



Department  
for Transport

# TRANSPORT ANALYSIS GUIDANCE

## An Overview of Transport Appraisal

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Department for Transport

Transport Analysis Guidance (TAG)

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# 1 An Overview of Transport Appraisal

## 1.1 Introduction

- 1.1.1 This unit contains general introductory information on the role of transport modelling and appraisal, and how the transport appraisal process supports the development of business cases supporting investment decisions.
- 1.1.2 The key principles from HM Treasury's Green Book are also set out here, with explanation on how these principles have been applied in the transport appraisal context to support investment decisions.
- 1.1.3 There is also explanation at the end of the unit to describe how the rest of the guidance has been restructured from the previous version TAG.

## 1.2 What is the purpose of TAG and what does it cover?

- 1.2.1 TAG (Web-based Transport Analysis Guidance) is the Department's transport appraisal guidance and toolkit. It consists of software tools and guidance on transport modelling and appraisal methods that are applicable for highways and public transport interventions<sup>1</sup>. These facilitate the appraisal and development of transport interventions, enabling analysts to build evidence to support business case development, to inform investment funding decisions.
- 1.2.2 Development of analysis using TAG guidance is a requirement for all interventions that require government approval. For interventions that do not require government approval this guidance would serve as a best practice guide.
- 1.2.3 However, there is a key distinction between the transport appraisal process and the decision-making process. The transport appraisal process is about options generation, development and evaluation of intervention impacts. In contrast, the decision-making process involves a separate governance process concerned with identifying and implementing interventions that deliver the needs of the sponsoring organisation and fits best with its investment funding objectives. On April 2011, the Department published the **Transport Business Case Assessment** (DfT, 2011), setting out the principles on how the Department assesses the business case for major investments and supports Ministers as they make decisions on them.
- 1.2.4 Whilst the Transport Business Case Assessment is developed based on HMT's '5 Case Model' [HMT] for business case preparation, TAG is developed based on HMT's Green Book [HMT, 2007], that sets out the framework for appraisal and evaluation for all policies, programmes and projects. This constitutes binding guidance on all departments – including the Department for Transport – and executive agencies. The binding nature of the guidance ensures that interventions from different departments are directly comparable, even if the detail of the analytical techniques used to estimate impacts vary from Department to Department.
- 1.2.5 Figure 1 below illustrates the relationship between the transport appraisal process (on the far left) and the decision-making process (top right). The application of the '5 case model' for business case development requires the investment decision to be considered from five perspectives – the Strategic case, Economic case, Commercial case, Financial case and the Management case. These are illustrated conceptually by the coloured boxes as part of "Development of evidence for business case". Subsequent sections in this unit will elaborate on how appraisal outputs produced from TAG and other guidance can be used to develop evidence for these five cases.

<sup>1</sup> The word 'interventions' is used to cover the entire range of measures from demand management measures through to major engineering projects.

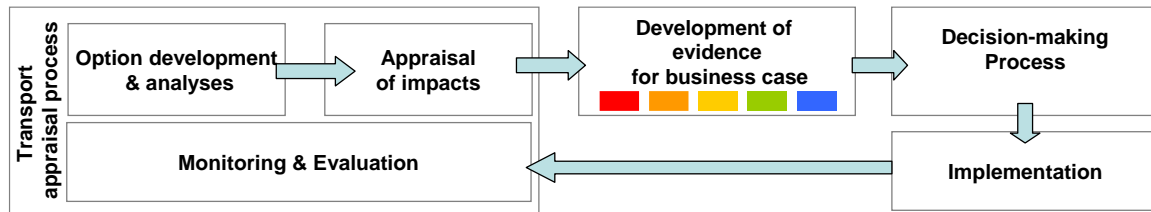


Figure 1 Relationship between the transport appraisal process and the decision-making process

### 1.3 How Green Book principles have been applied to transport appraisal

1.3.1 The Green Book recommends the cost-benefit analysis approach to appraisal. Applying this to the transport context, transport appraisal draws together information on a wide range of impacts – it does not just consider the direct impacts on the transport users and service providers affected by the intervention, but also the impacts of the intervention on the environment, wider society and government. Analysts should seek to place a monetary value on as many of the impacts as possible to allow a direct comparison between the costs and benefits of the intervention. To assist analysts involved in transport appraisal, TAG provides guidance to enable option development and analysis; and the appraisal of impacts (costs and benefits) produced by each option.

#### Option development and analysis

1.3.2 The effects of transport interventions are often complex. The requirement to analyse the wide range of impacts in cost-benefit analyses translates to the need to understand and measure how transport interventions will change patterns of travel (choice of origin and destination; frequency; distance), patterns of social activity (work and leisure) and impact on the environment. This has led to the development of sophisticated techniques for predicting people's travel behaviours, so that analysts can refine their options and maximise the value created by their proposal. Although these sophisticated methods will be required for most major interventions, they may not be needed for small scale interventions.

1.3.3 To support the development of evidence required in cost-benefit analysis, TAG provides guidance on modelling techniques alongside the guidance on appraisal. It covers subjects such as forecasting future levels of demand and modelling the impacts that a proposal will have on travel choices such as route choice, choice of destination and choice of mode.

1.3.4 As far as possible minimum standards have been specified to provide promoters with a clear indication of the Department's expectations of the quality of modelling that should be provided to ensure the business case is supported by robust evidence.

1.3.5 There are some impacts – such as noise, air quality, landscape, social and distributional impacts – where the transport model is unable to directly measure the impact. In such cases, guidance is provided on how the impacts can be measured using additional analyses outside of the transport model.

1.3.6 It is worth highlighting that although TAG provides best-practice guidance, it is not possible to write modelling guidance to address every eventuality and in some circumstances it might be more appropriate to deviate from these minimum standards or adopt an approach not addressed by the guidance. We therefore encourage scheme promoters to contact the Department at an early stage in the development process to discuss which techniques would be most appropriate in their particular circumstances.

#### Appraisal of impacts

1.3.7 Having measured the impacts of the transport intervention, the next step is to draw them together in a cost-benefit analysis. The methods used to undertake such analyses have largely been developed based on HMT's Green Book principles.

- 1.3.8 The Green Book advises on which analytical techniques should be used in preference to others and instructs on, for instance, how much weight to give future impacts versus present day impacts.
- 1.3.9 To aid consistent decision-making, monetary valuations are applied to the respective impacts to enable comparisons in cost-benefit analysis. Some of the valuations can be taken directly from prices paid in markets, or predictions of prices in future markets, e.g. fuel prices. Other valuations have been derived from research using techniques such as hedonic pricing and stated preference, e.g. the valuation of some noise impacts and the value of travel time savings. Where valuations rely on research or experimental methods they are reviewed by experts to ensure that they are robust enough to be used in cost-benefit analysis.
- 1.3.10 Some other impacts are simply too difficult to derive a reliable monetary value for in current practice. However, the fact that some impacts are not expressible as monetary values should not lead to the conclusion that they are neglected by the decision-maker. Instead there is guidance on how to present these in a consistent form that gives a clear sense of the severity of the impact, even if the impact cannot be simply added or subtracted from the other impacts that have been expressed in units of money.
- 1.3.11 To ensure that decision-makers are always presented with a full account of the impacts, all impacts – monetised, quantified, qualified wherever feasible – are summarised and presented in the form of an **Appraisal Summary Table**.
- 1.3.12 Figure 2 lists the appraisal outputs that can be produced from following TAG guidance. This should not be viewed as a prescriptive list, rather it aims to convey two key messages. Firstly, TAG enables the production of analyses and evidence that is sufficient to inform the Economic Case. Although these outputs may also be used to support the other cases, analysts should also be aware of separate guidance and tools that are relevant to investment appraisal of interventions. References to these have been listed in the bottom half of Figure 2.

Appraisal of impacts		Development of evidence for business case					
Study outputs		Strategic case	Economic case	Financial case	Delivery case	Commercial case	
<b>Guidance available in WebTAG</b>	<b>Stage 1: Option development</b>	Outputs from Early Assessment and Sifting Tool (EAST)	✓	✓	✓	✓	✓
		Options Assessment Report	✓	✓	✓	✓	✓
		Appraisal Specification Report					
	<b>Stage 2: Further Appraisal</b>	Appraisal Summary Table	✓	✓	✓		✓
		Transport Economic Efficiency table		✓	✓		✓
		Public Accounts		✓	✓		
		Analysis of Monetised Costs and Benefits		✓			
		Greenhouse gas worksheet	✓	✓			
		Noise worksheet	✓	✓			
		Air quality worksheet	✓	✓			
		Social Distributional Impact worksheet	✓	✓			
	<b>Other guidance &amp; tools</b>	Social Research evidence, guidance and tools	✓				
		Carbon Tool for Local Authorities	✓	✓			
		Value for Money guidance		✓			
Advice on Public Private Partnership (PPP) and Private Finance Initiative (PFI)						✓	
DfT's Evaluation guidance including evaluation plans and benefits realisation					✓		
Office of Government Commerce's Gateway Review guidance					✓		
Network Rail's management & control process for enhancements (GRIP)		✓	✓	✓	✓	✓	
Highway Agency's project control framework (PCF)		✓	✓	✓	✓	✓	

**Figure 2 Tools and guidance produce evidence that can be used to answer questions posed by each case within the 'Five Case Model'**

## 1.4 The role of the transport appraisal process

- 1.4.1 The transport appraisal process brings together the work required in option development, analyses and appraisal. It maps out the critical analyses and activities at different appraisal stages leading up to the various stages of business case development and approvals.
- 1.4.2 The design of the transport appraisal process is also underpinned by HMT Green Book principles. Before commencing a transport study, a clear mandate needs to be established setting out the rationale for the transport intervention. Once this mandate is created, analysts need to establish the study objectives and consider a broad range of options in early stages; these are then sifted against a set of criteria to shortlist preferred options. All assessments should be carried out in a proportionate manner. Key stakeholders should be involved and engaged even from early stages. When an intervention is completed, it should undergo comprehensive evaluation. This involves examining the outturn of a policy, programme or project against what was expected, ensuring that the lessons learned are fed back into the decision-making process.
- 1.4.3 The design of the process ensures that, before any decision is made about an intervention, promoters and assessors have considered whether there better ways to achieve the objectives that the intervention is set out to achieve. Overall, it also aims to make the transport appraisal process more transparent and consistent with other government Departments.

## 1.5 How should TAG be used?

- 1.5.1 Transport studies often require significant resources for data collection, analyses and appraisal. This is especially true for major highway or public transport interventions requiring central government funding. The Department recognises that good project management is essential to the managing not only the delivery of transport studies, but also the risks associated with the analyses and recommendations.
- 1.5.2 Although the specific topic of project management is not within the scope of this guidance, TAG has been restructured into two main tiers to facilitate better project management by focusing on the needs of three main types of project team members – the Senior Responsible Officer, the Technical Project Manager and the Practitioner.
- 1.5.3 With the specific needs and responsibilities of these team members' needs in mind, the content is now restructured and streamlined to achieve greater accessibility and clarity of appraisal requirements for these groups of users.

### Tier 2 (The Manager Tier)

- 1.5.4 Tier 2 provides guidance at a more general level for those managing the project and is divided further into two areas – one for the Senior Responsible Officer (SRO) and the other for the Technical Project Manager (TPM).
- 1.5.5 Guidance for the SRO is for those who create the mandate to initiate the transport study – usually the scheme promoter. He/she is also responsible for the overall success of the study in meeting the objectives it was set out to achieve. The SRO needs to know broadly how appraisal works and how the evidence derived from the transport study is used to support and prepare the transport business case. This will in turn enable him/her to direct the associated analyses more effectively and enhance communication with colleagues concerned with a broad range of issues including business case preparation, policy and technical challenges.
- 1.5.6 At this level, basic guidance is required on appraisal and modelling so that the objectives of the appraisal and modelling are understood. The SRO also needs to know what to expect from the Project Manager (TPM) so that the project may be managed more effectively. If the SRO needs to know more detail, then more detailed guidance at the TPM is available.
- 1.5.7 The TPM is responsible for delivering the transport study and is involved in program and project management of the required tasks. He/she needs to know what analyses are required to programme and manage the deliverables and resources effectively. He/she is the link between the SRO and analyst practitioner carrying out the detailed work. This guidance will provide some background information to the processes but will be focused on practical requirements. This will include core requirements for modelling and appraisal upfront and hence what to expect from those carrying out the work.

### Tier 3 (The Practitioner Tier)

- 1.5.8 The Tier 3 guidance has been written for practitioners carrying out the detailed analyses. It provides good practice advice for most transport studies. Note that it is not a text book, nor does it recommend the use of methods that are at the leading edge of research. The Department recognises that, in some circumstances, the methods recommended in Tier 3 may not be appropriate. Where alternative techniques appear to be more suited to the case in hand, Project Managers will need to liaise with Senior Responsible Officers and the Department to agree on the best way forward.

## 2 References

Department for Transport, 2011, **The Transport Business Case**, Available at:  
<<http://www.dft.gov.uk/publications/transport-business-case/>>

HM Treasury, **Business Case guidance**, Available at  
<<https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>>

HM Treasury, 2007, **Green Book (Appraisal and Evaluation in Central Government)**, Available at <[http://www.hm-treasury.gov.uk/data\\_greenbook\\_index.htm](http://www.hm-treasury.gov.uk/data_greenbook_index.htm)>

### 3 Document Provenance

This is a new TAG Unit created for the restructured TAG guidance.