

Written evidence submitted by Professor Phil Goodwin (MTP0052)

Personal Statement

I am Emeritus Professor of Transport Policy at University College London and the University of the West of England, and Senior Fellow of the Foundation for Integrated Transport. I have played a part in building up the national procedures for transport project and policy appraisal for some 40 years, during which I have been, and remain, an advisor to the DfT, led research commissioned by the DfT and other agencies, and on occasion been an expert witness in inquiries on specific projects. I have also engaged with a number of national governments and international agencies overseas, local authorities in the UK on their own plans and priorities. My work has sometimes been commissioned by the authorities and sometimes by oppositions, objectors, or campaigners for alternative approaches. The views expressed here are only my own.

The Green Book Review: a new situation.

There is a long tradition that speeches drafted for transport ministers include a phrase like ‘the UK has the ‘best transport appraisal system in the world’. It is certainly one of the most elaborate, but it is now widely recognised that it has some flaws which suggest that either the appraisal methods must be faulty or something must be wrong with the decision-making processes they inform.

A recurrent thread has been an undercurrent of suspicion that the formal rules of appraisal are a way of demonstrating a pre-determined result. This involves parameters, assumptions, models and rules that allow scope for ‘tweaking’ the results, so that even schemes which seem quite out of key with stated strategic objectives reach their pass-mark and find their way into a programme. At the end of last year this ‘undercurrent’ became the mainstream, in the Treasury Review of the Green Book¹, the generic rules of appraisal on which the DfT’s guidelines, are built. It is remarkably open in its critique of appraisal in practice. One of the fundamental issues the review has identified is the common failure of appraisals to engage properly with the strategic context in which their proposal sits.

Specifically, the review reports that business cases frequently do not demonstrate the necessary understanding of:

- “• the proposal’s specific contribution to the delivery of the government’s stated strategic goals (such as ‘levelling up’ or ‘net zero’); and
- the specific social and economic features of different places and how the intervention may affect them;
- other strategies, programmes or projects with which the intervention may interact, including in a particular geographical area”.

The Treasury stated:

“While the BCR [Benefit Cost Ratio] is a useful metric for capturing quantifiable costs and benefits, there is a tendency to place an inappropriate emphasis on it, in a way that frames value for money as an absolute concept.... Considerable time and

effort is expended to ‘boost’ the BCR that would have been better spent developing and testing the other elements of the business case including its strategic coherence, risk management and the implications of significant unquantifiable factors...”

1.12 “With a lack of strategic direction now baked into the appraisal process, the selection of the option to be presented as the best becomes heavily reliant on a Benefit Cost Ratio (BCR) that is not aligned to the decision makers’ objectives...”

“The BCR instead focuses on benefits that it is easy to put a monetary value on. This in turn creates an incentive for proposers to artificially boost the BCR with such benefits that are unlikely to be realised, as well as suggesting a level of certainty around the value of those benefits that is not merited by the evidence”

Thus the Treasury identifies issues for both the clients and their consultants, who ‘may have been tasked with producing a high BCR rather than a properly-rounded appraisal’.

I agree with these criticisms. So do many transport professionals and their institutions. For example, correspondence in the professional magazine *Local Transport Today* (Letters, 16.12.2020, K. Buchan for the Transport Planning Society) reports that a group of four important professional bodies – TPS, CIHT, LGTAG and RTPI - had been in discussion with the Treasury and DfT, and made their own submission for change. “The Treasury findings are clear in terms of the current system’s poor theoretical justification, lack of transparency, and poor outcomes in terms of failing to bring forward schemes which would achieve our objectives”. This approach particularly emphasises that some of the most important objectives are best pursued outside, and in advance of, the calculation of BCRs, notably by a broader statement of project objectives, consideration of a wider set of alternative methods of achieving them, and filtering out and rejecting projects which are incompatible with certain key objectives².

Of course, this discussion did not come out of the blue. Some of its themes have been asserted in previous reviews of the appraisal system. For example, in 2008 evidence submitted by the Centre for Transport and Society in UWE, where I was then employed, made 20 recommendations³ for change in NATA (as the DfT’s appraisal system was then called) including:

1. “NATA rightly already advocates a broad multi-modal approach including demand management. But in practice it is too often confined to narrower calculation of benefits of road projects providing small time savings or increased car travel.
2. NATA is rather weak on: demand management; walking; public transport quality; cycling; land use planning (especially favouring settlement patterns which reduce car dependence); pricing systems reflecting full external costs; smarter choices; the redefinition of the styles of street management including traffic calming and the reallocation of scarce road capacity; better information; recognising reliability and variability, both in conditions and choices.

These weaknesses identified then are precisely still the case.

There is one important caveat I would make to the Treasury critique⁴. Even the best ideas can turn out to be implemented in a way that undermines, rather than meets, the best intentions. ‘Greater attention to strategic coherence’ could be an excuse for wordy claims

unbacked by evidence. It could see the volumes of engineers' calculations and modelling replaced by shorter, glossier text worded by PR agencies and management consultants, which defy any attempt at scrutiny, challenge, evidential testing or clarification. That danger is real.

Specific weaknesses

There is not space here to suggest how to amend the appraisal methods in full, but I would draw attention to four specific points: the treatment of carbon emissions in project appraisal; appraisal when forecasts are uncertain; economic impacts of transport investment in specific locations; and what to do with the current portfolio of projects whose appraisals have not adequately treated these problems. Further argument and support are referred to in footnote links.

1. Badly deficient underestimation of the importance of carbon emissions from transport investment⁵.

Carbon emissions can be increased, especially from expansion of road capacity, in several ways, notably by manufacture, materials and their transport during the process of construction; the manufacture and additional use of vehicles directly induced by faster or cheaper travel; and the longer term growth of car-dependent land use and life styles. Some of these factors are taken into account in the appraisals, but not all, and there has been a long-term tendency to underestimate the quantities. The carbon estimated, is given a notional 'money value' which does not reflect the scale of economic damage which would follow from failure to stem climate change, because of assumptions that increases in carbon due to transport can be more than offset by reductions in other sectors. Reducing carbon in transport focusses mainly on conversion to electric vehicles, but without including the embedded carbon costs of manufacturing those vehicles. Emitted carbon, being long-lasting, has more damaging affects in the near future, but this is not adequately reflected in the appraisal. Such carbon which is accounted for in project appraisal is invariably described as 'insignificant' by means of a troublesome procedure of expressing carbon emissions due to a project as a percentage of the total carbon emissions in the economy, which inherently (but misleadingly) produces a very small number – in exactly the same way as would be true if one expressed time savings from a project as a percentage of all the time spent in the economy, or employment increases as a percentage of total employment in the economy (which is never, ever, done). This creates a false sense that carbon effects are unimportant from a practical point of view⁶.

2. Advances in recognition of uncertainty in demand forecasts not carried through to appraisal⁷

The traditional method for appraisal was to make traffic forecasts from the best available understanding of factors influencing travel, such as economic growth, population, travel costs, etc, then calculate the additional congestion that would result from the forecast additional travel, introduce notional higher speed that should result from expansion of road capacity, and compare an economic value of those time savings with the estimated cost of the construction. The time 'savings' are expressed against the lower speeds that would in future result from the extra congestion, not against the current conditions, which means that in many large schemes the forecast travel speeds 'with' the scheme can actually be lower than the current ones, but still measured as a benefit, which creates false hopes of future improvement.

Ever since 1989 (when the general approach to forecasting still used now was formulated), the long term traffic forecasts have been higher than the actual traffic which developed, and so have had to be revised down every few years, the reasons for this overestimate being various, including over-optimistic forecasts of economic growth and population, unexpected trends and impacts (eg, currently, Covid19 and Brexit), and oversimplified understanding of the effects of demographic and social change (eg failure for some 20 years to notice a progressive reduction in the tendency for younger generations to take up car use at the same rate as their parents).

Since 2015 there has been a very welcome recognition by DfT that these uncertainties made the idea of a confident forecast of a ‘most likely’ future much less appropriate. For this reason, the 2015 and 2018 National Road Traffic Forecasts did not make a forecast of a ‘most likely’ future, but rather a number of different forecasts, called ‘scenarios’, each corresponding with some different likely set of future trends. This is much better, though there is still resistance to the idea that the scenarios could include significantly worse, but still highly possible, outcomes or significantly better ones. The demand forecasting framework would allow those to be considered when there is a will to do so.

However, these alternative demand scenarios for the future are not applied to the appraisal process at all, which almost invariably treats one forecast, somewhere in the middle of the range of scenarios, as being the base for appraisal, sometimes with a minor sensitivity test for small variations at most. This means that the business cases for projects are assessed without taking into account the possibility either (a) that the general economic conditions obtaining after the project is completed may be very much less favourable, or more favourable, than assumed, which would influence the nature of the optimum design and even the viability of the project altogether, and (b) that the associated policies adopted by Government, eg on public transport, active travel, allocation of road capacity, transport pricing – and even neighboring related or competitive projects – may also weaken, strengthen or substantially change the viability of the project. Taking a presumed ‘central’ or ‘most likely’ description of the future, even if one knew what it was, has nothing to say about the Treasury’s emphasis on “other elements of the business case including its strategic coherence, risk management and the implications of significant unquantifiable factors...”.

The recommendation that follows from this is that whatever formal appraisal rules are adopted, they ought to be applied to more than one substantially different picture of the future. As a minimum requirement, promoters of schemes ought to be required to test their appraisal against, say, the maximum and minimum traffic levels in the alternative scenarios included for the demand forecasts⁸.

More generally, the idea of picking schemes chosen to provide for one or other view of the future has a major weakness. Transport planning should proceed from what sort of future is desirable, and plan to achieve it, rather than accepting that the demand patterns of the future, even if unknown, are inevitable. The chosen approach should be one which is robust to many different futures, and flexible.

3. Confusion between hopes and analysis in considering the wider economic impact of transport appraisal.

Key to the success of the ‘levelling-up agenda’ is that the effects of transport investments in specific areas on the wider economy in those areas must be well understood. There is a

tendency to assume that because a transport investment is intended to increase economic conditions in its surrounding area, that is what will happen. This is not necessarily the case. Better transport in an area intended 'to improve its ability to deliver goods and services to a neighbouring area', for example, may end up to the benefit of the other location. Similarly giving access to a wider catchment area for employment also gives access to a wider pool of employees from other areas. It is clear that someone will benefit, but it may not be in accordance with intentions. This is described in a very well established, but inadequately recognised, theorem called the 'two-way road'. It applies also to international trade. While the effects are always subject to very specific circumstances, needing close and realistic analysis, there is a general tendency for new connections to favour the richer or more efficient parties more than the poorer or less efficient parties. This needs great care when considering 'levelling-up'.

A key reference is the SACTRA (1999) report 'Transport and the economy'⁹. It proposed that the key determinants of whether transport improvements have positive or negative wider economic effects is how closely the prices charged correspond with the full economic costs including external costs such as congestion and pollution. If these prices are not aligned, a transport improvement can generate more travel of a type which reduces economic efficiency rather than increasing it.

4. What to do about the current portfolio of projects?

An issue which has to be confronted is that the present portfolio of projects, both considered individually and as a programme such as the RIS2 list of projects¹⁰, have all been appraised under rules to which the above problems apply. A review of appraisal methodology – if it concludes that there are significant weaknesses in the current methods or assumptions – must also address the question of the extent to which those weaknesses undermine or contaminate the reliability of the appraisal conclusions. There is only one way of determining that, which is to carry out a review of the projects, policy framework and programme corresponding with whatever conclusions follow with the review of methods. It seems to me that this logic is inescapable: if there are serious flaws in the methods and assumptions of appraisal, then it is very likely that the overall balance of the programme is imperfect, and at least some of the presently favoured specific projects will not be robust. And some of the projects already undertaken will not have delivered the hopes invested in them¹¹

There is not space here to go into detail about all the projects currently making up the RIS2 programme, but work I am aware of does support this feeling. As one would expect, particularly controversial projects are likely to reveal such issues more sharply, because they will have been exposed to more attention and scrutiny.

As an example, I would mention the A303-Stonehenge project¹². There are aspects of its appraisals which seem to correspond exactly with the criticisms discussed above. Its proposed time savings benefits are small, constituting a small proportion of its total costs, the benefits measured conventionally representing a negative BCR. and even then unlikely to be delivered unless every other section of the long distance route of which it is a part would be implemented, which is doubtful. The BCR was converted into a marginally positive one (£1.15 benefit per £1 of costs) by means of an exercise purporting to show that the population of the UK would value the environmental benefits of removing traffic from Stonehenge at a level of around £1 billion, though they were not asked to pay it. The method used to show this is methodologically suspect, and appears in an obscure Appendix of the multi-volumed

appraisal report, in words that suggest that even the promoters are ambivalent about recommending it. The calculations logically cannot be extended to heritage values nationally, since they would imply that the population as a whole would be willing to pay more to protect such benefits than they are financially able to. They are also predicated on the assumption that the scheme actually does ‘remove traffic from Stonehenge’ which more detailed study shows is not the case, since damage would be caused over a wider area of great architectural significance. The Examiners appointed by the Secretary of State to review the scheme unambiguously concluded that it would cause great environmental damage and should be rejected. Some critics suggest that a scheme which delivered the intended benefits would be possible, but it would involve a much longer tunnel and cost very much more. The scheme seems to be an exact example of the Treasury description of ‘*an incentive for proposers to artificially boost the BCR with such benefits that are unlikely to be realised*’.

Conclusion

The current conditions of Covid19 and Brexit will have very substantial effects on future patterns of travel, transport policy perspectives, and investment needs. None of those effects is yet well understood: the one thing we do know is these effects were not even imagined in the appraisal of schemes worked up in earlier years. In addition, Covid19 and Brexit both put great stress on the attention of Government, the priorities and immediacy of action needed, and the resources available for delivery of transport projects.

At the same time, we are in a position of understanding that the methods and traditions of transport appraisal, their formal rules and administrative procedures, have probably led to mistaken assessments and imperfect appraisal.

Putting these two together, my argument would be that this is an ideal time to carry out a swift but fundamental re-appraisal of the schemes and programmes whose appraisal has been faulty. Forging ahead with mistaken earlier project designs is unnecessary and inappropriate. We can use the current crises to give a breathing space to redesign our transport priorities and projects, for which the Green Book review honesty gives a very much greater chance of success.

January 2021

Endnotes

¹ H.M. Treasury (2020) Final Report of the Review of the Green Book

<https://www.gov.uk/government/publications/final-report-of-the-2020-green-book-review>

² <https://www.transportxtra.com/publications/local-transport-today/news/65453/transport-appraisal-and-planning-in-a-time-of-imperatives>

³ UWE (2008) Making NATA Fit for Purpose

<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjtr7LnsP3uAhVJ2qwKHfNqBeEQFjAAegQIAxAC&url=http%3A%2F%2Fwww2.uwe.ac.uk%2Ffaculties%2FFET%2FResearch%2Fcts%2Fprojects%2Fnews%2Fmaking-nata-fit-for-purpose.pdf&usg=AOvVaw28aDLDXzgcqNbLr8xH8Ib4>

⁴ <https://www.transportxtra.com/publications/local-transport-today/news/67529/new-green-book-paves-way-for-shake-up-of-road-and-transport-appraisals>

⁵ <https://www.transportxtra.com/publications/local-transport-today/news/65779/transport-appraisal-at-odds-with-decarbonising-transport->

⁶ <https://www.transportxtra.com/publications/local-transport-today/news/66363/road-appraisal-makes-carbon-dioxide-uniquely-insignificant--why-and-what-to-do-about-it->

⁷ <https://www.transportxtra.com/publications/local-transport-today/news/66414/road-appraisal-flawed->

⁸ <https://www.transportxtra.com/publications/local-transport-today/news/59214/how-should-we-use-the-road-traffic-forecasts-in-practice->

⁹ https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwitgq6VpJ7uAhVOXM0KHVY_CQEQFjAFegQIBRAC&url=https%3A%2F%2Fwebarchive.nationalarchives.gov.uk%2F20050301192906%2Fhttp%3A%2Fdf.gov.uk%2Fstellent%2Fgroups%2Fdf_econappr%2Fdocuments%2Fpdf%2Fdf_econappr_pdf_022512.pdf&usg=AOvVaw1yHTwv1hHrXVdFAonuQoi9

¹⁰ <https://www.transportforqualityoflife.com/u/files/The%20carbon%20impact%20of%20the%20national%20roads%20programme%20FINAL.pdf> <https://www.transportforqualityoflife.com/policyresearch/roadsandtraffic/> also

¹¹ <http://www.transportforqualityoflife.com/u/files/170320%20The%20Impact%20of%20Road%20Projects%20in%20England%20FINAL1.pdf>

¹² Project documents <https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-stonehenge/#> National Audit Office critique: <https://www.nao.org.uk/wp-content/uploads/2019/05/Improving-the-A303-between-Amesbury-and-Berwick-Down.pdf>

Initial critique of the heritage ‘valuation’ <https://www.transportxtra.com/publications/local-transport-today/news/60887/stonehenge-and-the-billion-pound-stated-preference-survey>

(also <https://www.transportxtra.com/publications/local-transport-today/news/64983/net-zero-requires-reappraisal-of-the-road-programme-but-how->

Examiners’ report recommending rejection <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010025/TR010025-002181-STON%20%E2%80%93%20Final%20Recommendation%20Report.pdf>