

**Applying the Multi-Modal New Approach to
Appraisal to Highway Schemes
TAG Unit 2.6**

February 2004

Department for Transport

Transport Appraisal Guidance (TAG)

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1 Introduction

1.1 Scope

1.1.1 Before reading this document, the reader should refer to *Trunk Roads: Applying the Multi-Modal New Approach to Appraisal to Highway Schemes* (TAG Unit 1.3).

1.1.2 This document should be used for the following types of initiative:

- all Highways Agency capital improvement projects;
- all Local Authority highway schemes in England, with capital costs in excess of £5 million, Local Authorities should also refer to *Major Scheme Appraisal in Local Transport Plans: Detailed Guidance on Public Transport and Highway Schemes* (TAG Unit 1.4) for additional advice;
- schemes located in England only.

1.1.3 This document should *not* be used for the following types of initiative:

- schemes located in Northern Ireland, Scotland or Wales - unless the project sponsor indicates otherwise;
- Multi-Modal studies – TAG accompanied by TUBA software and manuals (see below) should be used;
- Regional Transport Strategies – refer to PPG 11;
- Local Transport Plans – see *Guidance on Full Local Transport Plans* (DfT, periodically updated)
- Major public transport schemes – the reference for this is *Major Scheme Appraisal in Local Transport Plans: Detailed Guidance on Public Transport and Highway Schemes* (TAG Unit 1.4).

1.2 Recommended Software – Safety and Economy

1.2.1 In order to appraise multi-modal projects, and to identify all groups that benefit and those that not associated with a scheme, the way in which transport cost benefit analysis is reported has been adapted. Furthermore, 1998 is now the price base (formerly 1994). These changes do not affect the fundamental principles of appraisal, merely the presentation of results¹.

¹ Since the software recommended in this section incorporates these changes, it is not necessary for the analyst to understand the background to the changes. However, *The Economy Objective* (TAG Unit 3.5) provides a discussion of the issues involved.

1.2.2 This document recommends the use of one, or both, programs:

Software	Capabilities of the Software	
	PVB for Transport Economic Efficiency	PVB for Accidents
COBA11	fixed trip matrix only	fixed trip matrix variable trip matrix
TUBA	fixed trip matrix variable trip matrix	not included in program

1.2.3 Neither COBA10 nor URECA (discontinued) provides appropriate outputs for input into the Transport Economic Efficiency tables. However, COBA10 data will run on COBA11, thus updating existing analyses should not present any major problems.

In addition, QUADRO software may be used for the calculation of accidents and Transport Economic Efficiency during construction and future maintenance.

2 DMRB and TAG Correspondence Tables

2.1 Introduction

2.1.1 This document is focused on the production of a NATA appraisal at Plan Level equivalent to a DMRB Stage 3 assessment. This assumes a high level of detail can be achieved and the information available from the DMRB assessment is of an appropriate level of detail. However, less detailed information is available at DMRB Stages 1 and 2, thus the NATA appraisal method will need to reflect this and it is likely that assumptions will need to be made as appropriate. Where this is necessary, analysts should bear in mind the NATA principle that judgement should be based on evidence where possible and should ensure that all assumptions are justifiable and fully documented. Some advice with regard to Stage 1 and 2 appraisals, is given in the TAG Units covering each of the sub-objectives in the AST.

2.1.2 The Appraisal Summary Table (AST) is given in TAG Unit 2.7.2. The AST is a one-page summary of the effects of a scheme/Plan for use by decision-makers, explained further in Section 3.

2.2 Correspondence Tables

2.2.1 To assist the analyst, a correspondence table has been produced for the Environment Objective (Table 1), which illustrates for each sub-objective the worksheets that need to be completed as part of the GOMMMS appraisal and the source of the information from the DMRB assessment and other related sources, where there is a relevant equivalence. For those sub-objectives that are introduced by the New Approach To Appraisal, there is no equivalence in DMRB.

2.2.2 Tables 2 to 5 provide the correspondence tables for the Safety, Economy, Accessibility and Integration Objectives respectively, including references to other sources of information than DMRB where relevant.

Table 1: TAG – DMRB Volume 11 Correspondence Table for Environment

TAG Environment Sub-objective	TAG Worksheet (Plan Level)	DMRB Sections and Related Sources of Information
Noise	W1 (TAG Unit 3.3.2)	Section 3 Part 7 (August 1994) 'Noise' Ref. to DMRB Volume 11 Section 3.7 – noise annoyance relationship
Local Air Quality	W1 (TAG Unit 3.3.3)	Section 3 Part 1 (February 2003) 'Air Quality'
Greenhouse Gases	W1 (TAG Unit 3.3.4)	Section 3 Part 1 (February 2003) 'Air Quality'
Landscape	W1 (TAG Unit 3.3.7)	Section 3 Part 5 (June 1993) 'Landscape Effects' Ref. to DMRB Volume 11 Section 3.5.3 – methodology
Townscape	W1 (TAG Unit 3.3.8)	Section 3 Part 2 (August 1993) 'Landscape Effects' Ref. to DMRB Volume 11 Section 3.5.8 - methodology
Heritage of Historic Resources	W1 (TAG Unit 3.3.9)	Section 3 Part 2 (August 1994) 'Cultural Heritage' Ref. to DMRB Volume 11 Section 3.2.6 - methodology
Biodiversity	W1 (TAG Unit 3.3.10)	Section 3 Part 4 (June 1993) 'Ecology and Nature Conservation' Ref. 11.3.4.5 Section 3 Part 11 (June 1993) 'Geology and Soils' Ref. 11.3.11.5
Water Environment	W1 (TAG Unit 3.3.11)	Section 3 Part 10 (August 1998) 'Water Quality and Drainage'
Physical Fitness	W1 (TAG Unit 3.3.12)	Section 3 Part 8 (June 1993) 'Pedestrians, Cyclists, Equestrians and Community Effects'. Ref. Changes in journey time
Journey Ambience	W1 (TAG Unit 3.3.13)	Section 3 Part 9 (June 1993) 'Vehicle Travellers' Ref. Driver Stress and View from the Road

Table 2: TAG – DMRB Correspondence Table for Safety

TAG Safety Sub-objective	TAG Worksheet (Plan Level)	DMRB Sections and Related Sources of Information
Accidents	See note 1	Methodology – DMRB13.1 and DMRB14 Parameters – Interim COBA Guidance (ICG)
Security	W1 (TAG Unit 3.4.2)	None (refer to TAG Unit 3.4.2)

Note 1 – No worksheet contained in TAG, but a suitable worksheet may be adapted from GNATA Worksheet 7.1.

Table 3: TAG –DMRB Correspondence Table for Economy

TAG Economy Sub-objective	TAG Worksheet (Plan Level)	DMRB Sections and Related Sources of Information
Public Accounts	None	None – refer to TAG Unit 3.5.1
Transport Economic Efficiency	W1 (TAG Unit 3.5.2)	None – refer to TAG Unit 3.5.3
Reliability	None	None - refer to TAG Unit 3.5.7
Wider Economic Impacts	W1 (TAG Unit 3.5.8)	None refer to TAG Unit 3.5.8

Table 4: TAG – DMRB Correspondence Table for Accessibility

TAG Accessibility Sub-Objective	TAG Worksheet (Plan Level)	DMRB Sections and Related Sources of Information
Option Values	None	None - refer to TAG Unit 3.6.1
Severance	W1 (TAG Unit 3.6.2)	Methodology – refer to DMRB 11.3.8 Assessment guidelines – refer to TAG Unit 3.6.2
Access to Transport System	None	None - refer to TAG Unit 3.6.3

Table 5: TAG –DMRB Correspondence Table for Integration

TAG Accessibility Sub-Objective	TAG Worksheet (Plan Level)	DMRB Sections and Related Sources of Information
Transport Interchange	W1 (TAG Unit 3.7.1)	None - refer to TAG Unit 3.7.1
	W2 (TAG Unit 3.7.1)	None - refer to TAG Unit 3.7.1
Land-use Policy	W1 (TAG Unit 3.7.2)	DMRB 11.3.12
Other Government Policies	W1 (TAG Unit 3.7.3)	None refer to TAG Unit 3.7.3

3 AST Appraisal Information

3.1 Background

At the heart of New Approach To Appraisal process is the Appraisal Summary Table (AST). This records the degree to which the five Central Government objectives for transport (environment, safety, economy, accessibility and integration) would be achieved and provides a comprehensive summary of the impacts of an option. It is intended that assessors (decision-makers) should use the information provided in the AST (and, where necessary, its more detailed supporting documents) to make a judgement about the overall value for money of the option.

3.1.1 The assessment of the overall value of an option from the AST is one of four assessment strands. The others are:

- achievement of local and regional objectives;
- amelioration of problems; and
- supporting analyses of distribution and equity, affordability and financial sustainability, practicality and public acceptability, and impacts on 10 Year Plan targets.

3.1.2 The appraisal processes under each of these other three strands are explained in *The Appraisal Process* (TAG Unit 2.5). That document also contains advice on the procedure for distilling the information from all four appraisal strands and making recommendations. The appraisal of highway projects should include all four appraisal strands, it should not be restricted to the AST alone.

3.1.3 Guidance on appraising the achievement of local and regional objectives is summarised in *The Appraisal Process* (TAG Unit 2.5). Although it is convenient to use the five Central Government objectives to structure local and regional objectives, the indicators associated with local and regional objectives should be much more specific to the scheme's context (e.g. relief of congestion would only serve to duplicate the AST entry).

3.1.4 Amelioration of problems, see *The Appraisal Process* (TAG Unit 2.5), relates to the contribution of the improvement to pre-defined measures of performance.

3.1.5 Supporting analyses relate to four areas. *The Appraisal Process* (TAG Unit 2.5) provides further detail. For distribution and equity, the supporting analysis provides a breakdown of a subset of the entries in the AST, generally on a spatial basis. For affordability and financial sustainability, since the financial impact of highway schemes usually relates to public sector institutions, the GOMMMS affordability and financial sustainability tables need not be completed; the COBA manual, provides the format for the presentation of a cost calculation specific to road schemes¹. For practicality and public acceptability, *The Appraisal Process* (TAG Unit 2.5) provides a checklist of issues that may be relevant. For the impacts on the 10 Year Plan Targets, reference should be made to TAG Unit 3.10.

3.2 Completing the AST

3.2.1 The following sections provide advice on how to complete the AST, under each of the headers given in the table. *The Appraisal Process* (TAG Unit 2.1) provides further detail and should be referred to. A copy of the AST can be found in TAG Unit 2.7.2.

¹ Regardless of the software used to calculate PVC – e.g. COBA or TUBA – this format remains relevant.

- 3.2.2 The AST provides a summary of the impacts of an option and must be presented on a single sheet of paper. A separate AST must be prepared for each option considered, including rejected options. This will provide an audit trail of the rejection of options during the appraisal process and support for the selected preferred option. Each option should be distinct and a 'real' option, not simply a variation or modification. Where an entry using the terms "not assessed" or "not applicable" is made in the AST, there needs to be an explanation of why these terms have been used.

3.3 Option

- 3.3.1 This box should be completed with the option number.

3.4 Description

- 3.4.1 A few key words of text should be inserted which summarise the main thrust of the option. This may not be able to adequately express all the interventions involved, in which case a supplementary single sheet should be included giving a complete specification of the option.

3.5 Problems

- 3.5.1 This box should summarise the problems in the base year and in the do-minimum transport system in the forecast year, also the changes in the forecast year problems that would be brought about by the option. The definition of a problem should focus not on the *symptoms* of a problem (e.g. congestion through the village) but on the *causes* of a problem (e.g. congestion due to an factory or school or a bottleneck elsewhere). These causes influence the type of solution required. Emphasising the causes allows other modes to be considered, as well as different scales of intervention that may provide the more feasible and appropriate solution to the problem. In each case, only key points should be summarised (reference can be made to other reports for the specific details).
- 3.5.2 Specific entries in the Problem box should include:
- an outline of the causes of the problems on the road;
 - an indication of the status and function (importance) of the route (e.g. Trans European, major port or conurbation link, city orbital);
 - the number of vehicles per day; and
 - the percentage of HGV (this should always be stated for bypass projects)

3.6 Present Value of Cost to Government

- 3.6.1 For most road schemes, capital and operating costs will relate exclusively to government expenditures. In such circumstances, "Present Value Cost to Government" may be simplified to "Present Value Cost £m". Note, however, that where this is *not* the case, then the format used in TAG should be used.
- 3.6.2 The PVC should be in 1998 market prices, discounted to 1998.

4 Further Information

The following documents provide information that follows on directly from the key topics covered in this TAG Unit.

For information on:	See:	TAG Unit number:
Highway Schemes	<i>Trunk Roads: Applying the Multi-Modal New Approach to Appraisal to Highway Schemes</i>	TAG Unit 1.3
Appraising transport schemes against the Government's 5 objectives for transport	<i>The Environment Objective</i>	TAG Unit 3.3
	<i>The Safety Objective</i>	TAG Unit 3.4
	<i>The Economy Objective</i>	TAG Unit 3.5
	<i>The Accessibility Objective</i>	TAG Unit 3.6
	<i>The Integration Objective</i>	TAG Unit 3.7
Appraisal Summary Table	<i>Transport Appraisal and the New Green Book</i>	TAG Unit 2.7
Completing the Appraisal Summary Table	<i>The Appraisal Process</i>	TAG Unit 2.5
	<i>Objectives and Problems</i>	TAG Unit 2.2
Major Public Transport Schemes	<i>Major Scheme Appraisal in Local Transport Plans: Detailed Guidance on Public Transport and Highway Schemes</i>	TAG Unit 1.4

5 References

Key Documents – General

The following documents are key resources for the assessment of road schemes:

(DETR, March 2000) GOMMMS Volumes 1 and 2 – now incorporated into TAG

Highways Agency *Design Manual for Roads and Bridges Volume 5 (DMRB)*

ODPM (previously DETR) Regional Planning Guidance, Planning Policy Guidance Note 11 (PPG11)

DfT *Guidance on Full Local Transport Plans*

Key Documents – Environment

Highways Agency *DMRB Volume 11, (Environmental Assessment, periodically updated)*

Key Documents – Safety and Economy

Highways Agency *DMRB Volumes 13 (Economic Assessment of Road Schemes), 14 (Economic Assessment of Road Maintenance)*

HETA (Mar 2001) *Transport Users Benefit Appraisal User Manual, TUBA User Guidance with accompanying TUBA software* – TUBA has been developed for the analysis of transport economic efficiency, for use in the DfT-sponsored Multi-Modal studies.

TEN; HETA (Mar 2001) *Transport Economics Note, the primary source for information on: values of time; values for vehicle operating costs (fuel and non-fuel); and tax rates.*

ICG; HETA (Mar 2001) *Interim COBA11 Guidance with accompanying COBA11 software*. The ICG is the primary source for: detailed accident rates (e.g. for links, junctions, combined links/ junctions); casualties per accident data; values for the avoidance of accidents. The document also contains data on values of time and vehicle operating costs, and tax rates for conversion to market prices (although TEN is the primary source for these inputs).

Discontinued or Secondary Information Sources

The following document may be useful as a secondary information source:

Highways Economics Note 1 (HEN 1, DETR Road Safety Division, annual). This is a secondary source for accident rates and unit values. The primary source is ICG.

Discontinued documents that are no longer relevant are:

Guidance on the New Approach to Appraisal (GNATA, DETR, 1998). This no longer applies to projects within the scope of this document. In line with a commitment in the Transport White Paper (DETR, 1998), the new approach to appraisal has been revised to cover multi-modal appraisal. This multi-modal version of the new approach to appraisal is presented in GOMMMS;

Highways Economics Note 2 (HEN2, DETR HETA Division, 1994). The primary source for values of time and vehicle operating costs is now TEN; and,

URECA software. This is superseded by TUBA.

6 Document Provenance

This Transport Analysis Guidance (TAG) Unit is based on S1.3 to 1.9, Chapter 5 and Chapter 6 of Highways Bridging Document, *Applying the Multi-Modal New Approach to Appraisal to Highway Schemes*.

Technical queries and comments on the advice in this note should be referred to:

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LONDON SW1P 4DR
Email: itea@dft.gov.uk
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Facsimile: 020 7944 2198

Analysts working on specific trunk road investment proposals in England should refer technical queries to:

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Highway Agency
Room 4/31
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Southwark Street
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