

The NATA Refresh: Reviewing the New Approach to Appraisal

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Foreword

Transport appraisal helps in making decisions about how we improve the journeys important to our day-to-day lives. Getting these decisions right mean that we can be more productive, enables more of us to take a fuller part in society and ensures that we respect the environment we live in. Appraisal provides a picture of how our decisions will impact on these aims.

The New Approach to Appraisal was introduced in 1998 as part of 'A New Deal for Transport: Better for Everyone' White Paper. Ten years on, much has changed and following the Eddington and Stern Reviews, it is right to consult on how appraisal can help for the next decade.

This consultation document is written so that as many people as possible can participate in the development of appraisal. As we initiate a dialogue with users and the public, we have focused on the more strategic areas. It would be useful for us to have your views on the most important issues. Then, during 2008, we will progress specific developments, ensuring you can take part as we enhance appraisal.

I look forward to understanding your views as we take forward our work on appraisal.

A handwritten signature in black ink, appearing to read 'Ruth Kelly', written in a cursive style.

RT HON RUTH KELLY MP
Secretary of State for Transport
October 2007

Executive Summary

1. The New Approach to Appraisal (NATA) is the analytical framework used to appraise the economic, environmental and social impacts of all transport proposals that require Department for Transport funding or approval. Its introduction in 1998 represented a significant step forward in the way that transport interventions are assessed and presented to decision makers.
2. The appraisal evidence informs whether a proposal represents value for money (VfM), sitting alongside evidence on a scheme's deliverability and strategic fit. A key innovation of NATA was the use of the Appraisal Summary Table (AST) and associated worksheets to summarise all the impacts of a transport intervention in a balanced way. Interventions to which NATA is applied cover rail, road, public transport, port and airport proposals and include, for example, improvements to bus services, new road schemes and changes to rail services.
3. This consultation is based on experience from a decade of use of NATA, from the recommendations of the Eddington and Stern work, and specific issues emerging in discussions over summer 2007. Some themes can be drawn out. There is support for the overall NATA approach, with NATA being judged fit-for-purpose. While there is a need to guard against 'change for change's sake', the Eddington and Stern Reviews recommended a significant improvements to our appraisal tools and we are consulting:
 - The overall NATA framework for analysis;
 - Some specific areas we identified as needing attention; and
 - Some priority areas where we are proposing changes to be implemented in early 2008.
4. As we make specific changes, we will ensure that these are consulted on in an appropriate manner and transitional arrangements put into place for analyses in progress. We are keen to make progress on the presentational and structural areas identified in the document. These will form the basis for the 'quick wins' we envisaged would be delivered in spring 2008 when we announced this Refresh in May 2007. Early release of our proposed refinements will help you to visualise and contextualise your input into this overarching consultation. Their focus will be on:
 - *Integrating the mode-neutral perspective to stages of analysis from the strategic to intervention, recognising that better use of the existing network will be an important*

option. Better presenting the existing guidance but also considering how to integrate the 'strategic' policy making work into intervention level analysis;

- *Progressing some specific appraisal guidance to support innovation in meeting climate change challenges*. This partly reflects the importance of the issue, but is also about ensuring NATA effectively supports delivery partners and transport professionals as they analyse innovative interventions; and
 - *Progressing guidance to support innovation in meeting productivity challenges*. The Eddington study highlighted transport's role in this area. Some specific work will be advanced to support delivery partners and transport professionals more effectively in a technically challenging area.
5. The document poses some questions. These are given in the body of the document and brought together at the end. These are to get your views on some of the areas where we will progress work. During the next year we are likely to make progress in a number of areas, but the breadth of appraisal means that you can help us to order our programme of work. Your views are sought firstly on whether the areas identified are comprehensive and secondly over the priority that the Department should give them.
 6. In *Chapter 2: Analytical framework*, we explain how the NATA Refresh is an opportunity to align better the analytical information needs of decision makers and the public with the latest policy priorities for transport and the Government. To inform the consultation, the Department will progress demonstration material focusing on: integrating the mode-neutral perspective to stages of analysis, recognising that better use of the existing network will be an important option and progressing some specific appraisal guidance to support innovation in meeting climate change challenges.
 7. The analytical framework will underpin the Department's value-for-money assessment. As analysis widens its scope, the evaluation of schemes should also correspondingly broaden. Further, the framework should allow assessment of the impacts of regulatory or other non-infrastructure options so that it is neutral over each option.
 8. *Chapter 3: Economy, accessibility and safety* then recommends that the evidence provided on how a scheme impacts on the economy should take account of the reductions in public transport crowding. The location of the health sub-objective, currently in the environment objective, should be considered.
 9. The evidence base for and application of appraising the wider economic benefits (WEBs) of transport is still relatively new. This seeks to capture agglomeration impacts and the improvements to labour markets. There is a need to advance best practice and disseminate this. One of the early deliverables from this Refresh will be the development of advice on WEBs, communicating this, recognising its novelty and that innovative interventions are likely.
 10. *Chapter 4: Environmental appraisal and assessing housing impacts*, recommends that the Department uses Defra's new guidance on the shadow price of carbon to ensure that carbon is properly accounted for in the appraisal of transport policy. In addition, the Department should progress some specific appraisal guidance to support

innovation in meeting climate change challenges. This partly reflects the importance of the issue, but also about ensuring NATA effectively supports delivery partners and transport professionals as they analyse innovative interventions.

11. Overall, in better identifying the impact of new housing on transport schemes, appraisal tools should recognise the transport benefits and costs attributable to the residents of the new housing. Such information at a strategic and scheme level should also feed back into strategic decisions over housing. This would help in prioritising expenditure on transport schemes that are intended to support housing growth, e.g. the Community Infrastructure Fund. Further, the appraisal needs to develop analysis of the uncertainty around such development plans.
12. It is recommended that the Department should consider how to consolidate the extensive advice provided through WebTAG, Design Manual for Roads and Bridges and other products on environmental impacts. A particular aspect is to ensure that environmental information provides a consistent picture at the various stages of scheme development.
13. *Chapter 5: Assumptions and scenarios* recommends that the Department's release and update of common assumptions should be on a pre-announced, regular cycle, alongside guidance releases. For ease of use, assumptions should be stored in a single place, where possible.
14. The Department is committed to further work to provide a detailed specification of the BCR, as PSA Delivery Agreement 5 will use this ratio as an indicator of the Department's success in seeing better value for money from its investments over time. It will be important to ensure that the appraisal continues to provide the information required for the calculation of the indicator. This is covered in *Chapter 6: Evidence from appraisal*.
15. The final chapter – *Chapter 7: Building analytical capability* – highlights the need for developments to the Department's guidance to include presentational improvements as an important and on-going part of the overall approach. The Department should consider how editorial control of the various documents and 'knowledge' can be improved. In disseminating this material, the Department should consider how the use of the internet could be more effective both with regard to facilitating engagement and in being transparent with results.

Chapter 1:

Purpose and Background

Introduction

- 1.** The New Approach to Appraisal (NATA) is the analytical framework used to appraise the economic, environmental and social impacts of all transport proposals that require Department for Transport funding or approval. Its introduction in 1998 represented a significant step forward in the way that transport interventions are assessed and presented to decision makers.
- 2.** The appraisal evidence informs whether a proposal represents value for money (VfM), sitting alongside evidence on a scheme's deliverability and strategic fit. A key innovation of NATA was the use of the Appraisal Summary Table (AST) and associated worksheets to summarise all the impacts of a transport intervention in a balanced way. Interventions to which NATA is applied cover rail, road, public transport, port and airport proposals and include, for example, improvements to bus services, new road schemes and changes to rail services.
- 3.** That NATA has proven successful is indicated not just because the Approach is still very much in use, but also by its increased coverage over the last decade across a wider set of interventions. However, much has changed in that period and in May 2007, the Department for Transport (DfT) announced a strategic review of NATA. Annex 1 sets out the objectives for the Refresh.
- 4.** The Refresh was initiated following the recommendations made by Sir Rod Eddington and Sir Nicholas Stern in their reports on transport and climate change respectively (Stern, 2006; Eddington, 2006). The Eddington Study looked at the link between transport and the long-term economic growth of the UK. It identified that the UK's transport system was highly developed, providing the links needed. The report forecast increasing congestion across transport, and recommended that 'better use' of the networks, combined with targeted improvements could deliver significant benefits to the UK.
- 5.** Both the Eddington Study and the Stern Review considered the environmental impacts of transport. NATA also recognises the range of environmental impacts of transport interventions, such as on landscape. The challenge for transport on its emissions of carbon dioxide, however, has been a particular area of focus.

6. This document covers a wide range of issues and its structure links to some themes:

Eddington’s mode neutral approach Chapter 2 presents a framework for analysis: NATA’s expert advice and other support will maintain alternatives over mode for as long as possible in the policy cycle.

Strategic analysis In various parts of the document, how high level, strategic analysis can better link with intervention level analysis is considered. Such work would define the transport problem, generate options potentially involving multimodal packages of measures and support early decisions. Chapter 2 provides an overview; other Chapters consider assessing impacts and how to support and present the results of such work.

Transparency of approach NATA is primarily a body of publicly available advice and support for analysis. Its transparency, however, can be improved.

Climate change and transport Chapter 4 looks at how NATA assesses the environmental impacts of transport. The overall impact of transport on climate change has risen in importance, raising the evidence needed to make decisions on interventions.

Reliability of transport and productivity Chapter 3 looks at the issues emerging on assessing the economic impacts of transport. The reliability and wider economic benefits of transport are of rising importance as identified by the Eddington Study. Further, there is a growing importance attached to the efficient movement of goods. Chapter 4 also considers the link between transport interventions and the provision of housing.

Taking account of social impacts Accessibility to key services, transport impacts on social inclusion and the correct articulation of distributional impacts are areas covered in chapters 3, 6 and 7.

Risk and uncertainty Chapter 5 considers how evidence can complete the picture on an intervention, taking account of alternative views of the world.

7. The May announcement also included a timetable for making progress involving a period of consultative change. The Department is keen to progress some areas where there are ‘quick wins’. These are areas where there is a consensus or where some early deliverables will help participation in the consultation.

8. There are some areas for developing the guidance where this document will help to initiate a discussion about the direction of changes to NATA. The Department’s current thinking about particular areas is set out and the Department is keen to seek views on the priority that should be given to these.

Where you can help

9. This consultation document is based on lessons from a decade of use of NATA, from the recommendations of the Eddington and Stern work and specific issues emerging in discussions over summer 2007. Some themes can be drawn out: there is support for the overall NATA approach, with the body of advice and support in NATA fit-for-purpose. Further, there is a strong need to ensure against ‘change for change’s sake’ as this would add unnecessary uncertainty. However, the Eddington and Stern Reviews recommended significant improvements to our appraisal tools. As we make specific changes, we will ensure that these are consulted on in an appropriate manner and transitional arrangements put into place for analyses in progress.
10. We are keen to progress on the presentational and structural areas identified in the document. These will form the basis for the ‘quick wins’ we envisaged would be delivered in spring 2008 when we announced this Refresh in May 2007. Early release will help you to visualise and contextualise your input into the consultation. Their focus would be:
 - We are keen to progress on the presentational and structural areas identified in the document. These will form the basis for the ‘quick wins’ we envisaged would be delivered in spring 2008 when we announced this Refresh in May 2007. Early release will help you to visualise and contextualise your input into the consultation. Their focus would be:
 - *Integrate the mode-neutral perspective to stages of analysis from the strategic to intervention, recognising that better use of the existing network will be an important option.* Better presenting the existing guidance but also considering how to integrate the ‘strategic’ policy making work into intervention level analysis;
 - *Progress some specific appraisal guidance to support innovation in meeting climate change challenges.* This partly reflects the importance of the issue, but is also about ensuring NATA effectively supports delivery partners and transport professionals as they analyse innovative interventions.
 - *Progress on guidance to support innovation in meeting productivity challenges.* The Eddington study highlighted transport’s role in this area. Some specific work will be advanced to effectively support delivery partners and transport professionals in an area of technical challenge.
11. The consultation document also considers some specific technical and analytical areas. Your views are sought on whether the areas identified are comprehensive and over the priority that the Department should attach to these.

Chapter 2:

Analytical Framework

Introduction

- 12.** Complex transport interventions often involve a series of decisions. This chapter considers how the analytical framework can best support these decision-making processes. It describes some priorities for the future development of the framework to ensure it is able to meet the needs of decision-making in the coming years.
- 13.** This chapter points to the need to develop the use of analytical tools for making decisions at a strategic level. Further, there is a need to broaden the framework to encompass a wider set of intervention measures. At all times, there is also a need to ensure demands for evidence are proportionate.

Role and scope of transport analysis

- 14.** The role of transport analysis is to assess before the event whether a transport intervention, such as a project, programme, policy or plan, is worthwhile and to clearly communicate the conclusions of the analysis to inform decision makers. Appraisal normally involves cost-benefit analysis (CBA) and other quantitative or qualitative assessments of the case for an intervention. The Department has finite resources and the results of an appraisal enable a Value for Money (VfM) assessment to be made as one of the key inputs into decisions about whether a transport intervention should go ahead.
- 15.** Appraisal forms part of a broader policy making cycle and is complemented by evaluation. This is similar in technique to appraisal, focusing on the actual outcomes after the intervention. The main purpose of evaluation is to ensure that lessons are widely learned, communicated and applied when assessing new proposals. Taken together transport appraisal and transport evaluation provide the Department for Transport's NATA transport analysis framework.
- 16.** The primary objective of NATA is to provide analysts, scheme promoters and the public with advice about what evidence is needed in order to make decisions about whether or not a transport intervention should be progressed. The scope has developed over time to cover all interventions requiring Department funding or approval. The range of transport interventions subject to appraisal and evaluation includes infrastructure schemes, technology projects and regulatory and pricing measures.

17. The technical design of infrastructure – such as specifications for standards of engineering or information technology – does not fall within the NATA framework. Departmental advice on legal and financial aspects of decision making is provided elsewhere. There is also a range of guidance produced for application to specific funding, such as for major projects and the Transport Innovation Fund
18. Annex A provides background on the development of transport appraisal and NATA. It also summarises reviews of NATA that have been carried out in recent years, including some international comparisons of transport appraisal practice and use in other countries. It highlights the specific recommendations for improving transport appraisal made by Eddington.
19. NATA seeks to give a balanced assessment of all the impacts of an intervention. These were categorised into the five overarching objectives of the Department in 1998: environment, economy, accessibility, safety and integration. The Department has recently revised its objectives and is in the process of establishing subsidiary goals within those objectives (see <http://www.dft.gov.uk/about/aimandobjectives>).
20. In relation to NATA, one of the main changes is the dropping of the ‘Integration’ objective, which covered both the interchange between transport modes and legs of a trip and the integration of transport with wider government objectives. NATA will continue to assess these impacts to ensure a full picture is presented about an intervention. But some work will be needed so that NATA presents such appraisal results in line with the Department’s current policy position.
21. The NATA framework includes guidance, analytical tools, common assumptions about transport trends, data and associated support for those assessing transport interventions. NATA is primarily outward facing, supporting local authorities, other delivery bodies and transport professionals through official documents and products such as:
 - Transport analysis guidance stored on WebTAG
 - Later chapters of the Design Manual for Roads and Bridges, a product jointly owned by the Highways Agency, Scottish Government, Welsh Assembly Government and Northern Ireland Executive
 - Ports Appraisal Framework
 - Airports Appraisal Framework
 - Guidance and associated material on software and data packages such as TEMPRO, COBA and TUBA
 - Strategic modelling forecasts, such as the National Transport Model, the GB Freight Model, the Network Modelling Framework.
22. There is a large amount of technical advice and content in these products that are familiar to transport professionals. In refreshing the presentation of this material, it is

possible to quickly provide users and others interested with demonstrations of new formats and structures, using the existing content.

Developing the framework for NATA

- 23.** The overall approach of NATA – in particular, the need to ensure that all impacts are robustly assessed – was strongly endorsed by the Eddington Report. However, the Study indicated some particular aspects to consider over the coming years (see Annex 1). The Report emphasised the need to take a mode neutral approach to solving transport problems, particularly at the early stages in the decision making process. It indicated the importance of ‘better use’ measures and the role that small scale measures can make in solving transport problems. These indicate five areas where the transport analysis framework can be developed such that:
- more strategic analysis will be needed, at various levels in decision making, neutral with regard to the eventual mode of transport;
 - ‘better use’ measures – such as demand management – will enter into the options considered by promoters;
 - small scale projects need to be proportionately appraised, especially when considering their effectiveness in relation to large scale projects;
 - there are stages in the appraisal process and that the level of appraisal should be appropriate at each stage;
 - the guidance in NATA on some particular aspects, such as appraising environmental impacts and reliability, needs to be strengthened.
- 24.** At present, each of these issues would be tackled individually, adding to the existing guidance. However, such a solution has given rise to a very complex and – in some places – rather detailed body of advice. This has a number of adverse effects. Firstly, complex guidance means practitioners find it difficult to maintain the broad set of knowledge needed. Further, sponsors of the appraisal find the engagement with the analysis more difficult. It also becomes more difficult to assure the quality of appraisal evidence.
- 25.** There is the potential for the analytical framework to have a tighter structure for the presentation of guidance, with clearer direction on its application to different levels of decision making. This would then allow a more transparent definition of entry points into the guidance so that material appropriate to a policy problem is more quickly identified. Further, improved structure will facilitate better signposting, potentially allowing for some specific delineation between mandatory aspects and content of a more advisory nature.
- 26.** This section and the previous one suggest some first steps in the Refresh. These are summarised below:

The NATA Refresh is an opportunity to align better the analytical information needs of decision makers and the public with the latest policy priorities for transport and the Government.

To inform the consultation, the Department will progress demonstration material focusing on: integrating the mode-neutral perspective to stages of analysis, recognising that better use of the existing network will be an important option and progressing some specific appraisal guidance to support innovation in meeting climate change challenges.

Staged framework for decision making

- 27.** Across Government, including transport, rigorous processes are in place to oversee and improve public procurement and expenditure, such as the Office of Government Commerce (OGC) support to Departments through its Gateway Process. The Department has processes to manage public spending and ensure appraisal processes meet government standards. NATA and the VfM form part of this process.
- 28.** Prior to implementing a transport proposal, there are various stages at which decisions are made. Until recently this was defined along modal lines. Table 2.1 below indicates the stages in the development of a local authority/public transport, Highways Agency or railway scheme. At each stage of NATA, the evidence, including the results of analyses, is refined, improved through various feedback mechanisms.
- 29.** The first stage in Table 2.1 leads to the decision for the scheme to enter the programme (for railways this is Guidance on Rail Infrastructure Projects Stage 1 or pre-feasibility). This decision is then followed by further analysis as approval is reached to commit to work. The differences in the exact definition of each stage are currently modal, reflecting differences in planning and funding.

Table 2.1: Previous staged framework for scheme development

Category	Stage 1	Stage 2	Stage 3
Local Authority and Public Transport Schemes	Programme Entry	Conditional Approval	Full Approval
Highways Agency Schemes	Targeted Programme of Improvement (TPI) entry/Preferred Route Decision	Order Publication/ Works Commitment	Works Commitment
Railways	GRIP Stage 1: Pre-Feasibility	GRIP Stage 3: Option Selection	GRIP Stage 5: Design Development

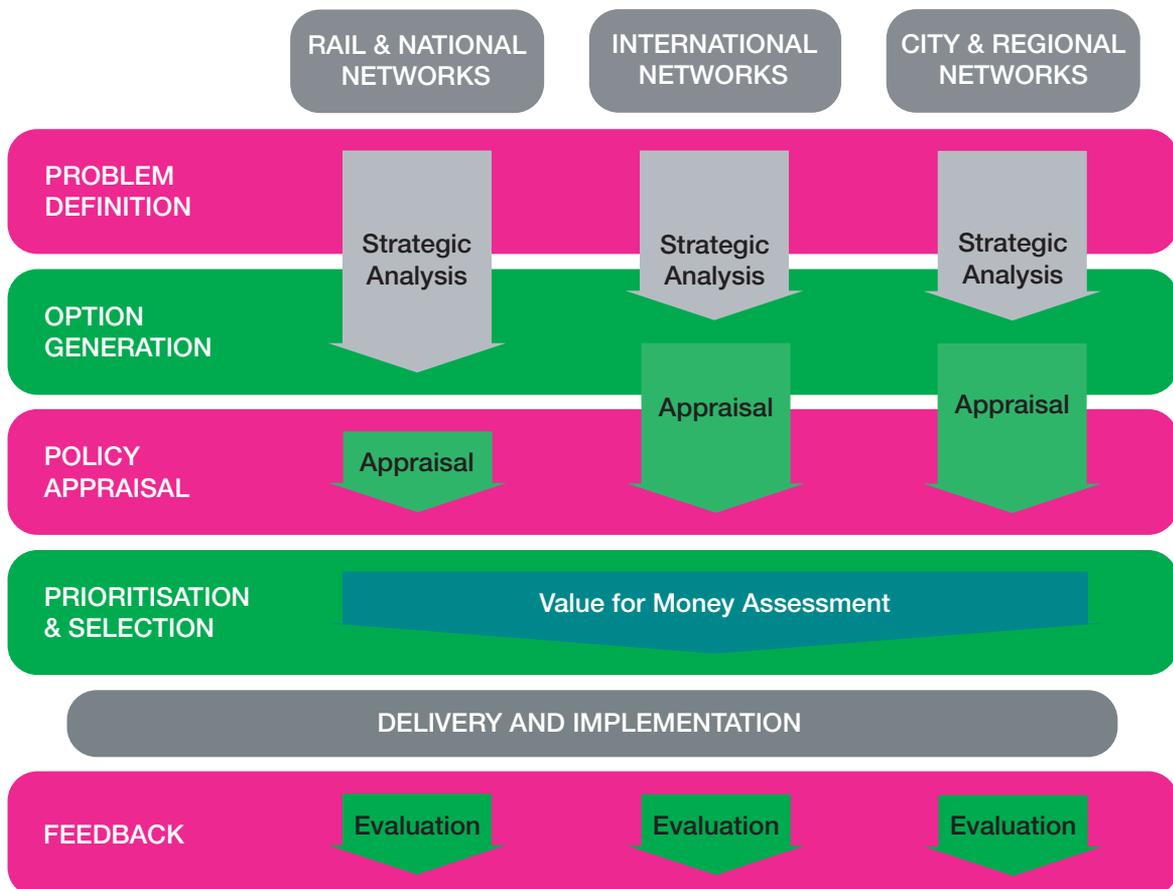
Source: DfT (2006)

- 30.** The Department's document 'Framing a Transport Strategy: Response to Eddington and Stern' (published at the same time as this consultation) outlines a new staged framework for policy and proposal development. Figure 2.1 provides a diagrammatic representation of how transport analysis will take place within that framework. The focus of the diagram is the need to analyse transport challenges in terms of three

priority areas, as recommended by the Eddington Study. These priority areas are inter-urban networks, international networks and urban and regional networks (as shown in the three columns).

- 31. Within each priority area, there are analytical stages and suitable tools. Some of these are familiar: appraisal, evaluation, forecasting and the value-for-money assessments currently used by the Department. However, in placing them in a mode-neutral, staged framework, covering the full range of interventions and focussing on priority links, the tools are more linked to the decisions likely to be made. Strategic analysis is not new, but its explicit incorporation into the NATA framework is new and described later in more detail.
- 32. There is a mapping between the stages and analysis required in Figure 2.1 and the OGC Gateways. The Problem Definition stage in Figure 2.1 equates to Gateway 1 in providing a Preliminary Strategic Outline. The next stages in Figure 2.1 (above the delivery and implementation stage) involve the development of an Outline Business Case for the chosen option (Gateway 2) and the development of a full business case (Gateway 3). The Delivery and Implementation stage in Figure 2.1 equates to later Gateway stages.

Figure 2.1 Decision making framework



Proportionate appraisal

33. The effort made in developing a proposal should be proportionate to the scale of the transport problem and the potential solutions being considered. Currently the Department's Investment Appraisal Framework includes two thresholds based on the cost of the intervention. The lower threshold splits small projects from medium sized ones – for example the Highways Agency considers schemes below £5m differently to those above this level. Similarly, local major projects below £5m are generally not eligible for majors funding. The Department's IAF threshold for capital investment projects is £10m, differentiating between two 'tiers' for finance processes.
34. At the lowest level of scale of project, there may be a need for a lighter touch appraisal, quickly identifying the material impacts and then focusing analysis. Specific support, such as the results of strategic analysis or work from comparable interventions, may provide in-sights also. There is however a risk that the quality of the appraisal declines, both from the light touch appraisal and the lower level of scrutiny.
35. At the upper threshold, the scale is such that funding and management becomes more cross-government in nature and the analysis undertaken is within a much more extensive range of support for the largest of infrastructure projects.
36. A first stage for analysis is to identify the scale of the intervention. This could be in terms of cost, but potentially the likely benefits may also be a factor. In particular, it is important to identify small projects. Given the high value-for-money the Eddington Study identified for the smallest schemes, an early identification of the scale of the intervention would mean that analysis can be proportionate.

Questions:

1. It is recommended that the analysis undertaken is much more explicitly linked to the scale of a project. Should there be a different level of appraisal with differing levels of detail for schemes of different size?
2. If there were a light touch appraisal, how is sufficient robustness maintained?

Analytical tools for strategic analysis

37. There is a recognition that analysis should start with some form of high-level, strategic assessment. An example is the division between a strategic level analysis and project or scheme level appraisal used in Scotland. The 2003 Scottish Transport Appraisal Guidance, STAG, introduced 'a simple and quick Part 1 appraisal ... in advance of a more comprehensive assessment of the impacts' (Scottish Executive, 2006, p. 7). The two stage process minimises waste by testing early the scale of potential solutions. Simple, preliminary analysis is often more accessible, allowing more participation in the decision making processes.

38. One notable feature of the Eddington Study was its use of the results from various national strategic models alongside the results of scheme level analyses. The Stern Review also encouraged more use of such analysis. The recent Rail White Paper, 'Delivering a sustainable railway' extensively used developments in the rail National Modelling Framework (DfT, 2007).
39. At the local level, analysis is being carried out as part of the Congestion Transport Innovation Fund. In some areas, this has involved bidding for capacity improvement in urban areas, analysed as part of complex packages of interventions. Similarly, regional models were built for the Multi-Modal Studies (AEAT and ITS, 2003), which covered some of the major corridors in England as well as some urban areas using relatively advanced transport modelling and other analysis tools.
40. Strategic analysis of environmental impacts is particularly powerful at establishing area-wide and cumulative impacts of interventions, especially in relation to issues such as the climate change impacts of transport. For example, the Department's National Transport Model forecasts the impact of transport on emissions of CO₂ and other pollutants. This can be undertaken for a policy or a programme of interventions to provide evidence on the overall impacts. Such results are consistent with techniques used to appraise impacts at an intervention level.
41. Strategic Environmental Assessment (SEA) also provides a set of strategic tools required under European Directive 2001/42/EC for certain plans and programmes. There is reasonable mapping between SEA and the NATA in terms of the comparison of consideration of environmental issues and mitigation. NATA adopted the additional requirements of SEA when the Department published Transport Analysis Guidance Unit 2.11.
42. Some policies are strategic in nature, such as congestion charging covering an urban area. The local authorities considering road pricing are appraising specific investments in the context of pricing policy, as well as in the context of the more traditional determinants of changing transport demand. The need for planning statements, recommended by the Barker Review, might also place more significance on strategic evidence, to allow policy decisions over significant infrastructural enhancements.

Questions:

3. The Department and other bodies involved in strategic planning should consider wider dissemination of strategic analysis to provide the context for later stages in decision making. How should strategic appraisal tools be developed, balancing the right options being generated without unnecessarily analysing those that are unsuitable?

Option generation

43. Option generation is of increased importance in the new policy framework. At an early stage, all potential solutions to a transport problem should be considered. The ways in which options are generated could be quite analytically intensive. For example, the multimodal study for the Cambridge-Huntingdon corridor employed large scale models which analysed all the major modes in sufficient detail for the complex transport network interactions to be captured (Mouchel, 2001). The study suggested options across a range of modes.
44. Transport analysis at a more local level necessarily has to be realistic about the number and scale of options that can be considered. Where the transport problem is quite modest, the resources used to generate and analyse possible options should be proportionate.
45. ‘Better use’ options – an Eddington term – offer a means to solve a transport problem through improved management of the network. Such options may be modest in scale but help in alleviating a transport problem where capacity enhancement alternatives are large in scale. Technology projects to actively manage the highways are usually considered within the small-scale projects budgets of the Highways Agency. However, such schemes are increasingly being viewed as options to compare with much more large scale projects increasing road capacity.
46. In the provision of public transport, the opportunity to improve the management of infrastructure is somewhat different. Better use may involve better planned bus services or information spreading to facilitate travel planning.
47. It is unlikely that the assessment of the costs and benefits of ‘better use’ schemes will be different in principle to investment projects. For example, hard-shoulder running on the motorway network, involves a mix of change of speeds and of using a lane previously allotted for emergency use only. It necessitates some technical enhancements – such as to better assess reliability impacts – but the option can be compared with others.
48. One of the effects of ‘better use’ options is to make transport systems more flexible during periods of peak stress, primarily using information technology. The challenge of developing and integrating methods to analyse these options is partly about moving from well-established and well-understood interventions such as road widening or train lengthening.

Question:

4. Option generation is likely to be more complex, integrating for example, small-scale and better use options. The range of alternatives, some possibly rejected at an earlier stage, may need to be summarised. How might this appraisal evidence be presented?

A comprehensive analysis framework

49. In 2003 the Department published its Value for Money guidance, which sets out the way the Department advises Ministers about the value of interventions (see DfT, 2006a for the latest update). The VfM assessment builds on the appraisal of transport interventions, weighing monetised benefits such as time savings against other costs and benefits such as the impact on the landscape.
50. The range of interventions considered for value for money is diverse, implying a need for good appraisal information. Sometimes a focus on investment means the correct consideration of the maintenance and renewal aspects of infrastructure is not considered adequately, though such issues are of importance.
51. A recent extension of the framework allows decisions about the value of regulatory and other non-infrastructure interventions to be considered alongside infrastructure proposals. The Department has undertaken a range of Regulatory Impact Assessments (RIAs), across policy areas and types of interventions. For example, there was an RIA regarding the use of seat belts and child restraints for children on buses and coaches. With effect from May 2007, a new Whitehall-wide system of Impact Assessments (IAs) replaced RIAs, with a greater focus on analysis and the quantification of costs and benefits. These need to be incorporated into NATA.
52. As the appraisal framework develops, the issues that need to be covered in evaluation should correspondingly broaden. Evaluation determines after the implementation of a scheme whether the impacts were as expected. The feed back that evaluation provides would then identify quickly whether new appraisal tools are appropriate.

The analytical framework should continue to improve the linkage with the value-for-money assessment. As analysis widens its scope, the evaluation of schemes should also correspondingly broaden. Further, the framework should allow an assessment of the impacts of regulatory or other non-infrastructure options so that it is neutral over each option.

Transport Options within Wider Government Objectives

53. One of the Government's responses to Kate Barker's review of housing supply is a policy review into supporting housing growth. This has included – as part of the Comprehensive Spending Review 2007 – the incorporation of housing objectives into infrastructure planning. Analysis has a role in examining how resources across Government are targeted appropriately to provide the national, regional and local infrastructure necessary to support future housing and population growth.
54. The Government's recent Green Paper on housing set in motion a process for expanding housing supply. Various planning strategies will develop this process, such as Regional Spatial Strategies. The focus will be to support the development of Growth Areas, New Growth Points and Eco-Towns. The transport impacts of these will be important both at a strategic and local level.

55. A relatively well used strategic analysis in NATA is the trip-end modelling programme (TEMPRO). TEMPRO combines official forecasts of population, GDP, other variables with assumptions about travel behaviour to estimate future transport demand trends. TEMPRO incorporates the latest Regional Spatial Strategies in order that future forecasts are consistent with expected growth in housing supply and other determinants of transport demand.
56. The integration of cross-government objectives has been more developed in other areas. The analysis of transport environmental impacts has been advanced as part of on-going work to improve the transport analysis framework. Techniques to value the productivity benefits of transport are currently being developed and this document describes some of the approaches being considered. Recently, the health impacts of cycling and walking have been incorporated into scheme appraisal.
57. As government objectives are considered in a more joined up way, there is a risk of analysis on similar impacts being undertaken in different ways. This may result because the funding source differs or because the needs of one decision are slightly different to another. This can lead to unnecessary duplication and implies that the Department, alongside other bodies, should ensure developments in advice are shared and – where possible and appropriate – as similar as possible.

Question:

5. The analytical framework used to assess transport interventions should explicitly recognise wider government objectives in the evidence provided, beyond the Department's economic, environmental and social ones. How should those elements which relate to broader objectives, such as housing or regional growth or the distributional impacts on the socially excluded, be presented?

Chapter 3:

Economy, Accessibility and Safety

Introduction

58. There is a long history in transport analysis of assessing the economic and safety impacts of interventions. More recently there has been work looking at accessibility, particularly to services in the context of local planning and enhancing social inclusion. This chapter focuses on the main issues that are emerging in this area, recognising that the current state-of-the-art is well-grounded, but that there have also been considerable changes in knowledge on analysing the economy, accessibility and safety impacts of transport.
59. Of particular interest over the last decade has been the improved understanding in the spatial patterns in growth and productivity and the links with transport. At the same time, the importance of journey time variability and reliability has increased.
60. This chapter will firstly look at the scope of the economy, safety and accessibility objectives. It will then turn to the role of strategic appraisal from the perspective of these three particular objectives. Then the chapter will look at a few key appraisal issues in relation to these objectives.

Scope of the sub-objectives

61. In assessing whether to make an investment in a transport improvement, the principle of whether those who benefit could potentially compensate losers underpins the assessment. In many transport investment decisions – such as those to increase the capacity in a transport network – the most common source of benefit is the reduced journey times of transport users and this along with the related journey time reliability benefits is covered in the economy objective.
62. These journey time savings and reliability benefits are also important for rail and other public transport interventions. However, when these modes are heavily congested, they do not only slow down – as with highways – but often become more crowded. Currently, an intervention that reduces crowding would register this impact in the journey ambience NATA sub-objective, which resides within the environment objective. Moving this sub-objective to fall within the economy objective would have the advantage of improving the multimodal nature of the economy objective (a discussion about other improvements to measuring crowding impacts is contained in Chapter 4).

63. A more open issue is the location of the health impacts of cycling and walking. There are considerable health benefits from these modes due to an increase in physical activity and these are currently registered as environmental benefits. This categorisation allows the assessment of impacts to be articulated alongside other impacts with some health effects, such as air quality and noise.
64. The multimodal credentials of the safety objective have improved markedly as NATA has developed: the values placed on particular types of casualty (injury or death) are the same across the different modes. There still remain presentational issues (such as the publication of these values in the Department's "Highways" Economics Note). Also, there is a difference in the expectations and legal requirements when decisions are made for public transport, reflecting the fact that there is a greater transfer of the responsibility for safety to the service provider, than is the case with private transport modes.
65. The scope of the safety objective has changed due to the increased importance of security, both personal security as transport is used and the wider issues of security due to terrorist threats. Over the last ten years, the interventions in this area have increased and have developed markedly in their complexity.
66. DfT undertakes appraisals for interventions which are specifically focused on addressing security issues, assessing the relative magnitudes of costs and benefits. Given the sensitivities in this issue, it is not always possible to make public the precise approach followed as part of NATA guidance. The assessment aims to follow NATA as closely as possible, for example, appraising the welfare impacts of the intervention on time, money, and casualties. The assessment also considers a number of other factors such as the destruction of capital assets and wider macroeconomic impacts such as that on UK tourism.

The evidence provided on how a scheme impacts on the economy objective should take account of the reductions in public transport crowding. The location of the health sub-objective, currently in the environment objective, should be considered.

Strategic appraisal: Economy, safety and accessibility

67. A key focus of the NATA Refresh is the development of information at a strategic level to inform decisions at an earlier stage in the policy process. Recent policy statements – the Future of Transport White Paper (DfT, 2004), the Rail High Level Output Strategy (DfT, 2007) – have made considerable use of national modelling. The National Transport Model (NTM), described in DfT (2006c), is a multimodal-modal forecasting tool estimating where congestion is likely to be concentrated. It includes links to rail models, with the most recent development in national rail modelling – the Network Modelling Framework – increasing the ability to determine the stress on the rail system.
68. Such modelling work supports high level policy design, providing evidence for the Department's decision making on overall transport strategy. The modelling uses the

latest government and Department estimates of future transport trends, many of which are then published in the Department's transport analysis guidance or are included in the transport forecasts of TEMPRO. This means that the strategic modelling is already to a large extent consistent with the evidence that would be provided at a more local level.

- 69.** Previously, the processing and data limitations of modelling meant that the two types of modelling – strategic and local – would be related only at a very high level. Improved modelling and data processing is blurring the distinctions between these forms of models, raising a question about what is a strategic analysis. The models for the largest conurbations and the regional models (such as that covering the east of England) are representing larger and larger areas. These can be used for 'strategic' analysis and for appraisal of more detailed interventions.
- 70.** There is scope for improvements to be made. Currently, the Department only publishes the results of its own modelling alongside policy statements. This has proven to be quite regular, but there is some selectivity over which aspects of the modelling are published. Some policy analyses may require more detail for specific modes, which means a particular publication does not cover the results of the other modes in sufficient detail. A more orderly publication process, which better integrates the new evidence with the existing evidence, would facilitate the transfer of relevant new results to local or project specific analysis.

Question:

6. Over the Refresh, the extent to which the evidence for strategic decisions can be consistent with local or scheme specific evidence should be explored. How might the provision of more detail about the strategic analyses of economic, safety and accessibility impacts of transport policies be made helpful for project appraisal?

Reliability impacts of transport interventions

- 71.** Reliability is a NATA sub-objective under the economy objective. Techniques to measure the impact on reliability of a scheme have been developed, focusing on variability in journey times in comparison to expected journey times. Journey times will be different, say, at different times of the day, and an approach called scheduling analysis assumes that people have an awareness that expected journey time differs. Current methods then go on to analyse the impact of unexpected delays.
- 72.** The data available to analyse the same trip in comparable circumstances, termed 'day-to-day' variability in travel times, has improved markedly in the past few years. On motorways, speed and flow tracking equipment provides the high-frequency data needed to monitor variability. The ITIS data – generated from a sample of vehicles that have voluntarily had tracking devices fitted – means that, for urban areas especially, traffic speeds can be monitored. In public transport, real time timetabling

and bus tracking are rich sources to inform the reliability properties of congested transport systems. Improved accessibility to the new data, combined with a better understanding of these impacts, means that valuation techniques can be used to find out how much people value punctuality and reliability.

Wider economic benefits in transport

- 73.** The 1999 SACTRA (Standing Advisory Committee on Trunk Road Assessment) report identified the potential for transport to have wider economic benefits (WEBs) that are not captured in appraisal. This has boosted efforts in trying to include the productivity impacts of transport, in addition to the traditional regeneration benefits that NATA characterises as wider economic impacts.
- 74.** The direct changes in users' time and money costs due to a transport intervention can be amplified through the economy as a whole. One example of these wider impacts is agglomeration effects; reducing transport costs can bring firms and workers closer together, generating benefits from better functioning markets. Empirical evidence has shown that in an area with a mass of firms and workers, i.e. an agglomeration, there is often a productivity premium. This premium may result from increased access to product and input markets and the sharing of knowledge and expertise.
- 75.** Transport can also influence productivity by changing the structure of the labour market. Improved transport may allow better matching of workers to jobs and facilitate individuals taking up more productive employment. Labour supply may also increase if transport costs fall sufficiently to encourage people to enter the labour market.
- 76.** DfT also recognises that in imperfect markets, transport may impact upon output levels. An increase in output is an example of another WEB that is not currently included in NATA. Consumers value this additional output above the production costs and DfT proposes to provide guidance on how this impact can be estimated.
- 77.** In 2005, DfT published a discussion paper that outlined an approach for estimating the wider economic impacts not captured in the existing NATA framework (DfT, 2005). This approach has been tested on several schemes and the research in this area is considered sound enough for WEBs to be brought within the current framework.
- 78.** Appraisal of transport schemes also includes regeneration benefits. In part, this is on the grounds of social equity; though there may also be an economic efficiency case for valuing job creation in regeneration areas. These benefits sit alongside the analysis of WEBs, as both are estimating changes in productivity and employment. In NATA, regeneration is a sub-objective where evidence of the job creation potential of a scheme can be presented. The Eddington Study concluded that transport schemes were only likely to aid regeneration where transport was a constraint, particularly the access to skilled labour markets, on growth and other pre-conditions were met.
- 79.** DfT believes that regeneration impacts should continue to be assessed in the appraisal process. However, in the light of the Eddington Study more emphasis should be placed on demonstrating how schemes improve regeneration, especially in the

light of evidence on the impacts and in the context of the improved understanding of a proposal's wider economic benefits. Looking at regeneration benefits and WEBs together may mean avoiding duplicating analysis and double counting.

80. In drawing together guidance on regeneration and WEBs there needs to be some consideration of:

- the conditions where regeneration could be significant for a particular scheme;
- potential criteria for determining whether an area can be considered a “regeneration area” for the purpose of appraisal;
- modelling options which allow consistent analysis of employment impacts for appraisal of both regeneration and WEBs; and
- how regeneration impacts should be presented against any productivity impacts.

The evidence base for, and application of, appraising the wider economic benefits (WEBs) of transport is still relatively new. This seeks to capture agglomeration impacts and the improvements to labour markets. There is a need to advance best practice and disseminate this. One of the early deliverables from this Refresh will be the development of advice on WEBs, communicating this, recognising its novelty and that innovative interventions are likely.

Issues for prioritisation

- a. The Department should consider how best to support the continued interest in the reliability and wider economic benefits of transport improvements. The nature of these issues suggests the support would be wide, looking at data, modelling issues in the context of innovative transport solutions. The need to align the appraisal of wider economic benefits and regeneration benefits is a particular area for guidance.

Valuing time for trips

81. A key component in the economy objective is the extent to which a trip results in journey time savings. This is then valued using purpose specific values of time. The valuations used by the Department reflect the results of a range of sources, including a large stated preference survey undertaken about a decade ago (Mackie et al., 2003). This section considers the appraisal values of time that are used to value the modelled journey time savings in assessment (rather than transport modelling use of ‘behavioural’ values of time for different types of users).

82. When the Department considered the updating of this study, one benefit identified was that a new study would be able to use the latest techniques to better account for the value travellers give to reliability, as well as the value of time savings. The evidence would then contribute both to the considerable interest in reliability benefits and to the increased importance of policies which recognise the heterogeneity of transport users.

- 83.** This may be particularly the case in urban congested areas. In London and other large cities, a large growth in light goods vehicles has occurred as businesses have adapted their vehicle fleets and business practices to the particular conditions. In properly assessing transport conditions in such areas, the importance of getting such large shifts right is increasing.
- 84.** There has been some confusion with regard to the value of time used in appraisal of benefits. For all passenger trips not undertaken during the course of work, the same value of time is used for all the modes, differing only by purpose, such as shopping, commuting or educational trips. However, for different modes, there is variation in the values of time for business travellers and this means that mode specific values of time have been estimated for the business trips.
- 85.** Over the decade of use of NATA, four particular issues related to time valuation have repeatedly emerged amongst users. Firstly, the extent to which travellers value small time savings has been debated, prompting a review (ITS, 2003). There, the evidence indicated that the average user did attach value to small time savings.
- 86.** A second area of discussion has been the extent to which valuing time neglects the fact that travellers can usefully use the time spent travelling. In public transport, particularly trains, the provision of facilities so that office-type work can be undertaken during travelling suggests that time can be spent productively, decreasing the cost of delays. This may be considered in the context of the wider economic benefits of transport.
- 87.** Whereas values of time are assumed to remain stable as trips lengthen, there is increasingly evidence that this may not be the case. Thus, a third area where the value of time may require further improvement is the stability of time values especially for long-distance trips. This is linked to the analysis of long-distance trips more generally, an area discussed in Chapter 5.
- 88.** Finally, some have suggested that the use of a set of standard values of time for the country neglect the variation apparent in regional income levels. Income levels are highly correlated with the willingness to pay for time savings and this - some argue - should be integrated into appraisal.
- 89.** These issues blur the consequences of trying to get a comprehensive and comparable picture of all the impacts of an intervention with the needs of trying to model the behaviour and choices of transport users. The areas remain difficult, but some steps have been taken to address the latter issue so that appraisal results can present some information on groups of users. For example, road pricing guidance now asks promoters to look at the distributional aspects of a scheme recognising values of time attributable to income groups differ. This meets the Department's need for evidence on the distributional impacts supplementing the appraisal use of the standard values of time to value time savings.

Issues for prioritisation

- b. The importance of journey time savings in the overall benefits of a scheme suggest some further information about their composition would be informative. Whether this is possible should be explored.

Freight values of time

- 90. Current Department transport appraisal guidance advises that the value of time used for freight reflects only the opportunity cost of the driver's time and vehicle operating costs associated with the freight trip. In the Department's transport appraisal guidance, the latest estimates of values of time represent the best information about these various costs (TAG Unit 3.5.6). These estimates are used to value the changes in journey times due to a transport intervention.
- 91. However, when a goods vehicle carries a load, this approach may understate the economic costs of delays. In particular, the increased importance of complex scheduling and just-in-time production systems for freight imply that production processes, both in the transport sector and the wider production industries, may be placing value on the time associated with delivery. This value to the production process would be over and above the transportation costs currently included in appraisal. In particular, the time taken to transfer goods between locations will have inventory costs associated with it, primarily the costs of capital tied up and the damage done to the stock as it is delayed in transit.
- 92. In appraisal, valuation focuses on robust estimates of the average value of journey time changes. Assuming no inventory costs could bias the estimates of freight value of time downwards. The valuation of inventory costs has proven difficult, primarily because, in standard freight surveys, there is relatively little detail on what is carried. However, the position here could be improved if more use is made of the latest developments in information technology associated with logistics.

Issues for prioritisation

- c. The Department will seek, engaging with the industry, to improve data and methods regarding freight time savings.

Accessibility to key services

- 93. The accessibility objective is concerned with increasing the ability with which people in different locations, and with differing availability of transport, can reach different types of facility. The term 'accessibility' has been used in the past in several different, often overlapping ways, including the following:

- measurement of ease of access to the transport system itself in terms of, for example, the proportion of homes within x minutes of a bus stop or the proportion of buses which may be boarded by a wheel-chair user;
- measurement of ease of access to facilities, such as schools, GPs, hospitals, centres of employment and shopping, with the emphasis being on the provision of the facilities necessary to meet people's needs within certain minimum travel times, distances and/ or costs. Increasingly the concern is with the accessibility of specific groups, often those who are socially excluded;
- measurement of the value which people place on having an option available which they might use only under unusual circumstances (such as when the car breaks down) – 'option value' – or even the value people place on simply the existence of an alternative which they have no real intention of using – 'existence value'; and
- measurement of ease of participation in activities (for personal travel) or delivery of goods to their final destination (for goods travel), provided by the interaction of the transport system, the geographical pattern of economic activities, and the pattern of land use as a whole.

94. Accessibility is a more complex concept than simply travel time or even time and monetary costs. For specific groups, availability, safety, security, reliability and information and awareness may be as important.

95. In many cases, the most important determinant of access to the transport system is the availability of a vehicle for private use. However for those without a car, access to the public transport system is of crucial importance. Additionally, policies are likely to support such alternatives, to reduce environmental impacts and to mitigate congestion. In looking at these accessibility aspects, it would be important to consider 'whole trip' aspects, such as the personal security of walking to, or waiting at, public transport interchanges.

96. There have been a number of recent developments in accessibility planning. Sophisticated geographical mapping tools are now in common use, drawing upon a range of GIS datasets which allow the accessibility of target groups to public transport and key services to be determined. Local authorities now set local accessibility targets, often drawing upon these tools, to help deliver the appropriate levels of accessibility. In the Congestion TIF schemes, the impacts on accessibility of vulnerable groups have been an important feature of the analysis.

Issues for prioritisation

- d. The Department should consider how accessibility measures should be used in the NATA framework. In particular, should the information on the accessibility impacts in relation to local targets be presented, or should a more national approach be used? How should the accessibility impact be presented alongside the other impacts of interventions?

Chapter 4:

Environmental Appraisal and Assessing Housing Impacts

Introduction

- 97.** The impact of transport on the environment has been a major public policy issue for many years. A comprehensive body of advice for assessing and appraising the environmental impacts of transport proposals exists and continues to be developed. The introduction of NATA itself was driven by the need to better consider environmental aspects in decision making, in line with the Government's Sustainable Development Strategy (Defra, 2005). However the environmental impacts of transport have been heightened by recent concerns about climate change. The Stern Review provided a strong impetus for reviewing the approach used to properly assess the impacts of transport on the climate.
- 98.** This chapter briefly describes the ways in which the environmental impacts of transport proposals are assessed and appraised, identifies issues with the current guidance and includes some suggestions for improvements.
- 99.** This chapter also looks at the transport impacts around housing. The Government recently announced plans to increase the supply of housing, taking on board the results of the *Barker Review of Land Use Planning* (Barker, 2006). Housing growth has always been a significant determinant of transport trends, but the recent housing Green Paper highlights this and notes the importance of covering transport impacts of housing in the NATA Refresh.

Environmental assessments and appraisal

- 100.** The earliest Appraisal Summary Tables included an assessment of the quantity of carbon associated with the intervention. In recent years, the work on monetary valuation for these impacts has improved to the extent where, last year, the Department provided advice and software specifically for promoters to provide a monetised assessment of the carbon impacts. Defra continues to develop and improve its valuation of carbon and it is important the Department uses this information as transport appraisal continues to develop.
- 101.** Interventions attempting to tackle climate change are likely to be innovative. Developing business cases for such proposals inevitably stretches the current analytical framework. The evidence needs may be high and there may be a limited number of real-life examples from which to form a strong evidence base. The capacity

for analysis may be limited as data, skills and other analytical support may need development. The Department has in the past provided a range of support to facilitate innovation.

- 102.** In the construction of transport interventions, energy use is embodied in the materials used and the construction processes. This is an area where current guidance does not expect specific analysis. However, as evidence on these indirect impacts improves and the importance of minimising such impacts increases, the analysis could be improved. Recent work at the University of Bath is building an inventory of embodied carbon (Hammond and Jones, 2007).

The Department should use Defra's new guidance on the shadow price of carbon to ensure that carbon is properly accounted for in the appraisal of transport policy. In addition, the Department should progress some specific appraisal guidance to support innovation in meeting climate change challenges. This partly reflects the importance of the issue, but also about ensuring NATA effectively supports delivery partners and transport professionals as they analyse innovative interventions.

- 103.** A key document about the environmental assessment of transport proposals is the Design Manual for Roads and Bridges (DMRB). It includes advice on how to assess and report the environmental impacts of trunk road proposals, in order to comply with EU environmental assessment directives and UK regulations. The guidance enables an Environmental Statement to be produced and presented at a Public Inquiry for a road scheme. There is a large and ongoing programme of work for updating and reviewing the environmental advice in DMRB.
- 104.** The advice in DMRB is not only used by highways scheme promoters. The guidance has over the years been considered authoritative enough to be used for other major projects. This cross-modal use of the advice means that the DMRB sometimes has to be 'interpreted', to adjust the roads advice to be used for other modes.
- 105.** There has also been work on how sustainability considerations should be factored into appraisal. The Strategic Environmental Appraisal (SEA) advice highlighted that the efficiency of society's use of environmental resources, as well as the direct impact on environmental capital base, may be assessed. NATA's incorporation of SEA has been a positive step, but there may be further areas to explore. Recent research has reflected on this (Marsden et al., 2007).
- 106.** DMRB and SEA both represent significant advances in the assessment of environmental impacts. Drawing into appraisal summaries this large body of expert information alongside other economic and social impacts is an important feature of NATA.

The Department should consider how to consolidate the extensive advice provided through WebTAG, DMRB and other guidance on environmental impacts. A particular aspect is to ensure that environmental information provides a consistent picture at the various stages of scheme development.

Scope of the environmental objective

- 107.** Using the comprehensive set of information included in an Environmental Statement, transport proposals are appraised against ten environmental sub-criteria within NATA and their impacts summarised in the AST in a balanced way alongside economic and social impacts. Some impacts are expressed in monetary terms, others expressed in quantitative terms and others appraised qualitatively and summarised using a seven point scale.
- 108.** The NATA environmental sub-criteria can be categorised, very roughly, into those whose impacts derive from new construction and which can be characterised as being 'land-take' impacts (landscape, townscape, biodiversity, heritage of historic resources and water environment) and those that arise from traffic levels (noise, air quality and greenhouse gases). There are also two other impacts (journey ambience, physical fitness).
- 109.** The five 'land-take' impacts are all appraised in qualitative terms in a similar way using the environmental capital approach. This is a methodology that: describes the characteristic environmental features; appraises their importance and to whom and their relationships with other environmental attributes; describes the impacts of the transport proposal on the features; and summarises this in terms of a qualitative seven point score. The methodology is endorsed by the Government's statutory environmental advisers, Natural England, English Heritage, the Commission on Architecture and the Built Environment and the Environment Agency.
- 110.** The noise impacts of surface transport proposals are appraised quantitatively, in terms of the number of people who are annoyed, and expressed in monetary terms. The Department plans to extend the monetary valuation of noise to aviation proposals. It is also working with other government departments to develop a consistent and comprehensive appraisal approach to noise appraisal that will feed into the upcoming noise strategy (Defra, 2006a).
- 111.** Changes in greenhouse gas emissions are expressed in terms of the change in tonnes emitted and in monetary terms. The local air quality impacts of proposals are appraised quantitatively, in terms of the number of properties which experience a change in levels of particulate matter (PM10) and nitrogen dioxide (NO₂). Regional air quality is appraised in terms of changes in nitrous oxides (NO_x).
- 112.** The other two environmental impacts (journey ambience and physical fitness) are not based on the information in the Environmental Statement. These are appraised separately by analysts in monetary terms, where they are considered most significant. For example, the health benefits of cycling are now valued; similarly crowding benefits in rail have a monetary valuation representing the journey ambience impacts. In other modes, these are summarised using a seven point scale.
- 113.** The key issue here is whether, when all of the environmental sub-criteria are taken together, the various approaches for summarising environmental impacts in the AST continue to allow sufficient account to be taken of environmental impacts, relative

to economic and social impacts, given the increased importance of environmental concerns in recent years and DfT's new departmental objectives.

- 114.** Conversely, another view is that the current environment criteria cover too many sub-criteria. A proposed slimming of the number of sub-objectives might move journey ambience sub-objective to the economy objective. The logic of this is best exemplified by considering rail, where journey ambience would primarily consider the effects of crowding. Crowding on public transport is commonly considered as an impact of congestion, comparable in impact to journey time savings.

Question:

7. In providing decision makers with the evidence on environmental impacts there is always going to be a balance between taking appropriate account of the environmental impacts of transport interventions and the need to summarise evidence for decision makers alongside other impacts. Is the current balance between detailed assessment and summary appraisal information appropriate?

Role of environmental valuation

- 115.** In recent years, the inclusion of environmental monetary values in transport appraisal has increased across the world, particularly in relation to noise, greenhouse gases and air quality impacts. In 2006, following several years of research (see DfT, 2002 for a summary), the Department released guidance on how to apply monetary values to the assessment of noise and greenhouse gas impacts within transport appraisals. Annex 2 provides more details.
- 116.** As part of its Air Quality Strategy, the Defra-led Inter-Departmental Group on Costs and Benefits (IGCB) produced monetary values for a range of air quality impacts (Defra, 2007b). These values can be applied at a strategic level within certain types of policy appraisals. Valuing air quality impacts at intervention level needs an analysis of the spatial patterns of air quality in and around the transport link. The Department will work with IGCB to integrate these values for use within project appraisal guidance.
- 117.** The Department is currently considering the potential for developing monetary values that can then be applied to the impact of transport proposals on the landscape. Research is establishing landscape and transport scheme typologies, aiming to establish monetary values using valuation surveys by 2008.
- 118.** Monetary values for the health benefits of walking and cycling have recently been included within NATA guidance on walking and cycling proposals. The next steps in this area is to assess the extent to which different types of transport proposals are likely to lead to changes in levels of walking and cycling activity. Additionally, research should consider the extent to which cycling at an early age delivers long-term benefits, particularly in terms of combating obesity.

- 119.** The journey ambience sub-criterion includes the impact of changes in journey quality, including changes in public transport crowding levels. At present WebTAG does not include monetary values for these impacts. However, such values do exist for heavy rail services in the rail industry's Passenger Demand Forecasting Handbook (PDFH). The Department is currently reviewing its approach to rail passenger demand forecasting, including how changes in crowding should be valued, for both appraisal and other forecasting purposes. With public transport, journey ambience covers areas such as vehicle quality and the provision of information. Assessing intervention impacts could be improved in the journey ambience sub-objective.
- 120.** The Department recognises the very real difficulties in extending monetary values to other environmental impacts, such as biodiversity, water and heritage of historic resources impacts, although it is aware that for some impacts more progress has been made in other countries. The Department's recent work on monetary valuation has focused on those areas where the value of impacts is high and where there is scope for tackling the technical issues.
- 121.** A new approach that Defra is promoting is the ecosystem services framework for valuation of the natural environment. Ecosystem services are the services provided by the natural environment that benefit society and the economy. These services are wide ranging from food and water supply, flood protection, recreation and cultural values to nutrient cycling (see United Nations, 2005). An introductory guide to valuation of ecosystem services is expected to be published by Defra at the end of 2007. Valuation of ecosystem services looks to build on existing environmental valuation techniques to take a fuller account of environmental impacts, especially better accounting for the costs associated with ecosystem degradation. Defra's work indicates the risk that these impacts are not fully accounted for in decision making.
- 122.** To ensure that this research is focused, efficiently managed and prioritised, the Department is keen to develop an overall strategy for, say, the next five or ten years. The Department will work with Defra and other organisations to establish these values. Valuations will continue to be reported in the Overall Assessment column of the AST.

Question:

8. What are the priority areas for extending the use of the monetary valuation of environmental impacts?

Cost effectiveness analysis and environmental constraints

- 123.** The nature of transport appraisal is that it assesses environmental impacts against a base case scenario in the absence of the intervention. It does not explicitly consider how that change relates to absolute environmental indicators used in assessing sustainable development. In some circumstances, the extent to which a trade-off between different impacts of an intervention is possible is limited. A legal limit on air quality in an area means that schemes cannot exceed that limit however much benefit

is realised through other impacts. In these circumstances, the appraisal would have to consider only those schemes or packages of measures that can meet the limit.

- 124.** Similarly, the cumulative impact of policy measures across the economy on the level of carbon emissions needs to be considered. The proposed Climate Change Bill would set legal carbon constraints on the whole UK economy. The Committee on Climate Change, to be established under the provisions of the Bill, would advise on the balance of reductions to be contributed by the traded sectors (for example, energy generation) and non-traded sectors (for example, domestic heating and transport). The transport sector would therefore be required to operate within, and contribute towards achieving, a UK carbon limit. The aggregate impact of transport measures within such a carbon limit needs to be considered.
- 125.** The appraisal of each policy measure or scheme in the transport sector takes account of the associated impact on carbon emissions by valuing those emissions at the shadow price of carbon. This price reflects the damage costs to society associated with an additional tonne of carbon dioxide (and therefore also the benefit of reducing carbon dioxide by a tonne).
- 126.** The choice between measures designed to reduce carbon emissions will usually use cost-effectiveness analysis, which - in the case of environmental emissions - would measure how cheap or expensive the emissions savings achieved by a policy are. It is usually expressed as the cost (or benefit) per tonne of greenhouse gas (GHG) emissions saved. The costs measured are resource costs, which mean costs to society. Such analysis was undertaken for transport during the Review of the Climate Change Programme (Defra, 2007).
- 127.** The above approach - incorporating the shadow price of carbon in appraisals and implementing the most cost effective measures to reduce GHG emissions - is consistent with achieving carbon limits that are set using cost effectiveness criteria, based on the Government's shadow price of carbon. The shadow price will be kept under review, in part to ensure that policy decisions based on appraisals using this price are achieving the required emission reductions overall. The extent to which this sort of analysis may be undertaken within NATA needs to be considered.

Issue for prioritisation

- e. The Department should consider how best to determine value for money within the transport appraisal framework using cost effectiveness analysis, in order to take account of economy-wide carbon and other environmental limits .

Strategic assessment versus the appraisal of small schemes

- 128.** The NATA guidance includes advice on Strategic Environmental Assessment and it is planned to release updated guidance on this as part of refreshed NATA guidance. One area of focus in the NATA Refresh is the degree to which strategic analysis can be increased, facilitating policy design and decisions of a more strategic nature.

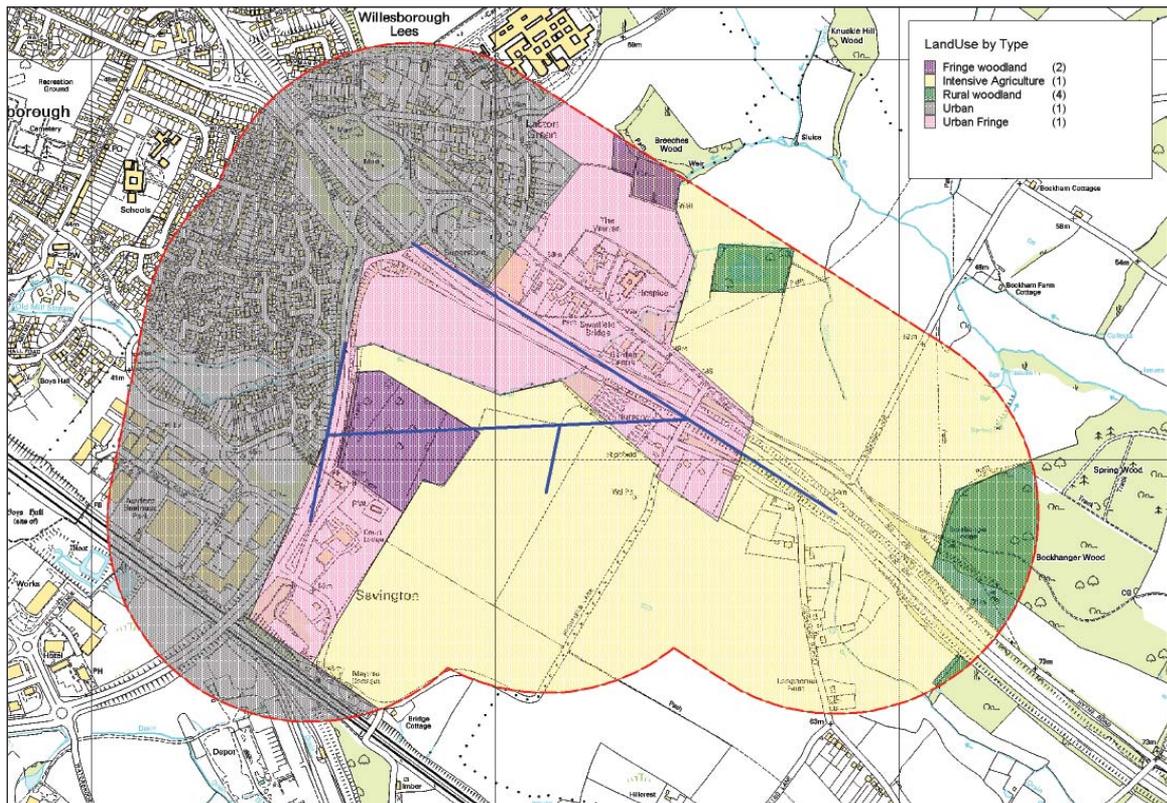
Ideally, the results of such work would then feed into scheme level appraisal. Chapter 2 noted that cumulative environmental impacts may best be assessed using strategic assessment. This will help to inform whether a series of interventions – which individually have modest impacts – could have more substantial aggregate consequences.

- 129.** The Department for Transport’s strategic modelling capabilities regarding the economics of a scheme are well advanced. For several decades, the Department has released forecasts of transport demand at a detailed geographic level that allow promoters to model local traffic problems in a manner that is consistent with the national picture.
- 130.** The Department has been investigating improvements to desk-based assessments of the environmental impacts of transport interventions. During the Multi-Modal Studies of 2000-2, the Department, with local authorities and other bodies, used such assessments of constraints on schemes, focusing on impacts not easily included in an appraisal. This was used to inform the early decision-making better at a strategic level. Since then, the tools available to analyse the geography of environmental impacts has continued to improve. Transport, being an area of analysis which is inherently spatial, could make use of some of these improving environmental data, complementing the improved strategic modelling.
- 131.** An example is offered below, which focuses on the assessment of landscape impacts. Part of project appraisal assesses the landscape impact of a scheme’s construction. Figure 4.1 below indicates the use made of map layers for a scheme to define the landscapes affected. In this example, a link has been made to the classification used by the Department for Communities and Local Government in their landscape valuation studies. This makes it possible to link values to land classes.
- 132.** The extent to which mapping environmental constraints will offer new tools to appraise impacts needs to be considered. As well as offering a strategic picture of impacts, at various stages in scheme decision making, these low-cost assessments would provide insights into whether more detailed studies are needed.

Issue for prioritisation

- f. The Department should develop desk-based analysis of the spatial aspects of environmental impacts. This can be used to facilitate strategic analysis, especially using GIS evidence, and support analysis of smaller schemes.

Figure 4.1: Combining landscape layers with a scheme map



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Housing benefits

- 133.** Housing is an important determinant of transport demand as the majority of trips start from or end at a place of residence. Incorporating the latest trends in the location of new housing is a key component in forecasting transport demand, primarily through the modelling of journeys. These forecasts then underpin the economic analysis of a scheme.
- 134.** In July, the Government published a housing green paper (CLG, 2007) which included joint commitments between CLG and DfT to improve the assessment of transport schemes that facilitate growth in housing supply. These are reflected in the PSA Delivery Agreement 20 published alongside the Comprehensive Spending Review 2007 (HM Treasury, 2007):
- “Building on the recommendations of the Eddington Review, work with CLG, to develop a methodology to better capture the economic benefits that new housing developments generate.”
- 135.** A focus for the Refresh is to ensure transport investment decisions are as informed about the impacts of housing growth as possible. Transport appraisal techniques seek to be comprehensive in assessing impacts, in order to: i) account for benefits and costs generated by new housing developments; ii) assist in prioritising projects that

offer best value-for-money in terms of the transport benefits generated; and iii) inform the housing planning process about transport constraints.

- 136.** Transport planning uses the Department for Transport's forecasts of transport demand. This is detailed in the chapter on common assumptions, where the TEMPRO forecasts are described. They incorporate housing growth at local level based on the plans of regional bodies. Areas where significant housing growth is planned will then have higher transport demand growth, resulting in increased traffic/patronage being modelled when appraisal is undertaken, increasing the need for transport interventions.
- 137.** Tackling the uncertainty regarding housing plans is a challenge that can be approached from two directions at a scheme level. Firstly, the Department's support to scheme promoters – primarily the TEMPRO forecasts – could more quickly take on board the changes to housing development plans. More frequent updates will have associated costs, as appraisals would need adjusting to reflect changing datasets.
- 138.** A second consideration for appraisal is how to better take account of information available at a local level. TEMPRO incorporates plans which are reasonably firm and this sometimes means that potential (at a local level) changes in the determinants of transport demand would not be in the baseline transport demand forecasts. However, decision making would benefit from additional information about the impact on a scheme's business case were such developments to materialise. The Department has been developing tools to assess such cases, analysing the sensitivity of a business case to potential developments near to a scheme.
- 139.** There is a need for transport analysis to inform the planning of housing development. This would ensure that decisions made on housing do not unnecessarily add stress to the transport system. The Government is committed to the provision of housing which makes best use of transport systems, particularly minimising the need for car travel, and housing design considerations can help in this.
- 140.** The analysis of synergies between housing and transport can be undertaken both at a strategic level and when a particular intervention is being designed. At a strategic level, regional strategic models can assess where to locate a development, helping to generate options for potential development sites. The Housing Green Paper envisages the re-development of brownfield sites, which are likely to be proximate to existing transport systems. However, where expansion in the periphery of existing urban areas, or the development of new 'Eco-Towns' is considered, the pattern of transport stress is an important initial starting point.
- 141.** In assessing transport impacts, NATA does not differentiate between the benefits attributable to the residents of a housing development from those associated with background growth in trip generation. However, it will be possible to identify, through using some of the data underlying TEMPRO forecasts, which of the generated trips are attributable to the residents of the new housing. This may require some approximations, but in providing such information, the transport impacts of new housing would become more transparent, improving the evidence on the interaction between housing and transport.

Overall, in better identifying the impact of new housing on transport schemes, appraisal tools should recognise the transport benefits and costs attributable to the residents of the new housing. Such information at a strategic and scheme level should also feed back into strategic decisions over housing. This would help in prioritising expenditure on transport schemes that are intended to support housing growth, e.g. the Community Infrastructure Fund. Further, the appraisal needs to develop analysis of the uncertainty around such development plans.

The wider benefits of housing

- 142.** Increases in housing supply require infrastructure to ensure development takes place in sustainable communities. Transport investment can be crucial in determining whether housing development can go ahead. In those cases, transport schemes can not only have benefits for existing and future transport users. They can also be the key factor in securing benefits from additional housing.
- 143.** From a housing perspective, the housing/transport links will uplift the value of land served by transport links. This will reflect the present value of the future stream of benefits (including commuting time savings) created by releasing the land for development. These impacts can be appraised directly, identifying each individual source of impact, such as the value of time savings, and valuing them. Alternatively, all of the impacts, some positive and some negative, will be reflected in the change in house prices. It is important to avoid double counting by only using one of these.
- 144.** At present, the Department considers the direct transport impacts and the previous section suggests ways to identify the benefits attributable to the residents of new housing. In cases where transport investment is a pre-cursor or possible pre-requisite for housing development in these communities, there may be additional benefits that flow from the increase in housing services.
- 145.** The housing growth planned is on a significant scale. At the moment, consideration of wider economic impacts of improved transport in NATA is confined to employment effects in regeneration areas. As part of the NATA Refresh, Chapter 3 considers how best to incorporate a more complete range of wider economic impacts into transport appraisal – including “agglomeration” effects such as benefits arising from more spatially concentrated economic activity. With substantial planned housing growth, agglomeration impact could also be significant.
- 146.** Additionally, the land supply for housing development is constrained. Transport interventions, where they facilitate a housing development, can sometimes widen the choices available to home buyers. One wider impact is that the intervention then increases the competitive pressures on housing markets, potentially lowering house prices. This is likely to be a second order effect but the scale of expansion in housing suggests some further work is needed.

Issue for prioritisation

- g. The Department should investigate the extent to which transport's wider economic benefits can be associated with housing growth. The considerable change in land value due to the use of land for housing may – in part – reflect some benefits of transport enabling housing growth.

Chapter 5:

Assumptions and Scenarios

Introduction

- 147.** Appraisal evidence is based on a number of assumptions, such as values of time or estimates of transport demand growth. Ensuring commonality of these assumptions ensures that the effectiveness of different interventions can be assessed in a comparable way, controlling for background transport trends.
- 148.** For a number of years, the Department has released a large body of common assumptions based on the best information available, primarily official forecasts and the results of authoritative research. The ‘common assumptions’ within the scope of this chapter are:
- The Department’s trip-end modelling programme (TEMPRO) and the associated car ownership modelling;
 - Common assumptions contained within WebTAG and other Departmental analysis guidance documents, such as Transport Analysis Guidance Unit 3.4.
- 149.** This chapter considers how to develop and present common assumptions in NATA, including the use of scenarios to assess uncertainty in informing the policy making process.

Presenting common assumptions

- 150.** There are a number of presentational issues as the Department refreshes the ‘common assumptions’ used in NATA. Firstly, common assumptions could be consolidated in one place, clarifying what the assumptions are and where source documentation can be found. This will minimise repetition, which can lead to inaccuracies and inconsistencies.
- 151.** There is a perception that NATA assumptions are not identical across modes. Earlier, this document notes the key role of common values of time. However there is scope for improving the presentation of these assumptions to avoid confusion and make use of the guidance easier. There is an ongoing need to ensure assumptions are the same across modes where appropriate and are presented as such.
- 152.** It would also be desirable to present assumptions so that it is easier to identify whether they are common across the modes; any move to make common

assumptions more multi-modal will inevitably need to recognise that some assumptions have to be mode-specific.

- 153.** Assumptions have to be updated over time, as new information becomes available. Most common assumptions are changed as infrequently as possible, minimising unnecessary additional appraisal work due to revised assumptions. However, NATA assumptions are updated on an ad-hoc basis and experience from other areas suggests that limiting changes to a transparent, regular cycle has advantages for users. For example, official statistical releases are pre-announced, indicate where changes to historical data have been made, and explain the cause for a revision.

The Department's release and update of common assumptions should be on a pre-announced, regular cycle. For ease of use, assumptions should be stored in a single place, where possible.

Strategic assumptions

- 154.** The use of a common assumed traffic demand forecast, using TEMPRO, underpins most road-based transport forecasting. TEMPRO provides transport demand forecasts for Great Britain until 2041. A similar role in rail is provided by the Passenger Demand Forecasting Handbook (PDFH), managed by the rail industry. For modelling of impacts, these forecasts provide a strategic context – the base case – against which to assess whether a proposal makes sense. To generate these estimates, key drivers such as population, GDP and oil prices have to be forecast and there are official forecasts for these drivers.
- 155.** There are two principal approaches to modelling transport demand. The first approach used in PDFH is relatively simple. In this approach, a statistical relationship is established between the demand for rail travel and variables that affect the demand for travel (income, employment, service quality, fare etc.). This uses time-series data. In rail demand forecasting, the attractiveness of the other modes is also considered.
- 156.** A second approach considers travel decisions as a series of discrete linked choices – whether or not to travel, when to travel, where to travel to, and how to get there. Under this approach the decision-making process is typically represented by the four key stages of: trip generation; trip distribution; mode split; and route assignment. These four stages are described in Transport Analysis Guidance Unit 3.11. TEMPRO provides the common assumptions about the first stage of trip generation. Then, strategic or scheme level models have been developed as part of a transport study for the other stages.
- 157.** This dichotomy between rail and other surface transport modes has emerged for some specific reasons. The most important reason is the observed discrepancy between forecasts of rail passenger demand generated by TEMPRO, when part of a four-stage multi-modal model, and those generated using PDFH. This imprecision proves much more significant for rail than road: because the road options are so dominant, a small proportion of car users switching to rail will represent a far greater change to rail patronage than the percentage change in road use.

- 158.** In order to better understand the differences between estimates, DfT recently commissioned research to consider the differences between the standard rail forecasting procedures and the choice forecasting of TEMPRO. In particular, the research seeks to understand why the two types of model apparently produce very different forecasts.
- 159.** This research is on-going and its exploration of the theoretical issues will help to improve strategic level common assumptions. Whether a set of strategic assumptions about transport demand can be derived from a single suite of multimodal tools remains to be determined. It may be that TEMPRO and PDFH as distinct approaches provide the best estimates for the two different areas of transport. The Refresh is an opportunity to reconcile the different approaches where this is necessary in the short-term. In particular there are three areas where the PDFH and TEMPRO approaches need reconciliation.
- 160.** First, there is significant interaction of all the modes on the trips which are long-distance. For these trips, the option over mode includes road, rail and the possibility of using air. Secondly, the choice over the use of rail or road is also significant in some urban areas for commuting trips, particularly London, where the high density of rail use means the mode share estimated is important. Finally, the use of a non-road mode often then motivates an onward journey in a car or bus. This means that particular attention should be paid to the trip generation properties around railway stations and airports.
- 161.** This section has focussed on the link between rail and road. Strategic demand forecasts for aviation have similar issues, although, because it is a relatively less significant portion of trips within the country, the consistency issues are less marked. For ports, the Department provides forecasts of growth, integrating the likely level of shipping activity at the major UK ports. These then feed into the forecasting of overall freight activity, currently undertaken by the Department using the Great Britain Freight Model. Much of the freight movements are 'strategic' in nature, driven by logistics supply chains. Work undertaken by the Department with Transport for London should better articulate the join between inter-urban and inter-urban (strategic) flow of products, and the onward movements into cities.

Issue for prioritisation

- h. While work to join up freight, rail and aviation forecasting of trip generation is continuing, the Department should in the short-term consider how to ensure that the modal interactions are adequately represented in long-distance trips. This is needed at a strategic level, and then could be incorporated into the trip generation common assumptions, such as TEMPRO.

Common assumptions about future scenarios

- 162.** The Department develops common forecasting assumptions to present the best information about the changing context of transport so that analysts can focus on the problems they are considering. For example, a current focus is the demographic trends captured in TEMPRO.
- 163.** The Eddington and Stern Reviews have focussed attention on the assumptions made about transport's carbon impact and on the wider economic benefits of improved transport. Further, policies are increasingly focussing on behavioural change, such as supporting children cycling to school or travel to work planning. These policy priorities focus on changing the context within which transport analysis is undertaken. The Refresh provides an opportunity to support such work; a means to analyse alternative views of the future has been the use of scenario analysis.
- 164.** There is inevitably an analytical burden placed when too many scenarios are considered. So, the Department has been considering whether a small number of realistic, alternative views of the world would be informative, focusing on particular categories of change:
- Technological improvements: focusing on changes in vehicle efficiency, including improvements such as better rail signalling;
 - Policy initiatives to tackle constraints at a strategic level, such as carbon trading to tackle climate change or demand management and better use measures on transport networks;
 - Planned growth in housing supply including the assumptions about how the increased housing will impact on transport;
 - Wider economy and behavioural considerations such as oil prices or the impact on trip rates due to demand management.
- 165.** This list could be divided into two broad categories, those that are primarily changes driven by government policy and those that could be ascribed to the wider changes in society, technology or the economy.
- 166.** When policy is analysed, results of strategic analysis are published to indicate the impact of the policy on transport trends. A recent example is the Department's work on road pricing (DfT, 2006c). This provides a starting point for analysts to determine firstly whether the particular problem they are considering would be impacted and secondly to start quantifying impacts. The Department can support such work – designing and testing scenarios – with advice and other support.
- 167.** Analysing the uncertainty around wider changes in society, technology and the economy has most profitably been undertaken by analysts showing the sensitivity of a scheme to some high and low combination of common assumptions. This tests what impact plausible combinations of worst and best case assumptions will have on the appraisal evidence. There may be some value to standardising such variation to common assumptions so that interventions can be assessed in a comparable way.

Issue for prioritisation

- i. The Department should consider defining common modelling scenarios to be used by those involved in strategic modelling and scheme level appraisal. These would recognise that some scenarios are policy determined. The evidence from alternative scenarios will need parallel tools to analyse uncertainty around scheme impacts.

Cross-government common assumptions

- 168.** There are a number of cross-government assumptions in NATA. To ensure common values across Government, for example, Defra assesses and promulgates the shadow price of carbon. Transport analysis routinely integrates such assumptions into its own 'common assumptions'.
- 169.** These would be updated as part of an orderly update of the common assumptions. Thus, the Department could update the values attached to carbon emissions as part of the general update of common assumptions. However, in some areas this may mean a delay between the best information being provided by Government and the adoption of these estimates in business case development for transport. Equally, irregular and frequent updates would burden promoters. A balance may be offered by fully documenting where the latest estimates are available, but maintaining an orderly adoption of these into NATA.

Chapter 6:

Presenting Appraisal Results

Introduction

- 170.** The Appraisal Summary Table (AST), together with its associated worksheets, is at the heart of NATA, summarising in one place all of the impacts of a transport intervention in a concise, balanced, consistent and unbiased way. It provides the main means for informing decision makers and the public about the various impacts. In parallel, the Department has also made considerable use of summary indicators such as the Net Present Value (NPV) of a scheme and its Benefit-Cost Ratio (BCR). These have proven to be valuable tools in presenting the key results of the appraisal process.
- 171.** This chapter looks at some of the issues that will be considered as the Refresh develops the appraisal summaries.

Analysis results at a strategic level

- 172.** Decision making is supported by evidence provided by appraisal. When NATA was developed, considerable thought was given as to how the large amount of appraisal information could most easily be delivered to decision makers so that the evidence was presented in a comprehensive, understandable and even-handed way. The AST was seen as a practical and informative way to summarise scheme level impacts.
- 173.** To some extent, the increased use of strategic analysis may well be able to borrow the techniques developed for individual interventions. It is possible to present a summary of the case for a strategic policy, in terms of all the costs and benefits, delineating the impacts in terms of objectives and sub-objectives along the lines of the NATA. Strategic models, such as the National Transport Model, do in fact deliver results very much in this format. However, it has been a notable feature of such work that alternative ways of summarising information have also proven powerful, such as maps indicating congestion and tabulations of the cumulative impacts of policies.

Presentation of the Results of Appraisal

- 174.** The AST (see Table A1 in Annex 1) groups the impacts of a project into five overarching objectives – environment, safety, economy, accessibility and integration. Within each of these, separate sub-objectives are defined. For example, the environment objective includes noise, local air quality, greenhouse gases, landscape, townscape, heritage, biodiversity, water, physical fitness and journey ambience sub-objectives.

- 175.** For each sub-objective, the AST provides space for three assessments of impact: qualitative, quantitative and a summary assessment. The qualitative assessment is intended to provide a brief statement of the impact within the sub-objective and to highlight details to decision makers about the information provided in the quantitative and summary assessment columns. The quantitative assessments provide – where possible – numeric indicators of impacts in appropriate units. Thus, for example, the entries for noise should show the estimated numbers of people who are likely to be annoyed in the longer term in the without scheme scenario, and the with scheme scenario, in the fifteenth year.
- 176.** The summary assessment column includes a mix of information. Some of the sub-objectives are assessed in monetary terms, representing the net present values of the impact over the project appraisal period. Where monetisation is not possible, a ‘qualitative score’ is specified, using (in most cases) a seven point scale ranging from large adverse through moderate and slight adverse to neutral and on to slight, moderate and large beneficial.
- 177.** The information to be provided in the quantitative and summary assessment cells of the AST is prescribed within the wider NATA guidance. Although there is limited leeway to adjust this to suit the particular circumstances of the project at hand, the use of non-standard indicators is not encouraged. Consistency in these cells is important, because they provide the basis for comparison of one option with another within a project development context, and of one project with others at higher levels of decision making.
- 178.** Finally, it is important to note that the AST is not a ‘stand alone’ document. The assessments reported on the AST must be based on detailed analyses, most of which are specified in detail in WebTAG, the Design Manual for Roads and Bridges (DMRB) and other related documentation. These analyses must be fully documented to enable scrutiny and to ensure transparency. The NATA process also specifies a number of ‘worksheets’ to provide an intermediate summary between the AST and the full documentation. The AST should also be accompanied by supporting documentation on: the achievement of local and regional objectives; the amelioration of problems; and supporting analyses of distribution and equity, affordability and financial sustainability, and practicality and public acceptability.

Emerging Issues in Summarising Appraisal

- 179.** A question is whether the AST remains a useful format, or whether there are more effective ways of conveying the information to decision makers. The single page AST format reflected Ministers’ preferences (as important users of appraisal evidence) to ensure that all of the key impacts of an intervention were brought together, succinctly, in one place. However, the format is often criticised for encouraging the use of very small font sizes in presenting appraisal evidence, reflecting a strategy by analysts to get more information onto the mandatory single page. Other appraisal frameworks, such as STAG, have adopted multi-page formats.

- 180.** The increased use of monetisation might suggest a more compressed format, with all those impacts that can be monetised being rolled up into a single Net Present Value (NPV). However, the state of the art of monetisation is not sufficiently well developed: providing decision makers access to ‘real world’ information in the qualitative and quantitative columns may well be more meaningful to them than an NPV. This will also help, given that some factors, such as the distributional and accessibility impacts and wider Government objectives, are not covered by the NPV.
- 181.** Earlier, the increased need for strategic level analysis was highlighted. When this is undertaken, the results have generally been presented in a manner similar to the results of appraisal. The costs and benefits of a scheme have been assessed, usually in a quantitative manner, covering the NATA objectives. On the impacts of a policy or proposal that cannot be as easily analysed using quantitative strategic tools, the qualitative evidence would also be presented, with appropriate text.
- 182.** Where strategic analysis is indicating results similar in nature to that contained in an AST, this consistency in presentation is sensible. However, strategic analysis is likely to provide evidence of a different nature. The cumulative impacts of a series of proposals have been an important aspect of strategic analysis. Equally, strategic analysis often presents the geography of a transport impact, allowing comparisons across areas or cities. Presenting such work so that it is as informative as possible for intervention-level appraisal is an area to develop.
- 183.** The five overarching objectives and the sub-objectives have not changed substantially since the NATA was developed. The Department has recently revised its objectives and is in the process of establishing subsidiary goals within those objectives. The AST could be restructured to reflect these new objectives and goals, thus aligning it more closely with the Department’s current policy position. It would be important to ensure a complete picture of the impacts of interventions is maintained in the AST.
- 184.** The AST was developed to enable the appraisal of major infrastructure projects. Now that it is being more widely used to appraise smaller projects, the range of sub-objectives is seen by some as excessive. A version could be developed in which the range of sub-objectives is reduced through some kind of ‘scoping’ stage, which identifies those sub-objectives that are relevant to the project at hand. The appraisal could then proceed with the reduced set of sub-objectives alone. A system along these lines has been adopted by the Highways Agency to appraise small scale projects.
- 185.** A similar approach could be adopted at early stages in project development. Omission of sub-objectives where, at the strategic level, the impact is expected to be irrelevant to decision making could speed up appraisal at these stages. However, any such approach should explicitly include in the project planning the risk of omitting sub-objectives: these impacts could prove to be significant when examining a project in more depth.
- 186.** Experience with the AST and developments in appraisal methods suggest that it may be necessary to adjust the AST to include new or different types of information. For example, the increased importance of uncertainty suggests that quantified and

monetised information should be presented as ranges, rather than as single figures. But including more information puts pressure on the single page format of the AST.

Question

9. Given there are a range of decision makers and the mass of evidence underlying appraisal is large and increasing, does the AST remain a useful format? How should the AST be augmented to be a more effective way of conveying the information to decision makers?

10. How do we summarise the results of strategic analysis?

Developing the NATA-BCR approach

- 187.** Alongside the NPV, the benefit-cost ratio (BCR) is a metric primarily used to prioritise across options, with a higher BCR indicating that a scheme is preferred over an alternative. The Government's PSA Delivery Agreement 5 on reliable and efficient transport networks highlights the important role this metric has in assuring overall value-for-money of transport expenditures by the Department (HMT, 2007).
- 188.** All BCRs have to categorise elements within the NPV calculation as benefits or costs. The ratio used in NATA (known as the NATA-BCR) measures the monetised benefits per pound of cost to the Exchequer: the numerator contains the net benefits to all transport users and providers other than government; the denominator reflects the project's cost to the Government public accounts. In recent years this has assisted decision makers in determining value-for-money (VfM), with the 'high' VfM category indicating a ratio of over twice the benefits relative to costs.
- 189.** There has been an interest in alternative definitions of the BCR. A key difference between definitions is whether a particular impact is defined as a cost or not. As stated above, in the NATA-BCR, the total costs (some negative, some positive) are characterised in terms of costs to government. This categorisation is linked to the budget that the decision maker is controlling, or the resources that are being prioritised over. The NATA-BCR has focussed on the entirety of the public accounts, presuming that the Department is comparing across not just the transport budget but also taking account of competing non-transport public expenditure options.
- 190.** In recent years some questions have been raised about this. A particular issue has been the impact of transport investments on the tax take of government. The use of motorised transport raises substantial tax revenues, with the extent differing by mode of transport. The provision of road capacity in particular has tax raising impacts as traffic is generated, reducing the overall costs to the government. Appraisal takes this into account and the NATA-BCR will generally be higher (but not always) because motorised vehicle use increases through the provision of roads.
- 191.** Such considerations have been further complicated by the other revenue aspects of transport, such as charges and fares levied by public transport authorities or claw

backs from private operators. These revenues would offset some of the costs of interventions and a concern has been raised about instability to BCRs that result from this and related theoretical issues.

- 192.** The Department has considered the properties of the BCR in a series of workshops during 2007. This involved external experts and was primarily focussed on developing and improving benefit cost metrics given the increased importance of a multimodal approach to appraisal and prioritisation. This is in the context of a potential greater role for pricing and other interventions, such as regulation, following the better use agenda set by the Eddington Study.
- 193.** It is clear that establishing what is a cost is the main determinant of a BCR. The current approach does not have a clear definition of cost, and one that is consistent with government accounting definitions and other important practical characteristics. Exploring how to develop this measure – particularly to tackle the instability around the measure – will be important.

The Department is committed to further work to provide a detailed specification of the BCR, as PSA Delivery Agreement 5 will use this ratio as an indicator of the Department's success in seeing better value for money from its investments over time. It will be important to ensure that the appraisal continues to provide the information required for the calculation of the indicator.

Scheme costs, discounting and price bases

- 194.** NATA is consistent with HM Treasury's Green Book with regard to the discounting of future impacts. Discounting allows future impacts to be valued in a way that is comparable with impacts today. This is an important part of the appraisal process, especially for monetised impacts. The common assumptions used in this aspect of appraisal are therefore determined by principles across Government. This also extends to the appraisal period, currently 60 years.
- 195.** One specific area for transport regarding the discount rate is with regard to financing of projects and the different extent to which private finance occurs in providing transport services. The discount rate is primarily a measure of the rate of social time preference, ignoring aspects of risk associated with raising capital. The risk premium that private finance attracts needs to be correctly included in appraisals to ensure that they are comparable, irrespective of how interventions are financed. In addition there is a need to consider to which impacts a risk adjusted discount rate could be applied. This is an area of on-going work, such as by the European Investment Bank.
- 196.** The recent Nichols Review highlighted the importance in appraisal of correctly estimating scheme costs and the uncertainty around those costs (Nichols, 2007). The Department developed guidance to support promoters in this, primarily by bringing the best practice of different modes into one place. The NATA unit presented tools such as quantitative risk analysis and explained how the Department recognises that there is an 'optimism bias' in a promoter's forecasting of costs, optimistically scaling down upward risks to costs. This reflected the latest advice in this area in the

Green Book. The NATA advice also recognised more explicitly that there are stages in cost estimation, with precision increasing as the intervention develops and cost risks either materialising or proving not to be significant.

- 197.** At this stage, various measures being taken by the Department to minimise the risk of cost escalation are being progressed. It is clear that what is learnt now will be important in the coming decades, especially as major infrastructure projects, such as London Olympics, places particular pressures on the delivery of transport projects.
- 198.** The determining of scheme costs ties in with issues of financing. To some extent, the decision over whether an intervention is worthwhile can be separated from how it is financed. However, as appraisal increasingly considers cost risks, the potential use of financing measures to better manage risks could involve a link between appraisal and how a scheme is financed.
- 199.** The monetised estimates of costs and benefits included in appraisals are all expressed in 2002 prices. The opportunity that the Refresh provides to update the price base can also allow a review of the application of market prices in NATA. This concept, consistent with the European System of Accounts and other national accounting standards, is harder to implement in analyses which mix business users and consumers.

Issue for prioritisation

- j. The Department's guidance should continue to be developed on scheme costs. Such work should make decision makers aware about the risks around costs and how estimates become more firm with time. Risks may be mitigated through the financing of schemes. The overlap between cost appraisal and finance issues should be considered.

Appraising packages of measures

- 200.** The multimodal approach envisaged following Eddington provides a stronger motivation to consider appraisal in terms of complementary packages of measures. These can sometimes be large packages tackling the most complex transport problems. Further, the analysis undertaken often uses advanced modelling and analysis tools. For example, the results of strategic models may be combined with more scheme specific results for a particular intervention. Decision makers will necessarily need to be guided through the evidence base being developed at various stages in the process; this section considers the later stages in the process.
- 201.** During the multimodal studies, the question of how best to present summary results from packages of measures was considered. The AST was improved during the studies to its current format, updating the original 1998 variant. More recently, the Congestion Transport Innovation Fund (TIF) has innovated in the approach taken to appraise packages. The types of analyses being used in the Congestion TIF is multimodal in nature, using variable demand models of a strategic nature, complemented by scheme specific modelling.

- 202.** Package development has been an iterative process. Initial appraisal work has informed the development of a variety of measures on different modes to form a package. The complexity has also been added to by the road pricing component, as promoters consider the economic case for both the road pricing scheme itself and the complementary measures, primarily in public transport provision.
- 203.** The approach taken in this work has analysed the incremental improvement in the package business case as an option is added to it, or in terms of the decremental impact of removing an option. This sort of analysis necessitates a strategic model, which can incorporate the suite of interventions. Overall, the value-for-money of the individual schemes added together may be lower than the package of schemes. This represents an important aspect of packages – that there are synergies between the individual schemes.
- 204.** To some extent, this approach places more emphasis on analytical work that can assess all of the impacts of a proposal. It can incorporate the more qualitative assessments for some of the impacts that are likely to arise from a scheme, but the strategic analytical capabilities – which underwent significant improvements in the earliest stage of the process – are particularly powerful at assessing increments/ decrements.
- 205.** The treatment of the road pricing component has proven particularly significant for this. On one side of the package of measures is the provision of increased capacity to the transport networks, while the road pricing intervention primarily seeks to manage demand. That these two types of interventions counter each other has meant that analysts have been asked to analyse increments and decrements to the business case for capacity options first with road pricing, but then without.

Issue for prioritisation

- k. The Department should look at the evidence emerging from Congestion TIF and other evidence on assessing packages and then consider how this approach can be widened beyond city and regional networks.

Appraising distributional impacts

- 206.** The Congestion TIF work also recommended that promoters analyse the distributional consequences of the road pricing component of their package. To do this, the most advanced analysis segmented passenger traffic, apart from trips undertaken in the course of work, into a small number of segments. The analysis would then determine the impacts, particularly journey time savings and the impacts of costs, for sub-groups of travellers.
- 207.** More generally, the social and distributional impacts of road pricing schemes were measured through assessing the potential impacts on different social groups through social research. It was recommended that, where possible, differential impacts should be dealt with at the scheme design stage.

- 208.** The motivation in asking for such analysis was specific to the type of intervention being considered. It was clear that decision makers would need information about the incidence of road pricing to help both in overall decisions on a scheme and on designing complementary measures. For example, the analysis of distributional impacts may point to some mitigating measures to lessen negative impacts.
- 209.** The costs associated with such analysis are also apparent. Segmenting trips by income and then modelling this proves analytically demanding. This is both in terms of the complexity of the modelling and analysis, and the data requirements for undertaking such work.

Issue for prioritisation

- I. The Department should continue to develop distributional analysis. In which types of interventions or transport problems should the priorities for this be? Does the current range of guidance capture the full range of social and distributional impacts of a transport scheme?

Chapter 7:

Building Analytical Capability

Introduction

- 210.** The development of analytical evidence necessarily involves a range of transport and wider analytical skills and tools. In 1998, the development of NATA drew upon the techniques and skills of environmental assessment much more explicitly. The major advance since then of having multi-disciplinary teams analysing transport problems is an important development and one to build on.
- 211.** This chapter necessarily can only discuss some of the issues in relation to capability in transport analysis. The provision of support and professional development is an area where the Department is part of the wider government, academic and consultancy community. It therefore focuses on the development of the areas of support that the Department has traditionally been able to participate in and the challenges to the analytical capability that may be caused by the issues considered in the rest of this document.

Supporting Stages in Analysis

- 212.** Transport analysis supports decision making at various stages in developing policies and interventions. The provision of analyses at an earlier, more strategic level has expanded considerably over the last decade using large-scale, strategic modelling and analysis tools.
- 213.** The development and maintenance of multimodal, large area models has become a significant part of this work. These are complex models and the modelling support the Department has provided has been wide-ranging. During the Congestion TIF and the Multimodal Studies, the Department has provided specific support for project managers and their consultants to ensure that the development of modelling capability is appropriate.
- 214.** The Department has considered that such complex tools should be fit-for-purpose, with, for example, the setting of specific standards for models in terms of whether the results of the model are validated by the observed level of traffic flows. In most road models, validation standards determined by transport modellers some decades ago are provided in the DMRB. These, once met, mean that a model is fit for almost all purposes.

- 215.** Complex transport problems are often tackled within an iterative process, determining priorities and options first at a strategic level. The interaction between the analyst and decision maker at this early stage is often facilitated by providing high level results, probably less sensitive to whether a model is validated to the same level as needed later in the scheme. Further, what constitutes fit-for-purpose, especially whether validation standards are met, can sometimes be specific to the proposals and problems being considered. Modelling standards may then need to map to the stages of decision making.

Issue for prioritisation

- m. The Department's support for determining whether a transport model is fit-for-purpose may supplement the standards by recognising the staged nature of designing solutions to complex transport problems. Should this be part of a more general look at model validation?

Presenting advice for different users

- 216.** The objective of appraisal is to provide robust information for decision makers, stakeholders and the public to use. To make effective use of the information provided, users need to understand what it means, how different elements are related, its strengths and weaknesses and an overview of how it has been produced. The Department has tried to meet these needs by providing targeted advice, recognising that there are different audiences for the guidance.
- 217.** For the experienced analyst, the guidance is generally perceived to be helpful and appropriate, though it is increasingly important to better guide users to the advice that they need. The guidance is not all available within WebTAG – some is in the Design Manual for Roads and Bridges (DMRB) and some is in other documents, such as the manuals written for Departmental software such as TUBA or COBA.
- 218.** Many users see the guidance as definitive for appraisal, implying that analysis carried out according to the guidance is unlikely to be challenged. This means that the guidance is followed strictly, which, for some projects, is likely to prove too onerous.
- 219.** Some analysts have difficulty in following the guidance. This is in part due to a lack of clarity in some of the guidance and the structuring of the units. Some of the guidance assumes that analysts have higher levels of skills and expertise than is common. This is exacerbated by the skills shortage in the transport modelling and analysis field in the UK. In parallel with the work to consolidate common assumptions (see Chapter 5), the Refresh is an opportunity to provide greater clarity about the steps that the analyst has to take in appraising an intervention. Also, some of the tools commonly used to access complex manuals, such as indexes, frequently asked questions, hyper-linking and a glossary of terms are either not currently available, or extensively used, within WebTAG.

- 220.** Earlier sections of this document – particularly chapter 2 – have indicated that the intention of the Refresh is not to ‘dumb down’ the analysis. To do so would reduce the robustness of the results, introducing uncertainty and biases which would make analysis inappropriate for Public Inquiries or government decision-making. It would also run counter to the advice received from the original Standing Advisory Committees on Trunk Road Assessment and other bodies over the years.
- 221.** However, it would be useful to restructure the WebTAG website so that non-technical users can easily find the material they need, without being drawn into the detailed guidance that they (usually) do not need. There is already a ‘Project Manager’ suite of advice recognising the oversight role in the appraisal process. This provides a sufficiently detailed overview of the technical work so that they can ensure that it is appropriate for the project, is of satisfactory quality and is fit for purpose.
- 222.** Recent guidance – such as the body of guidance on road pricing – has specifically indicated parts of the technical advice which are relevant to all interventions, distinguishing between those aspects which are optional or meet specific needs. This sign-posting is to assist at the interface between the non-technical users and technical users (who are often the formers’ clients). However, it is recognised that technical users often want rapid access to specific units of technical guidance. Guidance can also be tailored to those with ‘middle of the road’ skills and expertise, with pointers towards more advanced techniques to encourage analysts to enhance their skills.
- 223.** The need to provide training has been recognised since NATA was launched in 1998. Annual courses have been provided, introducing users to the NATA approach. The Department has also provided appraisal teaching as part of larger courses, such as PTRC’s series of weekly evening lectures for transport professionals since its inception. Because of the breadth of the NATA approach, lectures and short courses can only provide an overview of the methods and the issues that arise in their application. Thus, the Department welcomes the Transport Planning Society’s Skills Initiative, which is helping to provide the skilled workforce required to carry out the analyses underlying the NATA approach.
- 224.** In addition to improving the NATA guidance, the Department also provides – and encourages software vendors to provide – easy to use software that allows relatively inexperienced staff to avoid pitfalls whilst encouraging them to enhance their skills. Annual courses for users of the Department’s TUBA software have also been provided.

Developments to the Department’s guidance should include presentational improvements as an important and on-going part of the overall approach.

Question

11. From the range of techniques available to better communicate the appraisal advice, what should the Department consider?

Managing knowledge and making evidence accessible

- 225.** The last section highlighted some areas where developments could be made to improve the presentation of advice. These link into the earlier chapters' desire to 'join-up' advice better and to develop orderly mechanisms for the release and updating of guidance and associated support. These areas present some particular management challenges. To a large extent, this is an area internal to the Department and its Agencies. A direction that has been progressed in some parts of Departmental advice is identifying clear editorial roles. From the users' perspective, this means that the responsibility for the guidance as a whole, or for specific parts of the guidance, can be better identified.
- 226.** The improved technical solutions for knowledge management may also be explored. The need for clear versioning of advice, and archiving of materials that have been superseded has been undertaken by the Department, using a range of techniques. However, both the demand for much greater transparency and increased potential to use document warehousing and associated technologies would be a natural progression.
- 227.** One particular gap has been the Department's holding of the appraisal results provided to it by promoters. During the process of determining value-for-money, there is a need for key stakeholders – such as statutory bodies – to access this evidence. There may be more efficient ways to provide this access than is currently in place. Further, at numerous stages in decision making and after decisions, there are requests by various interested parties to see documents. Over the last ten years, a familiarity with the kinds of requests made by members of the public, non-government organisations, academics and others has been built up and the Department could explore the extent to which more transparent and efficient access can be provided.

The Department should consider how editorial control of the various documents and 'knowledge' can be improved. In disseminating this material, the Department should consider how the use of the internet could be more effective both with regard to facilitating engagement and in being transparent with results.

Supporting the profession in appraising economic impacts

- 228.** Recent releases of guidance have been challenging for all apart from the most advanced members of the appraisal and modelling profession. This is largely because of the complexity of the transport problems faced and the nature of the solutions being considered. The Department has sought to improve the manner in which the latest advice is disseminated to allow for users to both familiarise themselves with the tools and to feed back to the Department any issues or concerns.
- 229.** The more advanced nature of the technical advice prepared by the Department has also involved the academic community. The United Kingdom's strong scientific base in transport research has been an important asset for NATA. This is likely to be

continued with the establishment of the Transport Research Centre, funded jointly by the Department and the UK Economic and Social Research Council.

- 230.** The latest advice on variable demand in highways modelling was trialled with various consultants working for the Highways Agency and local authorities. With the road pricing guidance, there was specific support provided to local authorities on the modelling aspects of the Congestion TIF, such as regular workshops. In addition, the Department is keen to continue using the consultation section of the appraisal guidance website to disseminate working versions of technical advice. Further, the Department might consider whether moderated internet discussion forums will better join up the analytical community.
- 231.** In the coming year, several areas of appraisal are likely to undergo significant enhancements. For the economy objective the Eddington Study highlighted the importance of reliability benefits and wider economic benefits and this is a driver for specific guidance to be released. DfT commissioned a Usability Review in order to explore users' reactions to, and experiences of, applying the methodology in DfT's 2005 discussion paper for the estimation of the WEBs of transport schemes. The research made use of the responses from ten in-depth interviews with respondents who had applied the WEBs methodology to a transport scheme.
- 232.** The research highlighted a number of usability issues. Some of these are practical points related to improvements in the drafting of the guidance, some are related to data availability and the provision of suitable guidance on assumptions that are required. There were also usability issues raised on more detailed and technical matters related to modelling and estimation.
- 233.** Wider economic benefits have seen the transport analysis profession work more with the tools of the productivity analyst than has been the case in the past. To some extent, the tools are familiar, requiring relatively simple adjustments to the conventional measures of scheme impacts – particularly journey time savings. However, the wider economic benefits calculation places a greater emphasis on travel-to-work patterns, potentially requiring more geographical detail on commuting than in the past.
- 234.** On reliability, similar challenges are faced as appraisal moves from the average journey time saving to the variance in journey times. The Department released guidance on its WebTAG consultation website earlier in the year and anticipates some feedback from analysts as they use the advice. It is apparent that there are some significant analytical capacity demands being made when considering reliability in transport: one aspect is the data and modelling needed to analyse reliability; secondly, interventions aiming to improve reliability are innovative in their techniques.

Issue for prioritisation

- n. Developments to the Department's guidance should be issued with appropriate support. Appraisal tools assessing reliability and productivity impacts are demanding analytically and the Department should consider using workshops, training and the provision of data to enable analysis in these areas.

Data and statistics for transport analysis

- 235.** Transport analysis is a major user of a range of transport and non-transport statistics and data. The Department's own statistical capacity covers all the modes and includes significant links with the appraisal processes. Underpinning transport appraisal are the rich datasets on traffic, demography and the range of economic and social determinants of transport demand. In particular, the needs of transport analysis means this richness is required both in comprehensiveness and in geographical detail.
- 236.** Much of the data is published by the Department and its Agencies. Additional data collection is undertaken by local bodies and those responsible for transport delivery. There has been a joining up in some of these areas and this has helped to provide a more comprehensive picture of the resources available.
- 237.** However, both the expectations of data users and the ability to capture and compile datasets have increased. The close co-operation between those collecting and compiling data for the appraisal process helps to ensure the best value from 'new' data, such as real time data. In some areas, progress on appraisal is very strongly linked to the availability and usefulness of such data (for example, journey time reliability makes intensive use of such data).

Multi-Criteria analysis: Building analytical capacity in 'participative' techniques

- 238.** From its origins NATA was seen primarily as a multi-criteria decision making tool, providing evidence for decisions, recognising that the trade-off across the different impacts is often the most important aspect of any decision. The techniques available in this area have improved and new methods have been developed in the past 10 years. Some of these have been used in transport analysis. Recent work conducted both by the Department and by local authorities participating in the Congestion Transport Innovation Fund recognised that measuring the social and distributional impacts and public acceptability of schemes, particularly regarding the road pricing element of a TIF package, would require some specific analysis. The participative techniques used have proven to provide important evidence.
- 239.** Some of the improvements in the assessment of non-monetised have been in making them more 'participative' and representative of the wider population rather than of a 'vocal minority' (a danger with some techniques). For example, social surveys, using

statistically representative samples of local populations to explore different groups' travel choices and behaviour, have been used to assess the potential impacts of local road pricing schemes. Longitudinal, deliberative, qualitative research, using reconvened focus groups over at least three waves with a purposive sample of the general public is also currently being used to assess the factors that affect the public acceptability of road pricing more widely. The emerging literature in this area, such as that summarised in Stagl (2007), may provide an insight into how to gauge the appropriateness of these methodologies.

- 240.** These techniques all fall under the umbrella of participative social research (also known as applied social science). The Department has successfully begun developing cross-disciplinary approaches to better measuring the social aspects of transport schemes, including better participation of the public in decision-making. However, more work needs to be done.
- 241.** Research is currently underway within the Department to assess how best to use this type of evidence in problem definition, option generation and appraisal. The study is exploring both the types of social impacts that appraisal should consider and how best to collect this evidence. The research involves, amongst other elements, in depth consultation with a purposively selected sample of a range of transport professionals via depth interviews.
- 242.** There is inevitably a trade-off between the costs of using these techniques within NATA and their appropriateness in providing relevant evidence. The research noted above will take into consideration the implications regarding the cost, time and skills required for various data collection methodologies, as well as a need to ensure findings can be usefully compared with other monetised impacts.

Issue for prioritisation

- p. The Department is considering the scope to which a range of social research techniques may provide useful data involving the participation of the public at different stages in the appraisal process and to assess the social impacts of schemes, starting in the areas of option generation and in issues around public acceptability of proposals.

Better engaging with users of transport appraisal

- 243.** This document is primarily designed to start a dialogue about change to NATA. The next year is envisaged to be one where there will be opportunities to engage in specific aspects on appraisal, alongside the Department's development of transport policy.
- 244.** The year also provides an opportunity to develop the way we communicate NATA. There is a diverse set of stakeholders and the material ranges from technical guidance to advice of a more straightforward nature. It has been often noted that the accessibility of NATA is not responsive enough to this diversity of users and this in

itself holds back capability development. There is a recognition that the value added by further technical advances should be checked against the considerable benefits of better disseminating current practice. It may be better to improve the latter.

- 245.** To make the engagement with you as effective as possible, we intend some specific events and processes. Firstly, NATA Refresh will be on the agenda of the Department's workshops as it develops its transport strategy. This includes some regional events targeting local delivery bodies. Secondly, alongside this consultation we will disseminate some materials specifically designed to aid use of NATA, and hopefully helping engagement with the Refresh. Thirdly, the intention is to organise some technical events, such as a NATA Refresh conference. Overseeing the stakeholder engagement, we will be helped by members of the independent Commission for Integrated Transport, specifically in ensuring views are sought but without this being too onerous.

Question

12. Do you have any suggestions about the consultative change process we envisage to ensure that you can participate as we develop changes to the guidance?

Annex 1:

Origins of NATA Refresh

Development of transport appraisal

Over the last forty years the Department has developed a comprehensive approach to the appraisal of transport proposals, such as major road and public transport schemes, based largely on cost-benefit analysis (CBA) and environmental impact assessment (EIA) techniques. Formal CBA procedures were first issued by the then Department of Transport in the early 1970s with the release of the COBA computer programme for calculating costs and benefits of road schemes. The focus of the early analyses was on scheme costs and the limited number of impacts that could be expressed in monetary terms, such as changes in travel time, vehicle operating costs and accidents.

In 1976 the Advisory Committee on Trunk Road Assessment chaired by George Leitch started to consider the scope of transport appraisal. In 1977, the Leitch Committee recommended changes towards a more comprehensive framework where judgement on impacts that could not be readily valued in monetary terms, such as those on landscape and noise, would be integrated into the information provided to decision-makers.

The Standing Advisory Committee on Trunk Road Assessment (SACTRA) was set up in 1978. It provided on-going support to the Department's analytical processes throughout the 1980s and 1990s. Their 1986 report concerned urban roads appraisal. It confirmed the earlier work to incorporate all impacts, including those expressed in non-monetary terms, into the information provided to decision makers. It rejected proposals to use weighting and scoring techniques, retaining the judgement aspect proposed by Leitch (SACTRA, 1986). This caution about merging qualitative assessments with impacts that can be expressed in monetary values was more significant in the 1992 SACTRA Report, which focused on assessing the environmental impact of road schemes (SACTRA, 1992).

Development of NATA

During the 1990s environmental concerns about the effects of new road construction increased significantly. In 1998 the New Approach to Appraisal (NATA) was introduced as part of the Government's 1998 Integrated Transport White Paper and was first applied to trunk road schemes in the 1998 Roads Review. The White Paper and original NATA guidance emphasised the need for decision makers to take a balanced

account of all impacts (economic, environmental and social) of transport interventions and all modes of transport.

NATA provides a multi-criteria based decision support tool to help Ministers make decisions about transport proposals. It does this by bringing together the mass of information about the impacts of a transport proposal and presenting them on a one page Appraisal Summary Table (AST). Some of these impacts are expressed in monetary terms, others in quantitative terms, while some are expressed in qualitative terms.

Underpinning NATA is the use of standard methods for summarising the various impacts of a proposal. These methods sit on top of more detailed transport modelling and impact assessment techniques, such as those contained in the Design Manual for Roads and Bridges (DMRB). Within the NATA framework, impacts are categorised in terms of five high level criteria (economy, safety, environment, accessibility and integration), reflecting the then new Government's objectives for transport in 1997. Within these criteria, a number of sub-criteria (known as sub-objectives) were included and these have been expanded over time to the current set of 23 sub-criteria (see Table A1). It is against each of these 23 sub-criteria that the impacts of a transport proposal are assessed and presented on the AST. Extensive use is made of worksheets to summarise the key results from the detailed modelling and impact assessments and it is those summary results that are then presented in the AST in a concise, consistent and balanced way for decision makers. A key concept in the development of the AST was the need to avoid double counting the assessment of impacts between the various sub-criteria.

Since 1998, the NATA framework has been developed and a range of NATA guidance documents produced to help inform decisions in other areas, such as the programme of Multi-Modal Studies, small Highways Agency projects, Local Transport Plan major projects, rail proposals and the application of the multi-modal version of NATA to Highways Agency projects. The guidance produced for the programme of Multi-Modal Studies (MVA, 1999) advanced the NATA in a number of directions:

- The AST was developed to be applicable to proposals across all modes of transport, enabling it to present impacts against more public transport oriented journey ambience sub-objectives;
- The AST also better articulated information about plans and strategies in a manner consistent across the different study areas;
- There was move to a 'Willingness to Pay' approach in which the total impacts of proposals are presented and impacts are not netted off against each other;
- All impacts were to be expressed in market prices; and
- There was a requirement for increased supporting information focusing on the funding, deliverability and practicality of proposals.

In 2003, a web based set of guidance, called WebTAG (www.webtag.org.uk), which brought together previous NATA guidance, was launched. Since then the Department has consulted on a number of changes or enhancements to specific parts of the guidance. All of the key NATA/WebTAG documents produced and consultations carried out between 1998 and 2007 by Department for Transport can be found on the WebTAG web site.

The guidance documents that help scheme promoters develop business cases consistent with NATA, together with subsequent amendments to NATA over the last few years, are all published on the WebTAG web site.

The Scottish Government and Welsh Assembly Government have produced their own transport guidance, sharing much with the NATA framework. The Scottish Government's STAG appraisal framework is currently undergoing a refresh. The Northern Ireland Executive's Department for Regional Development has also adopted the five NATA criteria in its assessment of road proposals.

In 2003, the Department released guidance on its Value for Money assessment. This provided details of how appraisal and other intervention analyses are used by the Department in advising whether a scheme delivers value for money. The process meant that those interventions that were appraised could be compared for the first time with a range of other policies.

Reviews of NATA

A number of reviews of NATA have been carried out since its launch in 1998.

In 2000 Mackie and Nellthorp from the University of Leeds' Institute of Transport Studies (ITS) published a paper that looked at the ministerial decisions made on 68 trunk road schemes in the 1998 Roads Review. They compared the decisions made with the appraisal results for each scheme, as set out in the published Appraisal Summary Tables (ASTs). This enabled them to construct an econometric model that related the decisions taken to the published appraisal information. The model confirmed that the decisions made by Ministers to approve, or not approve, road schemes were statistically significant in terms of how they related to the information about the schemes included on the ASTs. This demonstrated that Ministers were taking account of the information provided on the ASTs in a consistent way.

The NATA framework was developed and used to appraise options, across a range of transport modes, identified in DfT's programme of Multi-Modal Studies. The studies were carried out between 1999 and 2003. A 2003 evaluation of that programme, produced by AEA Technology, John Bates Services and the University of Leeds' Institute of Transport Studies (ITS), concluded that:

- the appraisal advice 'was fit for purpose. There is an opportunity to learn from the experience of the MMS in relation to strategic appraisal and to approaches to sifting and screening.

- further work could be done to develop the advice on sustainability, social inclusion and regeneration. But we believe that the evidence shows that the appraisal framework was sound and that the methodology was implemented satisfactorily.

In 2004 the Commission for Integrated Transport (CFIT) reviewed the role of transport appraisal and looked at whether it could be enhanced to better meet the needs of decision-makers (CFIT, 2004a). CFIT considered a number of areas for improvement including the strategic context of appraisal, data issues, the treatment of non-monetised impacts and the question as to how information should be best presented to decision makers. CFIT included a number of challenging recommendations in its report, but concluded that NATA represents a:

‘significant improvement over previous systems’ and is ‘largely able to fulfil the role for transport’.

The 2006 Eddington Review noted that the UK uses ‘world class’ appraisal techniques. However a number of specific areas where the current appraisal practice could be strengthened were identified. These are shown in the Table below, which was originally published in the Eddington Review.

Figure A1: Capturing the impacts of transport on the performance of the economy

The Study suggests that consideration should be given to the following issues in appraisal:

- **valuations of time savings:** valuation of time based on local wages is essential to capture the true economic gain from a transport improvement in a particular region and to correct for the current anomaly between the calculation of costs and benefits in appraisal;
- **freight valuations:** the full GDP benefits realised from freight traffic could be considerably higher than currently assumed, reflecting the wider impact of transport on business operations and logistics. There is a strong case for exploring whether the current valuation of freight time fully reflects the benefits to this sector;
- **reliability:** it is clear that the performance of the transport network in terms of reliability often matters just as much, if not more, than any direct time savings from a transport journey. Evidence seems to suggest that these are considerably higher than has been appreciated in the past. There is a strong case for reliability valuations to reflect developing evidence in this field;
- **agglomeration economies:** thinking on transport's relationship with agglomeration economies is relatively new. There is very little literature that attempts to explain and measure this relationship, particularly in the context of service agglomerations. The UK is at the forefront of establishing techniques on how this relationship can be modelled. However, it is clear that there is merit in better understanding this relationship, not least because of the continuing importance of urban agglomerations to the future prosperity of the UK. The DfT's developing methodology on agglomeration economies should be applied to the appraisal of all transport schemes. This could increase the assessed value of schemes, especially in urban areas;
- **gains from trade:** the contribution of transport policy in supporting trade is not well understood or quantified. But it is clear that acknowledging this relationship and quantifying its scale through appraisal, is pivotal to informing good transport policy, particularly around ports and airports, and surface access routes. These are not captured currently in appraisal. New research would need to be undertaken to consider how such gains could be captured and reflected;
- **globally mobile activity:** additional GDP gains are difficult to quantify for individual schemes, but analysis suggests that it will be important for transport policy to reflect this driver at relevant times.

International comparisons

In recent years there have been a number of reviews of transport appraisal guidance and practice in other countries. These have included, for example, the European Commission's HEATCO three year programme of work which reviewed appraisal practice in EU countries and proposed harmonised appraisal guidelines and reports by the Danish Ministry of Transport comparing international appraisal practice.

The Institute for Transport Studies (ITS) at Leeds University has recently reviewed these and other studies of appraisal practice and their report, considering the implications of these studies for the NATA Refresh, is published alongside this consultation document. Set out below is a brief summary of the ITS report.

Whilst cost benefit analysis (CBA) forms the central component of most countries' transport appraisal frameworks, significant cross-country differences exist in relation to:

- appraisal guidance for rail interventions;
- the extent to which multi-criteria techniques are used to complement CBA and support the decision making process;
- the type of impacts included within appraisal; and
- the methods used to apply monetary values for various impacts.

The studies show that, relative to other EU countries, the UK along with the Nordic countries have the most developed transport appraisal practice and culture, with this informing decision making to the greatest extent. ITS' primary conclusion is that 'The UK remains at the forefront of the use of CBA to inform decision making.' (see p.18). Differences between NATA and HEATCO's recommended guidelines are largely of a technical nature.

The ITS Report found that appraisal feeds into decision making in a variety of ways in different countries:

- determining what projects are considered in the light of social and political factors (Japan);
- prioritising projects and selecting between options on the basis of BCRs (New Zealand, South Africa and Spain);
- providing evidence on how policy objectives are met when determining strategic plans (Germany and Sweden); and
- appraising in the light of a predetermined transport plan (Portugal).

As well as intervention level decisions, the report noted that in 10 out of 15 countries surveyed, appraisal does not significantly contribute to the policy making process at all (Danish Ministry of Transport, 2007, p18). This means that the scope to which international comparisons can be used may narrow to countries where the use of appraisal techniques is advanced.

In terms of presenting appraisal information to decision makers, Norway and Sweden do this using a format similar to the NATA AST. The Railway Project Appraisal Guidelines (RAILPAG) produced by the European Commission and European Investment Bank recommended presenting appraisal results using a stakeholder effects matrix that splits the Net Present Value (NPV) of an intervention into a number of categories and displaying these to stakeholders (EC and EIB, 2005). HEATCO also concludes that this format has advantages in clarifying the distributional impacts of an intervention. Communicating how much importance should be attached to non-monetised impacts using a colour coding system is also suggested. HEATCO (2005b) also recommends extending the scope of sensitivity analysis and applying Monte Carlo techniques to assess optimism bias.

NATA guidelines for valuing and modelling non-market impacts are advanced relative to many countries. Continuing to improve the treatment of these effects is important, since non-monetised impacts are shown to receive insufficient attention from decision makers (Danish Ministry of Transport, 2007, p18). A wide range of values are applied to non-market impacts, particularly environmental ones (HEATCO 2006b). Efforts by countries, such as the Netherlands and others, to monetise impacts such as air quality, have the potential to usefully inform future DfT work in extending the monetary valuation of environmental impacts.

International meta-analyses covering value of time (VoT) studies are useful resources. Their findings could inform future work on the robustness of VoT estimates across project, location, mode of transport, type of user, income and journey purpose and enable journey time reliability impacts to be better incorporated into appraisal.

The World Road Association, PIARC (2003), recommend co-operating internationally when researching VoT. Such joint working is also needed for valuing carbon emissions and other transboundary pollution impacts, where greater consistency is needed. More generally, the scope for 'exporting' and testing appraisal practice was also highlighted.

As well as differences in the range of impacts that are assessed, differences exist in how impacts on different groups of people are reflected in the appraisal information, with treatment of costs and benefits accruing to non-residents a particular area of divergence. ITS recommend that greater consistency on this issue is desirable between the approach set out in HM Treasury's Green Book and European practice.

The work to adapt NATA to be fully multi-modal could benefit from the experience of Nordic countries early attempts to do the same. Liaison and discussion with policymakers in countries such as Sweden and the Netherlands, and organisations like the EIB should continue during throughout the NATA Refresh.

Table A1: Appraisal Summary Table

Option	SUB-OBJECTIVE	Description	Problems	Present Value of Costs to Public Accounts £m
ENVIRONMENT	Noise	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	net population win/lose NPV £m
	Local Air Quality			Concs wtd for exposure
	Greenhouse Gases			tonnes of CO ₂
	Landscape			Score
	Townscape			Score
	Heritage of Historic Resources			Score
	Biodiversity			Score
	Water Environment			Score
	Physical Fitness			Score
	Journey Ambience			Score
SAFETY	Accidents			PVB £m
	Security			Score
ECONOMY	Public Accounts		Central Govt PVC, Local Govt PVC	PVB £m
	Transport Economic Efficiency: Business Users & Transport Providers		Users PVB, Transport Providers PVB, Other PVB	PVB £m
	Transport Economic Efficiency: Consumers		Users PVB	PVB £m
	Reliability			Score
	Wider Economic Impacts			Score
	Option values			PVB £m
	Severance			Score
ACCESSIBILITY	Access to the Transport System			Score
	Transport Interchange			Score
	Land-Use Policy			Score
	Other Government Policies			Score

Table A2: Objectives of the NATA Refresh

Objectives	Public commitment
Making the guidance fully multi-modal	The current guidance reflects its road schemes origin and the Refresh will seek to provide improved advice covering proposals relating to all modes of transport, making the guidance more consistent with Eddington's 'mode neutral' stance
Improving its use for non-infrastructure proposals	The guidance also reflects a large infrastructure focus. The Refresh will aim to provide clearer integration with guidance on small scale targeted interventions, such as walking and cycling. It will also include advice on the Cabinet Office's new system of Impact Assessments
Aligning with DfT's new objectives	The guidance needs to be aligned with DfT's new objectives, including the Department's social and accessibility objective
Improving consistency with other advice	Improving consistency with other advice, such as the Highways Agency's Design Manual for Roads and Bridges
Updating presentation	Updating the presentation of the guidance to ensure it continues to provide a coherent and transparent body of expert advice
Rebasing costs and benefits	The Refresh provides an opportunity to update the price base for which costs and benefits in transport appraisals are expressed
Development of an environmental valuation strategy	Reflecting the Stern Review, the Refresh provides an opportunity to develop a strategy for making further progress over the next few years on valuing the environmental impacts of transport proposals
Alignment with post-Eddington 'priority links'	The Refresh provides an ideal opportunity to make the appraisal guidance more helpful at early stages in scheme development when strategic views about proposals have to be made
Improving summary information	Ensuring that summary information about the value for money of a proposal meets decision-making needs, including consideration of how measures such as the Benefit Cost Ratios prioritise across modes The Refresh provides an ideal opportunity to make the appraisal guidance more helpful at early stages in scheme development when strategic views about proposals have to be made.

Objectives of the NATA Refresh

The objectives for the Refresh are described in more detail below.

1. **Making the guidance fully multi-modal.** The NATA guidance was intended to offer analysis tools for multimodal appraisal and separate guidance has been produced for different modes and for multi-modal applications. Eddington reinforced the need to improve the multi-modal credentials of WebTAG by recommending that appraisals should adopt a ‘mode neutral’ approach (Volume 4.1, paragraph 1.24, p231). To some extent, this can be implemented by taking the best practice in the appraisal of the different modes. Recently guidance has been included in NATA on rail appraisal techniques, but there is significant scope to expand this and better integrate it into the guidance. Appraisal guidance also exists for airport and maritime port proposals and these also need to be better integrated into NATA.
2. **Improving its use for non-infrastructure proposals.** The NATA guidance focuses on large infrastructure projects i.e. those with a capital value over £5 million. The Eddington Study noted that small projects can play a significant role in making better use of existing transport networks and recommended greater use of such solutions (Volume 4.1, paragraph 1.24, p231). In addition its emphasis on ‘making better use’ of the transport network means that we need to review the guidance to ensure that it provides workable guidance for pricing proposals or for technology schemes that better manage the existing capacity. An objective of the Refresh is to ensure that the information presented to decision makers allows them to choose between very different interventions on a consistent basis.
3. **Aligning with DfT’s new objectives.** The current five NATA criteria (economy, environment, safety, accessibility, integration) were taken from the five objectives for transport taken from the 1998 White Paper. Since then, the Department has restructured itself in line with the three strategic priorities for transport (urban areas, inter-urban corridors, international gateways) identified by Eddington, and adopted four new objectives which are to:
 - sustain economic growth and improved productivity through reliable and efficient transport networks;
 - improve the environmental performance of transport;
 - strengthen the safety and security of transport; and
 - enhance access to jobs, services and social networks, including for the most disadvantaged.

In the light of the above the Refresh provides an opportunity to reflect these new objectives.

4. **Improving consistency with other advice.** At present there are some inconsistencies and overlaps between some of the scheme assessment and appraisal parts in DMRB and WebTAG. The Refresh provides an opportunity to

remove duplication and any inconsistencies and – more importantly – better align the needs of assessment and appraisal.

5. **Updating presentation.** WebTAG mixes technical advice and assumptions needed in appraisals, with material for less advanced users. Better sign-posting of the content will aid use, and restructuring some of the content may also allow different types of users to use the guidance documents more easily. The Refresh also provides an opportunity to consider how web technologies can be used to improve the effectiveness of the current guidance.
6. **Rebasing costs and benefits.** The costs and benefits of transport proposals are required to be expressed in 2002 values and prices, known as the base year. This work package is concerned about changing that base year to a more recent base year.
7. **Development of an environmental valuation strategy.** The Stern and Eddington Reviews both recommended that ‘getting prices right’ was a key challenge for transport in the future. The main area in transport appraisal where the impacts of transport proposals are ‘unpriced’ is the environment. The Refresh is a chance to consider what are the data and research needs over the next few years if progress on ‘getting prices right’ is to be maintained.
8. **Alignment with Eddington priority links.** Guidance could improve the link between scheme analysis and strategic decisions, especially at the early stages in the life of a scheme or proposal. Eddington recommends that a wide range of options should be considered (Eddington, Volume 4, p225) once priorities are established. To some extent, the link between such strategic decisions and the scheme level analyses is already developed, with common assumptions across the country about a range of important transport factors. Currently, promoters are expected to use the Department’s forecasts of likely transport demand, using the trip-end modelling programme. However, the improved capability in providing such contextual information and data offers opportunities to enhance the fit between national, regional and scheme level analyses.
9. **Improving summary information.** Benefit-cost ratios (BCRs) are used as a summary measure for those impacts that can be expressed in monetary terms. They are used alongside the non-monetised impacts presented in ASTs and, when suitably adjusted to reflect those non-monetised impacts, provide a summary measure of the value for money of a proposal. The Refresh will consider how to make appraisal information most useful for decision makers, including the use of the AST.

Annex 2:

Environmental Valuation

This annex discusses latest developments assigning monetary values to the environmental impacts of transport interventions included in the WebTAG guidance.

Greenhouse gases

In 2006 the WebTAG guidance unit on greenhouse gases was amended to include monetary values for this sub-objective. The Department for Food and Rural Affairs (Defra) have recently issued new interim Whitehall-wide advice about the valuation of carbon impacts, based on a new Shadow Price of Carbon (SPC). This will replace the existing Social Cost of Carbon (SCC) currently used in the WebTAG guidance on assessing greenhouse gas impacts. Defra plan to issue final guidance about the SPC shortly and DfT aims to update its WebTAG guidance and TUBA software as soon as possible in order to reflect the new advice.

Noise

The Department also amended the WebTAG guidance unit on noise in 2006 to include monetary valuations for noise impacts in relation to road and rail interventions. More recently the Department has had research carried out by consultants on deriving monetary values for aviation noise impacts and is currently considering the results of this work.

Air quality

As part of its Air Quality Strategy, Defra produced monetary values for a range of air quality impacts in 2006. These values can be applied at a strategic level within certain types of policy appraisals. However there are difficulties in applying these values to many types of transport proposals, due to the linear nature of road and rail schemes and the current lack of information about dose response relationships to changes in air quality. There is scope to learn here from experience in other countries in valuing air quality impacts.

Landscape

Last year the Department launched a research project to assess the potential for developing monetary values that can then be applied to the impact of transport proposals on the landscape. Phase 1 of that research, which established landscape and transport scheme typologies, has been completed and Phase 2, now underway, aims to establish some monetary values for the Phase 1 landscape and transport types. The whole research project is due to complete in 2008.

Physical fitness

Monetary values for the health benefits of walking and cycling have recently been included within WebTAG guidance on walking and cycling proposals. In order to be able to apply these values within appraisals, further research is needed to assess the extent to which different types of transport proposals are likely to lead to changes in levels of walking and cycling activity.

Journey ambience

The WebTAG journey ambience sub-criteria includes guidance about how to assess the impact of changes in journey quality, including changes in public transport crowding levels. At present WebTAG does not include monetary values for these impacts. However such values do exist in respect of changes in crowding on heavy rail services within the rail industry's Passenger Demand Forecasting Handbook (PDFH). In order to assess the effect of crowding levels on passenger demand, the values are expressed in terms of changes in rail fares. The Department is currently reviewing its approach to rail passenger demand forecasting, including how changes in crowding should be valued, for both appraisal and other forecasting purposes.

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Useful links:

Department for Transport

Transport Analysis Guidance:

<http://www.webtag.org.uk>

Trip End Modelling Programme

<http://www.tempro.org.uk>

Highways Agency

Design Manual for Road and Bridges:

<http://www.standardsforhighways.co.uk/dmrb/index.htm>

Other links

Better Regulation Executive Impact Assessment guidance:

<http://www.cabinetoffice.gov.uk/regulation/ria>

Office for Government Commerce Gateway Process

http://www.ogc.gov.uk/what_is_ogc_gateway_review.asp

How to Respond

The consultation period began on 30th October 2007 and will run until 31st March 2008. Please ensure that your response reaches us by that date. If you would like further copies of this consultation document it can be found at: <http://www.dft.gov.uk/consultations/open/>, or you can contact Peter Sellen at the address below.

Please send consultation responses to:

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When responding please state whether you are responding as an individual or representing the views of an organisation. If responding on behalf of a larger organisation please make it clear who the organisation represents, and where applicable, how the views of members were assembled.

If you have any suggestions of others who may wish to be involved in this process please contact us.

The information you send us may need to be passed to colleagues within the Department for Transport and published in a summary of responses received in response to this consultation. We will assume that you are content for us to do this, and that if you are replying by e-mail, your consent overrides any confidentiality disclaimer that is generated by your organisation's IT system, unless you specifically include a request to the contrary in the main text of your submission to us. Please ensure that if you want your name or response to be kept confidential, you state this clearly in your response. (Confidential responses will be included in any statistical summary of numbers of comments received and views expressed.)

Consultation Questions

This section sets out some of the work we are doing and lists the questions that this consultation is asking for your help with in the boxes.

Chapter 2: Analytical framework

The NATA Refresh is an opportunity to align better the analytical information needs of decision makers and the public with the latest policy priorities for transport and the Government.

To inform the consultation, the Department will progress demonstration material focusing on: integrating the mode-neutral perspective to stages of analysis, recognising that better use of the existing network will be an important option and progress some specific appraisal guidance to support innovation in meeting climate change challenges.

Questions:

1. The need to ensure proportionality of appraisal effort is noted in NATA, but users suggest that in practice the burden appears to be on the excessive side. How might we support promoters and analysts so that appraisal is proportionate?
2. If there were a light touch appraisal, how should sufficient robustness be maintained?
3. The Department and other bodies involved in strategic planning should consider wider dissemination of strategic analysis to provide the context for later stages in decision making. How should strategic appraisal tools be developed, balancing the right options being generated without unnecessarily analysing those that are unsuitable?
4. In the future, option generation is likely to be more complex, integrating for example small-scale and better use options. The range of alternatives considered, including some possibly rejected at an earlier stage, may be informative to decision making. How might this information be presented?

The analytical framework should continue to improve the linkage with the value-for-money assessment. As analysis widens its scope, the evaluation of schemes should also correspondingly broaden. Further, the framework should allow an assessment of

the impacts of regulatory or other non-infrastructure options so that it is neutral over each option.

Question:

5. The analytical framework used to assess transport interventions should explicitly recognise wider government objectives in the evidence provided, beyond the Department's economic, environmental and social ones. How should those elements which relate to broader objectives, such as housing or regional growth or the distributional impacts on the socially excluded, be presented?

Chapter 3: Economy, accessibility and safety

The evidence provided on how a scheme impacts on the economy should take account of the reductions in public transport crowding. The location of the health sub-objective, currently in the environment objective, should be considered.

The evidence base for and application of appraising the wider economic benefits (WEBs) of transport is still relatively new. This seeks to capture agglomeration impacts and the improvements to labour markets. There is a need to advance best practice and disseminate this. One of the early deliverables from this Refresh will be the development of advice on WEBs, communicating this, recognising its novelty and that innovative interventions are likely.

Question:

6. Over the Refresh, the extent to which the evidence for strategic decisions can be consistent with local or scheme specific evidence should be explored. How might the provision of more detail about the strategic analyses of economic, safety and accessibility impacts of transport policies be made helpful for project appraisal?

Chapter 4: Environmental appraisal and assessing housing impacts

The Department uses Defra's new guidance on the shadow price of carbon to ensure that carbon is properly accounted for in the appraisal of transport policy. In addition, the Department should progress some specific appraisal guidance to support innovation in meeting climate change challenges. This partly reflects the importance of the issue, but also about ensuring NATA effectively supports delivery partners and transport professionals as they analyse innovative interventions.

The Department should consider how to consolidate the extensive advice provided through WebTAG, Design Manual for Roads and Bridges and other areas on environmental impacts. A particular aspect is to ensure that environmental information provides a consistent picture at the various stages of scheme development.

Questions:

7. In providing decision makers with the evidence on environmental impacts there is always going to be a balance between taking appropriate account of the environmental impacts of transport interventions and the need to summarise evidence for decision makers alongside other impacts. Is the current balance between detailed assessment and summary appraisal information appropriate?
8. What are the priority areas for extending the use of the monetary valuation of environmental impacts?

Overall, in better identifying the impact of new housing on transport schemes, appraisal tools should recognise the transport benefits and costs attributable to the residents of the new housing. Such information at a strategic and scheme level should also feed back into strategic decisions over housing. This would help in prioritising expenditure on transport schemes that are intended to support housing growth, e.g. the Community Infrastructure Fund. Further, the appraisal needs to develop analysis of the uncertainty around such development plans.

Chapter 5: Assumptions and scenarios

The Department's release and update of common assumptions should be on a pre-announced, regular cycle alongside guidance releases. For ease of use, assumptions should be stored in a single place, where possible.

Chapter 6: Evidence from appraisal

Question

9. Given there are a range of decision makers and the mass of evidence underlying appraisal is large and increasing, does the AST remain a useful format? How should the AST be augmented to be a more effective way of conveying the information to decision makers?
10. How do we summarise the results of strategic analysis?

The Department is committed to further work to provide a detailed specification of the BCR, as PSA Delivery Agreement 5 will use this ratio as an indicator of the Department's success in seeing better value for money from its investment over time. It will be important to ensure that the appraisal continues to provide the information required for the calculation of the indicator.

Chapter 7: Building analytical capability

Developments to the Department's guidance should include presentational improvements as an important and on-going part of the overall approach.

Question

11. From the range of techniques available to better communicate the appraisal advice, what should the Department consider?

The Department should consider how editorial control of the various documents and 'knowledge' can be improved. In disseminating this material, the Department should consider how the use of the internet could be more effective both with regard to facilitating engagement and in being transparent with results.

Question

12. Do you have any suggestions about the consultative change process we envisage to ensure that you can participate as we develop changes to the guidance?

Question

13. The document identifies some issues and we would appreciate your views on the priority – a ranking if appropriate – the Department should attach in progressing these. We recognise that all the areas will need some consideration, but what are your views on their importance?

- a. The Department should consider how best to support the continued interest in the reliability and wider economic benefits of transport improvements. The nature of these issues suggests the support would be wide, looking at data, modelling issues in the context of innovative transport solutions. The need to reconcile wider economic benefits and regeneration benefits is a particular area for guidance.
- b. The importance of journey time savings in the overall benefits of a scheme suggest some further information about their composition would be informative. Whether this is possible should be explored.
- c. The Department will seek, engaging with the industry, to improve data and methods regarding freight time savings.
- d. The Department should consider how accessibility measures should be used in the NATA framework. In particular, should the information on the accessibility impacts in relation to local targets be presented, or should a more national approach be used? How should the accessibility impact be presented alongside the other impacts of interventions?

- e. The Department should consider how best to determine value for money within the transport appraisal framework using cost effectiveness analysis, in order to take account of economy-wide carbon and other environmental limits .
- f. The Department should develop desk-based analysis of the spatial aspects of environmental impacts. This can be used to facilitate strategic analysis, especially using GIS evidence, and support analysis of smaller schemes.
- g. The Department should investigate the extent to which transport's wider economic benefits can be associated with housing growth. The considerable change in land value due to the use of land for housing may – in part – reflect some benefits of transport enabling housing growth.
- h. While work to join up freight, rail and aviation forecasting of trip generation is continuing, the Department should in the short-term consider how to ensure that the modal interactions are adequately represented in some specific areas. This is needed at a strategic level, to incorporate into the trip generation common assumptions, such as TEMPRO.
- i. The Department should consider defining common modelling scenarios to be used by those involved in strategic modelling and scheme level appraisal. These would recognise that some scenarios are policy determined. The evidence from alternative scenarios will need parallel tools to analyse uncertainty around scheme impacts.
- j. The Department's guidance should continue to be developed on scheme costs. Such work should make decision makers aware about the risks around costs and how estimates become more firm with time. Risks may be mitigated through the financing of schemes. The overlap between cost appraisal and finance issues should be considered.
- k. The Department should look at the evidence emerging from Congestion TIF and other evidence on assessing packages and then consider how this approach can be widened beyond city and regional networks.
- l. The Department should continue to develop distributional analysis. In which types of interventions or transport problems should the priorities for this be?
- m. The Department's support for determining whether a transport model is fit-for-purpose may supplement the standards by recognising the staged nature of designing solutions to complex transport problems. Should this be part of a more general look at model validation?
- n. Developments to the Department's guidance should be issued with appropriate support. Appraisal tools assessing reliability and productivity impacts are demanding analytically and the Department should consider using workshops, training and the provision of data to enable analysis in these areas.

- p. The Department is considering the scope to which a range of social research techniques may provide useful data involving the participation of the public at different stages in the appraisal process and to assess the social impacts of schemes, starting in the areas of option generation and in issues around public acceptability of proposals.

Impact Assessment

The Impact Assessment identifying a broad range of benefits and costs for the proposals and issues raised in this consultation document is published separately at <http://www.dft.gov.uk/consultations/open/>. When responding to the consultation, please comment on the analysis of costs and benefits, giving supporting evidence wherever possible.

Please also suggest any alternative methods for achieving the aims of the Refresh and highlight any possible unintended consequences and practical enforcement or implementation issues.

What will Happen Next?

Before the end of the consultation period, there will be workshops as the Department develops its transport strategy. This will include regional events targeting local delivery bodies and your views on the refresh of NATA would be welcome. Early in 2008, some materials specifically designed to aid engagement with the Refresh will be disseminated through the web. We also intend to organise a NATA Refresh conference.

A summary of responses, including the next steps will be published by 1st July 2008 on the Department's web site. Paper copies will be available on request.

The Consultation Criteria

This consultation is being conducted in line with the Better Regulation Executive's Code of Practice on Consultation. The criteria are listed below, a full version of the criteria can be found at:

<http://bre.berr.gov.uk/regulation/consultation/code/index.asp>

The Six Consultation Criteria

1. Consult widely throughout the process, allowing a minimum of 12 weeks for written consultation at least once during the development of the policy.
2. Be clear about what your proposals are, who may be affected, what questions are being asked, and the timescale for responses.
3. Ensure that your consultation is clear, concise and widely accessible.
4. Give feedback regarding the responses received and how the consultation process influenced the policy.
5. Monitor your department's effectiveness at consultation, including through the use of a designated consultation co-ordinator.
6. Ensure your consultation follows better regulation best practice, including carrying out an Impact Assessment if appropriate.

If you feel that this consultation does not fulfil these criteria please contact:

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