, such as container traffic, these uncertainties in prices imply substantial uncertainties in the scale of the future market for rail freight.

Road congestion

Reducing road congestion has long been one of the most significant advantages of rail, and DfT's road traffic forecasts suggest that congestion – and therefore the value of removing traffic at the margin – will increase significantly in the coming decades.

This is illustrated by figures for the marginal congestion costs of traffic, taken from DfT's Transport Appraisal Guidance. The table below shows the average marginal costs of congestion for roads in urban areas[1]:

		Marginal congestion cost (pence / car-km, 2020 prices)		
		2020	2050 (core scenario)	2050 (high scenario) *
London	A-roads	99	215	241
	Other roads	29	53	59
Inner & Outer Conurbations	A-roads	43	98	111
	Other roads	23	46	53
Other urban areas	A-roads	18	42	51
	Other roads	18	28	32

**: the "high" scenario for traffic growth is based on Scenario 7 in DfT's 2018 Traffic Forecasts, which assumed that all new cars (and LGVs) are zero-emission by 2040. Government policy is now for all new cars (and LGVs) to be zero-emission by 2035. In this respect the "high" scenario is therefore more consistent with current government policy than is the "core" scenario.*

These congestion costs are all greater – in some cases many times greater – than rail fares, which currently average around 15p per passenger-km (2018/19 data, average across all passenger journeys). In most cases the congestion costs are also greater than the (pre-covid) level of subsidy to rail services: in 2018/19 the highest level of subsidy to *any* train operator was just under 30p per passenger-km, even based on fully allocated costs (i.e. including a share of fixed infrastructure costs) [2].

There is therefore potentially a strong case for encouraging mode shift from car to rail, based on congestion relief alone, particularly if this can be done wholly or mainly with existing infrastructure.

Although the Baseline Report highlights that congestion is a particular problem in urban areas, it is also significant on some inter-urban roads. Outside urban areas, average marginal congestion costs on motorways and A roads are around 5p and 4p per car-km respectively. By 2050 this is expected to rise to 19p and 8p respectively in the "core" scenario, and 26p and 10p respectively in the "high" scenario. As many long distance services operated (pre covid) with subsidy in the range of 0p – 5p per passenger-km, even based on fully allocated costs, this again indicates the potential case for encouraging mode shift based on congestion benefits alone. This is true of freight as well as passenger services.

[1] Source: TAG data book, tabs A5.4.2 and A5.4.2.2. See https://www.gov.uk/government/publications/tag-data-book.

[2] Source: ORR Rail Finance 2018/19, Figure 2.1. See https://dataportal.orr.gov.uk/media/1547/rail-finance-statistical-release-2018-19.pdf

Government policy choices and their effect on prices faced by transport users.

The NIC intends to consider demand management options, including road user charging, as part of the NIA. More broadly, the prices faced by transport users are influenced in many ways by government, most obviously through taxation, charging and subsidy mechanisms, but also indirectly through regulations such as limits on the weights of HGVs.

It is clearly outside the remit of the WISP to make recommendations on broader transport policy. However, some policy choices would have potentially very significant effects on rail's markets, on the role of rail in the transport system, and therefore on any long term rail strategy.

For example, from the figures quoted in the previous section, it seems clear that any road charging system that reflected marginal congestion costs could have very significant effects on many rail markets. We have not attempted to quantify the potential impact of such a charging system on passenger demand, but the rail industry's most recent freight forecasts included a scenario in which the net external benefits of rail freight (principally reduced road congestion) were internalised, i.e. reflected in the prices faced by freight customers.

The result was an estimated 50% increase in key rail freight markets such as containers and aggregates[3]. This was based on current levels of road congestion and on values of carbon that pre-dated the commitment to net zero. At future levels of road congestion, and on values of carbon reflecting net zero, the increase in rail freight might be expected to be much greater.

Clearly any such results can only be indicative, given the difficulty of modelling the response of markets to such significant changes in prices. However, it is evidence of the scale of the effect that policy changes could have.

The need for an adaptive strategy

We agree with the NIC's emphasis on strategy being adaptive, given the uncertainty about future demand and, more broadly, all the uncertainties described above (and others). It will be important for the NIA to give a clear sense of direction and priorities, without attempting to decide now what all major transport investments should be for the next 30 years.

The NIA should also be mindful of the potential bias towards large interventions and investments in any long-term strategy. The largest interventions inevitably need to be planned a long time in advance, but as a result there is a risk that long term strategy may leave too little financial headroom for smaller-scale and/or local interventions.

[3] See https://www.networkrail.co.uk/wp-content/uploads/2020/08/Rail-freight-forecasts-Scenarios-for-2033-34-and-2043-44.pdf, Tables 4 and 5, comparison of scenarios "E" (Central case) and "F" (internalisation of external costs)

Response to specific Call for Evidence questions

We have not provided responses to questions where we have no comment to make.

Q1: 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?

Given the scale of the challenges over the next 30 years, and the scale of pressures on funding (whether through public expenditure or through bills), an overarching challenge for all infrastructure sectors must be to improve efficiency. The baseline report touches on this in places, for example when discussing digital technology, but does not identify it as a central theme.

The rail industry faces a particular financial challenge, given the drop in rail demand caused by the pandemic. A central aim of the rail reforms in the Williams-Shapps White Paper is to improve efficiency, with targeted savings of up to £1.5bn per year. But the challenge to improve efficiency is common across all sectors and could be considered more explicitly in the NIA.

Q2: What changes to funding policy would 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.

Levels of investment in rail (and in transport more broadly) are generally confirmed no more than a few years ahead; and specific investments are (rightly) confirmed only once they have been developed in enough detail for a Final Investment Decision to be taken. However, there is also a need for some indication of potential longer-term funding, to enable sensible planning of longer-term whole-network objectives such as freight capacity & capability, and to encourage investment by the supply chain in capacity and efficiency improvements.

In principle we support devolution of funding. Decisions should be taken locally and as near to the end user as practicable; and a model in which rail can be seen as a "free good" by regional or local decision-makers does not encourage balanced decision-making between modes.

However, there are challenges in fully devolving funding for the rail network given the extent to which longer-distance services, both passenger and freight, share tracks with regional or local services. In many of our largest cities there are few if any services, or sections of the network, that can be planned and operated wholly in isolation. Finding the best way to balance decision-making across different geographical scales is one of the key strategic challenges for transport in general and for rail in particular.

Q4: What interactions exist between addressing the Commission's nine challenges for the next Assessment and the government's target to halt biodiversity loss by 2030 and implement biodiversity net gain? Your response can cover any number of the Commission's challenges.

Infrastructure asset management needs to integrate biodiversity into its planning and delivery processes, rather than regarding it as a "bolt-on". But if this is done, there are no

obvious inconsistencies between addressing the Commission's challenges and improving biodiversity, and for some challenges (resilience and surface water management) there will be synergies in planning them together.

Q5: What are the main opportunities in terms of governance, policy, regulation and market mechanisms that may help solve any of the Commission's nine challenges for the Next Assessment? What are the main barriers? Your response can cover any number of the Commission's challenges

Within rail, the Williams-Shapps reforms are already addressing many of these areas and this will improve the ability of the railway to address the Commission's challenges.

In transport more broadly, some of the key issues relate to points already made above: the importance of multi-modal decision making, the importance of broader transport policy decisions, and the benefits and limitations of devolved funding.

Q6: In which of the Commission's sectors (outside of digital) can digital services and technologies enabled by fixed and wireless communications networks deliver the biggest benefits and what how much would this cost?

There are significant opportunities for digital services and technologies to deliver large benefits in rail. Examples include:

- Intelligent infrastructure, e.g. remote condition monitoring, to improve asset management in general and resilience in particular. We understand that the Network Rail response to the Call for Evidence includes more information about this.

- ETCS ("Digital Signalling"). The rollout of ETCS on main lines is starting with the southern end of the East Coast Maine Line. The business case for wider rollout is based on long-term financial savings compared to continued use of traditional signalling, as well as wider benefits such as improved train performance, network capacity and safety.

- Some of the central passenger reforms in the Williams-Shapps White Paper (e.g. improvements to fares & ticketing; better passenger information) depend on digital services and communications networks.

Q7: What barriers exist that are preventing the widescale adoption and application of these new digital services and technologies to deliver better infrastructure services? And how might they be addressed? Your response can cover any number of the Commission's sectors outside digital (energy, water, flood resilience, waste, transport).

In the rail industry, some of the main barriers to widespread adoption of new technologies are the same as the barriers to joined-up decision making more generally. There is no shortage of ideas. But once the ideas move past the prototype stage, the wider roll-out often requires co-ordination of many industry parties, with the benefits and costs of innovation falling to different parties, hindering implementation. In some cases there is also a lack of clarity about long term industry direction and therefore about the priorities for improvements.

One of the objectives of rail industry reform is to address these barriers and improve the adoption of innovation in the industry. The creation of Great British Railways, and of a long-term whole-industry strategy, are key parts of this.

We understand that the Network Rail response includes more detail on current industry activities around innovation and technology.

Q11: What barriers exist to the long term growth of the hydrogen sector beyond 2030 and how can they be overcome? Are any parts of the value chain (production, storage, transportation) more challenging than others and if so why?

We have no comments on the question as posed, but we note that the practicality and cost of hydrogen-powered trains may depend significantly on the extent to which the UK develops a substantial hydrogen sector across the economy.

Q13: In what ways will current asset management practice need to improve to support better infrastructure resilience? Your response can cover any number of the Commission's sectors.

Infrastructure resilience needs to be fully integrated into asset management, rather than planned and funded as a "bolt-on". We understand that the Network Rail response includes more detail on some of the improvements that are needed.

Resilience planning for transport also needs to consider the resilience of the system as a whole, not just of the infrastructure and not just of specific modes. Most rail journeys involve travel by other modes at one or both ends; and rail staff crucial to train operations (e.g. signallers, train drivers) will often get to work by other modes than rail. So if extreme events (e.g. widespread flooding) affect all modes in an area then there may be little point in maintaining a resilient rail infrastructure in isolation.

Finally, the resilience of rail services may need to be prioritised in areas where they play a bigger part in the overall transport system and there are fewer realistic alternatives for passengers. However, ensuring safety in the face of extreme events (whether through asset management, operational practices or both) is essential everywhere on the network and cannot be compromised.

Q16: 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?

The comments on road congestion (above) show the potential strength of the strategic case for rail as a means of reducing road congestion in urban areas, as long as services can be provided at a reasonable cost and attract sufficient numbers of passengers.

The TfL congestion charge had a significant impact on road use, with reductions in traffic of around 15% in the charging zone[4]. It is unclear whether this impact would be replicated in cities where public transport alternatives are less comprehensive than in London.

[4] See, for example, https://content.tfl.gov.uk/impacts-monitoring-report-2.pdf, page 1

In terms of demand management on rail, pre-covid experience (in the UK and elsewhere) was that it was difficult to achieve substantial changes to the numbers of people travelling in the busiest hour of the day, even if with significant price incentives between the peak and other times. Constraints such as employer's requirements and child care / school / other family routines meant that many people had little choice other than travel when they did.

The pandemic has shown that there is the potential for greater flexibility of travel behaviour, for example through more flexible / remote working. It is not yet clear whether this flexibility will be maintained in the long term. It is also possible that changes to fares & ticketing – for example the widespread adoption of mobile / contactless ticketing – may enable a wider range of approaches to demand management.

Q17: What are the barriers to a decision making framework on interurban transport that reflects a balanced approach across different transport modes?

Governance and organisational boundaries, and separate funding processes, are one barrier. Even if objectives and appraisal processes are broadly aligned, this does not necessarily mean that the choices of which problems to tackle, and which interventions to develop, are co-ordinated as well as they might be. An overall multi-modal strategy for long distance transport, as proposed by the NIC, would help; the recommendation in the Union Connectivity Review to define a "Strategic Transport Network" is along similar lines.

In the meantime, the problems can be mitigated to some extent by joint working between organisations. An example of this is Network Rail's collaboration with National Highways to jointly plan the future of the A34 / Southampton – West Midlands and A14 / Felixstowe – Nuneaton corridors for freight traffic from Southampton and Felixstowe ports respectively.

Another significant barrier is the data and modelling capability needed to inform decisions. Data on inter-urban rail and air demand is generally reasonably good, at least in terms of volumes of demand on the rail and air legs of passengers' journeys, for which ticket sales in principle give an almost complete picture. However, data on end-to-end journeys (e.g. ultimate origins and destinations) is less easy to capture. Data on car journeys (whether urban or inter-urban) is also problematic: it is relatively easy to count how many vehicles are using a road, but much harder to know where they are coming from and going to. And none of these kinds of data help to understand crucial information such as why people are travelling.

The traditional way of tackling this has been through extensive (and expensive) bespoke surveys of passengers and road users, often to build specific models to inform specific decisions. Anonymised data from (for example) mobile phones may offer a better way of understanding at least some aspects of travel demand, and a number of organisations (including in the railways) have started to do this. But we are still some way from having a systematic, comprehensive picture of inter-urban travel patterns. The constraints here are partly technical – the technology is good, and developing all the time, but is not perfect – and partly organisational: it is not clear who has the mandate (or funding) to assemble all the relevant data in one place, and then to develop models that would use it.