Department for Transport

Transport Appraisal Review

May 2026

Tony Venables CBE FBA
Bridget Rosewell CBE
Diane Coyle DBE
Dan Graham
Greg Marsden
Tom Worsley CBE

May 2026

Department for Transport
Great Minster House
33 Horseferry Road
London
SW1P 4DR

This publication is also available on our website at www.gov.uk/government/organisations/department-for-transport

Any enquiries regarding this publication should be sent to us at www.gov.uk/government/organisations/department-for-transport

Contents

Executive Summary

Scope of the review

The Transport Appraisal Review (TAR) panel has the task of clarifying "the extent to which we can have confidence in the Department for Transport's (DfT) Transport Analysis Guidance (TAG) as an effective and reasonably comprehensive framework for assessing the costs and benefits of schemes, which allows for fair comparison between projects of different scales, modes and geographies."

The focus of TAG is the economic case for transport investment projects and the cost-benefit analysis (CBA) techniques employed to assess value for money. TAG provides guidance for a wide range of users including scheme promoters, transport modellers, and officials in various branches of central and local government, so setting the framework and incentives for those designing and promoting transport projects. The review took evidence about, and comments on, the analysis developed in TAG and the effectiveness with which its guidance is used in practice.

Summary of findings

The view of the review panel is that TAG is a sophisticated and state of the art CBA procedure that is well-suited to providing estimates of the impacts of transport projects, including both direct and wider economic impacts. It is comprehensive in its coverage of possible effects, thus providing a sound basis for using BCRs to inform spending decisions across a wide range of projects. Our summary recommendations are that the Department: (a) Extends application of TAG methods to a more rigorous investigation of project costs and some of the trade-offs encountered at the early stage of project design. (b) Considers how best to use these tools in the context of complex integrated projects in particular place-based policies. (c) Facilitates the use of these techniques by stakeholders, this involving clarification and simplification of some materials and ensuring proportionality in their use.

Recommendations are summarised in the remainder of this section and arguments detailed in the full review.

Appraising impacts: We think that TAG provides essential core estimates of the value for money of transport projects. The techniques it employs for appraising the impacts of projects, both on direct users and through wider effects, are well-founded in principle and

subject to professional management and updating. They are sufficiently comprehensive to capture the important effects of transport investments. Adding further detail and complexity is, in general, not recommended.

Project costs: Costs incurred in the implementation, management and construction of projects receive relatively little attention. We think that project costs need deeper investigation and more rigorous challenge as part of TAG and the appraisal process.

Option development and project design: There are trade-offs – such as that between speed and cost – concerning the best ways of achieving a project's objectives. These decisions are taken during the early stages of project design and, in some cases, do not receive sufficient analysis despite having material impact on project costs. They require application of TAG to inform choices.

Integrated projects: Transport projects are often part of place-based policies (PBP) typically involving multiple policies and agencies and with objectives relating to local economic development. TAG sometimes adds an unhelpful level of complexity to these integrated projects and its application in this context needs to be reviewed. The following principles are important:

Integrated projects require integrated assessments (appraisals, business cases and decision taking). Setting hurdles for particular elements is, in general, inappropriate as the return to any single element of the project depends on other parts.

Claims made about all elements of an integrated project should be subject to rigorous evidence-based challenge. The use of a CBA framework to identify and value likely costs and outcomes is recommended as a means to achieve this. This should be applied across the integrated project, even if quantification and element by element attribution is not possible for all parts of the project.

The use of new modelling techniques should be explored, including AI tools to understand and predict outcomes in complex environments.

Comparability between portfolios: Spending decisions are taken at several different levels. At a high level there are choices between different portfolios by transport mode (road, rail, maritime), strategic portfolios, and to devolved nations and authorities. There is evidence of substantial differences in BCRs between portfolios, partly due to government spending objectives, and indicative of a loss of efficiency. We think that, in most contexts, BCRs are comparable across portfolios and could be used to inform spending allocations across portfolios and improve value for money, by allocating funding towards schemes that deliver the most value per pound of spending.

Evidence base: There needs to be continuing work building the evidence base on the effects of transport improvements, this guided by a clear view about where filling gaps in evidence will have the most material impact on decision taking. This will involve formal ex-post evaluations of projects (both costs and long-run outcomes), including work to increase understanding of circumstances that have led to projects under- (or over-) achieving relative to appraisal estimates. Improving understanding of the effects of place-based policies is a priority.

Simplification and proportionality: TAG has become complex, and some of its documentation is unclear, in detail and in specification of circumstances under which particular modules should be used. There is lack of clarity on the relationship between monetised aspects of TAG and non-monetised qualitative judgements, both in constructing the Value for Money Statement and in the relationship of the Economic Case to the other four cases. Clarification, simplification and transparency would support thoughtful and proportionate application of TAG and reinforce the credibility of TAG findings for final decision makers. This is particularly important given use of TAG by non-expert authorities and in their relationships with external consultants.

Introduction and summary

Scope of the review

The Transport Appraisal Review (TAR) panel has the task of clarifying "the extent to which we can have confidence in the Department for Transport's (DfT) Transport Analysis Guidance (TAG) as an effective and reasonably comprehensive framework for assessing the costs and benefits of schemes, which allows for fair comparison between projects of different scales, modes and geographies." The review is to cover how comprehensively TAG captures the benefits of schemes, identification of gaps or shortcomings in TAG, and whether it is fit for the purpose of identifying value for money (VfM) across a wide range of alternative spending options.

TAG and project appraisal

Transport is one component of the infrastructure the economy needs to thrive. A suitable infrastructure system will raise the return to all other investment across the economy. It is therefore important to select among the many potential projects as rigorously as possible.

TAG is a central element of this process, setting out the analytical framework and parameters from which monetised measures of the benefit and cost of transport investments can be calculated and a benefit cost ratio (BCR) derived. It also provides guidance for assessment of non-monetised impacts (those for which there is insufficient evidence on which to base a monetised value). Together these generate the Economic Case and the value for money assessment (VfM). The Economic Case informs the final investment decision alongside the other four cases (strategic, commercial, financial, management) and overall government spending objectives.

The Transport Appraisal Review focuses on TAG, in particular the methods used in the Economic Case. The review necessarily goes wider than discussion of CBA techniques. TAG provides guidance for a wide range of users including scheme promoters, transport modellers, and officials in various branches of central and local government. It creates the framework and shapes the incentives for those designing and promoting transport projects. We therefore comment on the effectiveness with which TAG is used, and its influence in shaping behaviour and decisions.

Principles underpinning TAG

TAG consists of an extensive and detailed set of guidelines for applying CBA to transport projects. This involves estimating impacts of projects on those directly affected, i.e. transport users, suppliers, and others such as people subject to noise or pollution. In some cases this is extended to effects on the wider economy, such as unlocking housing projects or stimulating private investment and hence providing a catalyst for local economic development. These effects go under the label of wider economic impacts (WEI). Effects are monetized where possible.

The fundamental principles of CBA, as applied in TAG and elsewhere, are the following:

1. Quantity effects: A project creates new or additional flows of goods and services while at the same time using or displacing other flows. These flows ('quantity effects') are estimated for scenarios with and without the project, the difference between these scenarios being the impact of the project.

2. Valuation: The quantity effects of the project are assigned social values (in monetary units), based ultimately on the benefit or cost that individuals place on these flows. Net values are derived, based on a comprehensive view of changes attributable to the project while avoiding double-counting. In application, values are usually equal to or derived from market prices but may also include subjective valuations (e.g. for noise or health, based on evidence of damage costs).

3. Changes in the wider economy such as induced private investments that can be attributed to the project may create benefits but will also displace other activities. An essential element of the methodology hinges around displacement, and the fact that creation and displacement often cancel out. They are therefore excluded from the analysis, unless there is evidence that this is not the case, as developed in the 'wider economic impacts' sections of TAG.

4. Benefits net of costs can be expressed as a net present value (£B-£C) or in ratio form as a benefit-cost ratio, BCR. These are taken to be indicators of value for money (VfM) which, as noted above, are used in conjunction with analyses of non-monetised impacts and alignment with 'spending objectives' to inform an assessment of expected value for money.

Summary of findings

The view of the panel is that TAG is a sophisticated and state of the art CBA procedure that is well-suited to providing estimates of the impacts of transport projects, including both direct and wider economic impacts. It is comprehensive in its coverage of possible effects, this providing a sound basis for using BCRs to inform spending decisions across a wide range of projects. We recommend that the Department: (a) Extends application of these methods to a more rigorous investigation of project costs and some of the trade-offs encountered at the early stage of project design; (b) Considers how best to use these tools in the context of complex integrated projects and interactions between transport and other investments, in particular place-based policies; and (c) Facilitates the use of these techniques by stakeholders, this involving clarification and simplification of some materials and ensuring proportionality in their use.

Recommendations are summarised in the remainder of this section and arguments detailed in the remainder of the paper.

1. ***Appraising impacts:*** We think that TAG provides essential core estimates of the value for money of transport projects. The techniques it employs for appraising the impacts of projects, both on direct users and through wider effects, are well-founded in principle and subject to professional management and updating. They are sufficiently comprehensive to capture the important effects of transport investments. Adding further detail and complexity is, in general, not recommended.
2. ***Project costs:*** Costs incurred in the implementation, management and construction of projects receive relatively little attention. We think that project costs need deeper investigation and more rigorous challenge as part of TAG and the appraisal process.
3. ***Option development and project design***: There are trade-offs – such as that between speed and cost – concerning the best ways of achieving a project's objectives. These decisions are taken during the early stages of project design and, in some cases, do not receive sufficient analysis despite having material impact on project costs. They require application of TAG to inform choices.
4. ***Integrated projects***: Transport projects are often part of place-based policies (PBP) typically involving multiple policies and agencies and with objectives relating to local economic development. TAG sometimes adds an unhelpful level of complexity to these integrated projects and its application in this context needs to be reviewed. The following principles are important:
    a. Integrated projects require integrated assessments (appraisals, business cases and decision taking). Setting hurdles for particular elements is, in general, inappropriate as the return to any single element of the project depends on other parts.
    b. Claims made about all elements of an integrated project should be subject to rigorous evidence-based challenge. The use of a CBA framework to identify and value likely costs and outcomes is recommended as a means to achieve this. This should be applied across the integrated project, even if quantification and element by element attribution is not possible for all parts of the project.
    c. The use of new modelling techniques should be explored, including AI tools to understand and predict outcomes in complex environments[1].
5. ***Comparability between portfolios***: Spending decisions are taken at several different levels. At a high level there are choices between different portfolios by transport mode (road, rail, maritime), strategic portfolios, and to devolved nations and authorities. There is evidence of substantial differences in BCRs between portfolios, partly due to government spending objectives, and indicative of a loss of efficiency. We think that, in most contexts, BCRs are comparable across portfolios and could be

[1] An AI 'world model' is a computational model learned from data that approximates the state, dynamics, and causal structure of an environment, enabling prediction of future states and evaluation of counterfactual actions. In the transport context this may model traveller and operator behaviour and system dynamics, enabling counterfactual simulation of policy changes for the estimation of economic welfare impacts. See for example Wu,et al 2017.

used to inform spending allocations across portfolios and improve value for money, by allocating funding towards schemes that deliver the most value per pound of spending.

6. ***Evidence base***: There needs to be continuing work building the evidence base on the effects of transport improvements, this guided by a clear view about where filling gaps in evidence will have the most material impact on decision taking. This will involve formal ex-post evaluations of projects (both costs and long-run outcomes), including work to increase understanding of circumstances that have led to projects under- (or over-) achieving relative to appraisal estimates. Improving understanding of the effects of place-based policies is a priority.
7. ***Simplification and proportionality***: TAG has become complex, and some of its documentation is unclear, in detail and in specification of circumstances under which particular modules should be used. There is lack of clarity on the relationship between monetised aspects of TAG and non-monetised qualitative judgements, both in constructing the Value for Money Statement and in the relationship of the Economic Case to the other four cases. Clarification, simplification and transparency would support thoughtful and proportionate application of TAG and reinforce the credibility of TAG findings for final decision makers. This is particularly important given use of TAG by non-expert authorities and in their relationships with external consultants.

Appraising impacts

The core of TAG is appraisal of the impacts of a transport project, this requiring estimates of its quantity effects – such as predicted changes in journey times and traffic flows – and valuation of these changes. Direct impacts are calculated for all TAG projects (section 2.1) and wider economic impacts calculated for selected, typically larger, projects (section 2.2).

Direct Impacts

The Department's analysis guidance sets out a list of the potential user benefits that a transport scheme might be expected to deliver. Improvements in accessibility are the largest category of benefit for many schemes, but improving safety and reliability, impacts on physical health and on journey quality also feature in the benefits included in TAG.

Quantity changes: Transport Modelling

Direct impacts include effects on travel times, number of trips (including crowding and congestion) as well as environmental impacts such as noise and pollution. These have to be estimated for two cases – with the project and without (do minimum) and typically projected for 60 years into the future.[2] It is not in the scope of this report to review the transport models used by scheme promoters in the course of project appraisals. However, a key consideration is the range of effects that are captured in the modelling process. For traffic flows this means the scale of the network and of the 'knock-on' effects that are to be modelled. More broadly, it means the breadth of definition of the project and of its 'users', this in turn requiring a clear view of the ultimate objective of the project.

Definition of project: There is a risk that if a project is narrowly defined then knock-on effects are ignored, possibly in a way that destroys comparability between alternatives. This can be mitigated if projects are defined relative to an ultimate objective. In the transport context this might mean simply in terms of an origin to destination journey, rather than, e.g. in terms of time saving on an intermediate stretch of road. An example is a road improvement which has the effect of improving access to a city centre. The full journey has to include the time and cost of parking, perhaps including construction of additional car

[2] Further scenarios may also be developed; see section on uncertainty

parking space. This is included in TAG guidance, but to omit it in practice would create a bias relative to an alternative, such as enhancement of rail commuting.

***Network effects, induced traffic and congestion*:** A transport improvement may create a substantial amount of additional traffic on parts of the network, arising both from additional journeys being made and existing ones being re-routed to improved routes. A criticism sometimes raised is that induced traffic leads to small (or zero) time saving as the benefits of improvement are swallowed up by additional traffic and congestion. This does not mean that the improvement is valueless (as is sometimes claimed), since the induced traffic is itself a source of benefit, revealed by the choice of travellers to travel. The popularity of the Elizabeth Line is a powerful example of such benefits[3]. We return to valuation of induced traffic and congestion in section 2.1.2.

Transport modelling needs to be effective in capturing induced trips generated by a project, and any consequent changes in congestion, across all modes of transport. Larger scale modelling is costly and time consuming so a judgement has to be made at an early stage of the assessment as to the likely volume of induced traffic and breadth of the network that is to be modelled. We note that (a) this judgement needs to be based on evidence from the effect of previous schemes and (b) advances in computing power and the application of artificial intelligence may enable significant extensions of modelling capability. These issues are now detailed in TAG unit M-21, although it is not clear how extensively this is applied in practise.

Valuation of direct impacts

A transport project has direct impacts on multiple variables, all of which have to be ascribed social values. These are generally based on the 'willingness to pay' of individuals affected, revealed either by market prices or by subjective valuations derived from survey or similar techniques. To illustrate the range of variables that assigned values TAG Appendix 1 of this report gives an illustrative copy of TAG's 'Appraisal Summary Table'. We think that the approaches used by TAG to derive these valuations are consistent with international best practise and are professionally managed and updated. However, several issues are contentious and are discussed in this sub-section.

Valuation of travel time savings, VoTTS: The core of many appraisals is travel-time savings, which TAG splits into 3 categories:

1. The TAG values of non-work travel time savings (including commuting) are a national average value, averaged across all transport users and all modes. They are derived from survey data.
2. In the case of journeys in the course of work, mode specific values are adopted to account for the greater effect on productivity of saving the time of a typical high income rail business passenger than of a car business traveller. Willingness to pay methods based on surveys carried out for the 2014/15 study for business travel time savings are now used in place of values based on wage rates and other employment costs. Business values increase with trip distance since longer distance business trips tend to be made by higher earning workers.

---

[3] Estimated to have increased public transport usage by 71,000 trips per day across the London public transport network, (Arup 2025).

3. Current freight values of time savings are based on changes in vehicle operating costs and in driver's time plus wage related mark-ups. These values are based on surveys of carriers and shippers and take account of the value of time savings and reliability in logistic chains and for time sensitive cargos.

A frequent criticism is that these three categories are insufficient to capture heterogeneity in the value of time across journey types, journey length, and user type and activity. The argument is expressed in various ways including: small time savings are not useful and therefore have zero value; values vary by journey length, comfort and quality; values vary by passenger income level and; office-workers are as productive on trains as they are in their office.

We have several observations. First, there is undoubtedly huge heterogeneity in the value of time spent on transport and the opportunity cost of not using this time on other activities. People sometimes find small travel time savings valueless, while behavioural evidence indicates that they sometimes attach a very high value to it – evidenced by everyday pedestrian and driver behaviour and by changes in passenger numbers in response to quite small timetable changes. It seems to us impractical for TAG to attempt to capture this and other aspects of heterogeneity in a meaningful way.

Second, and most contentiously, the (un-)productive use of business travel time. Values are based on survey data which cover the use of travel in the course of work. Although rail business travellers may perform some work on the train, they still place a cost on time spent travelling, relative to non-travel time. UK values for working time tend to be high when compared with most other European countries.

In evaluating these points we think that clarity and transparency is important, as well as proportionality in the Departmental resource used in refining methods. We are satisfied that the current balance is broadly correct. It is important to monitor developments and continue to update the evidence base, particularly with respect to productive use of business travel by office-workers as information and communication technology continues to improve. We note that DfT are proposing a new VoTTS study, with wide scope to include better quality of journey and the value of increased travel options.

Distributional aspects: If society values increments of well-being accruing to some individuals – those on low income – more highly than to others, then there is a theoretical case for attaching distributional weights according to who benefits.[4] However, identification of the income status of beneficiaries is difficult, and could take several forms including: (a) Travel passes or other forms of price discrimination targeted using information on characteristics of individual recipients or their households, as used in e.g. bus passes. (b) Valuations applied to particular projects, based on information about the income of representative users of the project. (c) Valuations applied to particular projects, based on the location of the project and representative income levels in the region.

[4] HMT's Green Book does this on the basis of assumed diminishing marginal utility of income.

Distributional impacts enter the Value for Money Statement in qualitative form (appendix 1). More extensive or quantified measures are not recommended by the panel for several reasons.

First, approaches are based on average incomes across a wide range of users, the width of this range varying project by project. This is a very blunt and rather arbitrary instrument, particularly at the regional level.

Second, benefits are 'shifted' between individuals and households via changes in relative prices. Better access to public transport often results in higher house prices and rents in the local area; the final beneficiaries of a transport improvement are then house-owners and landlords, not necessarily those using the transport system.[5] Attaching weights according to the socio-economic status of transport users is wrong if they are not the ultimate beneficiaries.

Third, transport policy is not a 'first-best' instrument to use for policy towards income distribution. While 'first-best' policy is never attainable, we think good policy practise involves careful matching of instruments to objectives. The government has instruments other than transport projects that can be used for shaping income distribution.

We note that identifiable transport needs may be correlated with income status. For example, the need for transport services to a low income area with low labour market participation and car ownership. However, this makes a case for identification of these transport needs at the local level, not for application of distributional weights set at central government level. The context of these examples is often integrated local development schemes (not a stand-alone transport project) discussed further in section 5.

Finally we note a related issue arising from the use of national values of working time, which vary only by mode and distance, and therefore do not capture regional variation in productivity and earnings. This suggests the possibility of a bias in appraisal towards areas with low average productivity, which would be corrected by using a lower value of time in these areas. However, economic principles suggest that this bias is small or possibly non-existent, and clarity and simplicity strongly suggest the case for maintaining use of national values.[6]

Value of Induced traffic: TAG guidance on the induced traffic was updated in December 2025 (TAG Unit M2.1, Variable Demand Modelling). Accurate measures of the value of induced traffic require specification of the demand for transport in order to compute surplus created (approximated by the rule of half), in some contexts combined with estimates of the time cost of congestion.

There has been previous criticism of TAG's handling of these issues, and the claim that both the benefits of network effects and the possible costs of congestion created induced

---

[5] See Machin and Gibbons (2004) for London and Rojas (2024) for a Swedish study.

[6] If time savings lead to increased work time, then regional variation in productivity suggest a case for regional variation in the value of time. But if it creates increased leisure time the relevant margin is households' leisure/ labour trade-off which depends on real, not nominal, earnings. Regional variation in prices will largely offset regional productivity differences, so adjustment on the basis of regional variation in productivity alone would generally not be correct.

traffic have been underestimated. The panel has not been able to assess the extent to which these issues are addressed in the updated guidance.

TAG guidance M2.1 on Variable demand modelling (Dec. 2025) seems comprehensive. While there might have been issues in the past with the omission of generated trips, the recent guidance clarifies the requirement to include traffic generated by the scheme and to account for the effects across a sufficiently wide network.

***Environmental Impacts*:** TAG Unit A3 provide guidance on covering the expected environmental impacts of transport schemes. These comprise:

1. Air quality
2. Noise
3. Greenhouse gases
4. Environmental capital
5. Townscape
6. Landscape
7. Historic environment
8. Water environment
9. Biodiversity

Air quality, noise and greenhouse gas impacts are quantified and valued, and included in the BCR. All other impacts are assessed on a qualitative scale and form part of the value for money assessment. Methods and values draw on work with other government departments and are beyond the scope of this report.

Wider Economic Impacts (TAG A-2)

A large transport project will generally have impacts beyond those directly affected, changing quantities and price of variables throughout the local area and perhaps in the national economy. This may take the form of unlocking land for housing or other 'dependent developments' or inducing investment that changes business activity and employment. The logic of CBA argues that, in many cases, these effects should be ignored. Quantity changes will generally expand some activities but contract others (displacement); these changes are often of similar value (e.g. workers moving between jobs with similar wages) so netting out to zero. Price changes transfer funds between buyer and seller, but if the real income of each is ascribed equal social value, they net out and are of zero social value.

Wider economic impacts (WEI) come in to play in well-defined circumstances where this netting out is not perfect, so leaving some aggregate effect.

Quantity changes: output expansion and productivity: The wider economic impact (WEI) modules of TAG addresses the first of these effects (quantity changes) on the basis that there are circumstances under which induced changes are of net value. The main mechanism is agglomeration economies. Empirical work establishes the presence and magnitude of agglomeration effects, these arising as proximity between firms – more employment in a place – creates relatively high productivity. The mechanism is that proximity and scale (effective density) can create a 'business ecosystem' with high labour skills, knowledge spillovers, and a network of specialist suppliers and customers.

Transport improvement may increase the scale of an economic centre or cluster, facilitating commuting and higher employment, as well as improving connections between businesses in the centre. These changes create or amplify agglomeration effects thereby increasing productivity, a net benefit providing that productivity elsewhere in the economy is not reduced by displacement.

A further mechanism arises in the presence of imperfect competition. There are efficiency gains if transport improvement breaks local monopolies and intensifies competition between firms, or if sectors where supply is restricted (due to price-cost mark-ups higher than in other sectors) are induced to expand.

We think these effects are represented well in the WEI modules of TAG. However, there are several issues in the identification and application of WEI. First is displacement. As indicated above, there are net gains if agglomeration and pro-competitive effects in one area or sector are not offset by foregoing these effects elsewhere. This means that context matters; appraisal of a policy to establish a cluster in one place must take into account its impact on development elsewhere.

Second, establishing the likely scale of private sector investment's response to a transport improvement may be highly speculative. Supplementary modelling is sometimes used but this is expensive, subject to a high degree of uncertainty, and an area in which the funding authority may not have the expertise to assess the credibility of estimates produced by external consultants. The problem is easier if the 'do-nothing' counterfactual is one in which an existing centre is being constrained by inadequate transport capacity, an argument used in support of Crossrail (Elizabeth line).[7]

Third, there is the question of whether application of these techniques goes far enough to incorporate 'transformational change', such as the establishment of a new business cluster or regeneration of a derelict area. It is possible that the economic mechanisms underpinning WEI, in particular agglomeration effects, may be sufficient to trigger transformational change, fundamentally altering the nature of economic activity in a place. However, we think that such change is, almost invariably, achievable only with a set of policy initiatives going beyond transport. We discuss the role of TAG in this context in Section 5, *Integrated programmes and place-based policy*. Further issues surrounding the issue of transformative change are set out in Box 1 below.

Box 1: Transformational Change

What is meant by transformational change, and how does it fit into the TAG framework? The idea is that a system of inter-related parts – such as a local economy – is shifted into a new state as it goes through a threshold or 'tipping point'. In the spatial context the 'new state' typically refers to formation of a new cluster of business activity or regeneration of an initially depressed area.

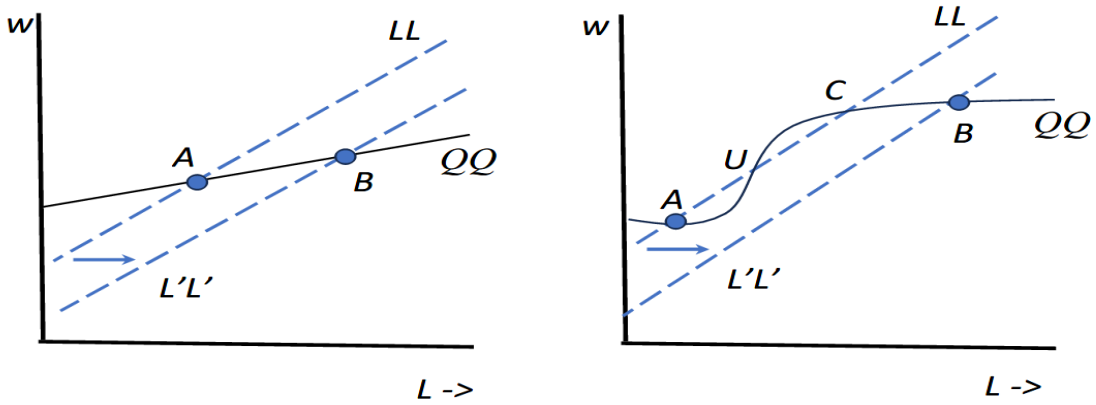
An economic formalisation of this is illustrated in the figures below. The horizontal axis is employment in a place and the vertical measures both labour productivity and the wage. The supply of labour to the place is *LL*, upwards sloping as higher wage attracts

[7] See also examples in https://webarchive.nationalarchives.gov.uk/ukgwa/20250327100337/ https:/nic.org.uk/studies-reports/national-infrastructure-assessment/second-nia/

commuters into the place. The line *QQ* describes the relationship between employment and productivity, upwards sloping because of agglomeration economies.

The initial situation is at point *A*. A transport improvement increases labour supply (e.g. better commuting) shifting labour supply to *L'L'*. On the left-panel the equilibrium moves to point to *B*, bringing welfare gains to initial users, to induced traffic, and through productivity gains associated with WEI.

On the right-panel the productivity schedule has a range in which the productivity effect is much sharper, and the upper and lower parts of this correspond to different 'states'. The lower one might capture a 'low-level trap' with little productivity (or amenity) and low employment density. The upper one is a 'high-level equilibrium', with higher productivity and amenity. The transport improvement shifts the outcome from *A* to *B*, this now a 'transformative change'.



Several points follow. First, the shift from *A* to *B* goes through a tipping point since the equilibrium at *A* disappears giving a jump to the higher state. Furthermore, reversing the shift in *LL* would lead to the system to point *C*, not back to *A*, i.e. the change of state.

Second, the effect of the policy depends critically on the exact positioning of the curves. If the initial position of *A* is far to the left a large policy change will only have a small effect; if *A* is far to the right even a small policy change will have a large effect. A large shift in *LL* (i.e. a large transport policy) may be neither necessary nor sufficient to achieve transformation.

Third, why, in the right-panel, does the market not achieve point *C*, along *LL* from the initial situation? The answer is coordination failure. No firm is willing to set up outside the cluster (at point *A*) unless it is confident it is going to be followed, but the market provides no mechanism to coordinate these choices. Similarly, at the policy level, multiple coordinated policies (collectively shifting to *L'L'*) are likely to be required.

In practice, under what conditions might such a transformative change occur? There has to be a credible possibility that a target place can host the high state. Making the transition to the high state generally requires many conditions to be met – transport, accessibility, available land, skilled labour, quality housing, amenities, local authority backing. In some places many of these conditions are already in place (e.g. derelict land in an urban centre) so little may be needed to cross the tipping point. In others multiple policy actions will be required to assemble all the conditions necessary for

transformation (new towns). This sets a high bar for claiming that a project is transformational, a bar that is not met simply on the basis of the project being large.

Price and wage changes: the terms of trade: Wider impacts of a transport project are not just on quantities, but also on prices and wages in the local or national economy. As noted above, these effects are not included in either direct or wider economic impact appraisal because – given productivity levels – such changes are transfer payments, from those paying higher prices or wages to those receiving them. However, there are circumstances under which it might be argued that such changes are not zero sum. These circumstances merit discussion and Departmental awareness, although we are not recommending that they become part of the core TAG apparatus.

If transport improvement triggers a response of private sector investment and employment then it is likely to also change wages in the affected area, possibly a net redistribution to the area from elsewhere. At the local level the effect is likely to be small – the UK has a relatively well integrated national labour market – and is subject to the provisos of capitalisation in land and house prices noted in Section 2.1.2 above. Effects may be larger in the context of integrated programmes, discussed in Section 5.

At the national level this mechanism is important in the debate surrounding the benefits of growing sectors or firms that produce internationally tradable goods and services, including inwards foreign direct investment (FDI). Transport policy may alter the attractiveness of the UK as a place for investment in such activities. Attracting investment in such internationally tradable sectors will cause the real GBP exchange rate to be higher than otherwise, this raising real wages in the UK. Given productivity, higher UK wages are passed on partly as higher prices to UK consumers (a transfer, netting out) and partly to foreign consumers, yielding net benefit to the UK. Thus a term of trade improvement is triggered by making the UK a more attractive destination for internationally mobile investment. This is not an effect of quantitative importance for the vast majority of projects, but could be argued to apply, for example, to airport development, or to projects designed in order to attract inwards investment to the UK. Details of this argument and some further points on FDI are contained in Box 2.

Box 2: Tradables and foreign direct investment (FDI)

Attracting FDI or expansion of internationally competitive tradable sectors more broadly is often seen as a priority of government. What are the arguments, and how do they fit with the CBA approach of TAG?

FDI may bring with it high-level management skills, high productivity, and perhaps also capital inflow to finance investments. The value of this to the UK depends, evidently, on who the ultimate beneficiaries are. These factors are a source of firms' operating profits which may be repatriated to the parent company, so are not therefore a particular source of UK welfare gain. They become so to the extent that they generate positive externalities – spillovers of knowledge, skills, training, and as drivers of cluster formation and strong business ecosystems.

A broader argument applies to investment (domestic and foreign) that expands UK production of internationally tradable goods and services (both export, and import-replacing). Investment raises demand for labour so tends to increase wage rates, locally

or even nationally. This change in wages is the mechanism through which displacement occurs – higher wages cause other firms to release workers – until labour market equilibrium is restored.[8] Whether or not this is a source of benefit depends on who ultimately pays the higher wages. At given productivity levels (abstracting from the arguments of the preceding paragraph) higher wages feed directly into higher prices. For non-tradable goods and services there is no net welfare gain, but for internationally tradable goods and services (think of a good that is 100% exported) the higher prices are paid by foreigners giving the UK net gain – an improvement in its terms of trade. The identical argument can be phrased in terms of the foreign exchange market: a new source of exports appreciates the exchange rate (displacing other exports until equilibrium restored), the appreciation giving the UK cheaper imports.

Is this relevant to transport appraisal? The overall quality of transport infrastructure is important to decisions about where internationally mobile firms locate their investments, perhaps as important as decisions on trade policy. The argument matters for overall infrastructure spending, and in a few circumstances for specific projects where there is a credible case that transport improvement is key to attracting investment.

Uncertainty

Projects face multiple sources of uncertainty. Outcomes depend on shocks that are exogenous to the project, such as national economic performance, climate variation, or related policy measures. And they depend on project specific and local shocks, arising in project procurement and implementation, or due to unknown behavioural responses to the project, ranging from responses of traffic flow to possible impacts on firms' investment decisions. For purposes of comparing projects the question is, how do these and other uncertainties bear on one project relative to another?

The Department produces 'common analytical scenarios' that capture macro-level outcomes (national economic performance, climate, demography) and can test different projects against these scenarios. These may be valuable, although it leaves the problem of how to form a VfM judgement across multiple scenarios. It is not clear to us what has been learnt from the use of these scenarios. How much cross-project variation is there in outcomes with respect to scenarios, and what sort of schemes have been filtered in or out as a consequence?

We think that it may be valuable to increase focus on project specific and local sources of uncertainty where these can be credibly identified. Emphasis should be given to understanding the sources of uncertainty that are key to success or failure of the project, measured by impact on the estimated BCR. We think that forming a view of the threats posed by extreme scenarios is important, e.g. asking 'what is the most likely reason that benefits will not materialise?'. This involves focusing on tail risk as much as on further refinement of an expected value. This can also be thought of inversely, as 'what would need to be true for this to be a bad decision?'

[8] For non-tradables displacement occurs not only through this labour market mechanism, but also through product market competition: opening one restaurant causes another to close due to lack of custom.

We note that this approach has value not just in the final investment decision, but also in adjusting project design. Understanding these tail risks, as well as an expected value, enables mitigation steps to be taken in the management and design of the project. We note that the Department has recently published its plans to refresh its uncertainty scenario guidance[9] .

[9] We note that TAG guidance on uncertainty was updated in December 2025, Summary of upcoming changes to uncertainty scenario guidance - GOV.UK

Project costs[10]

TAG A1-2 addresses project costs, including investment costs, but we are concerned that relatively little attention is paid to costs in the application of TAG. While project procurement and implementation is beyond the scope of this review, there is risk that (systematically) inaccurate estimates of delivery and construction costs undermine the credibility of BCRs and the appraisal process as a whole. There are a number of aspects of project costs that deserve more attention in the application of TAG.

First, we have been told of cases where extremely outdated information was used as a basis for estimates of project costs. Evidence of recent experience with project delivery needs to be compiled and fed into cost estimates.

Second, the particular circumstances of projects (e.g. geology, permissions required, complexity and likely causes of delay) need to be evaluated and fed into cost estimates. Estimates of 'optimism bias' are of little value unless they accurately differentiate between projects and vary according to the details of each. This is an area where the evidence base needs development in order to get a better understanding of cost estimates, and of circumstances in which estimates differ markedly from outcomes.

Third, estimates of alternative specifications need to be available relatively early in the design stage of projects. For many projects there are trade-offs between cost and aspects of project design. These are precisely the trade-offs that need to be subject to economic appraisal, points we discuss further in Section 4.

Fourth, the efficiency of the construction sector itself cannot be taken as exogenous. In particular there may be efficiency gains as the sector experiences learning by doing and benefits from continuity of operation. These considerations may be hard to incorporate in a BCR. However, such positive externalities flowing from one project to another are, in principle, little different from externalities already addressed in the more complex circumstances of wider economic impacts.

Finally, there is a set of issues surrounding project finance, including the balance between public and private finance. There are good reasons for placing a shadow premium on public funds. This is not currently done under Green Book rules (although we note that the

[10] For a review of these issues see Major transport projects governance and assurance review - GOV.UK.

Value for Money Assessment scores a project as ‘poor’ if the BCR is less than 1.5) and would be irrelevant if financing of all projects were 100% public. Where this is not the case the relative costs of public vs private finance and their implications for the BCR merit attention.

Option development

TAG covers guidance from identification of ‘problem’ (or opportunity) through to a short-list of schemes (project designs) that go through to ‘further appraisal’. An important issue surrounds the point at which the CBA methods of TAG are brought to bear in this process.

Problem (or opportunity) identification is undertaken in a variety of different ways – from high level strategic ‘vision led’ approaches through to recognition that ‘doing minimum’ is damaging. It is unclear what economic analysis goes into this and into the shortlisting for further analysis. The design stages – what scheme design is best value for money to address a particular problem – is likely to involve important trade-offs that should be the subject of appraisal using cost-effectiveness and CBA techniques. It is precisely in comparing competing schemes to solve the same ‘problem’ that TAG is likely to be most valuable.

We are concerned that this is generally not the case, so designs are settled with too little attention to the value for money that the different options offer. The guidance seems to offer an over-complicated process, while not being supported by enough analysis to make possible a rigorous comparison between alternatives. While the guidance indicates that ‘a small number of better performing options’ are expected to proceed to further appraisal, we are told that, in practise, this is rarely more than one. A view expressed to the panel several times was that economic assessment is brought to bear too late in the process. We recommend that the Department reviews this process. The approach followed might well involve cost-effectiveness techniques rather than CBA, and cover a range of proposed options including those incorporating risk mitigation (see Section 2.3). We recognise that this could be costly, to the Department and more broadly if it creates ‘planning blight’ -- so needs to be used proportionately.

Integrated Programmes and Place-based Policy

Transport investments are a part of many integrated programmes of place-based investment, often 'vision led' and intended to 'achieve the objectives of a particular place' (Green Book). Application of TAG in these contexts has been subject to multiple criticisms, some of principle, some of practice.

Integrated programmes of investment are necessary if there are complementarities or synergies between different elements of the package (the whole is greater than the sum of the parts). Economic principles dictate that in these circumstances the programme is appraised as a whole. It is difficult to attribute outcomes to particular elements of the programme and, even if it were possible, setting separate hurdles (such as required BCRs) for each element would generally not lead to efficient outcomes; on the contrary, this approach would generally miss potential returns from complementary elements (such as housing, different transport modes, and other infrastructure). It is in these programmes, rather than stand-alone projects, that 'transformational' change may occur if, for example, the programme acts as a catalyst for the formation of a new residential community or cluster of business activity, or crystallises agglomeration effects through increased density of activity.

The review panel has heard that application of TAG is sometimes viewed as unhelpful in these situations. It is seen as cumbersome, time consuming and costly. There is lack of clarity as to the extent to which TAG procedures should, or may not be, used. And fundamentally, there is a view that final decision makers may attach little or no weight to TAG appraisals. They may be viewed as not credible, not comprehensible, and/or unimportant relative to other considerations.

Rethinking the role of TAG in this context should be a priority, consistent with work in other departments following the Green Book Review. There are a number of elements to this work.

TAG should not be held up in opposition to other approaches. On the contrary, integrated and place-based policies are a context in which the strengths of TAG are particularly valuable, for several reasons:

5. TAG provides an overall framework in which costs and benefits are laid out consistently, comprehensively, avoiding pitfalls of double-counting and paying proper attention to the issue of displacement.

6. The TAG framework sets out methods to identify likely impacts and to challenge wishful thinking. Claimed effects need to be backed by plausible argument and, where possible, quantitative evidence. Ex-post evaluation of previous projects are needed as part of the evidence base.

7. TAG offers estimates of the social value of impacts, drawing on existing values and expertise in securing new estimates where needed.

8. TAG's wider economic impacts framework provides a basis for analysis of effects across a local economy, including those driven by complementarities between different actors and with a potential to create transformational change. Techniques include possible use of TAG's guidance on 'supplementary modelling' tools, i.e. the use of spatial economic models of various types, and the future use of AI tools to understand and predict in complex environments.

These properties are important even if BCRs are not calculated item by item.

Effective use of TAG in these contexts requires a clear, straightforward and supportive approach which facilitates rather than deters the involvement of other stakeholders, including non-specialists. This will require simplification of TAG documentation and processes, and possibly the development of a simplified version of TAG itself. The DfT will need to work with local areas and other Departments to ensure its approach is accessible, to develop local capacity, and to build and apply an evidence base for the effectiveness of place-based policies.

The points made in preceding paragraphs are relevant not only to place-based policy, but also to a tension between the economic case and the strategic case that can occur in other contexts. Arguments in the strategic case need to be supported by evidence, analytically well-founded, and subject to a process that encourages rigorous challenge. They should accord closely with the effects studied and quantified in the economic case.

Comparability across projects and portfolios

As noted above, the Department's spending decisions are taken at several different levels. At a high level there are choices between different portfolios, defined by transport mode; local, devolved or central government delivery; capital or current spending; or other strategic portfolios. There is evidence of wide variation in BCRs across portfolios, variation which may, in principle, be due to several different factors including: non-comparability of BCRs across different portfolios; the presence and treatment of non-monetised impacts in the VfM assessment; and the role of government spending objectives in final decisions.

We note several points. First, TAG is sufficiently comprehensive in its coverage of the effects of transport improvements to secure a high degree of comparability across a wide range of projects, varying by size, mode, and geography. However, TAG was designed essentially to appraise new projects and in other areas (such as operations and maintenance) different methods may be used. For example, methodologies used to choose efficient scheduling of routine maintenance might be quite different from the calculation of BCRs on new projects. The DfT should consider work to develop understanding of these and other differences that might impair comparability across portfolios. Subject to these qualifications we think that BCRs as generated by TAG are sufficiently comparable across a wide range of projects and portfolios to usefully inform spending decisions at these margins.

We note also that selection of 'good' projects should be clear from within portfolio decisions, while inter-portfolio decisions affect marginal projects. A reallocation of funds from portfolio A to portfolio B will yield gains if A is unable to undertake the worst project that it would have funded, and B becomes able to do the project that would have just failed to be funded. Comparability is therefore required between these marginal projects, not between priority projects that should – with properly prioritised intra-fund procedures – have been implemented in any case.

Evidence, proportionality and presentation

Evidence, proportionality and presentation are three recurring themes through this report.

First, we have made repeated reference to the role of evidence. It is important that the Department has views about what are the key evidence gaps, how new evidence will be used, and whether it is likely to have a material impact on decisions. Quantitative evidence is needed to update model parameters and valuations. A broader evidence base is needed to build a picture of how policies have worked in practice, and also of how well TAG appraisals have performed relative to outcomes. What sort of problems have been encountered with project costs and delivery? Where has there been systematic over-optimism? What plausible impact has been omitted from appraisal because of lack of evidence? And what claimed impacts can be dismissed as wishful thinking? A priority here is to improve understanding of circumstances under which place-based-policy is more or less successful and the role of transport in such projects. Building this evidence base may require different types of data collection and knowledge curation. New data technologies – and in particular artificial intelligence – need to be fully utilised.

Second, proportionality matters in the sophistication (and expense) of techniques employed and in choice of the situations in which alternative approaches are used. Some appraisals require sophisticated techniques and modelling, others can be done more simply. In many circumstances fine-tuning to achieve a spurious degree of accuracy is less valuable (as well as being more expensive) than a readily interpretable and credible table presenting key benefits and costs. It should be made clear to users that in well-specified circumstances a light-touch appraisal is appropriate, and is supported by light-touch documentation.

Third, clarity in the presentation of TAG and its relationship with other elements of the appraisal process is critical, and has several dimensions. One is that descriptions of TAG are spread through multiple documents; some are written rather obscurely, and the relationship between parts is unclear. The panel heard that some users were unclear not just about the details, but also about what elements of TAG they were expected to use, how different elements combined in the appraisal process, and what parts were of importance to final decision taking. Much work is done by consultants, sometimes in circumstances in which the client does not have the capacity to specify exactly what is needed or to assess the quality of what is produced. There are incentives for scheme promoters and consultants to undertake excessive analysis, endeavouring to cover all possible critiques in a push to have a scheme funded. To correct this appraisal specifications need to be clear, proportional to need, and light-touch where appropriate.

To be influential TAG must be credible, requiring that its methods and findings have to be accessible to an audience including non-specialists. This is a matter of both content and presentation. Results should be presented in a sufficiently transparent way that people can 'see where they are coming from' and even do back-of-envelope calculations to check orders of magnitude. There needs to be confidence that different elements of the appraisal – monetised BCRs, non-monetised impacts and spending objectives – are handled in a consistent and transparent manner as they pass through the appraisal process.

References

ARUP (2025), Elizabeth line: post opening evaluation, https://content.tfl.gov.uk/elizabeth-line-post-opening-evaluation-full-report.pdf.

Dept for Transport, (2025b), Value for Money Framework, https://www.gov.uk/government/publications/dft-value-for-money-framework

Dept for Transport (2025) TAG, the Department's Transport Appraisal Guidance https://www.gov.uk/guidance/transport-analysis-guidance-tag

Dept for Transport (2025a) 'Transport Analysis Guidance: the transport appraisal process' ,https://www.gov.uk/transport-analysis-guidance-tag

Dept for Transport (2025) Summary of upcoming changes to uncertainty scenario guidance - GOV.UK https://www.gov.uk/government/publications/tag-uncertainty-scenarios-upcoming-changes/summary-of-upcoming-changes-to-uncertainty-scenario-guidance

Gibbons, S. & S. Machin (2005) 'Valuing Rail Access Using Transport Innovations' Journal of Urban Economics, 57.1

National Audit Office (2025) 'Department for Transport, 2024-25'.

Rojas, A. (2024) 'Train stations' impact on housing prices: Direct and indirect effects'Transportation Research Part A: Policy and Practice Volume 181, 103979

Wu, C., Kreidieh, A., Zhu, E., & Bayen, A. M. (2017). Flow: Architecture and Benchmarking for Reinforcement Learning in Traffic Control. arXiv:1710.05465.

Appendix 1: Transport Appraisal Review panel membership

Tony Venables CBE FBA (panel chair)

Tony Venables is a senior research fellow at the University of Oxford and part-time research professor at Monash University, Melbourne. He is a fellow of the Econometric Society, the Regional Science Association, the British Academy and the Royal Economic Society. Former positions include Professor of Economics at the University of Oxford and at London School of Economics and Political Science and Chief Economist at the Department for International Development.

Bridget Rosewell (CBE)

Bridget Rosewell is director, policy maker and economist, with experience in advising public and private sector clients on strategic issues. She chairs Flood Re and the M6 Toll Company and is a non-executive for the National Wealth Fund, Northumbrian Water and the Atomic Weapons Establishment. Previous roles include Chair of Atom Bank, a Commissioner for the National Infrastructure Commission, Senior Independent Director for Network Rail and Chief Economic Adviser to the Greater London Authority.

Diane Coyle (DBE)

Diane Coyle is the Bennett Professor of Public Policy at the University of Cambridge and Research Director of the Bennett School of Public Policy. Her research focuses on the economics of AI and digital, and on economic measurement. Diane is a member of the Industrial Strategy Council and advises the Competition and Markets Authority. She previously served as Vice Chair of the BBC Trust and as a member of the Competition Commission, the Natural Capital Committee and the New Towns Taskforce.

Dan Graham

Dan Graham is Professor of Statistical Modelling in the Department of Civil and Environmental Engineering at Imperial College London (ICL), Director of the ICL Transport Strategy Centre and Head of the ICL Centre for Transport Engineering and Modelling. Dan is also a Project Partner of the Data Centric Engineering Program at the Alan Turing Institute and a Fellow of both the Institute of Mathematics and its Applications and of the Royal Statistical Society. He is a visiting Professor at Zhejiang University and South East University in China.

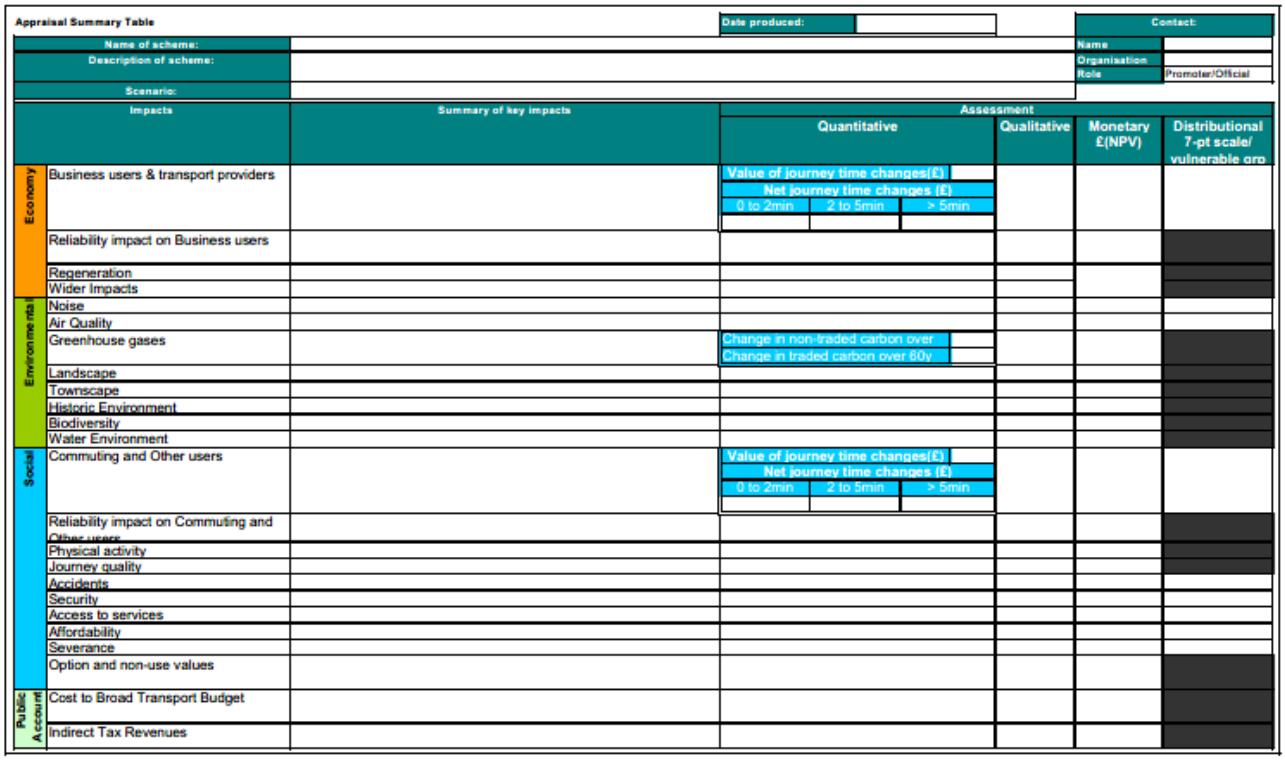
Greg Marsden

Greg is Professor of Transport Governance at the Institute for Transport Studies at the University of Leeds. He holds a PhD in urban pollution modelling and has researched issues surrounding the design and implementation of transport policies in different institutional settings for over 20 years. He leads the ‘place’ theme in the National Energy Demand Research Centre, is Director of the INFUZE project and is a Trustee of the Rees Jeffreys Road Fund.

Tom Worsley CBE (providing technical advice to the panel)

Tom Worsley is visiting fellow at the Institute for Transport Studies at the University of Leeds and previously spent more than 35 years as an economist at DfT. He has experience in using economic analysis to make policy and investment decisions, having been responsible for developing economic appraisal, modelling and forecasting methods. He acted as a special adviser to the Parliamentary Economic Affairs and the Treasury Select Committees and has chaired several round tables convened by the International Transport Forum. Tom was commissioned to advise the government of Estonia on the economic appraisal of transport projects and is a member of DfT’s Joint Analysis Development Panel.

Appendix 2: Illustrative Appraisal Summary Table



Appraisal Summary Table		Date produced:		Contact:	
Name of scheme:				Name	
Description of scheme:				Organisation	
Scenario:				Role	Promoter/Official

	Impacts	Summary of key impacts	Assessment			
			Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers		Value of journey time changes(£) / Net journey time changes (£): 0 to 2min, 2 to 5min, > 5min			
	Reliability impact on Business users					
	Regeneration					
	Wider Impacts					
Environmental	Noise					
	Air Quality					
	Greenhouse gases		Change in non-traded carbon over / Change in traded carbon over 60y			
	Landscape					
	Townscape					
	Historic Environment					
	Biodiversity					
	Water Environment					
Social	Commuting and Other users		Value of journey time changes(£) / Net journey time changes (£): 0 to 2min, 2 to 5min, > 5min			
	Reliability impact on Commuting and Other users					
	Physical activity					
	Journey quality					
	Accidents					
	Security					
	Access to services					
	Affordability					
	Severance					
	Option and non-use values					
Public Account	Cost to Broad Transport Budget					
	Indirect Tax Revenues					

Appendix 3: Contents of Guidance for the appraisal practitioner and links to TAG modules

A1 cost-benefit analysis

These guidance documents give advice on the principles of cost-benefit analysis in transport appraisal, the estimation of scheme costs and the calculation of direct impacts on transport users and providers.

- TAG unit A1-1 cost-benefit analysis
- TAG unit A1-2 scheme costs
- TAG unit A1-3 user and provider impacts

A2 economic impacts

These guidance documents give advice on the appraisal of the wider impacts, regeneration impacts, and dependent development impacts, of transport interventions.

- TAG unit A2-1 wider economic impacts appraisal
- TAG unit A2-2 induced investment
- TAG unit A2-3 employment effects
- TAG unit A2-4 productivity impacts

A3 environmental impacts

This guidance provides advice on the appraisal of the environmental impacts of transport interventions. It deals with impacts on both the built and natural environment and on people. The environmental impacts covered in this manual are noise, air quality,

greenhouse gases, landscape, townscape, the historic environment, biodiversity and the water environment. The guidance discusses the relationship between environmental impact appraisal (as set out in this unit) and environmental impact assessment and the need to tailor the level of appraisal to the stage of development of the proposal.

- TAG unit A3 environmental impact appraisal

A4 social and distributional impacts

These guidance documents give advice on the appraisal of the social impacts and distributional impacts of transport interventions.

- TAG unit A4-1 social impact appraisal
- TAG unit A4-2 distributional impact appraisal
- TAG unit A4-3 place-based analysis

A5 uni-modal appraisal

These guidance documents give advice on issues specifically relating to cases where only one mode of transport is explicitly modelled. Guidance is provided for active modes (such as walking and cycling), aviation, rail and highway interventions and on the use of marginal external congestion costs to estimate decongestion benefits resulting from mode switch away from car use.

- TAG unit A5-1 active mode appraisal
- TAG unit A5-2 aviation appraisal
- TAG unit A5-3 rail appraisal
- TAG unit A5-4 marginal external costs
- TAG unit A5-5 highway appraisal

Appraisal worksheets

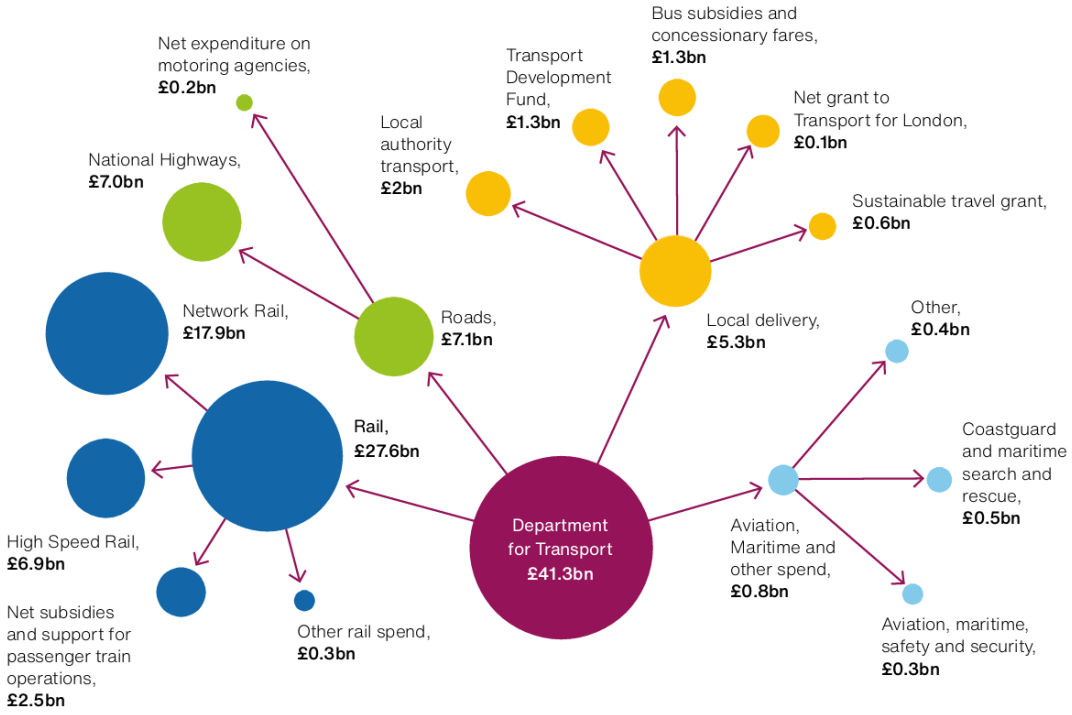
Worksheets used to present evidence for each impact:

- Appraisal tables
- Economic impacts worksheets
- Environmental impacts worksheets
- Social and distributional impacts worksheets
- Proformas

- Optimism bias workbook

Appendix 4: DfT net spend in 2024-25

Department for Transport's net spend in 2024-25



Source NAO