

**WELSH TRANSPORT
PLANNING AND APPRAISAL
GUIDANCE**

WelTAG

June 2008

The Welsh Assembly Government
Crown Building
Cathays Park
Cardiff
CF10 3NQ

WELSH TRANSPORT PLANNING AND APPRAISAL GUIDANCE

WeITAG

June 2008

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date
5	0	WeITAG_Final_v5(2)	May 2007
6	0	WeITAG_v7.1	June 2008

Contents

	Page
1. INTRODUCTION	1
1.1 Introduction to WelTAG	1
1.2 Background	1
1.3 The Importance of Appraisal Guidance	2
1.4 Purpose of WelTAG	3
1.5 This Guidance	3
1.6 Overview of the structure of this guidance	4
2 THE PRINCIPLES OF WELTAG	5
2.1 Objectives of WelTAG	5
2.2 Overview of the WelTAG Process	7
2.3 Transport Policy and Planning in Wales	9
2.4 The 'Welsh Impact Areas' (WIAs)	10
3 APPLICATION OF WELTAG	16
3.1 Applications of WelTAG	16
3.2 Transitional Period	17
3.3 Level of Effort Required	23
3.4 The Application of the Guidance at Strategy and Scheme Levels	24
3.5 Elements of the Appraisal Guidance	27
3.6 Output and Presentation	28
3.7 Summarising Significance of Appraisal Impacts	29
3.8 Double Counting	30
4 THE PLANNING STAGE	31
4.1 Introduction	31
4.2 The Planning Approach	31
4.3 Identification of Problems and Opportunities	31
4.4 Transport Planning Objectives	33
4.5 Identifying Possible Solutions and Sifting	40
4.6 Data Sources	45

5	THE APPRAISAL APPROACH	46
5.1	Introduction	46
5.2	The Appraisal of Strategies and Schemes	47
5.3	Stage 1	49
5.4	Proposal Development between Stages 1 and 2	55
5.5	Stage 2	56
5.6	Calculating Transport Impacts	58
5.7	Reporting	59
5.8	Decisions and Design Development Stage	62
6	ECONOMIC IMPACTS	65
6.1	Overview	65
6.2	Transport Economic Efficiency (TEE)	66
6.3	Economic Activity and Location Impacts	88
7	ENVIRONMENTAL IMPACTS	99
7.1	Overview	99
7.2	Strategic Environmental Assessment (SEA)	101
7.3	Environmental Impact Assessment (EIA)	105
7.4	Noise	105
7.5	Local Air Quality	110
7.6	Greenhouse Gas Emissions	114
7.7	Landscape and Townscape	119
7.8	Biodiversity	124
7.9	Soil	127
7.10	Heritage	131
7.11	Water Environment	133
8	SOCIAL IMPACTS	137
8.1	Overview	137
8.2	Transport Safety	138
8.3	Personal Security	142
8.4	Permeability	145

8.5	Physical Fitness	148
8.6	Social Inclusion	150
8.7	Equality, Diversity and Human Rights	160
9	OTHER APPRAISAL REQUIREMENTS	166
9.1	Introduction	166
9.2	Health and Wellbeing	166
9.3	Equality Impact Assessment	173
10	APPRAISAL SUMMARY	175
10.1	Purpose	175
10.2	The Appraisal Summary Tables	176
11	PARTICIPATION	182
11.1	Overview	182
11.2	Purpose of Participation	182
11.3	Policy and Legislative Framework	183
11.4	Guiding Principles	184
11.5	Application to Strategies and Schemes	185
11.6	Developing a Participation Strategy	185
11.7	Reporting	186
11.8	Evaluation - Learning from the Process	186
12	MONITORING AND EVALUATION	187
12.1	Definitions	187
12.2	Monitoring and Evaluation Plan	187
12.3	SEA Requirements	189
13	GLOSSARY AND TERMINOLOGY	190
14	REFERENCES AND BIBLIOGRAPHY	195

FIGURES

Figure 2.1. Stages of the Appraisal Cycle in ROAMEF	7
Figure 2.2. Policy Context for Transport Planning in Wales	9
Figure 2.3. The Pillars of Sustainable Development	11
Figure 3.1. Transitional Arrangements for Road Schemes	19
Figure 3.2. Transitional Arrangements for Rail Schemes	20
Figure 3.3 The Structure of WelTAG at a Strategy Level	26
Figure 3.4. The Structure of WelTAG at a Scheme Level	27
Figure 9.1. The Equality Impact Assessment Process	174

TABLES

Table 2.1. Interface between WelTAG Criteria and WTS Outcomes	12
Table 3.1. the key difference between weltag and other appraisal guidance	21
Table 3.2. Key differences between weltag and the previous iteration	22
Table 4.1. TPO's Related to Problems and Constraints	37
Table 4.2. TPO's Related to Wales Transport Strategy Outcomes	39
Table 4.3. TPO's Related to Strategic Priorities	40
Table 6.1. transport economic efficiency	85
Table 6.2. public accounts	86
Table 6.3. analysis of monetised costs and benefits	87
Table 6.4. an example of potential ealis	98
Table 7.1. Stages in the Strategic Environmental Assessment Process	104
Table 7.2. Inputs for Assessment of Noise Impacts	108
Table 7.3. Additional Inputs to Assess Noise at Receptor Points	108
Table 7.4. Inputs for Calculation of Air Pollutant Emissions	113

Table 7.5. Inputs for Calculation of Air Pollutant Emissions	118
Table 8.1. Correlation between WTS Social Outcomes and National Indicators	155
Table 8.2. Presentation of Results of Social Impact Assessment	160
Table 8.3. Statutory Equality Duties	162
Table 9.1. interaction between weltag criteria and health	170
Table 9.2. Template for a HIA Screening or Appraisal Tool	171
Table 10.1. Appraisal Summary Table	179
Table 10.2. Summary of Appraisal of Different Options	180
Table 10.3. Health Impact Assessment Summary Table	181
Table 10.4. Equality, diversity & human rights Summary Table	181

APPENDICES

APPENDIX A:	MODELLING
APPENDIX B:	WORKED EXAMPLE FOR THE PLANNING STAGE
APPENDIX C:	WORKED EXAMPLE: APPRAISAL SUMMARY TABLES
APPENDIX D:	ECONOMIC ACTIVITY AND LOCATION IMPACTS: FURTHER TECHNICAL GUIDANCE
APPENDIX E:	APPROACH TO STRATEGIC ENVIRONMENTAL ASSESSMENT
APPENDIX F:	DATASETS AVAILABLE IN WALES
APPENDIX G:	PARTICIPATION

1. INTRODUCTION

1.1 Introduction to WeITAG

1.1.1 WeITAG is the Welsh Transport Planning Appraisal Guidance. It has been developed by the Welsh Assembly Government with the intention that it is applied to all transport strategies, plans and schemes being promoted or requiring funding from the Welsh Assembly Government.

1.1.2 WeITAG replaces the interim guidance STAG (Scottish Transport Appraisal Guidance), the current practice in Wales.

1.2 Background

1.2.1 Transport Appraisal Guidance was originally introduced in 1998 in the form of the Guidance on the New Approach to Appraisal. The purpose of the methodologies was to provide a system of appraisal that clearly identified the benefits, costs and impacts of schemes and identified their contribution to the core objectives for transport. The New Approach to Appraisal (NATA) was developed because of the need to achieve consistency of approach and to provide the information in a clear and open framework to enable decision-makers to compare proposals on a comparable basis.

1.2.2 Prior to NATA, appraisal of proposals was largely an economic exercise based on monetised benefits and costs, notably within a cost-benefit analysis framework. NATA was less tangible, less quantitative, and less easy to monetise, but included important environmental and social impacts. This underlying principle of multi-criteria analysis provides the framework adopted by transport appraisal guidance.

1.2.3 Since then the techniques have been developed and refined. In England the current appraisal methodology is GOMMMS (Guidance on Methodologies for Multi- Modal Studies) and more recently WebTAG (web based Transport Appraisal Guidance) which provides an up to date and 'live' version of the methodologies to be applied. In Scotland the Scottish Executive has produced Scottish Transport Appraisal Guidance (STAG).

- 1.2.4 The Welsh Assembly Government has identified the need for transport appraisal that is focused on meeting the needs of the people of Wales, hence the development of WelTAG.
- 1.2.5 Transport appraisal is currently evolving and being refined; hence the current refresh process of NATA and STAG. This WelTAG guidance should be seen as a live document.

1.3 The Importance of Appraisal Guidance

- 1.3.1 The public sector spends significant sums of money on improving transport provision through the implementation of new or improving existing services or infrastructure. The choice of options to address problems and to achieve policy objectives is considerable and varied. This, added to the need to justify expenditure and investment, means there is clear need for a robust appraisal framework.
- 1.3.2 In order to compete for public sector resources, transport proposals need to demonstrate that they:
- Make a positive contribution to the objectives for transport and hence the wider policy objectives for Wales;
 - Provide good value for money;
 - Provide overall economic, social and environmental benefits to society; and
 - Maximise benefits and minimise impacts.
- 1.3.3 Transport appraisal is the mechanism for providing decision-makers with the information about all significant impacts from proposals (positive and negative). It enables decision-makers to judge the merits of applications for support, and eventually helps resource allocation and other reasoned decisions to be made using a consistent approach.
- 1.3.4 The appraisal process provides an audit trail of decision-making, clearly showing the linkage between wider policy objectives and the strategy or scheme under consideration.

1.4 Purpose of WelTAG

1.4.1 There are two primary purposes of WelTAG:

- To assist in the development of proposals to enable the most appropriate scheme to be identified and progressed – one that is focused on objectives, maximises the benefits and minimises the impacts; and
- To allow the comparison of competing schemes on a like-for-like basis, so decision-makers can make difficult funding decisions.

1.4.2 In achieving these purposes WelTAG aims to:

- Ensure appraisal requirements are of a scale that is appropriate to the value to the scheme;
- Focus on those areas of most concern; and/or
- Focus on those areas that differentiate options.

1.4.3 The Welsh Assembly Government will, in future, assess new transport planning proposals using WelTAG. WelTAG is, therefore, the core document to be used in the planning and appraisal of transport proposals in Wales. As such it is the overarching guidance whose principles and practices are to be applied to all modes, to all types of transport investment proposals, at a strategic or scheme level.

1.5 This Guidance

1.5.1 This document is intended to:

- Provide guidance on how all transport proposals should be planned and developed;
- Give advice on how to conduct an appraisal;
- Show how appraisal results should be presented; and
- Indicate how post-implementation monitoring and evaluation should be undertaken.

- 1.5.2 The approach adopted in WeITAG is to present core or generic transport guidance, supported by references to sources. This format allows practitioners to follow through the planning and appraisal process, referencing other relevant guidance where appropriate, without unnecessary repetition within the WeITAG document itself.
- 1.5.3 The guidance has been subject to wide consultation in Wales. WeITAG is available on-line as a downloadable document.

1.6 Overview of the structure of this guidance

- 1.6.1 WeITAG is set out as follows:

Section 2	Sets out the principles of WeITAG, considering the overarching objectives of WeITAG and its role and provides an overview of the WeITAG process.
Section 3	Sets out the application of WeITAG
Section 4	Describes the Planning Stage, which includes the identification of problems and opportunities, the development of Transport Planning Objectives and the development of possible solutions.
Section 5	Describes the approach to appraisal, explaining what is expected at Stage 1 and Stage 2 of the appraisal.
Section 6	Explains the approach taken to assess strategies and schemes against economic appraisal criteria.
Section 7	Explains the approach taken to assess strategies and schemes against environmental appraisal criteria.
Section 8	Explains the approach taken to assess strategies and schemes against social appraisal criteria.
Section 9	Sets out the process for completing a Health Impact Assessment and an Equality Impact Assessment.
Section 10	Sets out the process for completing an Appraisal Summary Table.
Section 11	Defines the participation procedures throughout the appraisal process.
Section 12	Describes the ongoing monitoring and evaluation methodologies.

2 THE PRINCIPLES OF WELTAG

2.1 Objectives of WelTAG

2.1.1 Appraisal is the process of assessing the worth of a course of action and provides decision-makers with all the information they require to make a reasoned and auditable decision.

2.1.2 All transport proposals and plans requiring public funding and/or approval of the Welsh Assembly Government need to be planned and appraised to ensure that the resultant schemes are “fit for purpose” and achieve the expected and required outcomes. This includes:

- Proposals¹ to meet the Outcomes and Strategic Priorities of the [Wales Transport Strategy](#)², such as the National Transport Plan and its component plans;
- Trunk road and rail schemes for which the Welsh Assembly Government has direct responsibility;
- Transport proposals such as the Regional Transport Plans; and
- Public transport schemes that may be developed by the Regional Transport Consortia and local authorities and which seek Welsh Assembly Government funding.

2.1.3 The objectives of WelTAG reflect the overarching objectives of transport appraisal but also fit the requirements of the Welsh Assembly Government in meeting its wider policy objectives for Wales. Therefore, the objectives of WelTAG, shown below, are sub-divided into two categories:

2.1.4 Overarching objectives of transport appraisal:

- Appraisal on a consistent basis to allow decision-makers to make informed choices on a comparable basis;
- Ensure proposals are focused on achieving identified needs or aspirations – an objective-led approach;
- Openness on the impacts of a proposal;

¹ The term **proposal** embraces projects, schemes, plans strategies and programmes

² The Wales Transport Strategy was adopted on 8th May 2008.

- To provide an audit trail of decision-making; and
- Aid the scheme development.

2.1.5 Welsh-specific objectives:

- Appraisal criteria to be focused on overarching impact areas relevant to Wales e.g. economy, society and environment;
- To be applicable to all stages of scheme development from development of strategies and plans to the design of schemes;
- Easy to assimilate presentation of results that allows for unbiased consideration of the impacts;
- To provide a process for developing transport strategies and schemes in Wales;
- Contribution to [Wales Transport Strategy](#) outcomes and strategic priorities.

2.1.6 These objectives are integral to the WelTAG process and its appraisal framework and users should be mindful of these objectives when applying WelTAG.

2.1.7 In addition to the objectives above, WelTAG is also subject to a number of guidelines, these are:

- The level of effort in undertaking appraisal should be appropriate to the value of the scheme;
- Application of WelTAG should focus on those areas of most concern; and/or
- Those criteria that differentiate between options; and
- Consistency with other appraisal requirements.

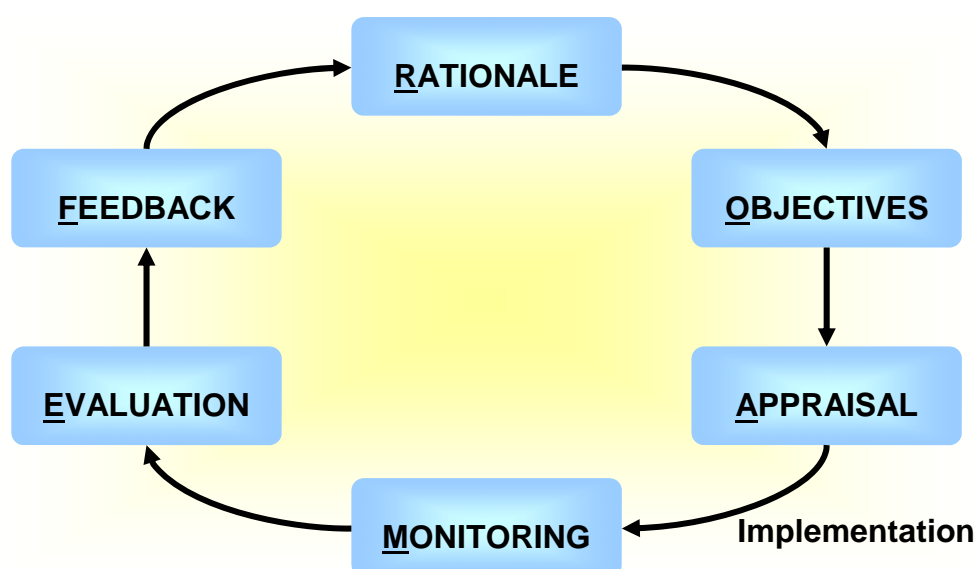
2.1.8 Hence, the appraisal process in WelTAG needs to satisfy the following key requirements:

- Be comprehensible and applicable;
- Produce results which adequately represent the range of impacts of interest;
- Produce results which enable comparison across proposals of different types and magnitudes; and
- Comply with statutory requirements.

2.2 Overview of the WelTAG Process

- 2.2.1 Appraisal is but one process within a planning and implementation cycle, and WelTAG is intended to provide guidance on all elements of this cycle, not merely on appraisal. Therefore, this guidance specifically on appraisal should be seen as part of, and consistent with, a larger process.
- 2.2.2 WelTAG is consistent with established UK guidance on planning and appraisal. It is structured around the [ROAMEF cycle](#) (shown in Figure 2.1), which is at the heart of current UK appraisal practice³:

FIGURE 2.1. STAGES OF THE APPRAISAL CYCLE IN ROAMEF



³ See the Green Book and 3Rs Guidance: [The Green Book: Appraisal and Evaluation in Central Government](#) (2003) HM Treasury.

Assessing the Impacts of Spatial Interventions: Regeneration, Renewal and Regional Development
 'The 3Rs Guidance' [3Rs Guidance](#) (ODPM, 2004).
<http://www.communities.gov.uk/documents/corporate/pdf/146865>

2.2.3 WeITAG is structured into the following stages:

- A **planning** stage which includes problem identification/proposal rationale, objective setting (these are interactive processes), option development and testing;
- An **appraisal** stage, which involves a two-stage process;
- A **post appraisal** stage which involves both on-going monitoring of performance and evaluation / value for money assessment; and
- **Participation** (including **consultation**), which occurs at several stages in the planning process (from setting objectives through to proposal appraisal and quite possibly implementation) and should start being considered from the outset.

2.2.4 The Planning Stage requires practitioners to adopt an objective-led approach. This means that planning starts by identifying problems and opportunities and defining what is to be achieved – the ultimate outcomes expressed as transport planning objectives (TPO's), rather than focusing on the means to achieve the outcomes i.e. the projects, schemes, plans or strategies themselves.

2.2.5 This approach to planning is compatible with best practice in the UK and consistent with both the [Green Book](#) on appraisal and recent [EU guidance](#). It should be possible to adopt a common approach which will develop appraisal required both by the Welsh Assembly Government and any proposal seeking EU funding.

2.2.6 The starting point for objective identification should be the [Wales Transport Strategy](#), but promoters should also consider the objectives within the relevant Regional Transport Plan.

2.2.7 The planning stage goes on to the identification of options that contribute to the TPO's and hence [Wales Transport Strategy](#) outcomes.

2.2.8 The appraisal stage includes the development and testing of options. The testing covers transport planning objectives and Welsh impact areas.

2.2.9 The appraisal process is subdivided into 2 stages.

- Stage 1 is always required and has the primary purpose of testing and screening options.
- Stage 2 is only applicable to schemes and provides a fuller, more evidence based, appraisal of the options selected for future development by Stage 1.

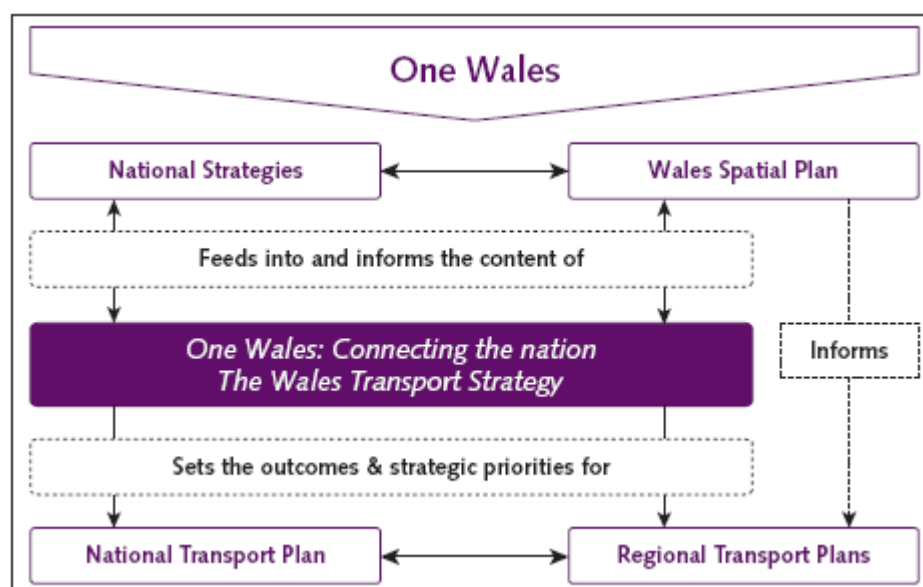
2.2.10 For completeness, WeITAG provides post-implementation guidance on monitoring and evaluation (see Chapter 12) and advice on participation (Chapter II).

2.2.11 The distinction between planning and appraisal is convenient but somewhat artificial. At the appraisal stage, it is normal for options to undergo further development, which could be regarded as planning rather than appraisal. However, this distinction will be made as it enables the planning focus to be on objectives and how these relate to transport problems and opportunities.

2.3 Transport Policy and Planning in Wales

2.3.1 WeITAG aims to ensure that transport proposals contribute to the wider policy objectives for Wales. Figure 2.2 shows the integration between the key policy documents.

FIGURE 2.2. POLICY CONTEXT FOR TRANSPORT PLANNING IN WALES



Source: The Wales Transport Strategy (Welsh Assembly Government, 2008)

- 2.3.2 As shown in Figure 2.2, the Wales Transport Strategy has a key role to play in ensuring the success of strategies developed for other policy areas.

2.4 The 'Welsh Impact Areas' (WIAs)

- 2.4.1 The Welsh Impact Areas focus on the three elements of sustainability that underlie policy in Wales. They are:

- The **economy**: this reflects the importance of a strong and developing economy for Wales and particularly for EU [Convergence](#) and [Regional Competitiveness and Employment](#) areas;
- The **environment**: this reflects both the legal requirements and desire to protect and enhance the condition of the built and natural environment; and
- **Society**: this reflects the desire to address issues of social exclusion and to promote social justice and a high quality of life for Welsh people.

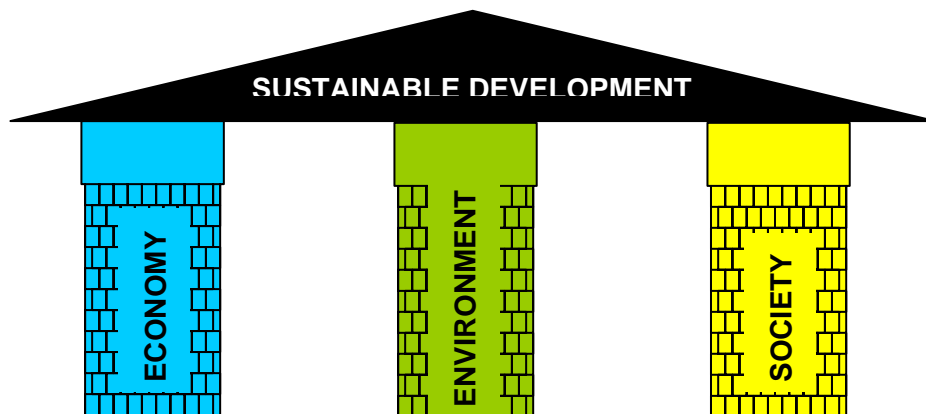
- 2.4.2 The use of these three impact areas marks a difference between WeITAG and guidance in use elsewhere in the UK, but there is a direct correlation (i.e. criteria from the UK Government's five overarching objectives are embedded in WeITAG). The Department for Transport's White Paper '[The Future of Transport](#)'⁴ is also based on these three overarching impact areas, which are required to be given a balanced degree of importance.

- 2.4.3 These high-level, strategic Welsh Impact Areas correspond to the three "pillars of sustainable development", as illustrated in Figure 2.3.

⁴ This superseded the 1998 White Paper entitled [A New Deal for Transport: Better for Everyone](#).

- 2.4.4 The Welsh Assembly Government has a statutory duty under the [Government of Wales Act](#) to promote sustainable development and is, therefore, committed to making decisions which are consistent with this aim. These impact areas are also consistent with the [UK Sustainable Development Strategy \('Securing The Future'\)](#), which promotes sustainable social, environmental and economic development.

FIGURE 2.3. THE PILLARS OF SUSTAINABLE DEVELOPMENT



- 2.4.5 The role of Welsh Impact Areas is to help the Welsh Assembly Government to determine which proposals to fund or approve, in normal situations where there are more proposals than funding available. The Welsh Impact Areas form the BONDS of the appraisal criteria. Thus the Welsh impact areas are intended to enable a national perspective by showing the performance of proposals of all sizes and kinds using a common yardstick.
- 2.4.6 Welsh Impact Areas are directly related to the Wales Transport Strategy outcomes as shown in Table 2.1.
- 2.4.7 In order to make this operational, it is necessary to develop more specific criteria expressed as eventual impacts, with potential outputs and results. Each appraisal criterion is therefore “nested” under each of the three Welsh Impact Areas as shown in Table 2.1, and described below.

TABLE 2.1. INTERFACE BETWEEN WELTAG CRITERIA AND WTS OUTCOMES

Criteria Area	WelTAG Criteria	WTS Outcome Area	WTS Outcomes
Economy	Transport Economic Efficiency	Economy	Improve the efficient, reliable and sustainable movement of people. Improve the efficient, reliable and sustainable movement of freight.
	Economic Activity and Location Impacts	Economy	Improve connectivity within Wales and internationally.
		Economy	Improve access to employment opportunities Improve access to visitor attractions.
Environment	Noise	Environment	Improve the impact of transport on the local environment
	Local Air Quality	Environment	Reduce the contribution of transport to air pollution and other harmful emissions.
	Greenhouse Gas Emissions	Environment	Reduce the contribution of transport to greenhouse gas emissions. Adapt to the impacts of climate change.
	Landscape and Townscape	Environment	Improve the impact of transport on our heritage.
	Biodiversity	Environment	Improve the impact of transport on biodiversity.
	Soil	Environment	Improve the impact of transport on the local environment
	Heritage	Environment	Improve the impact of transport on our heritage.
	Water Environment	Environment	Improve the impact of transport on the local environment
Social	Transport Safety	Social	Improve the actual and perceived safety of travel.
	Personal Security		
	Permeability	Social	Encourage healthy lifestyles.
	Physical Fitness		
	Social Inclusion	Social	Improve access to healthcare. Improve access to education, training and life-long learning. Improve access to shopping and leisure facilities.
	Equality, Diversity and Human Rights	Social	Improve the actual and perceived safety of travel. Improve access to healthcare. Improve access to education, training and life-long learning. Improve access to shopping and leisure facilities. Improve actual and perceived safety of travel

Economy

2.4.8 The economic outcomes from the [Wales Transport Strategy](#) are:

- Improve access to employment opportunities;
- Improve connectivity within Wales and internationally;
- Improve the efficient, reliable and sustainable movement of people;

- Improve the efficient, reliable and sustainable movement of freight;
- Improve access to visitor attractions.

2.4.9 In policy terms, the focus of interest is in the performance of what could be termed the “real” economy of employment and Gross National Product (GNP), both in aggregate and in more local or regional terms, where the way in which particular groups within the economy are affected is of interest. However, precise links between transport proposals and employment and income impacts are difficult to quantify, especially at the Wales level.

2.4.10 The standard approach in transport appraisal is to consider the impacts of transport proposals within the transport sector only, which under certain conditions would fully capture the value of all the consequent impacts on the economy⁵. Nonetheless, decision-makers are equally interested in gaining an understanding of how these impacts reflect on the wider economy, especially on employment and income. Hence the importance of accounting for the impacts on employment and income, however, their estimation will be more uncertain than the ‘direct’ economic impacts.

2.4.11 The two criteria under economy are:

- TEE; and
- EALI.

Environment

2.4.12 The environmental outcomes from the [Wales Transport Strategy](#) are:

- Increase the use of more sustainable materials;
- Reduce the contribution of transport to greenhouse gas emissions;
- Adapt to the impacts of climate change;
- Reduce the contribution of transport to air pollution and other harmful emissions;

⁵ This is a major topic and can be referred to the [Government's response to the SACTRA report on "Transport and the Economy"](#) published in August 1999.

- Improve the impact of transport on the local environment;
- Improve the impact of transport on our heritage;
- Improve the impact of transport on biodiversity.

2.4.13 Transport proposals commonly impact upon the wider environment. It is important to understand the extent of these impacts and take a long-term view, which reflects concerns with sustainability and the condition of the wider environment for future generations.

2.4.14 At present, there is no complete parallel to the economic analysis which provides a valuation of the impacts. This is an area where valuation techniques are developing and where future appraisal guidance will reflect changes in the availability and acceptability of valuations of environment impacts. At present, therefore, under the environment impact area there are unavoidably numerous criteria; nevertheless, it is possible to apply the same results – outputs – impacts approach to these.

2.4.15 The environmental criteria are:

- Noise;
- Local Air Quality;
- Greenhouse Gas Emissions;
- Landscape and Townscape;
- Biodiversity;
- Soil;
- Heritage; and
- Water Environment.

Society

2.4.16 The social outcomes from the [Wales Transport Strategy](#) are:

- Improve access to healthcare;
- Improve access to education, training and life-long learning;
- Improve access to shopping and leisure facilities;
- Encourage healthy lifestyles;
- Improve the actual and perceived safety of travel.

2.4.17 As well as having impacts on economic performance and the environment, transport proposals can affect the more general quality of people's lives in various ways. The aim of the Society impact area is to capture, describe and where possible quantify these impacts. As with environment, there is no single or simple valuation measure and consequently a number of criteria need to be used in the appraisal.

2.4.18 The criteria under the social impacts are:

- Transport Safety;
- Personal Security;
- Permeability;
- Physical Fitness; and
- Social Inclusion;
- Equality, Diversity & Human Rights.

3 APPLICATION OF WELTAG

3.1 Applications of WeITAG

3.1.1 As set out in Section 2, the core purpose of WeITAG is to enable the appraisal of all types of transport proposals in a consistent manner across Wales, regardless of size, mode(s) or nature of the location. WeITAG is designed to encompass:

- All transport modes (i.e. road, rail, air, water) as well as multi-modal schemes (in the same way as for other UK Appraisal Guidance, e.g. [WebTAG](#));
- Passenger transport as well as freight;
- Varying project sizes and levels of detail;
- A wide range of measures, from soft planning, management, pricing and land use to the implementation of infrastructure;
- From a strategic (or macro) level to more scheme (or micro) levels. Packages of schemes can also be applied using WeITAG; and
- Policies, strategies and plans⁶. A slightly different approach is required for the application of the guidance to strategies and to schemes, and this is explored throughout the document.

3.1.2 In principle, WeITAG is applicable to all transport proposals applying for funding or support from the Welsh Assembly Government. However, it is important to ensure that the correct overall appraisal approach is employed in all cases. WeITAG is not suitable, for instance, for application to:

- Transport network maintenance schemes which do not affect demand nor create (economic, environmental or social) benefits;
- High-level Welsh Assembly Government policies such as the [Wales Transport Strategy](#), although defined proposals arising from such policies can be appraised in the usual manner;
- Guidance documents.

⁶ This is particularly relevant as the guidance will be used to indicate compliance with the duty set out in Section 1 of the Transport (Wales) Act 2006.

- 3.1.3 WeITAG is not geared to deal specifically with new development or regeneration-led proposals (including residential, commercial or mixed-use), and guidance for the appraisal of development or regeneration proposals in the UK is not yet fully developed⁷. However, transport schemes may form an integral part of the plans for providing access to such development or regeneration sites. In addition, the transport consequences of such developments are of significant interest to the Welsh Assembly Government and the approaches and tools in WeITAG will be useful to assess these consequences. Developers and local planning authorities are encouraged to consider alternative options for transport provision and the economic, environmental and social impacts of these options. WeITAG provides the framework in which to do this: a list of criteria to be considered and techniques which can be used to help assess whether options are problematic on particular criteria or make a positive impact in particular ways. The outcomes from the appraisal of the transport schemes within the new development or regeneration will provide essential information for obtaining planning consent, which will need to take into account broader issues from the development (transport being one of them).
- 3.1.4 In case of doubt, or when there is a blurred line between situations where the guidance is applicable, advice should be sought from the Welsh Assembly Government's Transport Planning and Administration (TP&A) division.

3.2 Transitional Period

- 3.2.1 It is recognised that in the period following the introduction of WeITAG, the appraisal process will need to be applied to proposals which have already been well researched and developed. These proposals are likely to have been generated through the planning process set out in current interim guidance and there will be a certain transition period in which both approaches will be acceptable.
- 3.2.2 WeITAG will need to be applied to projects that have already been advanced to some degree, but which have not yet been approved. Any previous appraisal work can be used in the context of WeITAG (Stages

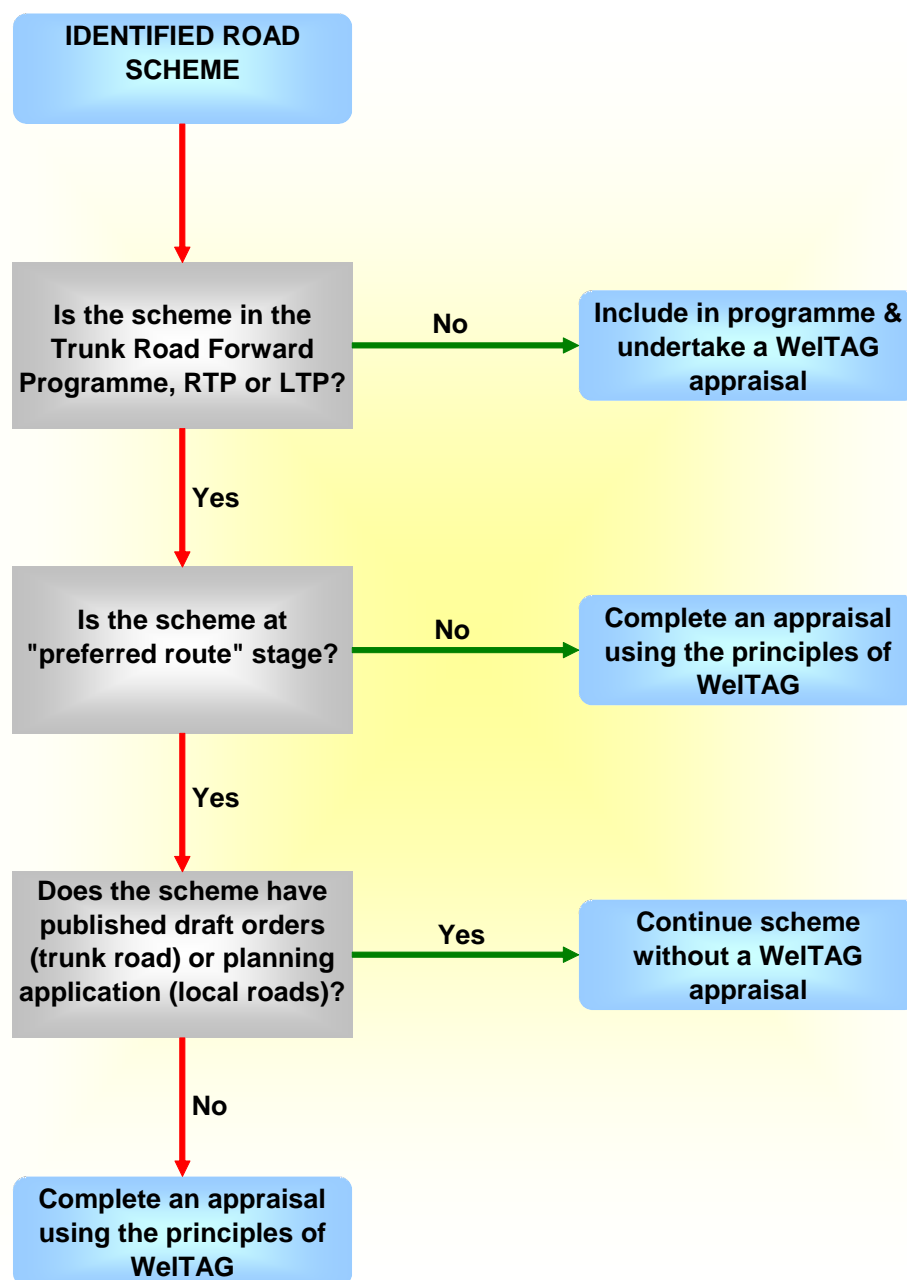
⁷ The [3Rs Guidance](#) should be used where the desired outcomes are concerned with economic development: WeITAG is consistent with 3Rs but is designed for proposals whose objectives are transport related.

1 and 2) as long as it is still relevant and updated. Figures 3.1 and 3.2 provide guidance on the transitional arrangements for major road and rail schemes.

- 3.2.3 The advice from the Welsh Assembly Government is for users to start adopting WeITAG as soon as possible.
- 3.2.4 The key differences between WeITAG and other guidance used in the rest of the UK, which need to be reflected in the way the guidance is applied, are summarised in Table 3.1.
- 3.2.5 A number of report iterations have been completed during the development of WeITAG. The most recent iteration being May 2007. The key differences between this version of WeITAG and its predecessor are also listed in Table 3.2.



FIGURE 3.1. TRANSITIONAL ARRANGEMENTS FOR ROAD SCHEMES



Notes:

RTP - Regional Transport Plan

LTP – Local Transport Plan

FIGURE 3.2. TRANSITIONAL ARRANGEMENTS FOR RAIL SCHEMES

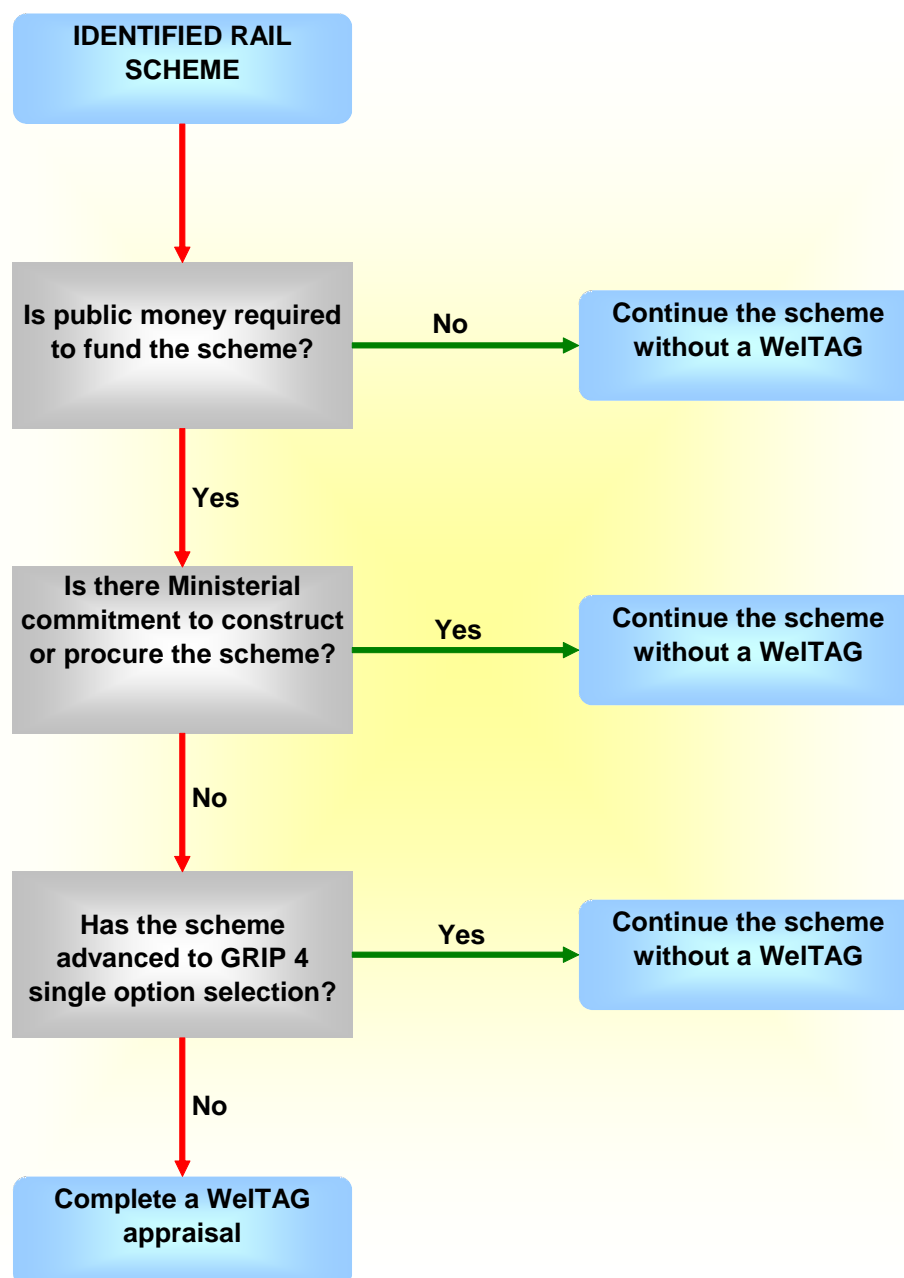


TABLE 3.1. THE KEY DIFFERENCE BETWEEN WELTAG AND OTHER APPRAISAL GUIDANCE

Category	Description	Reference
Transport Policy	<ul style="list-style-type: none"> Consistency with other planning documents in Wales, such as the Wales Transport Strategy and the Regional Transport Plans. 	
Strategies & Schemes	<ul style="list-style-type: none"> Specific advice for strategies (e.g. Regional Transport Plans), and individual schemes (which would have been part of a strategy). 	
Appraisal Stage	<ul style="list-style-type: none"> The classification of the main impacts under three headings: economic, environmental and social, and some reclassification within those headings. Less reliance on modelling tools, since these are less widely used in Wales. Advice for the appraisal methods at Stages 1 and 2. 	
Economic	<ul style="list-style-type: none"> The inclusion of “Walking and Cycling” as modes in Transport Economic Efficiency . The inclusion of “Reliability” as an item in the Transport Economic Efficiency analysis. 	
Environmental	<ul style="list-style-type: none"> Inclusion of EU Guidance on Environmental Impact Assessments (EIA) and Strategic Environmental Assessments (SEA). 	
Social	<ul style="list-style-type: none"> The sub-classification of the social impacts (including the notion of permeability and more detailed advice on social inclusion). 	
Appraisal Summary (AST)	<ul style="list-style-type: none"> Appreciation of impact distribution for all appraisal criteria, now shown explicitly in the AST. More succinct ASTs, also in a different format . Summary of ASTs for assessing alternative options. The incorporation of transport planning objectives in the AST. 	
Participation	<ul style="list-style-type: none"> Refreshed advice on participation. 	
Presentation	<ul style="list-style-type: none"> More explicit advice on output and presentation. 	

TABLE 3.2. KEY DIFFERENCES BETWEEN WELTAG AND THE PREVIOUS ITERATION

Category	Description	Reference
Equality, Diversity & Human Rights	<ul style="list-style-type: none"> The inclusion of Equality, Diversity & Human Rights as a sub-criterion of 'Social' impacts. It is an additional element in the AST. 	
Health Impact Assessment	<ul style="list-style-type: none"> The requirement to complete a Health Impact Assessment 	
References	<ul style="list-style-type: none"> Many references have changed, including amendments to the Wales Transport Strategy outcomes. 	
Structure	<ul style="list-style-type: none"> The main document has been re-structured and the text has been amended for clarity. Much of the technical advice is now contained in the Appendices 	

3.3 Level of Effort Required

- 3.3.1 The level of effort, depth and detail required for appraisal has to be in keeping with the costs, risks, appraisal stage (i.e. Stage 1 or 2) and size of the proposal:
- Small proposals (under £5 million) should be appraised using the planning and appraisal in WeITAG at a broad level. They would not generally require the detailed appraisal in Stage 2, but there may be the requirement to consider areas of concern in more detail.
 - Large proposals will require a commensurate level of effort.
 - For other schemes of small to moderate size, where a full Stage 2 may not be justifiable, an extended Stage 1 could be more appropriate. This involves either:
 - Further investigation of the impacts that are coming out as significant in Stage 1; and/or
 - Further details and quantification than normally required in Stage 1.
- 3.3.2 It is risky to be prescriptive about the precise effort level required, as the appraisal process is not separate from scheme development: their integration is promoted as leading to better decision-making (and better projects). The appraisal effort will depend on how complicated the issues involved are: in some big projects the effort required is clearly substantial due to the variety, complexity and inter-correlation of issues.
- 3.3.3 The level of effort also depends on the stage of the proposal's development, e.g. whether it is at a more conceptual or design stage, and the actual stage within the appraisal process (Stage 1 or 2 – see Chapter 5). Generally, the more advanced a proposal is, the more details there are, the greater the scrutiny of government agencies and the public, and therefore, the greater the levels of resources required. The level of effort should also take account of any statutory requirements.
- 3.3.4 It is important to ensure that all parts of the appraisal are given comparable and consistent consideration. However, in order not to waste resources, proportionate effort should be directed to the appraisal of impacts which are considered to be more significant. The

planner will have to demonstrate when a lower level of effort, or no consideration at all of specific impacts, is appropriate.

- 3.3.5 The decision-making body in each case (typically the Welsh Assembly Government) will need to be satisfied with the level of effort proposed for the appraisal of each proposal, hence consultation with appropriate officers is advisable.

3.4 The Application of the Guidance at Strategy and Scheme Levels

- 3.4.1 WeITAG is applicable to strategies, programmes or plans and to individual or packaged schemes. The structures for strategies and schemes are shown diagrammatically in Figures 3.3 and 3.4. The key differences in the approach are:

- The guidance for strategies is applicable only at Stage 1, while for schemes both stages are required;
- Strategic Environmental Assessment (SEA) regulations must be met at the strategy level appraisal when plans or programmes are being developed, while Environmental Impact Assessment (EIA) is appropriate at the scheme level; and
- The Economic Activity and Location impacts (EALI), TEE, environmental (EIA) and Social Impact Report (SIR) methods are not explicitly shown in the WeITAG structure for schemes, and some of these may not always be required.

- 3.4.2 A strategy should set out broad objectives, identify measures to achieve these and propose a – typically broad – package of interventions to achieve the objectives. Good strategic planning (at a macro level and often over a long-term timescale) follows exactly the same process as planning at a more micro scale. The appraisal of strategies would need to involve the consideration of all measures within the strategy, but because the strategy objectives are broad, the appropriate level of appraisal is also broad. The purpose is to identify whether the strategy or components of the strategy have the ability to contribute to the overall objectives. In practice, however, the availability of data and / or the capability of currently available modelling tools to represent the interactions between the various components of the strategy can limit the scope to undertake appraisal to the same depth that is possible for individual schemes.

- 3.4.3 Strategies (including Regional Transport Plans) are appraised using this guidance at the strategy level, applying Stage 1 only. When individual schemes are put forward for appraisal, the guidance is used but at scheme level, and both Stage 1 and 2 are applicable. Some work from the strategy stage can be re-used into Stage 1 appraisal for a scheme.
- 3.4.4 The application of the guidance for strategies and schemes can be illustrated by the following example: A strategy has identified a rail scheme, a road scheme, a cycle route and other improvement measures as required to address the problems and meet the objectives. Packages which comprise combinations of these schemes will be appraised at Stage 1, at a strategy level. The rail scheme is later taken forward, and the analysis of the problems and objectives will need to be revisited (some of the planning stage work undertaken under the strategy appraisal could be re-used, if still relevant and updated). The scheme will need to be appraised again under Stage 1, possibly considering route variations as appraisal options. In Stage 2, a smaller set of most feasible and achievable options is appraised in more detail.



FIGURE 3.3 THE STRUCTURE OF WELTAG AT A STRATEGY LEVEL

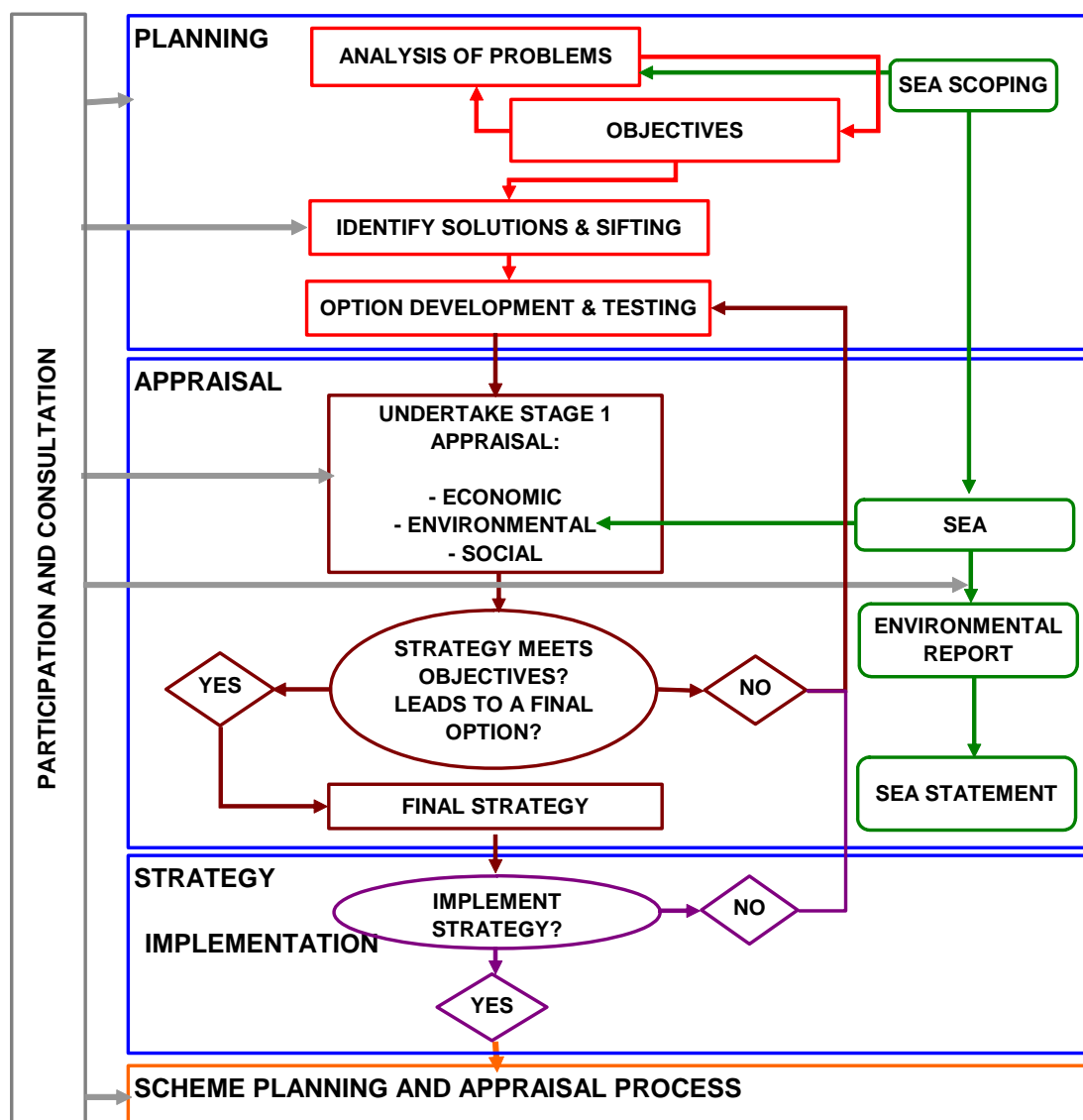
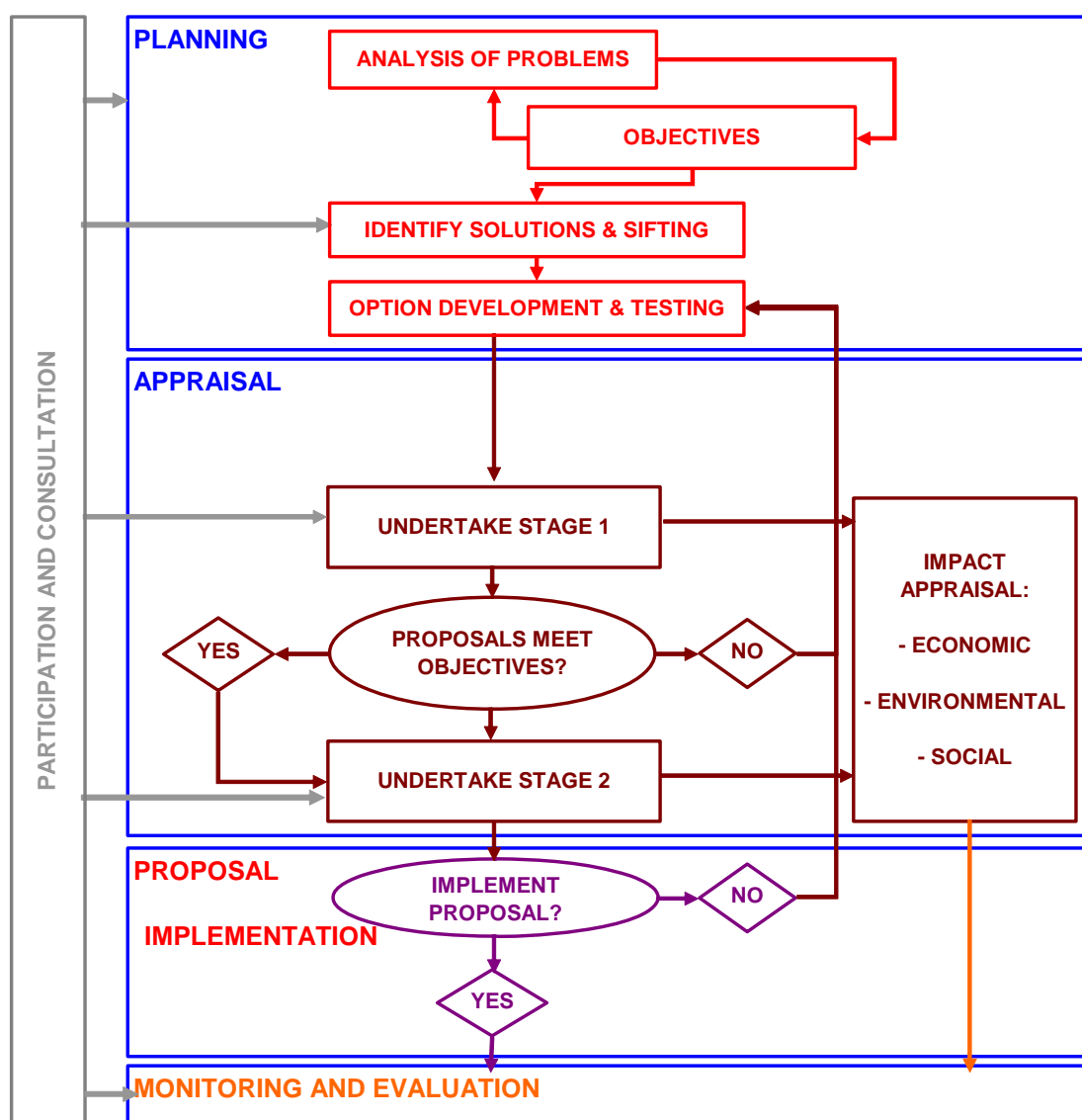


FIGURE 3.4. THE STRUCTURE OF WELTAG AT A SCHEME LEVEL



3.5 Elements of the Appraisal Guidance

3.5.1 The appraisal of the various impacts from the implementation of transport proposals should be undertaken as described in this guidance, for each criterion. The guidance is structured in a way that, for each criterion (see chapters for the economic, environmental and social impacts), the following aspects are described:

- **Impact description;** This involves a description of the impacts for each appraisal criterion and their scale.

- **Appraisal methods for Stage 1;** The qualitative or quantitative approach for the appraisal against each criterion as part of a Stage 1 appraisal.
- **Appraisal Methods for Stage 2;** The (ordinarily more detailed) qualitative and quantitative approach for the appraisal against each criterion as part of a Stage 2 appraisal.
- **Required Inputs;** This describes data requirements and guidance on sources.
- **Impact Distribution;** For each criterion being appraised, a careful consideration of the distribution of the impacts is recommended. This discusses how impacts might be distributed geographically and how they might affect different groups in society (e.g. mobility impaired, elderly, people on low incomes or unemployed, women or deprived groups). These distribution impacts should be explicitly stated and quantified wherever feasible. This is relevant to ensure that the proposal promotes social inclusion and that certain groups are not disproportionately adversely affected. Possible factors to be used in distributional analysis may include some of the following:
 - Population age or gender profiles (for which the [Employment Equality \(Age\) Regulations 2006](#), Sex Discrimination Act 1997 and the [Equality Act 2006](#) may be relevant);
 - Employment/unemployment rate;
 - Income levels or quintiles;
 - [Index of Multiple Deprivation](#);
 - Regional Gross Domestic Product (GDP) levels;
 - Index of economic activity;
 - Motorisation index (car ownership levels); or
 - Transport mode distribution (e.g. % of people commuting by car, on foot, by bicycle, by train, by bus, etc.).

3.5.2 When TPO's (see Section 4.4) are developed so that specific areas or population group can benefit from certain proposals, then these issues should feature in the impact distribution analysis.

3.6 Output and Presentation

3.6.1 There is a need for decision-makers to have a clear statement of the results and outputs that the appraisal generates. These should be provided in a concise but sufficiently detailed level to enable options to be compared and to inform decisions. Geographic Information

System(GIS) potentially have an important role to play in presenting results for a range of appraisal criteria, but organisations which have no access to GIS should not feel obliged to obtain them. In this section there should also be an assessment of the significance of the impacts.

- 3.6.2 The presentation of the appraisal results follows the terminology used in EU documents including appraisal guidance. This terminology is clear and generally is familiar to those involved in EU programmes such as the former [Objective 1 programme](#) for West Wales and the Valleys. This terminology is also helpful when undertaking, and providing guidance on, evaluation.

3.7 Summarising Significance of Appraisal Impacts

- 3.7.1 Qualitative and quantitative measures for each appraisal criterion will be assessed in their own merits. The results of the assessment of the impact significance will be summarised using a seven-point scale, like for other UK guidance, as follows:
- Large beneficial (+++);
 - Moderate beneficial (++);
 - Slight beneficial (+);
 - Neutral (0);
 - Slight adverse (-);
 - Moderate adverse (- -); and
 - Large adverse (- - -).
- 3.7.2 An example of how to determine impact significance for the environmental objective is given in Appendix E and the principle is valid for all other appraisal criteria.
- 3.7.3 This assessment of significance aims to differentiate the impact levels across options and should not be considered in isolation from the overall appraisal results.
- 3.7.4 Appraisal of significance should be of the proposal as a whole, and not a series of individual site-based scores. Depending on the stage in a project lifecycle when the appraisal is undertaken, good design may have already removed or mitigated the worst or avoidable impacts, and

so those 'large' impacts which remain should have this clearly reflected in the final significance assessment.

- 3.7.5 Qualitative comments should draw out the most significant effects and the main justifications for the assessment of the impact significance given. It will be informed by the appraisal of impacts and the descriptions produced.

3.8 Double Counting

- 3.8.1 It is recognised that there is scope for double counting and overlap between criteria, which may lead to a distortion of the importance of certain elements in the appraisal process. While as far as possible this needs to be netted out within an appraisal, it is recognised that this can be taken only so far – transport by its nature has direct and indirect consequences which feed through in different ways to a range of economic, environmental and social impacts. There is, therefore, a need to make clear how impacts arise – through results and outputs – and where double counting may have occurred, when this cannot be eliminated.
- 3.8.2 Examples of potential double counting elements in previous UK guidance included the monetisation of accident benefits within the economy impact area and then their quantification within the safety criterion, and accounting for travel time benefits within the economy impact area and the accessibility benefits within the accessibility criterion, measured in terms of number of people with changes in journey times. This problem has since been acknowledged – in [WebTAG](#) accident benefits have been removed from the TEE.

4 THE PLANNING STAGE

4.1 Introduction

4.1.1 This section presents an overview of the planning stage, which is the first phase of the WeITAG process, as shown in Figures 3.3 and 3.4.

4.1.2 It is expected that stakeholder participation will be an integral part of this stage. Chapter 11 provides further guidance.

4.2 The Planning Approach

4.2.1 The initial tasks of the planning stage are to establish the area's conditions, its transport problems, opportunities, and to generate objectives for the steps that follow. This is followed by the identification of possible solutions which are tested first informally against the objectives set (sifting) then in more detail, leading in due course to appraisal stage.

4.2.2 Good practice in transport planning requires that the planning of any transport intervention is objective-driven. The planner starts by establishing the final outcomes to be achieved, which are formalised as Transport Planning Objectives (TPO's), and then develops solutions – proposals – which will help to achieve these objectives.

4.2.3 Therefore, the planning process starts from problems and opportunities, then sets objectives, and then identifies the best ways of achieving these. An important implication of this is that the planner has to consider a diverse range of alternatives, and not start from an implicit objective of promoting a particular proposal. A planner who thinks that WeITAG is simply a new hoop through which to get their preferred proposal is missing the point of transport appraisal and this guidance.

4.3 Identification of Problems and Opportunities

4.3.1 The starting point is the identification of transport problems, constraints and opportunities which affect an area and its aspirations for the future,

ensuring transport interventions are forward-looking and not simply reacting to current issues. Thus, both the transport problems affecting an area and aspirations for the future – which often are broader than transport – must be the drivers of the proposals for a transport intervention.

- 4.3.2 WeITAG is intended for the development and appraisal of proposals which contribute to objectives relating to transport, i.e. when the underlying problems are transport problems (such as traffic congestion) or the underlying opportunities are transport opportunities (such as improving accessibility to key services). The reason is that if transport proposals are being considered to help meet an objective that could be met by other means (rather than transport), a poor decision could easily result. However, this does not mean that the guidance cannot be used to assess the impacts from new development or regeneration led proposals.
- 4.3.3 The identification of problems and opportunities can be made from a variety of processes. These could include public pressure and general awareness of problems, or more formal analyses such as the Regional Transport Plan development process, the Route Management Strategy, data gathering (e.g. roadside interviews and counts) and modelling.
- 4.3.4 Stakeholder consultation or other forms of participation is fundamental to this stage in the process. Later, in the appraisal stage, public acceptability of the proposal will be a key test of whether it can be delivered or implemented. Early participation in both examining problems, constraints and opportunities, and in developing the transport planning objectives (see below), can greatly assist in generating and sustaining support for the proposal.
- 4.3.5 For on-going strategies and schemes, where problems and opportunities have already been identified, a cross-reference should be made to the identification of any original problems and opportunities of that strategy. Where required, appropriate revisions of the problems and opportunities should be carried out.

4.4 Transport Planning Objectives

The Importance of Transport Planning Objectives

- 4.4.1 Transport planning objectives (TPOs) establish the context for any planning exercise by stating clearly what the planner seeks to achieve. TPOs underpin the whole development and appraisal process by allowing the planner to test whether or not a proposal is likely to succeed in addressing the identified problems, or securing the identified opportunities.
- 4.4.2 Developing TPOs is a crucial early stage in the appraisal process, prior to developing transport proposals. Testing against the TPOs should, therefore, enable the planner to identify the proposal(s) which best address the problems, and which should be proposed for funding or approval.

Setting Transport Planning Objectives

- 4.4.3 TPOs should specify, as fully as possible, what is desirable for transport to achieve for a particular area or socio-economic group. TPOs should be framed in such a way that:
- They focus on the outcomes to be achieved (the ends rather than the means);
 - They are specific about what the planner or promoter wishes to achieve;
 - They relate directly to the identified problems and opportunities;
 - Their success can be tested in a consistent manner;
 - They are sufficiently detailed to enable the comparative assessment of different options.
- 4.4.4 There are different ways in which TPOs can be developed. However, the starting point should be the outcomes of the [Wales Transport Strategy](#). Planners should also consider objectives within the relevant Regional Transport Plan and the Welsh Assembly Government's strategic priorities for transport. TPOs do not, necessarily, have to mirror the outcomes and priorities, however it is a useful practice to begin with high-level goals from which more specific and quantifiable

objectives ('outputs' or 'results' objectives), can be developed. The development and updating of existing outcomes or objectives is often more efficient than formulating them from scratch.

- 4.4.5 There is no strict rule for the optimum number of planning objectives, but clearly they should be comprehensive and at the same time manageable. Too few or too many objectives would make it difficult to compare the performances of different options, hence some 5-15 objectives could be considered as a base guidance for minimum and maximum limits.
- 4.4.6 A variety of processes can be used to develop planning objectives, including meetings, focus groups and workshops which could involve the public, businesses, representative bodies, council officers and politicians. Consultants can assist both in helping to express objectives concisely and to test objectives worked up through consultation or in other ways. The setting of objectives is usually an interactive process.
- 4.4.7 The planner could consider whether some objectives are more important than others and therefore should be given greater consideration in the appraisal process. The planner is free to establish priorities (e.g. essential, important, desirable), attach weights to each transport planning objective or rank them, so that achieving a more critical TPO would be seen as more important than achieving a secondary TPO. It is not possible to be prescriptive about a prioritising/weighting/ranking system or how to prioritise/weight/rank, however, the planner will be expected to demonstrate that the approach used is sound and unbiased. If any such weighting system is adopted, it needs to be explicit in the planning process, as well as in the part of the Appraisal Summary Table dealing with TPOs. Note that the part of the Appraisal Summary Table dealing with the WelTAG criteria (based on economic, environmental and social impacts) should not be weighted. Instead, that part of the summary table will always show the impact of the proposal on each of the WelTAG criteria.



SMART Objectives

4.4.8 Transport planning objectives should, as far as possible, conform to the principles known as SMART:

- **Specific**, in that it will say in precise terms what is sought (e.g. a 10% reduction in average vehicle delay on a given length of road);
- **Measurable**, in that there will exist means to establish to stakeholders' satisfaction whether or not the objective has been achieved (e.g. a reduction in the quantity of PM₁₀ (particulate matter of 10 micrometres or less) present in the atmosphere);
- **Attainable**, in that there is general agreement that the objective set can be reached;
- **Relevant**, in that the objective is a sensible indicator or proxy for the change which is sought (e.g. a proportion of development to take place on 'brownfield sites' as a proxy for minimising the damage of the natural environment by land use development); and
- **Timed**, in that the objective will be associated with an agreed future point by which it will have been met.

4.4.9 Thus it is not legitimate to frame an objective of the form 'improve accessibility'. Accessibility is only valuable if it enables people to get to places and services that are important to them. A SMART objective relating to accessibility will identify the group(s) and the destination(s) and will specify the level of improvement sought, by when. This is the surest way of avoiding the development of schemes which, though perfectly well-intentioned, end up serving no useful purpose.

4.4.10 In practice, SMART objectives are not easy to set; they demand more thought and impose greater accountability than the more vague statements of intent which are often seen in planning documents. There are, however, good reasons for making the necessary effort in arriving at them:

- SMART objectives provide unparalleled focus on the job to be done and, if intelligently set, may foster a shared enthusiasm for their achievement; and
- They render explicit all conflicts between priorities and therefore force a proper resolution of them.

- 4.4.11 In addition to the accountability they bring, they also provide a unique opportunity for recognition of achievement. Indicators must be developed from the TPO's established for the project. It is therefore important that planners should aim to set SMART objectives from the outset with the intention of developing meaningful indicators for monitoring and evaluation purposes. Brainstorming and consultation (with appropriate planning authorities) may help deriving SMART objectives.

Transport Planning Objectives for Strategies and Schemes

- 4.4.12 As reported in 3.1.6 (The Application of the Guidance at Strategy and Scheme Levels), WeITAG is applicable to strategies and schemes (individually or as a package).
- 4.4.13 For scheme appraisal, the TPOs set at strategy level (e.g. Regional Transport Plans) must be revisited. Some will not be relevant to the examination of a given set of scheme options because those options will typically address only a subset of the strategy-level objectives. By the same token, strategy-level objectives may have been relatively coarse and, in order to enable the relative performance of options to be discerned, a greater degree of precision will be needed. The level of additional effort required to develop scheme objectives could be minimal or significant, varying from case to case.
- 4.4.14 For a strategy, it might prove useful to start developing objectives from a broad 'vision' for an area, which would enable a top-down approach and would help to ensure that transport planning is consistent with wider policies and aspirations. Therefore, the vision could include broader aspirations such as quality of life, prosperity, community values and so on. The vision could state where a town, community, local authority or region wants to go or what they want to become over a planning period.
- 4.4.15 Below this, would sit some operational objectives which would 'flesh out' the key outcomes and define practical objectives for each theme - These will be the TPOs.

- 4.4.16 Article 3 of the SEA Directive⁸ states that an environmental assessment shall be carried out for all plans and programmes which are prepared for transport and which set the framework for future development consent of projects. Therefore, as the application of WeITAG for strategies is done at Stage 1, the definition of the TPO's for the strategy needs to relate closely to the SEA objectives.

Correlation between Transport Planning Objectives and Problems

- 4.4.17 Once the TPOs have been defined, planners should verify how they can contribute to resolving problems and satisfying constraints. Table 4.1 provides a useful template.

TABLE 4.1. TPO'S RELATED TO PROBLEMS AND CONSTRAINTS

Transport Planning Objectives (TPOs)	Potential Problems				Potential Constraints			
	Problem 1	Problem 2	...	Problem n	Constraint 1	Constraint 2	...	Constraint n
TPO 1.								
TPO 2.								
TPO 3.								
TPO 4.								
...								
TPO n.								

- 4.4.18 Planners should check that their TPOs do relate to the problems identified, for example by ticking the boxes where each transport planning objective relates to problems/constraints. If there are considerable gaps, it might be sensible to revisit the TPOs. Both objectives and problems should sit within the relevant policy framework (i.e. objectives for sub-regional schemes should sit within the RTP framework, while objectives for national schemes should sit within the

⁸ SEA Directive 'The Assessment of the Effects of Certain Plans and Programmes on the Environment' European Directive 2001/42/EC

relevant Wales-wide strategy). If a weighting or ranking system has been adopted for TPOs, then it needs to be reflected in this correlation.

- 4.4.19 Planners should also demonstrate how TPOs contribute towards the Wales Transport Strategy outcomes and Welsh Assembly Government Strategic Priorities. Tables 4.2 and 4.3 provide templates for this purpose.



TABLE 4.2. TPO'S RELATED TO WALES TRANSPORT STRATEGY OUTCOMES

Wales Transport Strategy Outcomes	Transport Planning Objectives (TPOs)					
	TPO 1.	TPO 2.	TPO 3.	TPO 4.	..	TPO n.
<i>Social Outcomes</i>						
Improve access to healthcare						
Improve access to education, training and lifelong learning						
Improve access to shopping and leisure facilities						
Encourage healthy lifestyles						
Improve the actual and perceived safety of travel						
<i>Economic Outcomes</i>						
Improve access to employment opportunities						
Improve connectivity within Wales and internationally						
Improve the efficient, reliable and sustainable movement of people						
Improve the efficient, reliable and sustainable movement of freight						
Improve access to visitor attractions						
<i>Environmental Outcomes</i>						
Increase the use of more sustainable materials						
Reduce the contribution of transport to greenhouse gas emissions						
Adapt to the impacts of climate change						
Reduce the contribution of transport to air pollution and other harmful emissions						
Improve the impact of transport on the local environment						
Improve the impact of transport on our heritage						
Improve the impact of transport on biodiversity						



TABLE 4.3. TPO'S RELATED TO STRATEGIC PRIORITIES

Strategic Priorities	Transport Planning Objectives (TPOs)					
	TPO 1.	TPO 2.	TPO 3.	TPO 4.	..	TPO n.
<i>Strategic Priorities</i>						
Reducing greenhouse gas emissions and other environmental impacts from transport						
Integrating local transport						
Improving access between key settlements and sites						
Enhancing international connectivity; and						
Increasing safety and security						

4.5 Identifying Possible Solutions and Sifting

- 4.5.1 Once the problems and opportunities are clear and TPOs have been formulated and agreed with stakeholders, it is necessary to identify possible solutions which will be developed into proposals for appraisal. This is, effectively, an initial coarse sifting process of putting together a long list of possible solutions (which will then be developed and refined to become proposals), considering all possible modes.
- 4.5.2 There is no 'right' way to go about identifying possible solutions, which clearly is very different at the strategic level from the scheme level. Public consultation and other forms of participation can help considerably. Similarly, techniques such as brainstorming and looking for solutions that have worked in similar circumstances elsewhere can be used. What should be avoided is simply 'dusting off' some existing project ideas and trying to make these fit the TPOs: an objective-driven approach is intended to encourage re-thinking old solutions and finding new ones, even to old problems.
- 4.5.3 Once possible solutions have been identified there is a need for a refinement and development process. This is necessarily an iterative

process, and is part planning and part appraisal, as it involves appraisal questions such as:

- Does this work?
- Does it achieve the TPO's and address the regional priorities?
- Can it be delivered?

- 4.5.4 It is important not to discard possible solutions too early on weak grounds or because of lack of information, but, on the other hand, appraisal is resource intensive and there is little point in developing proposals that are unlikely to prove workable. For instance, it may be possible to discard some solutions that are unlikely to perform well in the appraisal process. Here, fit with the TPOs is the key test, but other tests that should be applied include fit with other policies (e.g. planning, environmental, economic), public acceptability, acceptability to stakeholders, technical and operational feasibility, financial affordability and deliverability, and risks.
- 4.5.5 The output from this stage will be a list – possibly a long list – of possible solutions (single or packaged measures) some of which may not be well developed or costed, but which can be seen to have some potential to achieve the TPO's and to offer some prospect of being delivered.
- 4.5.6 For strategies, this stage may define some policy themes as alternatives: for example, for a particular corridor there may be an investment theme (large-scale investment in road and / or rail infrastructure) and a service theme, emphasising interventions such as development of public transport and non-motorised modes with no or limited infrastructure investment. In practice, such themes can begin as extremes in order to identify how to combine the best elements of each theme – in this example, some infrastructure investment is used alongside other measures to increase the use of public transport.
- 4.5.7 For schemes, option identification is more straight-forward; it can be developed for instance, in terms of alternative routes, transport modes, designs or technologies.



Further Defining Proposals

- 4.5.8 All proposals under consideration need to be clearly defined, so that there is no ambiguity about what is being proposed and appraised (and consulted on, when appropriate). The components of the proposal(s), including location, scale, expected implications (positive and adverse), costs (or estimate of magnitude) and interface with other modes and activities should be set out in as much detail as possible.

- 4.5.9 For strategies, their various components need to be defined in isolation, but any expected synergies between them should be made explicit from the outset. For schemes or packages of schemes, these equally need to be clearly defined. It is often the case that mitigation measures are introduced as integral parts of proposals, from the early planning stages, taking opportunities to make enhancements when implementing measures. The mitigation measures considered as part of the proposal need to be made very clear, in order to avoid any confusion with any further mitigation measures identified during or even after the appraisal process.

- 4.5.10 Proposal definition can be difficult when proposals are not clearly conceived, have numerous variants (some of which may be tested within the appraisal process), or are at an early stage of development. The definition of some proposals may be more transparent or comprehensive than others. However, a sufficient level of detail must be provided to enable each stage of the appraisal process to be carried out, and appropriately differentiate any options considered.

- 4.5.11 Failure to properly define a proposal can lead to decision-makers having an inadequate picture on which to base a decision. This is particularly relevant for proposals which comprise multiple schemes, or when they are part of a wider package of measures. In these cases, they should normally not be appraised as discrete transport schemes in isolation from other elements, particularly if there are dynamic effects between them. All components of the package (their timescale, funding opportunities, interaction with other schemes, etc.) will need to be defined as part of the proposal definition.

- 4.5.12 Promoters often define a proposal too narrowly and with inadequate reference to other inextricably linked elements which are fundamental to the execution of the proposal. The correct approach is to identify

both the demand and supply side linkages and to define the proposal in a manner that encompasses all the important issues. Thus, for instance, if a new motorway causes additional traffic on feeder roads, this consequential linkage has to be taken into account. If in practice it becomes necessary to invest in feeder roads as well as the motorway, the proposal should be defined to include both feeder roads and the motorway. It is important not to divide up what are essentially inter-linked elements of a larger proposal as the appraisal of any element will have to draw on impacts external to itself. This adds complexity and is generally regarded as not following best practice.

- 4.5.13 The EU [Guide to Cost-Benefit Analysis of Investment Projects](#) puts this succinctly, and defines a project as “an economically indivisible series of tasks related to a specific technical function and with identifiable objectives”. The same guidance states that “the activities included in the project must lead back to a unique objective as well as to a coherent and co-ordinated entity of actions and roles”.
- 4.5.14 Since WeITAG needs to comply with new EU Guidance, it is important that promoters define proposals well and in as much detail as possible. This could save valuable time and resources later in the process.

Option Development and Testing

- 4.5.15 At the Wales level, decision-makers will want to know that alternative options have been considered, and, if these have been rejected, that the reasons for rejection are sound. There might, for example, be an option which would meet 90% of the transport planning objectives at 50% of the cost of the ideal proposal, which would meet the objectives fully. This involves a trade-off between benefits (not only economic) and costs, and decision-makers will rightly ask whether such possibilities have been considered.
- 4.5.16 **The option development process should:**
- Be auditable and easily comprehensible to all involved parties, including the public;
 - Avoid leading to a particular outcome simply by virtue of the method or process adopted;

- Enable a wide range of options (and possibly the synergy between combinations of components of an option) to be investigated (against the “Do-Minimum” scenario) in a cost-effective manner; and
 - Enable preferred options to be identified and taken forward to Stage 1 appraisal, provided they are broadly viable and address the objectives and problems.
- 4.5.17 In some cases, options may have already been developed and tested prior to appraisal to some extent, and if so, this stage is not meant to duplicate efforts but just to formalise previous findings.
- 4.5.18 A transparent audit trail should be developed to record which options were considered, when, and how they were dealt with and why any were sifted and rejected. This could be useful later in the appraisal process when both the public and decision-makers may wish to ensure that a sensible and wide ranging option process had been undertaken.
- 4.5.19 It is also important that the audit trail includes evidence of statutory compliance, for example, in the reporting on the consideration of alternatives as required by the SEA and EIA Directives. This involves the identification, comparison and documentation of the environmental implications of alternative options, which are specifically stipulated by the SEA Regulations. Evidence of statutory compliance may also be required in the ‘appropriate assessment / Imperative Reason of Overriding Public Interest (IROPI)’ procedures for European sites and protected species under the Habitats Directive (see Paragraph 7.1.8).
- 4.5.20 Option testing can also be undertaken using a more formal scoring system, with options being scored on the basis of how they perform against TPOs. TPOs can be weighted so that the most important of these can be given greater significance than those which are considered less important. As far as possible, scores could be based on some form of objective assessment: for example, the results from consultations. Extreme caution would need to be taken in the use of scores, particularly in extrapolating or transferring results.
- 4.5.21 How many options to take to Stage 1 appraisal is a matter of judgement. In practice, considering a large number of options could commit an excessive amount of resources. But, where a number of options appear to perform very similarly, it will be hard to justify rejecting any particular one, given the margins of error in early testing.

One option is to imagine options' performance as being points on a line (running from poor to good). If there is a significant gap between one set of options and another, this may be a sensible place at which to "make the cut".

- 4.5.22 It is recommended that the option development stage be based on a consistent and structured approach to ensure that the transport planning objectives are all properly taken into account when sifting options.
- 4.5.23 At the end of this stage, decision-makers have the opportunity to decide whether or not to proceed to the next stage which involves more detailed appraisal of the options.

4.6 Data Sources

- 4.6.1 A number of data sets are likely to be required in order to undertake the planning stage. Various data sources are available for the UK and specifically for Wales. In general, UK data sources are maintained by the Department for Transport and many of the Welsh sources by the Welsh Assembly Government. Appendix F presents the key data sources which may be required for the application of WeITAG. The Wales Transport Strategy Draft Monitoring Plan also contains information on data sources.

5 THE APPRAISAL APPROACH

5.1 Introduction

- 5.1.1 Strategies and schemes need to be appraised against the TPO's and the Welsh Impact Areas. The methods for impact appraisal set out in this guidance are focused on the Welsh Impact areas, since they will be the same for all proposals.
- 5.1.2 The Welsh Assembly Government will need to see evidence that appropriate methods are developed for the appraisal against TPO's, even though it is not possible to provide specific guidance. These will be particular to individual strategies and schemes, and in each case the best practice appraisal methods (if existing) can be very different.
- 5.1.3 Whilst planners can adapt the appraisal methods specified in this guidance for the criteria relating to Welsh Impact areas, they should not be seen as the only method or for that matter as the most suitable in all situations. Where there is better local data or alternative methods which can more appropriately capture the impacts being appraised, these should be used in preference to, or in conjunction with, established methods. The important message is to use the best resources available to capture the impacts which are relevant to each proposal.
- 5.1.4 Appraisal is often based, at least to some extent, on existing information. In most cases, strategies and schemes are not completely new and some work has usually already been undertaken. Existing data and information should be used as far as possible, as long as still relevant.
- 5.1.5 Other specific considerations in the appraisal approach in WelTAG include:
- Mitigation measures: Any mitigation measures considered as part of the proposals will need to be costed and their effects appropriately considered in the appraisal process.

- Cumulative effects: The principles of the EU Guidance on major project appraisal ([Guide to cost-benefit analysis of investment projects](#))⁹ should be applied if there are important interactions between different proposals (or different schemes of a strategy) being appraised and implemented either together or separately. The synergies between proposals need to be taken into account if one scheme on its own may not work, but may complement other proposals as part of a strategy, and the overall benefits could warrant the scheme a success. Alternatively, individual schemes may seem acceptable one by one (e.g. do not cause substantial environmental damage individually), but in combination with others in a strategy they could produce unacceptable impacts.

5.1.6 Where proposals interact or complement each other, this should be taken account of in the appraisal process.

5.2 The Appraisal of Strategies and Schemes

5.2.1 Both strategies and schemes, as defined in section 3.4, need to be appraised. The Appraisal of a whole strategy will normally only be undertaken at a broad level. The appraisal for schemes will be more detailed.

Strategies

5.2.2 For strategies, only appraisal Stage 1 is applicable. At this level, it may only be possible to undertake appraisal qualitatively, firstly because of the conceptual nature of the measures in the strategy, and secondly, because of the lack of data and/or modelling tools capable of quantifying the various impacts of a number of interacting interventions.

5.2.3 SEA Directives¹⁰ state that an environmental assessment shall be carried out for all plans and programmes which are prepared for transport and which set the framework for future development consent of projects, and at this stage more than one plan option needs to be appraised. However, it may be appropriate to consider only one option at Stage 1 if other options are demonstrably worse when compared to

⁹ European Commission, Guide to Cost-Benefit Analysis of Investment Projects.

meeting objectives and when tested against deliverability, affordability and public acceptability criteria.

- 5.2.4 Although a qualitative assessment may be acceptable for strategies at this stage, the SEA regulations require robust evidence to support the findings.
- 5.2.5 Care has to be taken to consider whether different elements of a strategy will complement or conflict with each other – for example additional road capacity to address congestion in a corridor combined with a park and ride scheme designed to ease congestion in a town centre. Here it is possible that easier driving conditions will serve to reduce demand for the park and ride. A comparison could be made between the impacts of the strategy with an individual component versus the impact of a strategy without this component.

Schemes

- 5.2.6 Once individual schemes from strategies are put forward for appraisal, the guidance will need to be applied again for the scheme under consideration. As much of the effort made during the strategy appraisal as possible should be used in the appraisal of the scheme, if appropriate, in order to avoid duplication of effort.
- 5.2.7 For schemes, there is a formal and standardised two-stage appraisal process. Undertaking appraisal in two stages enables best use of appraisal resources, as the first stage narrows the list of proposals down to the leading options – or option – with only the best options then being subjected to a full and detailed appraisal.
- 5.2.8 Stage 1 may involve several iterations, depending on the TPOs and the number of solutions and combinations of possible solutions that may need to be considered. In practice, there is a degree of overlap between planning (in particular the development of the TPO's) and appraisal, and a practical feedback mechanism needs to be established to handle this.

¹⁰ SEA Directive 'The Assessment of the Effects of Certain Plans and Programmes on the Environment' European Directive 2001/42/EC

- 5.2.9 Following Stage 1 scheme appraisal, usually a small number of options will be further developed and then appraised in considerable detail in Stage 2, so that a proper consideration of the alternatives can take place.
- 5.2.10 In both stages there should be equal emphasis on the appraisal against the TPO's and the Welsh impact areas (see Section 2.4), as these are intended to enable the Welsh Assembly Government to compare proposals from different sources and for different modes on a consistent basis.
- 5.2.11 The following sections describe these stages in detail, for strategies and for schemes, whereas consideration will be given throughout the guidance on the application of the guidance for Stages 1 and 2.

5.3 Stage 1

- 5.3.1 Stage 1 appraisal¹¹ is always required (for strategies and schemes) and is intended to screen and test options (already developed and *pre-tested* in a previous planning stage) against both the TPO's and the Welsh impact areas. Appraisal against TPO's ensures that the proposal does address the problems identified. It is also essential to appraise using the Welsh impact areas, because a proposal that performs poorly against Welsh impact areas (see Section 2.4) is unlikely to gain support from the Welsh Assembly Government.
- 5.3.2 In addition, Stage 1 includes a more detailed test for deliverability, risks (and how they are managed and mitigated) and the degree of support (from the public and other stakeholders).
- 5.3.3 Therefore, appraisal Stage 1 aims to:
- Assess the extent to which the options resolve all or some of the problems, as well as take advantage of the opportunities, identified earlier in the planning process;

¹¹ It is important to differentiate WeITAG Stage 1 and Stage 2 from the planning stages 1 and 2, which planners and engineers in Wales refer to at present.

- Assess how well a proposal performs against the TPO's and Welsh impact areas;
- Test the strength of the overall case and in particular the quality and depth of the evidence and information used to make that case;
- Evaluate deliverability and risk issues as well as the likely level of support (further details are given below); and
- Avoid wasted resources on detailed information gathering for the appraisal of proposals which perform poorly against the issues raised in the points above, eliminating them from the appraisal process.

- 5.3.4 The main criterion at this stage should be that the information (even if qualitative for some or most criteria) is sufficiently robust to be able to identify and differentiate the most promising options and provide sufficient information to complete summary ASTs over the successive iterations. The availability of some quantitative data may be possible for certain criteria and will help highlight distinctions between options. Professional judgement will also be required in addition to, or in the absence of, models and data.
- 5.3.5 The Stage 1 process needs to provide a transparent audit trail in order to justify the reasons why particular options have been selected as most promising for the next appraisal stage.
- 5.3.6 As shown in Figures 3.3 (strategies) and 3.4 (schemes), there may be a loop back to the planning stage following the Stage 1 appraisal where a proposal can be amended to improve its performance. This would arise when no proposal performs sufficiently well against the planning objectives, where there are serious concerns regarding deliverability or where performance against Welsh impact areas is such that funding or approval from Welsh Assembly Government appears unlikely.
- 5.3.7 For strategies, the assessment at this stage is necessary to ensure that the best performing options are put forward. For schemes, the assessment is necessary at this stage because any proposal will compete for funds with other proposals (from organisations other than that of the promoter).
- 5.3.8 It might be necessary to appraise individual schemes both qualitatively and quantitatively in Stage 1. For larger schemes (e.g. above £5m) the



appraisal in Stage 1 is likely to go beyond a purely qualitative approach, with further detail being required in Stage 2. The main point to remember in determining the need for quantitative data at Stage 1, is that the purpose of the Stage 1 appraisal is to ensure that only the best performing options are taken forward to Stage 2.

- 5.3.9 Promoters may wish to consult with the Welsh Assembly Government or stakeholders on the basis of the Stage 1 appraisal in order to obtain feedback on the quality of the planning and appraisal process up to that point and guidance on taking suitable proposals forward to Stage 2.
- 5.3.10 Judgement is required on the part of the proposal promoter to determine how many options to take to the Stage 2 appraisal. It is important that Stage 1 identifies a small number of options to be appraised, among which there are trade-offs between factors such as:
- Performance against TPOs – one option may score well against certain objectives, while another scores well against other objectives; and
 - Degree of affordability and risk – the best performing option might also entail higher costs or more delivery risks, for example because of a proposed technology.
- 5.3.11 Before resources are committed to a detailed and potentially costly Stage 2 appraisal of the impacts of a proposal, there is a need to consider whether the proposal will be acceptable by the public and other stakeholders, if it can be implemented and delivered and if the level of risks is acceptable or can be managed. This should be a consideration at all stages, from developing options through to the appraisal itself, but it is at Stage 1 (within the two-stage appraisal process) that implementation issues should be a major test. This will reduce the risk of taking forward an unrealistic option. Key considerations include:
- Public acceptability;
 - Acceptability to other stakeholders;
 - Technical and operational feasibility;
 - Financial affordability and deliverability; and
 - Risks.
- 5.3.12 The analysis on the relative popularity, acceptability, feasibility, affordability and risks will need to be revisited in Stage 2 if the proposal

being appraised has developed since Stage 1 (for instance, if costs increase substantially at Stage 2, when more is known about the proposal and when further work has been carried out, then affordability may become an issue). If the circumstances haven't changed, then the same analysis is simply taken forward to Stage 2 (i.e. no additional work).

Public Acceptability

- 5.3.13 The analysis of public acceptability will need to determine the extent to which proposals are supported by the public, who are the key opposition groups and what are the reasons for opposition. Public acceptability tends to increase pressure and support in favour or against proposals. This needs to be demonstrated through participation (see Chapter 11). It is possible that public opinion is divided, where winners support the proposal while losers (especially if uncompensated) oppose it. In fact, it is extremely unlikely that any proposal will have absolute acceptability by the public, as there will always be some degree of opposition.

Acceptability to Other Stakeholders

- 5.3.14 Stakeholders other than the public (e.g. elected representatives, transport operating companies, local authorities) can have significant input in proposing workable solutions, thus, it is important to maximise their buy-in to the proposals from early on in the process, if these are to be delivered with their involvement and approval.
- 5.3.15 If there is little political motivation or acceptability, then the chances of successfully implementing a proposal are significantly reduced.

Technical and Operational Feasibility

- 5.3.16 Options need to be assessed for technical and operational feasibility, in particular to identify whether significant topographic, geologic, hydrologic, geomorphologic or environmental constraints apply (depending on the stage in the project lifecycle when the appraisal is being undertaken, some or all of this information may not be available). Feasibility concerns would also include existing structures and installations (e.g. utilities), construction (e.g. embankments and

cuttings) and any operational issues which could make the proposal unviable.

- 5.3.17 If there are serious barriers for implementation, timing and/or operation of the proposal, it is worth considering whether the options can be redeveloped to overcome these barriers or if they should be pursued any further.

Financial Affordability and Deliverability

- 5.3.18 A view needs to be taken about the likely financial requirements of any proposal. This involves an analysis of whether the proposal can realistically be funded or may be dependent on future funding - this is particularly relevant for public transport proposals. There should be a clear recognition of the different sources of funding and how this may affect the decision-making process.

- 5.3.19 In order to ensure that proposals are financially viable, it is recommended that the promoters and planners:

- Address the funding issues early on, by ensuring budgetary support from local authorities, the Welsh Assembly Government, UK Central Government, European Union, transport operators or other private sector organisations. This aims to ensure that only realistic proposals are put forward; and
- Use professional public transport analysis to make the business case for options and build them properly into the plan.

- 5.3.20 The financial and funding implications should be revisited at different stages in the appraisal process in order to ensure that proposals remain viable. Conversely, it is important not to discard any proposals which may initially appear undeliverable but which, with further consideration of funding sources (possibly through the cooperation or promotion by other agencies), may become fundable. It is unwise to dismiss proposals at the early stages on deliverability grounds only, as consultation between various relevant bodies and operators may result in a solution.

Risks

- 5.3.21 Risks can be associated with many aspects, such as those related to the finance and costs, implementation and operation. Besides identifying all relevant risks, it will also be important to describe how they will be mitigated and managed (this can be difficult at early stages of project development).
- 5.3.22 Risk management needs to consider outcome risks as well as scheme-specific implementation risks. It needs to form part of an iterative process, starting with the development of objectives and proceeding through appraisal, implementation and monitoring and evaluation. Detailed guidance on risk assessments is provided in [WebTAG Unit 3.5.9](#).



5.4 Proposal Development between Stages 1 and 2

- 5.4.1 At the end of Stage 1 a small number of “best” or dominant¹² proposals will be identified to be taken forward to Stage 2. In practice, there will often be aspects of proposals which have not been fully developed or tested by the end of Stage 1, so that uncertainties are explicitly or implicitly attached to all or some of the impacts and to costs. For example, not all the environmental or wider economic impacts may have been explored fully, and costs and aspects of delivery will have contingencies and risk factors applied to them.
- 5.4.2 As a result there may be the need for an informal interim stage where development of the proposals that pass Stage 1 takes place. This should reduce the risks and uncertainties and meet the information requirements of Stage 2. During this period, no changes can be made to the TPOs – if the objectives change, the whole planning process has to be re-run. However, other considerations that affect the proposal may be identified: for example, it may be necessary to alter the alignment of a proposed railway line. If this affects the likely costs and / or benefits sufficiently, it may be necessary to return to the planning stage in order to re-assess this proposal against the rejected options. If new options or sub-options are considered, they will need to be generated and tested.
- 5.4.3 The period between Stage 1 and Stage 2 can also be used for the further development of a proposal (or a set of proposals), in order to:
- address questions and uncertainties that arise at Stage 1;
 - to develop aspects such as design and costings;
 - to undertake further consultations, if necessary; and
 - to prepare to undertake the Stage 2 appraisal.
- 5.4.4 Where well-developed proposals already exist, there may be little need to undertake any additional work on the proposal between Stages 1 and 2. However, it is generally expected that some further development will be undertaken. This period, should be as short as practicable, in order to prevent underlying scheme costs inflating

¹² Dominant proposals are those which perform better than all the others on all or most appraisal criteria. In this case, there are limited trade offs of the positive aspects of one proposal against the negative aspects of another – there are clear “best” proposals.

beyond their original estimates, and to mitigate the probability of other risks affecting the Stage 1 appraisal results.

5.4.5 Thus, promoters should use Stage 1 not only to select options but also to determine where additional information is required, whether further consultation is required and how to deal with risks identified at Stage 1. The length of the period between Stages is then determined by the extent of such additional work. It should also be noted that the expected elapse of time between stages is the reason why proposal background information that is provided at Stage 1 may have to be provided again for Stage 2.

5.4.6 If a considerable amount of time is taken between stages, then the validity of the TPOs need to be verified and Stage 1 needs to be revisited and updated (particularly in relation to any policy changes).

5.5 Stage 2

5.5.1 Stage 2 is only applicable to schemes. It is where a fuller, more detailed, more quantitative and more evidence-based appraisal of the options selected for further development at Stage 1 takes place. Stage 2 is, therefore, a much more resource intensive process. It is designed to be applied only to a limited number of feasible, tested options. In some cases it might be clear following Stage 1 that only a single option should be looked at in Stage 2. However, it is strongly recommended that a small number of options are fully appraised in Stage 2 and eventually placed before decision-makers. This could be achieved, for instance, by alternative alignments in road schemes, or a low-cost public transport alternative.

5.5.2 At Stage 2, the focus of appraisal is against the Welsh Impact Areas, because the results of this stage are presented to the Welsh Assembly Government in order to determine whether funding and/or approval can be granted to any of the options. The use of the Welsh Impact Areas provides the level playing field for the appraisal of all types of proposals. However, the Welsh Assembly Government will also wish to see confirmation that the proposals address local problems effectively, thus performance against TPOs is also included in Stage 2.

- 5.5.3 A modelling tool, surveys and cost assessments are likely to be required at Stage 2 to simulate the impacts of the proposal in quantitative terms.
- 5.5.4 In Stage 2 promoters are required to update Stage 1 information, in particular:
- The details of the actual proposal, which in general will have been developed since Stage 1;
 - The problems, issues and proposal context, all of which might have evolved since Stage 1;
 - Performance against planning objectives, which is necessary whenever there has been a development of the proposal or of its context; and
 - Deliverability, in particular to address issues of risk (where there should be a better appreciation of risks and how to address them compared with Stage 1), and public acceptability.
- 5.5.5 The results from Stage 2 appraisal will need to be revised (and updated, if required) whenever the circumstances change, and certainly at key stages of the statutory process, which for road schemes, for instance, are the definition of the preferred route and the Draft Orders.
- 5.5.6 Stage 2 may not be required, for instance, for:
- Pre-feasibility studies, where a high level of detail is not required and therefore will not be available for use in such advanced stage of appraisal;
 - Broad strategic transport options, where schemes are not clearly defined e.g. pre- [Trunk Road Forward Programme](#) or pre-Rail Forward Programme;
 - Small schemes (under £5 million) although an extended Stage 1 may be appropriate; and
 - Some modest schemes (e.g. between £5 and £10 million), when a full Stage 2 may not be proportional to the size of the proposal, and an extended Stage 1 is generally more appropriate. The local authority (or the Welsh Assembly Government when appropriate) will need to be satisfied that there is a genuine justification in this case.

5.6 Calculating Transport Impacts

- 5.6.1 The consequences of transport proposals are often complex and widespread, involving direct and indirect effects, cross-modal effects, on both demand and supply. Most economic, environmental and social outcomes from the appraisal process will rely on the assessment of these transport impacts. Therefore, it is essential that such impacts are simulated and assessed properly, and that an appropriate level of effort is made (especially at Stage 2), because imprecise estimations at this point will affect the appraisal against most objectives.
- 5.6.2 The impact of strategies or packages of schemes appraised together is not necessarily equal to the impact of the sum of all schemes in the strategy or package. Appropriate consideration should be made of the synergies across different components of a scheme or strategy, and what they mean in terms of transport impacts.
- 5.6.3 Transport models are often used to simulate the impacts of transport schemes on demand (attitudes and behaviour) and supply (the network and levels of service provision). However, the development of transport models, along with the collection of the required data, is potentially costly and time consuming. Thus, it is sensible to consider whether a model is required in the first place, and if so, the degree of precision needed to help decisions to be made. The level of modelling will need to be consistent with the 'Level of Effort Required' discussed in section 3.3.
- 5.6.4 The key outputs from the transport model, for both Do-Minimum and Do-Something scenarios, for use in the appraisal process are:
- The number of trips, by mode and O-D pair;
 - The number of vehicle-km and passenger-km, by mode and O-D pair;
 - Travel time, by mode and O-D pair; and
 - Private transport speed.

- 5.6.5 Appendix A provides information on the modelling decisions to be made and the advice available.

5.7 Reporting

- 5.7.1 The WeITAG report aims to demonstrate that the principles of planning and appraisal have been followed and provide an audit trail of decision making. They also intend to remind all parties involved about the key milestones in the process and to ensure that sufficient time and resources can be allocated for each task. The reports should be easy to read, clear, logical and user-friendly.

- 5.7.2 The reports expected to be produced at each stage, are:

- Planning Report;
- Appraisal Report (including an Environmental Report and other reporting requirements by the [SEA Regulations](#));
- Participation Report; and
- Monitoring and Evaluation Plan.

Planning Report

- 5.7.3 The Planning Report needs to cover the following:

- The identification of problems and opportunities;
- The derivation of the TPO's, including verification against problems and opportunities and Wales Transport Strategy outcomes and priorities;
- The development of possible solutions and sifting;
- The definition of proposals;
- Option development; and
- Testing.

- 5.7.4 It is possible that the planning and appraisal reports are presented under the same cover. In such circumstances, it is important to ensure that the TPOs are clearly set out before the appraisal process, to avoid temptations of retro-fitting the objectives to meet known appraisal outcomes.
- 5.7.5 The level of detail required for the Planning Report must be commensurate with the effort undertaken in other parts of the process (see 'Level of Effort Required' in section 3.3).

Appraisal Report

- 5.7.6 The findings from the appraisal at Stages 1 (strategies and schemes) and 2 (schemes) need to be reported under the headings within the impact areas and appraisal criteria established in this guidance. The summary of Stages 1 and 2 appraisal needs to be shown in a standard format – please refer to the Appraisal Summary Table in Chapter 10.
- 5.7.7 In addition, the appraisal report will need to provide evidence that the appraisal has been carried out in a robust, auditable and thorough manner. For a road scheme, for instance, the following components would be expected (either in the main body of the report or in an annex):
- Local model validation report;
 - Forecast report;
 - Economic report;
 - Environmental Report (in some cases completed environmental assessment worksheets may be relevant);
 - Social inclusion or accessibility report;
 - Monitoring and evaluation plan;
 - Health Impact Assessment; and
 - Equality Impact Assessment.

Participation Report

5.7.8 Planners need to summarise the participation process, covering the following:

- The development of the participation strategy (objectives set, rationale for approach adopted);
- The activities undertaken in relation to the wider planning process;
- General findings;
- An explanation of how proposals have been modified in response to participants' contributions; and
- A brief assessment of whether the participation conducted has achieved the objectives.

5.7.9 Such a summary need not be lengthy but should provide enough detail to give decision-makers confidence.

Monitoring and Evaluation Plan

5.7.10 A monitoring and evaluation plan will be a required output from the planning and appraisal process, both for strategies and schemes, and will be a condition of funding or approval. This plan will require the development of indicators at a number of levels (e.g. regional indicators, sub-regional indicators, local indicators and secondary indicators), and will enable the Welsh Assembly Government to determine the proposals which have been effective and resource efficient. Further details are set out in Chapter 12.

5.8 Decisions and Design Development Stage

- 5.8.1 Appraisal is not about how to make decisions, or how to provide detailed design for a preferred option, and therefore no specific guidance is provided on these aspects of the planning process. Effectively, WelTAG stops here and resumes when the decision to proceed to the design phase has been made or the proposal has been implemented, and monitoring and evaluation need to be undertaken.
- 5.8.2 This section covers some issues in the process beyond appraisal Stage 2, in particular the statutory requirements for Draft Orders (road schemes) or [Transport and Works Act 1992](#) (public transport schemes).
- 5.8.3 In cases where the proposal is straightforward, well defined, where information is robust and where few risks and uncertainties remain, a decision to fund or approve may be taken, followed by little or no further development of that project or programme. However, in other cases, especially for large projects (including most road schemes), further design development will be required and the decision to proceed is subject to the caveat that the outcomes of design development do not undermine the case for the decision to proceed.

Fit with Design Manual for Roads & Bridges (DMRB)

- 5.8.4 WelTAG will guide the Welsh Assembly Government as to whether or not (and to what extent) a transport proposal should be taken forward. For road-based solutions or solutions which contain a roads element, the [Design Manual for Roads and Bridges \(DMRB\)](#) is the current national standard for strategic road design. The practitioner will find that the work undertaken for the WelTAG Stage 1 and Stage 2 appraisals will for the most part, serve to cover what is required under the DMRB Stage 1 and Stage 2 assessments. Additional reporting may be needed to meet the requirements of the DMRB.
- 5.8.5 The scope of the WelTAG appraisal exceeds that of the DMRB assessment in the following principal areas:
- The Welsh impact area “Society” (although certain of the Social impacts are included under DMRB Economy); and
 - EALI under the Welsh impact area “Economy”.

- 5.8.6 The DMRB assessment includes a Stage 3 (between preferred route announcement and making the legal orders for the scheme) where the absolute performance of a developed single solution is measured. There is no equivalent stage within WelTAG, however the stage 2 appraisal will need to be raised at key stages in the statutory process.
- 5.8.7 The Assessment Summary Tables (ASTs) required for DMRB Stages 2 and 3 differ in detail from the Appraisal Summary Tables (ASTs) required for WelTAG Stages 1 and 2. It is recommended that for consistency of reporting, and to avoid duplication of effort, a single set of ASTs in the WelTAG style be used at each stage of either process, including the DMRB Stage 3.

Validation of WelTAG Outcomes during Design Development

- 5.8.8 The appraisal outcomes need to be revised during design development and, if necessary updated, at every key stage in the statutory process: definition of the preferred route (DMRB Stage 3) and Draft Orders. Such validation is necessary both to support the scheme Key Stage Approval to commence statutory procedures and (in the event that such approval is given) for the purposes of the statutory process. This has also the role of testing and confirming the developed project against the original TPOs. In addition, because the expected performance against some TPOs could potentially improve or worsen, conditions need to be attached to decisions which specify limits of variation within which design development can continue. Within design development, a single option is generally taken forward, but variants on this may emerge (for example, for a rail project, subsequent development may identify the need for a different type of station or at a different location). These variants need to be tested:
- Against the original transport planning objectives;
 - Against the Welsh impact areas;
 - In terms of overall value for money – in particular improving cost information and reducing optimism bias in cost estimates; and
 - For deliverability – including all technical and financial risks, affordability and public acceptability.
- 5.8.9 In all cases, it is essential to ensure that the variants perform at least as well as expected at the Stage 2 appraisal. Typically, during design development, performance of some variants will be expected to

improve against some objectives and worsen against others. Where expected performance worsens such that it is expected to lie outside a pre-set limit (determined as part of the decision to proceed), then it may be necessary to abandon a particular variant, adopt mitigation measures, or at least to consider if upside gains are sufficient to continue with it in the design development. Where all the variants “go backwards” and expected performance is outside the pre-set limits, it may be necessary to abort the design development and go back to the planning stage, or to revisit Stage 2 and the decisions based on it.

- 5.8.10 Following design development, a review process will confirm whether full funding / approval is to be granted, or if there is a need to rework any part of the planning / development / appraisal process to improve the performance of the proposal and its variants.

Schemes in Development Prior to WelTAG

- 5.8.11 Roads schemes that were in development prior to the introduction of WelTAG, but have not yet been approved, will need to follow WelTAG (see section 3.2 on Transitional Arrangements). The planning report shall include the original objectives, revised if appropriate, expressed in SMART form and organised in accordance with the principles of WelTAG. The transport planning objectives and Welsh impact area objectives will need to be appraised accordingly (if previously appraised, the process may need to be revised and updated). Any additional statutory DMRB requirement (as previously described) will need to be met.

6 ECONOMIC IMPACTS

6.1 Overview

6.1.1 Appraisal under the Economy impact area has two components which, between them, cover all the economic impacts resulting from a proposal:

- Transport Economic Efficiency (TEE), covers the impacts ordinarily captured by standard cost-benefit analysis – the impacts of a proposal within the transport sector (see table 6.1 for specific impacts); and
- Economic Activity and Location Impacts (EALIs), allows the impact of proposals to be expressed in terms of their effects on the local, regional and/or Welsh economy – that is, the consequences beyond the transport sector.

6.1.2 These two approaches use different measurements to cover different aspects of the economic Impact Areas. Both components are usually of considerable interest to decision-makers, and therefore it is desirable to provide guidance on how to undertake these economic elements of the appraisal.

6.1.3 Descriptions of these impacts, the recommended methods, outputs and presentation are given below, while a worked example of the appraisal of the economic impacts is provided in Appendix C.

6.1.4 The methods needed for a Stage 1 appraisal (which is relevant for strategies and at the screening / shortlisting stage for schemes) will be less detailed than at Stage 2, as described below.

6.2 Transport Economic Efficiency (TEE)

Impact Description

- 6.2.1 This part of the appraisal is designed to measure the impact of the proposal on the economic efficiency of the transport system. Relevant impacts include the costs and benefits incurred by users and operators of the transport system and those providing funding.

The Cost and Benefit Implications

- 6.2.2 The purpose of this analysis is to summarise the costs and benefits of the proposal under consideration, and to provide disaggregated results by user group and transport mode.
- 6.2.3 User benefits are essentially a measure of what transport users would be willing to pay to secure an improvement (or avoid a disbenefit). Other benefits are to transport operators (e.g. in the form of revenue) or government (e.g. indirect tax revenue). The main indicators are:

Costs

- Capital (investment) costs – including components such as:
 - Land acquisition;
 - Construction and implementation of infrastructure and facilities;
 - Vehicle costs; and
 - Proposal design and planning.
- Annual operating costs.

Benefits

- Travel time savings – Travel time savings can arise for both passengers and freight, and in each case a body of evidence exists on the willingness to pay for improvements.
- Vehicle operating costs – The use of the road system by private cars and lorries gives rise to user operating costs. These include

the obvious costs of fuel, oil and tyres (fuel VOCs) and an element of vehicle maintenance (non-fuel VOCs).

- User charges – These include the changes in payments made by users, such as public transport fares, parking charges, road tolls, etc.
- Revenue – These may accrue to public transport operators (public or private) from the usage of the system and to local or UK Central Government from parking charges, congestion charges, road tolls (also to private operators) and road user charges.
- Reliability – This is the variability in journey time that can be affected when the proposal under consideration impacts on system performance or on route capacity, and this can take place at certain times or locations. This can be an important consideration both for passenger and freight transport.
- Impacts during construction and maintenance – To users* and others, when relevant.
- Grant/subsidy – The level of public sector support (local, regional, UK Central Government and European Funds) required for proposals to be delivered (including items such as proposal implementation, maintenance, operation and compensation measures).
- Developer contributions – When developers or other private sector bodies make contributions to the capital or running costs of proposals.
- Indirect tax revenues – These relate to any changes in Government revenues from taxation on items such as fuel (usually a very high proportion of the fuel price).

Discounting and the Price Base

6.2.4 The results of the TEE analysis will be in terms of Present Value (PV) terms. That is, the streams of benefits and costs occurring over the entire period of the appraisal will be discounted back to a base year using a specific discount rate. The discount rates to be used are:

- 3.5% per annum for the first 30 years; and
- 3% per annum beyond that period¹³.

¹³ These are consistent with the [Green Book](#)

- 6.2.5 The default base year to which benefits and costs should be discounted is 2002. Further advice on discounting can be found in the relevant section of the [Green Book](#) and in [WebTAG Unit 3.5.4](#).
- 6.2.6 The TEE analysis should be undertaken at constant prices, using 2002 as the default price base year. In other words, all costs and benefits should be deflated to the general price level of the base year. General price inflation should not be included in the future costs and benefits and should be stripped out of any raw data which includes it. Advice on how to do this can be found in [WebTAG Unit 3.5.9, Sections 2.1 and 5.2](#).
- 6.2.7 Note, however, that relative price changes may be important – e.g. real terms increases are expected in people's willingness-to-pay for time savings ([WebTAG Unit 3.5.6](#)). Real growth rates are given in this WebTAG Unit for time and vehicle operating costs and should be used in all TEE analyses.
- 6.2.8 The Unit of Account to be used in appraisals is market prices (rather than factor cost, which was used before 1999). The WeITAG values of travel time savings and vehicle operating costs (from WebTAG) are already in market prices. For further explanation of the unit of account, refer to [WebTAG Unit 3.5.4, Section 3](#).

Appraisal Period and Residual Values

- 6.2.9 The standard appraisal period is 60 years. This should be used for all assets if evidence is not presented as to why case-specific values are appropriate. For further information refer to [WebTAG Unit 3.5.4, Section 5](#)
- 6.2.10 When there is a mix of asset lives under consideration – e.g. rail infrastructure and rail vehicles – the appraisal period should normally be based on the longest-lived asset created by the scheme. It is important then to include replacement costs at suitable intervals for the assets with shorter lives.

- 6.2.11 Residual values may be used to reflect any value retained by the assets created in the scheme after the final year of the appraisal period. Typical reasons for using these are to capture: second-hand or scrap values of equipment; or the underlying value of any land purchased (net of the cost of clearing it, of course). More detailed advice on the choice of appraisal period and the use of residual values can be found in [WebTAG Unit 3.5.4, section 5.3](#).

Appraisal Methods for Stage 1

- 6.2.12 The level of detail at Stage 1 will depend on the data available and the stage of development of any proposal. The following should be (broadly) estimated:

- Capital and operating costs;
- Vehicle operating costs;
- Travel time savings;
- Revenues and user charges;
- Reliability; and
- Grant, subsidy and any developer contributions.

- 6.2.13 Available information should be used as much as possible. If a particular item cannot be estimated quantitatively, then a qualitative assessment of the implications of the proposal will be preferable to no assessment at all. When possible, broad BCRs should be derived based on DfT value for money guidance (poor = BCR<1, low = BCR 1-1.5, medium = BCR 1.5-2, high = BCR >2).

Appraising Strategies and Packages

- 6.2.14 For strategies (such as Regional Transport Plans) and for packages of measures, the interactions between different elements of the strategy or package will be key. Often the purpose of packaging measures together is to obtain synergies between components, e.g. in a Quality Bus Partnership proposal, bus priority measures (on the infrastructure) are matched by vehicle quality improvements. The aim is typically to attract more passengers than could be attracted by either measure in isolation. Measures are complementary if the impact of the package is greater than the sum of the impacts of individual components, implemented alone. In these cases, it is the job of the appraisal to use

analysis and evidence to determine the effect of the strategy/package as a whole, including these interactions.

- 6.2.15 At Stage 1 appraisal, if suitable models do not exist to predict the demand effects and user benefits of the complete package, then a qualitative assessment should be made of the way in which the components of the package/strategy support each other. This should be taken into account when selecting components for the package, and when comparing alternative packages/strategies.

Appraisal Methods for Stage 2

- 6.2.16 The TEE criterion at Stage 2 is one of the more quantitative parts of the appraisal framework. Planners should adopt the appraisal methods set out in this guidance for estimations of key economic costs and benefits. This is to standardise methods both for ease of use by appraisers and to allow comparison between proposals.

Cost and Benefits at Stage 2

- 6.2.17 The scope of Stage 2 – i.e. the impacts to be included – will be the same as those listed above for Stage 1 and for the TEE analysis generally (6.2.2 and 6.2.13). The difference will be that at Stage 2 a greater level of detail will be expected, leading to a quantitative summary of the costs and benefits as in Tables 6.1 and 6.2.
- 6.2.18 The appraisal software tools established by the Department for Transport, such as Transport Users Benefit Appraisal ([TUBA](#)) and Cost Benefit Analysis ([COBA](#)) will be useful in carrying out the analysis. [TUBA](#) can produce TEE results in the form required by WeITAG and can also accommodate public transport and multi-modal schemes, packages and strategies. However, TUBA is not able to calculate accident benefits. [COBA](#) is generally used for this purpose.
- 6.2.19 Appraisal software will normally need to be underpinned by transport models capable of predicting the effects of the proposal on demand –

i.e. traffic flows, public transport trip rates, etc. Advice on modelling for Stage 2 appraisal is contained in Appendix A of this document.

- 6.2.20 All benefit and cost components will need to be estimated and then discounted over the appraisal period (project life-time), as described above. This will enable the results tables to be completed (Tables 6.1 and 6.2). In addition to showing what the effects of the proposal will be and who will be affected (e.g. rail passengers, car drivers, etc.); these tables lead to the calculation of key economic performance indicators – such as the Benefit/Cost Ratio (BCR) and the Net Present Value (NPV). Note that these indicators are not a substitute for the AST (see Chapter 10) which give an overview of the performance of the proposal in relation to Economy, Environment, Society and the transport planning objectives of the proposal.
- 6.2.21 Freight is represented in the TEE analysis and in [TUBA](#) and [COBA](#), as well as passenger transport. The necessary values of time, vehicle operating costs and so on are built into the software. Freight volumes will need to be estimated - advice is given in Appendix A. Note that freight may benefit from transport schemes and strategies even if it is not the main target of the intervention, e.g. if improved urban transport leads to less congested roads; or if bypasses improve traffic flow on the trunk network.

Capital Costs

- 6.2.22 In Stage 1, costs only need to be sufficiently detailed to enable options to be developed and sifted onto the next stage, while in Stage 2, where a full economic assessment is undertaken, costs will need to be more detailed, and as accurate as possible.
- 6.2.23 It is essential that cost estimates are consistent for each alternative option under consideration, so that comparisons can be made. For this, a number of assumptions may be required, including unit cost rates, the quantity of each cost component and the effect of any economies of scale (e.g. 50 new buses purchased together may cost less than 50 times the price of one bus). Further effort may be needed on refining cost components which have a special influence on the overall cost of the proposal or on the cost differences between options.

- 6.2.24 The definition of maximum and minimum, as well as confidence intervals, will be useful when producing cost estimates (see further details under the heading “Risk, Uncertainty, Optimism Bias and Sensitivity Analysis”, from paragraph 6.2.78).
- 6.2.25 Consideration should be given to the likely growth in capital cost rates in the period up to and including construction. Where prices are anticipated to change at a faster or slower rate than general inflation, then this should be incorporated within the stream of costs appraised. Evidence should be presented to support any such assumptions (for example, time series trends should be investigated).
- 6.2.26 For appraisal purposes, capital costs should be presented in market prices i.e. including indirect taxation as perceived by the purchaser of construction services in the market. This requires costs to be marked up by 20.9%¹⁴ to reflect the average rate of indirect taxation in the economy.
- 6.2.27 Further information on estimating costs can be found in [WebTAG](#) and the [Green Book](#).

Operating Costs

- 6.2.28 Annual operating costs are used in appraisal as the net changes in the costs of operating the new proposal, and may incorporate areas outside the proposal scope, for instance when the proposal shares costs with other parts of the network (e.g. marketing, maintenance resources). These should not be confused with Vehicle Operating Costs.
- 6.2.29 As for capital costs, these will also need to be estimated for each alternative option under consideration and be more detailed at Stage 2. The uses of maximum and minimum ranges, as well as confidence intervals, will also be useful when producing estimates.

¹⁴ [WebTAG Unit 3.5.6](#)

- 6.2.30 The changes in annual operating costs can be estimated with the use of cost models or unit rates and will include all expected expenses in the running and maintenance of the proposals. Operating costs can be different for different transport modes and types of proposal, but they can include, for instance, personnel (wages), repairs, maintenance, parts, services, supply of energy, enforcement, cleaning, etc.
- 6.2.31 Real changes in the value of operating costs can have a significant effect on the Present Values of costs. Assumptions on the real value of factor costs such as labour should be assessed and clearly stated. More detailed advice on estimating operating costs can be found in [WebTAG Unit 3.5.9](#). In particular, WebTAG emphasises the need to factor in realistic assumptions about cost escalation, provides guidance on adjusting costs to reflect optimism bias and provides clearer guidance on how to handle risk in appraisal (including requiring a quantified risk assessment to be provided for all major schemes).

Travel Time Savings

- 6.2.32 Benefits due to travel time savings will need to be estimated for users (those actually using the new/improved transport service or infrastructure) and non-users (those not using the new service or facility but impacted by the proposal nevertheless). For both users and non-users, estimates will be made on the basis of changes in the average travel time, considering changing levels of congestion, transport service and distances travelled. Travel time savings should be estimated for the “Do-Something” and “Do-Minimum” scenarios, considering:
- Journey times between each affected origin and destination;
 - All transport modes (and vehicle types) affected by the proposal: e.g. car passenger, driver, rail passenger, freight time, walking/cycling, etc.;
 - Time of day (peak or off-peak), when relevant.
- 6.2.33 For passengers, it is also important to investigate:
- The changes in journey time components, namely: walk time, wait time, interchange time and in-vehicle time;
 - Changes by trip purpose (e.g. commuting, leisure, etc.); and
 - The split between working and non-working time.

- 6.2.34 Clearly, travel time savings are more important in the appraisal of public transport or highway schemes whenever a reduction in journey time is valued (e.g. working trips during peak hours). [WebTAG Unit 3.5.6](#) gives the empirical evidence on the valuation of travel time savings to freight, while [WebTAG Unit 3.5.7](#) gives advice on reliability.
- 6.2.35 While in Stage 1, the estimation of travel time benefits may be acceptable on a broader level, in Stage 2 this exercise will most likely rely on the outputs of a transport model. Total travel time savings from passenger transport proposals are calculated, by convention, using the “rule of a half” (see [WebTAG Unit 3.5.3](#)), applicable for each mode.
- 6.2.36 This rule needs to be applied separately for work and non-work trips, since estimates of the value of travel time are different for these two categories, and the other categories of journey time identified above. If [TUBA](#) software is being used, it will apply the rule to each category including different trip purposes.

Value of Time

- 6.2.37 The valuation of travel time savings recommended by the Department for Transport is to be used in most routine economic appraisals of transport proposals. The values of working and non-working travel times are given in [WebTAG Unit 3.5.6](#), by travel mode, journey purpose and working/non-working time (in £ per hour per person in 2002 prices and values). Values at market prices should be used (already incorporated in [TUBA](#) and [COBA](#)).

Value of Work Time

- 6.2.38 Working travel time is the time spent travelling during the course of work, which is a reflection of the opportunity cost of time not working (i.e. wages). It applies only to journeys made in the course of work, i.e. excludes commuting journeys. Non-working time is the value placed on people’s own time during the majority of journeys, which do not take place during working hours. Commuting time is valued more highly than other non-working time.
- 6.2.39 In cases of staged journeys, the value of working time for the main mode should be used, where the main mode refers to the mode for the longest journey by distance. In the freight context, the value of time is

to the business running the haulage (and not to the driver), and if necessary, could be refined to reflect the value, type and urgency of the products being transported.

Value of Non-Work Time

- 6.2.40 For travel in non-working time, higher valuation should be given to changes in time spent walking to or waiting for public transport. The factors typically used are 2.5 for waiting time and 2 for walking time¹⁵.

- 6.2.41 Values of time are expected to grow in the future, as a result of the growth in wealth. Forecast growth in the real value of time is given in [WebTAG Unit 3.5.6](#), for a range of years and for both working and non-working times. These annual growth rates are to be applied to the valuation of travel time throughout the appraisal period. Since highway model outputs are often provided in terms of vehicles and not people, an estimate of the average vehicle occupancy should be used to convert vehicle travel time into personal travel time. Vehicle occupancy rates for different vehicle types and journey purposes, considering weekdays, weekends and week average, can be found in [WebTAG Unit 3.5.6](#).

- 6.2.42 For passenger cars, occupancies are predicted to decline. [WebTAG Unit 3.5.6](#) recommends annual changes in car occupancy, for work and non-work time, according to journey purpose and for weekday average, weekend and all week. Occupancies for all other vehicle types are assumed to remain unchanged over time.

- 6.2.43 Further advice on the estimation of time savings is available in [WebTAG Unit 3.5.3](#).

Vehicle Operating Cost Savings

- 6.2.44 As a result of changes in the number of trips undertaken, trip patterns (e.g. changes in destination or routing), trip distances and mode

¹⁵ See paragraphs 1.2.19 & 1.2.20 in [WebTAG Unit 3.5.6](#)

transfers, changes to vehicle operating costs (for car and motorcycle, public transport or freight vehicles) may occur.

- 6.2.45 For each transport mode affected, estimates of the changes in vehicle operating costs (VOC) will be required. In Stage 1, these estimates can be at a broader level (for instance, the number of km saved multiplied by fuel costs and ignoring the fixed costs of owning and running a vehicle), while in Stage 2 they will need to follow more closely the guidance recommended by the Department for Transport for use in economic appraisals of transport proposals (see [WebTAG Unit 3.5.6](#))
- 6.2.46 VOC estimates for proposals affecting road transport are split into fuel and non-fuel operating costs and are based on changes in total vehicle-kilometres on the network (described in more detail below). These use estimates of changes in number of trips per transport mode, trip distance, average fuel consumption parameters and operating costs. All parameters are expressed in average 2002 values and prices.
- 6.2.47 As far as road freight is concerned, operating costs are published annually by the [Freight Transport Association](#), providing a cost breakdown (operating cost per mile) for different types of road, haulage vehicles and different intensities of use. The Managers Guide to Distribution Costs uses data provided by [Freight Transport Association](#) members based upon actual vehicle operations over the previous year. It is important to note that the intended readership of this publication is haulage operators, and it is therefore not designed with the potential use for appraisal purposes in mind.

Fuel Vehicle Operating Costs

- 6.2.48 The fuel VOC parameters (in litres per km, 2002 prices) are given in [WebTAG Unit 3.5.6](#). These parameters can be converted into pence per kilometre by multiplying by the cost of fuel. All vehicles, except cars which are fuelled by unleaded petrol, are assumed to be diesel driven and therefore parameters for these vehicles should be multiplied by the cost of diesel. The cost of fuel, fuel duty and VAT (in pence per litre, 2002 prices) are also given in [WebTAG Unit 3.5.6](#), for petrol and diesel cars, considering the resource cost (net of indirect taxation), duty and market price (gross of indirect taxation, i.e. [resource cost + fuel duty]*[1+17.5% VAT]). Fuel operational costs for heavy goods vehicles can be obtained from the [Freight Transport Association](#), and are based

upon an average price paid by the industry. Given the prevalence of bulk pricing, particularly by operators of large fleets, this value tends to be lower than the average pump price of diesel.

- 6.2.49 In work time, the perceived cost of fuel VOCs is the resource cost plus fuel duty. In non-work time, the perceived cost of fuel VOCs is the market price.
- 6.2.50 Figures for cars represent the average car 'on the road' and are therefore a weighted average of the petrol and diesel figures where the weights used are the proportions of the car fleet using petrol and diesel. However, since the proportion of petrol and diesel vehicles is likely to change in future years, the split given in [WebTAG Unit 3.5.6](#) is recommended. This split reflects the changes in fuel VOCs for cars in future years.
- 6.2.51 Fuel VOCs change over time, because of improvements in vehicle efficiency and changes in the cost of fuel. The assumed percentage annual changes in fuel consumption, for different vehicle types, in the future are given in [WebTAG Unit 3.5.6](#).

Non-Fuel Vehicle Operating Costs

- 6.2.52 The components of non-fuel vehicle operating costs include oil, tyres, maintenance, depreciation and vehicle capital saving (only for vehicles in working time).
- 6.2.53 The non-fuel vehicle operating costs parameters are given in [WebTAG Unit 3.5.6](#) (in pence per kilometre, at 2002 prices), for different vehicle types, and in terms of the resource cost (net of indirect taxation) and perceived cost. Non-fuel VOCs are assumed to remain constant in real terms over the forecast period.

Revenues

- 6.2.54 Proposals may provoke changes in the levels of revenue generated not only by the operator of a new or improved transport system (or facility, e.g. car parking operator), but also by other operators of related or competing parts of the network. Changes in operator revenues should

be calculated by subtracting total operator revenues in the “Do-minimum” from the corresponding “Do-something” value, taking account of any changes in the numbers of journeys. If the option leads to an increase in revenue, then that should be recorded as a positive amount in the TEE table, while decreases appear with a negative sign.

- 6.2.55 For freight in particular, revenues are generated by contracts to carry goods between suppliers and buyers, and hence will depend on the operating agreement and on whether services are leased or privately operated. It is usually far too challenging to forecast these changes right down the supply chain. Benefits from time savings and Vehicle Operating Costs (as described above) give an indication of the cost savings to freight operators from a proposal. Whether this leads to a change in revenue depends on the impacts on prices and quantities traded in final goods markets, usually beyond the scope of a transport appraisal.
- 6.2.56 For Stage 2, the PV of changes in revenues will be used as one of the benefit (or disbenefit) indicators (to operators). The [TUBA](#) software can be used to produce revenue estimates, like for user benefits.

User Charges

- 6.2.57 User charges can be expressed, for instance, in terms of fares (e.g. public transport fare), tolls (e.g. tolled motorways and bridges), tickets (e.g. car parking) or charges (e.g. road pricing, lorry user charging). Hence, they are applicable to all modes of transport, whenever charges apply, and are calculated in the same way as other user benefits (using the “rule of a half” formula described above, where charges replace travel time), for all relevant charge categories.
- 6.2.58 User charges represent money transfers from users to operators which become revenues from the operator's point of view. However, this does not mean that the economic benefit of changes in user charges is the same to the traveller and the operator. In fact, for travellers, the economic benefit of a change in charges is the resultant change in their consumer surplus. For those who do not change their behaviour, the change in consumer surplus is the same as the change in money paid, but for those who do change their behaviour, this is not the case. For operators, however, the economic benefit of a change in charges is simply the change in net revenue received. Therefore, the values for

User Charges under User Benefits and the values for Revenues under Private and Public Sector Providers will usually not be equal in size.

Reliability

- 6.2.59 Journey time reliability is one of the deciding factors on mode choice, both for passenger and freight transport. For passengers, sensitivity to reliability tends to vary by journey purpose (business travellers value it more highly than others), while in freight it varies by the type of goods transported (customers of perishable goods may be more sensitive to reliability than others).
- 6.2.60 Journey time variability is a standard part of appraisal procedures in the rail sector. In the road sector, the analysis of reliability benefits is considerably more straightforward for public transport than it is for private car and freight.
- 6.2.61 In the context of freight transport, any disruption that leads to the goods arriving late will affect the reliability of delivery, with possible knock-on effects in the effectiveness of the supply chain. Whenever possible, these changes on lateness should be identified and quantified in the appraisal process. Benefits from greater reliability are experienced both by the party receiving the goods (less disruption in the supply chain and in subsequent activities) and by the operators (better use of assets and avoidance of additional costs). The main complexity is that the value of the benefit should depend on the obligations of each shipping contract, but appraisal is not expected to reach this level of detail. User valuations of freight journey time savings and reductions in freight journey time reliability for use in project appraisal were discussed by Fowkes et al in 2003¹⁶.
- 6.2.62 The proposed approach to estimate reliability benefits to passengers is based on the Department for Transport Rail's Guidance, which is incorporated into [WebTAG 3.13.1](#). The method derives a measure of average lateness (i.e. any expected changes in late time) and applies to this the appropriate value of time (i.e. value of time * weighting for

¹⁶ Fowkes, T. (2006) The Value of Freight Travel Time Savings and Reliability Improvements – Recent Evidence from Great Britain Presented at the AET conference, University of Leeds

late time). The excess waiting time experienced by passengers is likely to be valued at a higher level than ordinary waiting time, reflecting the anxiety and annoyance caused by service unreliability. The “[Black Book](#)” (TRL 2004) recommends that bus wait time’s standard deviation is valued at 1.0 to 2.5 times the value of in-vehicle time (IVT), while bus IVT’s standard deviation is valued at 0.8 to 2.3 times the value of IVT. For rail, recent evidence suggests late time is valued at 3 times the value of IVT.

- 6.2.63 An alternative method based on a ‘reliability ratio’, which is the value of travel time variability (measured by the standard deviation of journey time) over the value of travel time, requires data which is harder to model.
- 6.2.64 Because there is no hard and fast rule on the appraisal of reliability impacts, planners are expected to arrive at a method that suits the circumstances and data available. But it is important that, if it is likely that reliability would prove a differentiator between options, a proper attempt to estimate these impacts is made.

Impacts During Construction and Maintenance

- 6.2.65 [WebTAG](#) advises that impacts (positive or negative) to transport users and operators due to the construction or future maintenance of a proposal should be recorded in the TEE table, where they are likely to be significant. These impacts can be portrayed in terms of increased travel time / operating costs or reduction in reliability / revenues, and hence the appraisal can be undertaken using the methods presented in the respective sections above.
- 6.2.66 The Department for Transport’s [QUADRO](#) (Queues and Delays at Roadworks) program should be used for proposals affecting inter-urban road users. For proposals affecting urban road users, delays to traffic resulting from construction and/or future maintenance may be estimated by using the same congested assignment package as used to predict the overall traffic impacts of the proposal.
- 6.2.67 Models may also be useful for options affecting public transport users, if significant diversion is expected during construction and/or future maintenance. In other cases, simplified approaches to the estimation of delays to public transport users may be sufficient. The [TUBA](#)

program may be used to value delays to road and/or public transport users, using standard economic parameters.

- 6.2.68 In some circumstances, it may be sufficient to use a simplified approach, based on evidence of unit costs per kilometre from other proposals. For road user delays, unit costs will vary with traffic levels, and thus it will be important to demonstrate that they are appropriate for the proposal under consideration.
- 6.2.69 For proposals affecting public transport, the impact on operators' revenues should also be considered. For heavy rail, estimates should be based on the compensation regime between the train operators and infrastructure authority.

Grant/Subsidy

- 6.2.70 Any grants or subsidies being provided by the public sector need to be registered both in the TEE (Table 6.1) and Public Accounts (Table 6.2) tables. Grants and subsidies should always be recorded as positive amounts in the TEE table (since here they represent benefits to operators). They should correspond exactly to an amount recorded in the Public Accounts table, where costs (including Grant and Subsidy payments) are shown in positive figures. If a grant comes from UK Central Government to Local government, then the payment and receipt will net out within the Public Accounts table.

Developer Contributions

- 6.2.71 Developer contributions are costs to business, but appear in the TEE table with a positive sign. Where developers or other private sector bodies make contributions to the capital or running costs of options, these reduce the net costs to public accounts. Thus, these amounts should appear again in the Public Accounts table as negative numbers.

Indirect Tax Revenues

- 6.2.72 The benefit or loss to Government as a result of changes that affect tax revenues needs to be estimated. The inclusion of fuel duty as well as VAT in the cost of fuel for road users means that options that increase

road use are likely to lead to an increase in indirect tax revenue, as road users switch expenditure from other goods that are generally subject to VAT alone. Similarly, options that increase public transport use are likely to lead to a reduction in indirect tax revenue, because public transport fares are zero rated for VAT.

- 6.2.73 In practice, the ability to measure this impact with a credible degree of confidence is limited to changes in fuel duty and VAT on fuel. Indirect tax on 'sale of goods' and 'employment' can be omitted for practical purposes. Further advice is provided in [WebTAG Unit 3.5.1](#).

Risk, Uncertainty, Optimism Bias and Sensitivity Analysis

- 6.2.74 The [Green Book](#) places considerable emphasis on the need to take account of risk, uncertainty and optimism bias in the estimation of costs and benefits, since there is clear evidence that risks and uncertainty can have a significant effect on cost and benefit estimates.
- 6.2.75 In line with current advice, it is now required that all proposals include an allowance for optimism bias in cost estimates. Capital costs need to be uplifted to reflect the degree of risk in construction, potential delays and the process for scheme development (e.g. statutory procedures). A QRA (Quantified Risk Assessment) is recommended to be carried out for large investment proposals (costing more than £5m).
- 6.2.76 The [Green Book](#) recommends that where the evidence is insufficient to support adjustments to benefits, sensitivity analysis should be carried out by developing central, optimistic and pessimistic scenarios rather than by carrying out a full risk assessment. Sensitivity testing should also be used to estimate the impacts of risk factors (e.g. potential delays in construction, travel demand forecast, regeneration benefits) on costs and benefits.
- 6.2.77 [WebTAG Unit 3.5.9](#) and [supplementary Green Book guidance](#) provide additional information on risks and optimism bias for major schemes. The approach outlined in the [Green Book](#) is to:

- Classify projects as standard or non-standard;
- Start with the upper bound factors, currently 66% for non-standard engineering projects and 44% for standard engineering projects;

- Consider whether optimism bias factors can be reduced, through risk mitigation (e.g. additional site surveys); and
- Independently verify the process – this is essential to process integrity.

Required Inputs

6.2.78 The production of the TEE requires a considerable amount of data, which normally originates from a transport modelling or similar process. The inputs include, for instance, for each mode and O-D pair, for both the Do-Minimum and the Do-Something scenarios:

- Number of trips;
- Number of vehicle-km and passenger-km; and
- Travel time and speed.

6.2.79 Further data and estimates are required (outside the transport model), such as:

- Estimates of capital and operating cost components;
- Fares and charges;
- Changes in late time (if reliability changes are measured); and
- Any grant, contribution or tax.

Impact Distribution

6.2.80 Some proposals may generate benefits (e.g. time savings) for certain groups, but disbenefits for others. These distributional impacts are of interest to decision-makers and, as for all other criteria within the appraisal framework, distribution effects analysis should be a standard part of the TEE analysis.

6.2.81 The TEE table is set up so that the distribution of economic impacts between groups can be verified (see Table 6.1). Both costs and benefits need to be disaggregated in terms of whom they accrue to (e.g. consumer, business) and mode which stand to benefit/disbenefit. In addition, an appreciation of how various demographic/geographic

segments or economic interest groups in society are affected is highly desirable.

- 6.2.82 The distribution indicator(s) to be used will depend on the proposal, its objectives, and mode of transport and how it is expected to affect different geographic or economic groups. For instance, the economic distribution from the impacts of a freight scheme may be most relevant if shown against regional GDP levels or indices of local economic activity, while promoters of a new rail connection with access to a regeneration area may wish to demonstrate how it will benefit the most deprived sectors of society, in which case the [Index of Multiple Deprivation](#) is a good indicator.
- 6.2.83 In Stage 1, distribution can be treated descriptively; however in Stage 2 some GIS presentation of the distribution impacts against the selected indicator(s) would be helpful.

Output and Presentation

- 6.2.84 The analytical methods outlined above and set out in WebTAG Units [3.5.1](#), [3.5.6](#) and [3.5.9](#) explain how to undertake the calculations. These calculations lead to the completion of the various cells in the TEE table, Public Accounts table, and Analysis of Monetised Costs and Benefits table (Tables 6.1 to 6.3). [TUBA](#) or [COBA](#) can help to carry out many of these calculations, especially when a large or complex transport network model is being used.
- 6.2.85 Tables 6.1 to 6.3 show how the economic efficiency of the transport system for the proposal under consideration (in PV terms, in £ million, 2002 values and prices) should be presented, in accordance with the guidance in [WebTAG](#). Further information on how to calculate the NPV can be found in [WebTAG 3.5.4](#). The inclusion of the following items in the TEE table represents two specific developments in relation to the current guidance in [WebTAG](#) and [STAG](#):
- Walking and Cycling as modes; and
 - Reliability as an entry in the TEE table.

TABLE 6.1. TRANSPORT ECONOMIC EFFICIENCY

IMPACT GROUP	Total All Modes	Present Value (£ million)						Walking/ Cycling	Other (e.g. LRT)
		Car/LGV	Road HGV	Bus/Coach	Rail Passenger	Freight			
Consumers									
User benefits									
Travel time									
Vehicle operating costs									
User charges									
Reliability									
During construction/maintenance									
Net Consumer Benefits	(1)								
Businesses									
User benefits									
Travel time									
Vehicle operating costs									
User charges									
Reliability									
During construction/maintenance									
Subtotal	(2)								
Private Sector Provider Impacts									
Revenue									
Operating costs									
Investment costs									
Grant/subsidy									
Subtotal	(3)								
Other Business Impacts									
Developer contributions	(4)								
Net Business Impact	(5)	= (2) + (3) + (4)							
Present Value of TEE Benefits	(6)	= (1) + (5)							

Notes: Benefits appear as positive numbers. Costs appear as negative. All entries are discounted to present values in 2002 prices and values.

6.2.86 In addition to the TEE table, current guidance recommends the use of a table setting out the implications of the proposal for the various tiers in the public sector. This is shown in the Public Accounts table, as illustrated by the next table. The differences between this guidance and [WebTAG](#) are:

- The inclusion of “Walking and Cycling” as modes, as for the TEE;
- The split of grants and subsidies from local and UK Central Government funding into those coming from local, regional and central Wales authorities and those coming from outside, i.e. the UK or the EU.

TABLE 6.2. PUBLIC ACCOUNTS

IMPACT GROUP	Total All Modes	Present Value (£ million)				
		Road	Bus/Coach	Rail	Walking /Cycling	Other
Local Government Funding						
Revenue						
Operating costs						
Investment costs						
Developer and other contributions						
Grant/subsidy from Wales						
Grant/subsidy from UK/EU						
Net Impact	(7)					
UK Central Government Funding						
Revenue						
Operating costs						
Investment costs						
Developer and other contributions						
Grant/subsidy from Wales						
Grant/subsidy from UK/EU						
Indirect tax revenues						
Net Impact	(8)					
Present Value of Costs (PVC)	(9)	= (7) + (8)				

Notes: Costs appear as positive numbers. Revenues and Developer and Other Contributions appear as negative. All entries are discounted to present values in 2002 prices and values.

6.2.87 It is important to notice that the monetary implications from accident savings and externalities (valuation of local and global pollution, noise nuisance, etc.) have not been taken into account in the TEE or Public Accounts tables. These are included in the Environmental and Social parts of the appraisal (Chapters 7 and 8), and are not repeated here to avoid double-counting of benefits. Nonetheless, all impacts that can be monetised have been brought together in [WebTAG 3.5.1](#) in a table entitled “Analysis of the Monetised Costs and Benefits”. This is not

be looked at as an additional economic indicator, but just an account of the impacts which could possibly be monetised in the appraisal process, including those from the TEE and the Public Accounts, and others which can be monetised. This analysis is shown in the table below, and does not mean that all impacts shown need necessarily be monetised. However, the Department for Transport's recent guidance on noise ([WebTAG 3.3.2](#)) and CO₂ ([WebTAG 3.3.5](#)) emissions requires that these be monetised. The differences between this guidance and [WebTAG](#) are:

- The exclusion of Journey Ambience and Option Values, as appraisal criteria in WeITAG; and
- The inclusion of Reliability in the line 'Present value of TEE benefits'.

TABLE 6.3. ANALYSIS OF MONETISED COSTS AND BENEFITS

Impact	PV (£m)	
Noise		
Local air quality and greenhouse gas emissions		
Accidents		
Present value of TEE benefits		= (6) from TEE table
Present value of benefits (PVB)		= Sum of all above
Present value of costs (PVC)		= (9) from Public Accounts
Net Present Value (NPV)		= PVB-PVC
Benefit Cost Ratio (BCR)		= PVB/PVC



- 6.2.88 It is important to bear in mind that because this table cannot account for all costs and benefits monetarily, it needs to be treated with much caution in decision-making and not be the sole basis for decisions.
- 6.2.89 The “[Black Book](#)” looks at the effects of public transport service quality factors on demand, and reports monetary values which can be used in appraisal. Such service quality factors include the waiting environment, the presence of staff at stations and personal security, the characteristics of vehicles, crowding, on board facilities, cleanliness, interchanges, reliability and travel information. These could be valued and included in the analysis of costs and benefits above.

6.3 Economic Activity and Location Impacts

Introduction

- 6.3.1 Transport proposals, and particularly large proposals that result in significant changes in accessibility, have the potential to impact upon economic performance at least at the local level. This can take place through, for example, reducing costs or opening up new markets. Even small proposals that have no effect on overall economic performance can affect how economic opportunities are distributed, for example by changing relative accessibility to employment for different communities. Such changes might enable some areas or communities to gain relative to others. Both performance and distributional changes are potentially important to decision-makers. Transport investment may also influence demand for where economic and other activities will be located. As in [STAG](#), these types of impacts have been called [EALI](#) – [Economic Activity and Location Impacts](#).
- 6.3.2 There is already some experience elsewhere in the appraisal of this impact, arising from application of the [STAG](#) guidance in Scotland, [WebTAG Unit 2.8](#) and the [Economic Impact Report](#) (EIR) guidance in England (DfT 2003a) (focused on employment impacts from regeneration areas). However, the derivation of EALIs remains challenging and uncertain.
- 6.3.3 This section summarises the EALI analysis, while the further guidance is presented in Appendix D. New guidance is also available from the Department for Transport on the methodology to estimate “[Wider](#)

[Economic Benefits in Transport Appraisal](#)", including the impact of transport schemes on GDP.

- 6.3.4 A full analysis is required for all proposals which are likely to produce significant impacts on employment and income, including the distribution of employment and income. Planners wishing clarity on the meaning of "significant" should discuss the expected impacts from the proposal under consideration with the Welsh Assembly Government. Consideration also needs to be given to the specialist skills required at this stage, the consequent budget implications and the level of confidence associated with the expected outcomes. The amount of resources to be spent on the EALI analysis should be proportional to the resources to be spent in other areas of the appraisal.
- 6.3.5 Once the need for an EALI has been determined, both local or intra-area impacts and inter-area impacts need to be taken into account. In looking at impacts on the economy, it is necessary to assess these at both the Wales and the regional or sub-regional level. In some instances, it may also be necessary to indicate impacts at the UK level.
- 6.3.6 It should also be noted that, for appraisal purposes, the intention is to consider the various components of the impacts of any transport proposal, rather than simply the overall net impact. In other words, each positive and negative impact needs to be considered "gross" rather than simply netting out positive and negative effects. This is important, because typically there will be gainers and losers - particular areas, communities or groups may gain, while others lose. Thus, even if these offset each other to yield a zero net impact, decision-makers need be able to assess all of the gross impacts of the proposal, and their magnitude. The net impact within an area could be positive but neutral at the Wales level.
- 6.3.7 Even where EALIs are not expected from a scoping assessment of a transport proposal or where they are not central to the case for the proposal, the potential for such impacts needs to be considered. This principle applies to all sizes of proposals. This is because most proposals, even some small ones, generally have the potential to generate at least some distributional impacts – benefits to some areas or communities or groups and disbenefits for other areas, communities or groups. A benefit to an area or community would then be a gross impact.



- 6.3.8 This is especially important where a transport proposal might affect a disadvantaged, regeneration or development area, which might be the target for other social and economic policies. In all such cases, the gross impacts need to be identified even if there is a reasonable expectation that the net impacts will be zero or very small.
- 6.3.9 As a generalisation, EALIs are more likely to arise in the case of larger proposals, but should be considered in all cases at least at Stage 1. Where no gross impacts are expected, no further appraisal is required, but there needs to be a sound statement to this effect with the rationale for this expectation. This should be included in the relevant part of the AST for Stage 1. Where some gross impacts are expected, the initial appraisal is reported at the Stage 1. Clearly, at Stage 1 the level of analysis will be less detailed and possibly more qualitative than at Stage 2. It may be that more detailed analysis indicates that no gross impacts will actually arise, and in such cases this finding needs to be reported at the Stage 2. A full EALI will only be required at Stage 2 for larger proposals which have significant and demonstrable economic activity impacts.
- 6.3.10 Improved accessibility for freight traffic in certain locations tends to increase the likelihood of investment in that area in terms of warehousing or production facilities, and hence the job market. Schemes that provide locations with improved linkages to major conurbations (where consumption of goods tends to be focused) are likely to experience the most benefits of this nature.

Impact Description

- 6.3.11 The aim in the EALI analysis is to describe the impacts of a proposed transport proposal on the economy, but considered in terms of employment, income and output, in contrast to the welfare economics approach used in the TEE analysis. Accordingly, income (or GVA, Gross Value Added) and employment are used as measurements of the results and impacts of the transport proposal, for the following reasons:
- First, these indicators of economic performance are comparable with regional and national economic statistics; and
 - Second, employment alone may give a false picture, for example in remote areas where labour may be underemployed and where

the impacts are in the form of higher wages for those in employment rather than extra jobs.

- 6.3.12 It is useful to measure impacts in this way, as these are generally of considerable interest by decision-makers, who need to know how and under what circumstances transport proposals might have impacts on economic performance – income and employment – at Welsh and/or regional or local level. This is particularly important where areas or groups are already targeted by economic policies (for example by the Welsh Assembly Government's [Department for the Economy and Transport](#)), where the extent to which the transport proposal adds value or detracts from other policy measures needs to be assessed. There is also some evidence from economic research that the standard TEE appraisal approach may, in certain circumstances, fail to capture all of the economic impacts of a proposal.
- 6.3.13 The concept of regeneration is sometimes used interchangeably with wider economic impacts. In WeITAG the focus is on quantifiable and measurable primary economic impacts, namely employment and income. Regeneration, in contrast, is more generally concerned with:
- The well being of particular areas and communities, within which employment may be a consideration: this concept of regeneration is therefore essentially about distributional and societal impacts; and
 - Impacts on physical aspects such as land use and townscape, which is linked to both environmental and societal impact areas.
- 6.3.14 Accordingly, in the (real) economic analysis only the (potentially) measurable impacts of employment and income are considered. Whether employment / income gains, plus other aspects of a transport proposal (such as reduced community severance), lead to regeneration is considered under environment and society impacts. Thus, positive economic impacts might contribute towards regeneration but in some circumstances might not. The processes involved in regeneration are more complex than in the generation of economic impacts and hence further analysis would be required to assess regeneration impacts.

Appraisal Methods for Stage 1

- 6.3.15 In order to identify and assess the scale of any potential EALIs, it is necessary to develop an understanding of how the transport proposal will generate impacts in terms of GVA and employment. This can be

thought of as developing a (credible) chain of cause and effect, linking the transport proposal (which is an input) to its final economic outputs and impacts, which are measured as GVA and employment impacts. If employment models are available and are believed to be useful for this purpose, these could be used in conjunction with the EALI methodology.

6.3.16 In both the initial (Stage 1 AST) and detailed (Stage 2 AST) appraisals, it is necessary to consider how:

- Individual (gross) impacts arise;
- These affect particular areas and/or groups; and
- These combine to give net impacts at “local” and national (Wales or UK, depending on sources of funding) levels.

6.3.17 In undertaking this analysis, it is necessary to consider how the transport proposal potentially affects economic activity (positively and adversely), first at a local level and then at the Wales level. Fundamental to this is an understanding of the transmission mechanisms involved – for example, whether changes in journey times or reliability can alter economic decisions by businesses or people looking for employment. The required information for appraisal and how best to obtain it requires careful consideration. Business surveys may overstate the qualitative case for a proposal, for example, but may produce little in terms of hard quantitative evidence. In contrast, labour market analysis may build from employer and employee surveys and can yield quantitative results, for example, where labour supply is a constraint on business activity and can be addressed through a transport measure. It is difficult to be prescriptive here, as experience shows the approach needs to be tailored to each specific case.

6.3.18 The expected impacts need to be assessed first at an appropriate local level and then at the Wales level. It is then necessary to undertake research on this to quantify the type, scale, term (short, such as temporary construction jobs, or long term changes), nature (e.g. jobs in retail, manufacturing, agriculture, forestry, farming, tourism, etc.) and speed of responses to changes in travel opportunities. Jobs that arise directly from the implementation or operation of the proposal (e.g. train drivers) may be differentiated from those arising indirectly, for instance, new business near a new train stop. It may also be relevant to assess the number of jobs that would be lost in the absence of the proposal, or the number of jobs transferred from one place to another. Such

research needs to be at a level commensurate with the stage in the appraisal process (Stage 1 or 2), the size of the transport proposal and the significance of potential EALIs as part of the case for that proposal.

6.3.19 At Stage 1, the analysis should be targeted at identifying the key economic linkages, and only indicative information is required, involving:

- Segmentation of the economic context by economic sectors or drivers of economic development – further segmentation may be required to differentiate particular economic actors¹⁷/decision-makers;
- Assessment of the expected transmission mechanisms or processes – how is the transport proposal going to affect different classes of economic actors in different locations and how might these respond; and
- Analysis of potential local and Welsh level impacts in each sector.

6.3.20 It may not be possible to properly differentiate the impacts of alternative options at Stage 1, and if that is the case, then Stage 2 will have a greater role to play in assessing EALIs.

6.3.21 As far as indirect impacts are concerned, it is impossible to be prescriptive about how far their appraisal needs to stretch. For instance, EALI identifies the magnitude of new jobs, but these jobs create further transport movements, with possible increases in economic activity, greater economic efficiency, increased congestion and environmental damage. The planner will need to define in every case the boundary of the impacts otherwise the appraisal will become increasingly complex.

Appraisal Methods for Stage 2

6.3.22 In addition to the considerations explored at Stage 1 (see section above), a more detailed Stage 2 appraisal of EALIs is required for schemes where such impacts are expected to be significant. EALIs are

¹⁷ Economic actors are those whose decisions affect the economic performance of an area or region, and include individual businesses both in an area and outside it, land and property developers, and individuals in their roles as residents, workers, shoppers, visitors and tourists.

unlikely to be required for small proposals, except where economic impacts are their principal or sole justification (e.g. those designed to tackle social exclusion or regeneration). When Stage 1 analysis has identified EALs as potentially important or significant for particular areas or groups, in Stage 2 it will be necessary to identify and quantify the impacts and to address uncertainties identified in Stage 1. In most cases, it will be appropriate to develop a case based on some or all of the following, depending on the chains or links identified at Stage 1:

- Primary research with relevant types/sectors of economic activity which are likely to be affected (for example, how much employment in manufacturing, services; how many tourists and estimates of the value of tourism);
- Economic analysis:
 - Micro/industrial economic analysis;
 - Labour market analysis;
 - Property market analysis.
- Evidence of impacts from other studies.

6.3.23 The basis of the analysis is to assess how a transport proposal will impact upon each sector of the spatial economy under consideration. For example, in the business sector the following are potentially relevant:

- Intra group effects, such as greater ease of travel and lower financial costs.
- Transport cost effects: these affect transactions with local and non-local businesses (as suppliers and/or as customers); and with local and non-local consumer markets, where relevant.
- Market development effects: Changes in time and financial costs, including aspects such as more convenient rail or flight timings, can alter business strategy with regard to markets. However, there is scope for the “2 way road effect” – businesses located outside the impact area would also find it easier or more attractive to target markets within the impact area, and this could lead to job losses rather than job gains in that area.
- Labour market impacts could arise through access to a larger pool of labour; this might reduce time to fill vacancies and/or improve the range or quality of potential recruits, which might bring about indirect cost savings through efficiency benefits.
- Land and property impacts can arise in various ways, including provision of additional premises through improved access to land for business development. However, such benefits need to be

looked at carefully as in many cases development at one location is a substitute for another, with no or limited net impact. Nonetheless the spatial dimension has to be considered in relation to impacts on different areas/socio-economic groups.

- Business travel: a consequence of transport changes can be more business travel out of the area: this should have knock-on benefits for business activity (e.g. additional sales won) but also represents a loss of expenditure from the area.
- Sector/business interactions: businesses often benefit by being in proximity to each other. It is important to consider how businesses relate to each other and to assess whether a transport proposal facilitates interactions which enhance performance.

6.3.24 A fuller treatment of these issues can be found in the Standing Advisory Committee for Trunk Road Assessment (SACTRA) Report on [Transport and the Economy](#)¹⁸. Further discussion of research methods is provided in Appendix D (“Further Technical Guidance”).

Required Inputs

6.3.25 The basis of the EALI analysis is an understanding of the local / regional economy in terms of key sectors. The key inputs are GVA and the labour market (employment). Additional data on businesses, tourism and households in Wales may be required. Key data sources include [2001 Census data](#) from the Office of National Statistics and further economic indicators in [NOMIS](#).

Impact Distribution

6.3.26 Decision-makers are also interested in how particular socio-economic groups (including businesses, workers, tourists, etc.) and/or areas might be affected, in terms of levels of income and access to new or existing employment.

6.3.27 This applies particularly in areas where there are issues of social inclusion to be addressed, where a transport proposal could help to

¹⁸ Paragraphs 10.158 and following paragraphs.

enhance social inclusion, or might enable other measures to be more effective in tackling exclusion.

- 6.3.28 Even if the net impact at a local level is expected to be negligible, at the stage of developing a proposal, planners should consider the potential gainers and losers (areas and/or socio-economic groups), and the scale of both positive and negative impacts. In the context of Wales, cross-border issues are also of importance in the analysis, since jobs could be created or transferred to a different country.
- 6.3.29 In all cases, it is desirable to capture spatial and distributional impacts. In Wales, the distribution of spatial impacts is relevant, considering large parts of the country has EU [Convergence programme](#) area status. Distributional considerations are particularly important when the proposals could affect regeneration areas, which might include any areas that are the focus for targeted policy initiatives aimed at improving economic and/or social conditions in that area.
- 6.3.30 The distribution of the EALI can be treated qualitatively in Stage 1 appraisal, while in Stage 2 some GIS representation of the distribution impacts against relevant indicator(s) is likely to be helpful.

Output and Presentation

- 6.3.31 An assessment of how the transport intervention is expected to contribute towards enhanced performance (in terms of gross GVA and/or employment impacts) in the sector (e.g. business, households) or sub-sector (e.g. industry, tourism, retail, etc.) under consideration can be made in a tabular, geographical (using GIS) or graphical format, at the appropriate local, regional and Welsh spatial levels. A consideration of how sectors might interact needs to be undertaken; in most cases this can be undertaken descriptively, but where an economic model is available this is an impact that should be capable of being modelled.

- 6.3.32 The suggested way of bringing together information is to use a summary assessment table, as given in the example shown in Table 6.4.
- 6.3.33 In this example, the net impact within the impact area is a gain of 260 jobs (here the timeframe issue is ignored for ease of exposition). This is shown in the first part of the table. Some of this impact arises because of displacement elsewhere in Wales – here 200 jobs are displaced elsewhere in Wales, leaving a net gain to Wales as a whole of 60 jobs.
- 6.3.34 Outputs as such need to be accompanied of adequate demonstrations of how they were derived, the assumptions used and the levels of confidence associated to them.



TABLE 6.4. AN EXAMPLE OF POTENTIAL EALIS

Sector	Assessment Time Frame	Notes	Summary of Jobs Impacts		
			Gross impacts gains/gainers	losses/losers	Net impact gains/gainers
Business sector located in impact area					
Manufacturing and processing	current future	Extra demand for labour	300	70	230
Locally traded services	current future				
Externally traded services	current future		Extra demand for labour	250	100
Inward/mobile investment	current future				
Household sector in impact area					
Labour/job search	current future	Extra demand met within area			
Tourism – outbound	current future			70	-70
Day trips outbound	current future			50	-50
Day trips within area	current future				
Residents – migration	current future				
TOTAL within Impact Area	current future		550	290	260
Business sector located outside impact area					
Manufacturing and processing	current future	Includes gain from day trips into this area from impact area	0	50	-50
Externally traded services	current future		50	150	-100
Inward investment	current future				
Household sector outside impact area					
Tourism – outbound	current future				
Day trips outbound	current future			50	-50
Migration to impact area	current future				
TOTAL outside Impact Area			50	250	-200
TOTALS					
Sector interactions/synergies	current future				
total Wales level impacts	current future		n/a	n/a	60
Net impact	Overall impacts			Summary of distributional impacts	
	Impact area	Gain of 260 jobs		Impact area: national	
	national	Gain of 60 jobs			



7 ENVIRONMENTAL IMPACTS

7.1 Overview

- 7.1.1 Appraisal under the environment impact area is a requirement for both WeITAG stages. All plans, programmes and projects¹⁹ should be screened and scoped in accordance with European, UK and Welsh Strategic Environmental Assessment and Environmental Impact Assessment requirements to ensure legal compliance.
- 7.1.2 The appraisal criteria in this guidance are consistent with European requirements, while the level of detail required is such that, by properly following the guidance on the appraisal of transport proposals in WeITAG, these assessments are likely to satisfy the requirements of EU and national legislation. However, local authorities and promoters must satisfy themselves that this is the case. In addition, the regulatory requirements on screening and consultation are covered in WeITAG.
- 7.1.3 The SEA Directive applies to plans and programmes, and modifications to them, whose formal preparation began after 21 July 2004. It also applies to plans and programmes whose formal preparation began before that date, if they have not been adopted (or submitted to a legislative procedure leading to adoption) by 21 July 2006. This guidance refers only to 'plans', but this should be taken to include all relevant plans or programmes regardless of their formal titles. SEA will normally be required for new transport plans. Extensions or amendments to those plans and other new transport plans may, in certain circumstances, require SEA. Therefore when WeITAG is applied for strategies (e.g. Regional Transport Plans), an SEA is a legal requirement (Stage 1 only).
- 7.1.4 The SEA Regulations for Wales stipulate the need for a SEA process to be undertaken alongside the development of certain plans and programmes, and documentation needs to be produced at key stages.

¹⁹ This chapter uses standard SEA Directive terminology relating to “plans and programmes”, however, this should be understood in the context of this guidance as “schemes and strategies”.

In particular, the EU Directive on [SEA](#)²⁰ requires the production of a report on the assessment of environmental impacts for these plans and programmes. This has been implemented by incorporation into UK law applying to Wales²¹ which requires the preparation of an Environmental Report (ER) as the reporting requirement for SEA. There is also a requirement to produce a summary of how the ER and responses to consultation have been taken into account, how environmental considerations have been integrated into the plan/programme, with enough information to make clear any changes made or alternative rejected, i.e. what is often referred to as the SEA Statement. Further information on SEA is provided in section 7.2.

- 7.1.5 Similarly, the EU directive on [Environmental Impact Assessment](#)²² may require an Environmental Statement to be prepared for individual infrastructure proposals.
- 7.1.6 An Environmental Impact Assessment (EIA) is applicable for schemes (both Stages 1 and 2) and, although there is no legal requirement about the minimum number of options to be appraised, good practice indicates that, like for strategies, more than one option should be considered (in addition to the 'Do-Minimum' scenario). Stage 2 requires a more detailed assessment of the environmental effects than Stage 1 (where much of the assessment can be made on a qualitative basis).
- 7.1.7 Any mitigation measures incorporated as integral part of the strategies, plans or schemes to be appraised (as described in the definition of the proposal and costed as part of the economic assessment) must be clearly described and their impacts appraised accordingly. Further mitigation measures may be identified during the appraisal process, but these should be handled differently from those above, since their impacts have not been considered in the appraisal.

²⁰ EU Directive 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment. This directive came into force in the UK in July 2004.

²¹ Welsh Statutory Instrument 2004 No. 1656 (W.170) - The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004.

²² EU Directive 85/337/EEC on the Assessment of the Effects of Certain Public and Private Projects on the Environment.

- 7.1.8 Where an 'appropriate assessment' is required under the Habitats Directive²³, the SEA must contain the information that will be required to inform that assessment. Where a proposal requires an 'appropriate assessment' it can be incorporated within the SEA. If this is the case, the Environmental Report should include a specific section under the heading; 'the likely significant effects on the internationally important habitats and / or species' to aid the appropriate assessment process. Further guidance on carrying out an 'appropriate assessment' is contained in the EU Habitats and Birds Directive Handbook²⁴.
- 7.1.9 It should also be noted that the Welsh Assembly Government consulted on the [Draft Annex to Technical Advice Note \(TAN\) 5 on Appropriate Assessment](#) (David Tyldesley and Associates, 2006) and although this refers to local authority land use plans only, it provides useful background and context. In particular, it should be noted that:

European sites are Special Protection Areas (SPA) classified under the EC Birds Directive 1979, candidate Special Areas of Conservation (cSAC), and Special Areas of Conservation (SAC) designated under the EC Habitats Directive 19925. As a matter of policy the Assembly Government expects public authorities to treat all Ramsar sites, and potential SPAs (pSPA), in Wales as if they are European sites for the purpose of considering development proposals that may affect them. Offshore marine sites will also require consideration although there are no OMS designated at present.6 For ease of reading this guidance all SPA, pSPA, SAC, future OMS and Ramsar sites to which HRA applies are referred to as 'European sites'²⁵.

7.2 Strategic Environmental Assessment (SEA)

- 7.2.1 This section provides an overview of the approach to SEA for transport plans and programmes in Wales in accordance with the requirements of European Directive 2001/42/EC on the assessment of the effects of

²³ EU Directive 92/43/EEC on 'The Conservation of Natural Habitats and of Wild Fauna and Flora'.

²⁴ Environment Agency, Natural England & Countryside Council for Wales. EU Habitats & Birds Directives (The Handbook is regularly revised and updated. For more information about the latest version of these documents see: <http://www.environment-agency.gov.uk/subjects/conservation/295641/>

²⁵ David Tyldesley and Associates (2006) – Ibid – Paragraph 1.1.7.

certain plans and programmes on the environment, referred to as the SEA Directive. The Directive was transposed in Wales through The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 (Statutory Instrument 2004, no. 1656).

- 7.2.2 The objective of the SEA Directive is 'to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans ... with a view to promoting sustainable development' (Article 1). As stated in section 7.1, an SEA is likely to be required for the preparation of most transport plans.
- 7.2.3 While some of the requirements for SEA will be fulfilled through the transport appraisal process, it is likely that some additional work will be required in order to meet the statutory requirements of the SEA Directive. In particular, the key difference between appraisal and assessment needs to be recognised, in that
- **Appraisal** looks at long term, permanent effects, and typically uses a fixed methodology regardless of the issues involved or whether the issues will be addressed through the appraisal process. The focus on appraisal is to determine whether a plan or project is worthwhile.
 - **Assessment** more usually deals with a range of effects, including direct/ indirect, short/ long term, secondary, cumulative, synergistic etc., and consequently uses the methods that are most appropriate for addressing the specific issues in question. The focus of assessment is to determine whether the predicted effects are significant.
- 7.2.4 In order to overcome this, and to ensure that the appraisals carried out for transport plans in Wales satisfy all the regulatory requirements of the SEA Directive, the approach to be adopted should be consistent with the advice already provided by the UK Government on SEA generally²⁶ and guidance in [WebTAG Unit 2.11](#).
- 7.2.5 The SEA should be started early in the process and aligned to the preparation of the plan. SEA should be an iterative process of

²⁶ Office of the Deputy Prime Minister et al (2005) - A Practical Guide to the Strategic Environmental Assessment Directive: Practical guidance on applying European Directive 2001/42/EC "on the assessment of the effects of certain plans and programmes on the environment".

collecting information, defining alternatives, identifying environmental effects, considering ways of mitigating adverse effects and revising proposals in the light of predicted environmental effects. However, it is important to identify an end-point when further iterations are unlikely to bring further significant improvements in predicting the environmental effects of the plan or programme.

- 7.2.6 Table 7.1 illustrates the main stages that should be following in carrying out a Strategic Environmental Assessment (SEA). However, it is important that this is done flexibly and tailored to the needs of the plans being assessed, while at the same time ensuring that the requirements of the SEA Directive are met. Guidance on the approach to each stage of the SEA as illustrated in Table 7.1 can be found in Appendix E.



TABLE 7.1. STAGES IN THE STRATEGIC ENVIRONMENTAL ASSESSMENT PROCESS

Stage	Task	Purpose
Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope	Identifying other relevant plans, programmes and environmental protection objectives	To establish how the plan or programme is affected by outside factors, to suggest ideas for how any constraints can be addressed, and to help to identify SEA objectives.
	Collecting baseline information	To provide an evidence base for environmental problems, prediction of effects, and monitoring; to help in the development of SEA objectives.
	Identifying environmental problems	To help focus the SEA and streamline the subsequent stages, including baseline information analysis, setting of the SEA objectives, prediction of effects and monitoring.
	Developing SEA objectives	To provide a means by which the environmental performance of the plan or programme and alternatives can be assessed.
	Consulting on the scope of SEA	To ensure that the SEA covers the likely significant environmental effects of the plan or programme.
Stage B: Developing and refining alternatives and assessing effects	Testing the plan or programme objectives against the SEA objectives	To identify potential synergies or inconsistencies between the objectives of the plan or programme and the SEA objectives and help in developing alternatives.
	Developing strategic alternatives	To develop and refine strategic alternatives.
	Predicting the effects of the plan alternatives	To predict the significant environmental effects of the plan or programme or programme, including and alternatives.
	Evaluating the effects of the plan or programme, including alternatives	To evaluate the predicted effects of the plan or programme and its alternatives and assist in the refinement of the plan or programme.
	Mitigating adverse effects	To ensure that adverse effects are identified and potential mitigation measures are considered.
	Proposing measures to monitor the environmental effects of plan or programme implementation	To detail the means by which the environmental performance of the plan or programme can be assessed.
Stage C: Preparing the Environmental Report	Preparing the Environmental Report	To present the predicted environmental effects of the plan or programme, including alternatives, in a form suitable for public consultation and use by decision-makers.
Stage D: Consulting on the draft plan or programme and the Environmental Report	Consulting the public and Consultation Bodies on the draft plan or programme and the Environmental Report	To give the public and the Consultation Bodies an opportunity to express their opinions on the findings of the Environmental Report and to use it as a reference point in commenting on the plan or programme. To gather more information through the opinions and concerns of the public.
	Assessing significant changes	To ensure that the environmental implications of any significant changes to the draft plan or programme at this stage are assessed and taken into account.
	Making decisions and providing information	To provide information on how the Environmental Report and consultees' opinions were taken into account in deciding the final form of the programme to be adopted.
Stage E: Monitoring the significant effects of implementing the plan or programme on the environment	Developing aims and methods for monitoring	To track the environmental effects of the plan or programme to show whether they are as predicted; to help identify adverse effects.
	Responding to adverse effects	To prepare for appropriate responses where adverse effects are identified.

7.3 Environmental Impact Assessment (EIA)

- 7.3.1 Some transport projects will require an Environmental Impact Assessment (EIA) under EU Directive 85/337/EC (EIA Regulations as amended) to be undertaken. Where EIA is needed for a scheme, it is likely to be informed by the findings of the Strategic Environmental Assessment. EIA is a procedure that must be followed for certain types of projects when planning permission or some other sort of 'development consent' (e.g. an order made under the Transport and Works Act 1992) is sought. EIA draws together, in a systematic way, an assessment of a project's likely significant environmental effects. In this way, the importance of the predicted effects, and the scope for reducing them, are properly understood by the public and decision-makers before the consent is given or refused.
- 7.3.2 However, in terms of WelTAG's application to transport proposals applying for funding or support from the Welsh Assembly Government, this may be done prior to an EIA to support the relevant consent application having been carried out. Therefore, where the Stage 2 WelTAG appraisal is being carried out before an EIA is done, the approaches described here should be followed. Where an EIA has already been carried out, and an environmental statement has been prepared, the more detailed information available from this should be used to inform the Stage 2 appraisal, and referenced as appropriate.
- 7.3.3 It is important to notice that some of the issues considered above for the Strategic Environmental Assessment (for instance, "Scoping", "Defining baseline information" and "Predicting and Evaluating the Significance of Environmental Effects") are also applicable to EIA.

7.4 Noise

Impact Description

- 7.4.1 Noise annoyance is defined by the World Health Organisation as 'a feeling of displeasure evoked by noise'. Noise nuisance from transport sources can adversely affect the quality of living of local communities. Vibration is a similar effect, but instead of being transmitted by air, it is transmitted by the earth. Noise is normally considered as an

approximate indicator for both noise and vibration, since its effects are normally felt more strongly.

- 7.4.2 The introduction of transport proposals may generate additional noise, both during construction and system operation. This guidance focuses on the operational noise impacts, since any construction impacts will be temporary and will be unlikely to matter in the overall decision-making process. If changes in demand occur elsewhere in the network (e.g. trip redistribution), the effects (positive or negative) could be felt well away from the new infrastructure. The assessment requires a definition of the locations where noise levels are expected to change most as a result of the proposal implementation.
- 7.4.3 Noise from transport sources is measured in dB(A). It is important to consider that noise is expressed by the logarithm function of flow and speed. Thus, a 3 dB(A) change in noise levels would be achieved by halving or doubling the total traffic flow. This suggests that no further effort should be wasted in the appraisal of noise levels when the traffic impact is expected to be low, particularly in Stage 1.

Appraisal Method for Stage 1

- 7.4.4 For Stage 1 (both strategies and schemes), a qualitative assessment of the potential noise impacts may be sufficient, highlighting the key issues, expected impacts and geographic locations most affected.
- 7.4.5 However, for schemes where the results from a transport model are available at an early stage and the changes in traffic are considered significant, then a simplified version of the approach for Stage 2 (described below) may be more appropriate.

Appraisal Method for Stage 2

- 7.4.6 For Stage 2, a quantitative assessment is more appropriate. Established predictive methodologies exist for the estimation of road²⁷, rail²⁸ and air²⁹ noise impact, both at the source and at receptor points (these methods are also described in [WebTAG Unit 3.3.2](#)).
- 7.4.7 For estimation of exposure to noise, noise contours using 3dB(A) increments for road and 5dB(A) for rail need to be mapped and overlaid with population distribution data (population catchments with population exposed). Annoyance response relationships have been developed (see [WebTAG](#)) to estimate the percentage of people likely to be annoyed by road and rail traffic noise as a function of the noise level.
- 7.4.8 For road and railway proposals, the analysis can be restricted within a 300 metre buffer from the noise sources, since significant impacts are not likely to occur beyond that, and this is the limit of eligibility for mitigation measures under the [Land Compensation Act 1973](#). For air proposals, the analysis needs to extend to the areas where impacts are considered significant.
- 7.4.9 The revised guidance in [WebTAG Unit 3.3.7](#) provides the assessment of the transport-related noise impacts experienced at residential locations in urban areas between 6:00 and midnight from road and rail noise. The guidance also includes a noise calculation spreadsheet which automates the changes in noise levels and in the number of people annoyed. This new guidance should be used to appraise all new options, whilst schemes already being appraised should continue to use the existing guidance. All schemes submitted for funding after the 1st January 2007 are expected to be consistent with this new guidance.
- 7.4.10 As part of the Department for Transport's wider research programme to broaden the range of monetised impacts within transport appraisal to

²⁷ Department of Transport and Welsh Office (1988) Calculation of Road Traffic Noise, HMSO, London.

²⁸ Department of Transport (1995) Calculation of Rail Noise, HMSO, London.

²⁹ Civil Aircraft Noise Contour Model, [Civil Aviation Authority](http://www.caa.co.uk/application.aspx?catid=33&pagetype=65&appid=11&mode=detail&id=784).
<http://www.caa.co.uk/application.aspx?catid=33&pagetype=65&appid=11&mode=detail&id=784>

aid the decision-making process, the revised guidance in [WebTAG](#) includes a method for estimating the net present value of noise from new proposals. The method is based on the differences in the market prices of houses exposed to changing levels of road and rail traffic noise (a method for noise from aviation is soon to become available). Planners are not currently required to use this technique as part of a WeITAG appraisal but they are free to do so.

Required Inputs

- 7.4.11 For the assessment of noise at source (i.e. noise produced by the source before considering any propagation effect), the key inputs are as given in table 7.2 (irrespective of whether vehicles transport people or freight).

TABLE 7.2. INPUTS FOR ASSESSMENT OF NOISE IMPACTS

Road	Rail	Air
Traffic flow	Train frequency	Aircraft flow
% heavy vehicles	Number of coaches	Aircraft type
Traffic speed	Train speed	Power/speed

- 7.4.12 For the impacts of noise at receptor points (i.e. considering the effects of propagation), the additional points in Table 7.3 are required:

TABLE 7.3. ADDITIONAL INPUTS TO ASSESS NOISE AT RECEPTOR POINTS

Road	Rail	Air
Distance source-receptor	Distance source-receptor	Aircraft position and altitude at locations near airports
Façade reflections	Façade reflections	Building noise insulation
Barrier/obstruction	Barrier/obstruction	
Surface/ground	Surface/ground	

- 7.4.13 If a measure of exposure is needed, then population distribution data is also required (see below).

Impact Distribution

- 7.4.14 The population living or working in the vicinity of the proposal is likely to be that most strongly affected by noise nuisance. In Stage 1, the density, land use or socio-economic characteristics of the population affected by different levels of nuisance can be described qualitatively. In Stage 2, a visual representation of the distributional impacts is recommended (see “Output and Presentation” section below). This should be done against any relevant indicators, which can vary from proposal to proposal, such as the geographic distribution of the population density in the affected areas, land use (with particular reference to the location of any noise-sensitive locations such as schools, hospitals, residential areas, etc.) and socio-economic characteristics.

Output and Presentation

- 7.4.15 For Stage 1, it may be sufficient to describe qualitatively the likely magnitude of the effects on the environment (in terms of the differences between the Do-Minimum and Do-Something scenarios), and the number of people likely to benefit or disbenefit from the implementation of the proposal.
- 7.4.16 For Stage 2, results can be presented in terms of the changes in noise levels per link, or changes in population annoyed by noise at different levels, in a table or, preferably, map format. Geographic Information Systems (GISs) can be particularly helpful in summarising the appraisal results in a visually appealing format. Noise contours can be used to spatially display the levels of noise within the study area. In GIS it is also possible to estimate the number of residents within each contour.
- 7.4.17 For both stages, qualitative impacts will be summarised using the seven-point scale measure of significance.

7.4.18 The European Noise Directive³⁰ requires the production of strategic noise maps and noise action plans for major roads, railways and airports. From 2012, the maps will have to be produced using harmonised prediction methods. The project [HARMONOISE](#) (Harmonised, Accurate and Reliable Methods for the European Directive On the Assessment and Management of Environmental NOISE) was designed to fulfil this need, and provides a description of the noise prediction methods for road and railway noise sources that have been developed. Although not available at present, it is expected that software suppliers will subsequently supply computer programs for mapping and action plans. [HARMONOISE](#) changes the basis on which noise levels are predicted, as required by the European Noise Directive, to:

- L_{den} : the equivalent continuous noise level over a whole 24-hour period, but with noise in the evening (19:00 to 23:00) increased by 5 dB(A) and noise at night (23:00 to 07:00) increased by 10 dB(A) to reflect the greater noise-sensitivity of people at those times; and
- L_{night} : the equivalent continuous noise level over the night-time period (23:00 to 07:00).

7.4.19 Noise maps have been produced on this basis for London and Birmingham, and are being developed for 20 other English cities presently. The Welsh Assembly Government has undertaken development studies for noise mapping in Wales, but presently such mapping is not generally available.

7.4.20 Where planners use the monetisation method referred to in Paragraph 7.4.10 they should present the financial calculation in the significance field of the AST and copy it into the Analysis of Monetised Costs and Benefits table.

7.5 Local Air Quality

Impact Description

7.5.1 Exhaust emissions from transport sources disperse in the air, affecting its quality. A deterioration in local air quality can cause damage to

³⁰ The European Directive for the Assessment and Management of Environmental Noise (2002/49/EC).

human health and to the urban environment (e.g. through the soiling of materials, buildings and other structures), while certain pollutants can affect the world's climate (contributing to global warming through greenhouse gas emissions). The latter are dealt with in the next section.

7.5.2 The key local pollutants that affect local air quality are PM₁₀ and NO₂.

Appraisal Method

7.5.3 This criterion can be assessed at different levels:

- Exhaust emissions at the source (i.e. not considering the effects of dispersion);
- Air quality in terms of how pollutants disperse in the atmosphere. Pollutant concentration levels are useful for comparing predictions to air quality standards, hence enabling an indirect correspondence to be made between the impact and human health; and
- Number of people exposed to such pollutant concentration levels. This estimate may be useful to illustrate how many people are actually affected (for instance, the impact may be considered greater in urban areas than in less densely populated areas). The impacts of emissions on designated nature conservation sites (SSSIs, SACs, SPAs and Ramsar sites) should also be considered in accordance with guidance in [DMRB](#)³¹, although care needs to be taken to ensure that this is also consistent with draft guidance on 'appropriate assessment'³²

Appraisal Method for Stage 1

7.5.4 Stage 1 will normally not require more than the estimations of exhaust emissions, applying average emission rates (in grams per kilometre) to the number of vehicle-km estimated to be removed from or added to the network. This approach provides the overall changes in network-wide emissions and is valid for all modes. Clearly, this is only possible if a previous mechanism (e.g. transport model) has been applied to

³¹ Volume 11, Section 3, Part 1.

³² David Tyldesley and Associates (2006) - Draft Annex To Technical Advice Note 5: Nature Conservation And Planning – "Draft Guidance The Assessment Of Development Plans In Wales Under The Provisions Of The Habitats Regulations" - Consultation Version 20 October 2006 - Welsh Assembly Government.

estimate the changes in the number of trips. Otherwise, even a qualitative approach may be justifiable in some cases.

Appraisal Method for Stage 2

- 7.5.5 Stage 2 is likely to require a more sophisticated approach, using detailed emission functions for different vehicle types and pollutants, which are dependent on average traffic speed (as per [DMRB](#) method³³ for the calculation of road traffic emissions). It can also go further to estimating changes in air quality or level of exposure as indicators (see further details below). It must be emphasised, however, that due to the constant improvements in vehicle efficiency, emission regulations, fitting of catalytic converters in petrol engines or filters in diesels, etc., air quality is currently less of a problem, and is likely to become even less of a problem in the future. Therefore, any additional effort to estimate air quality must be weighted against the potential benefit from it. While pollution concentration estimates are useful for comparing with air quality standards, emission levels are sufficient for comparing the relative performance of different options.
- 7.5.6 Local air pollution impacts will be assessed in terms of the changes in annual exhaust (i.e. produced locally) emissions of NO_x (nitrogen oxides) and PM (particulate matter). For the local pollutants, if considered necessary, the assessment of air quality impacts (i.e. considering the effects of dispersion) can be undertaken using dispersion models (which are complex and require information such as wind speed, wind direction and temperature) or, for road traffic, the empirical and more straightforward method described in the [DMRB](#)³⁴. If a measure of exposure is required, then concentration levels need to be mapped against population, in order to determine the number of people affected by different levels of degradation.
- 7.5.7 Local air quality impacts are likely to be highly localised in the vicinity of the polluting sources. This is particularly the case in built-up urban areas, where population density is higher and where buildings provide a “canyon effect”, by preventing pollutants to disperse freely into the atmosphere. Thus, the analysis will not need to extend beyond a 200-

³³ Volume 11, Section 2, Part 1.

³⁴ Volume 11, Section 3, Part 1.

metre boundary (as per [DMRB](#) and [WebTAG 3.3.3](#)), and for heavily built up areas it can even be restricted to the properties facing the proposal.

- 7.5.8 In specific cases, the modelling of emission impacts may need to reflect the degree of “stop-start” and acceleration/deceleration in the profile of traffic at a road or location. However, models which incorporate such profiles are complex and require a great deal of data.

Required Inputs

- 7.5.9 The input data required depend on the appraisal level. For the assessment of exhaust emissions, the key inputs are as shown in Table 7.4 (similar for all modes):

TABLE 7.4. INPUTS FOR CALCULATION OF AIR POLLUTANT EMISSIONS

Road	Rail	Air
Traffic flow	Train frequency	Aircraft flow
Traffic composition	Vehicle type (diesel/electric)	Type of aircraft
Traffic speed	Train speed	Power/speed

- 7.5.10 For the assessment of the number of people affected by local air quality impacts, geographic distribution of population data is also required.

Impact Distribution

- 7.5.11 For the local air quality impacts, the socio-economic characteristics (i.e. deprivation, income and employment), density and distribution of the population living or working in the vicinity of the proposal must be described (Stage 1) or geographically represented on a map (Stage 2)

overlaying the impacts on relevant social and/or demographic indicators (see “Output and Presentation” section below).

Output and Presentation

- 7.5.12 As a minimum requirement, the net changes in the emissions of the local pollutants (i.e. the changes between the Do-Minimum and Do-Something scenarios, for each pollutant, in tonnes per year) need to be presented (Stage 1). This can be done in a table format.
- 7.5.13 For the appraisal at Stage 2, local air quality impacts can be estimated on a link-by-link basis, when a transport model is used and its outputs are given on a link basis. Results can be presented on a table or, preferentially, geographically on a map. Maps can show geographically the changes in emissions or, by overlaying the impacts to the population distribution, how populations are affected.
- 7.5.14 For both stages, qualitative effects will be summarised using a seven-point scale measure.

7.6 Greenhouse Gas Emissions

Impact Description

- 7.6.1 CO₂ is considered to be the most important greenhouse gas and, therefore, should be used as the key indicator for the purposes of assessing the impacts of transport options on climate change.

Appraisal Method

- 7.6.2 Here, changes in carbon emissions resulting from any aspect of a proposal should be considered. However, there is little evidence on the impact of transport schemes on carbon emissions except in so far as they are related to changes in fuel consumption. Consequently, this guidance (similar to WebTAG and others) focuses on changes in emissions that are associated with changes in fuel consumption only

(although for practical reasons, this is based on an estimate of changes in veh/km).

- 7.6.3 Although the assessment focuses on CO₂ emissions, these should be considered in terms of the change in tonnes of carbon equivalent³⁵ released resulting from implementing a transport scheme (assuming all carbon present in the fuel will be released as CO₂).
- 7.6.4 Carbon emissions should be estimated for the 'with scheme' and 'without scheme' options for each year of the appraisal period. If information for each year is not available, emissions should be estimated for a number of modelled years, and interpolated or extrapolated from these to cover the whole appraisal period using the same factors that are used for the Cost Benefit Analysis as appropriate to make sure that the assumptions used are consistent with those used to estimate other economic benefits. The monetary value for the change in carbon emissions should also be calculated.
- 7.6.5 Where a scheme involves changes to both road and rail travel, the net change in carbon emissions for impacts on both modes should be estimated, taking account of the difference between the sum of carbon emissions from road and rail in the "with scheme" scenario and the sum of carbon emissions from road and rail in the "without scheme" scenario for each year. The appropriate monetary values and discounting can then be applied to these differences to derive the NPV of the scheme in terms carbon emissions from both road and rail.

Appraisal Method for Stage 1

- 7.6.6 Stage 1 would usually only require the estimations of changes in exhaust emissions, applying average emission rates (in grams per kilometre) to the number of vehicle-km estimated to be removed from or added to the network. Changes in carbon emissions and the monetary value of these over the whole appraisal period should be clearly documented. Qualitative comments and data sources should also be provided as appropriate. However, for both road and rail schemes predictions of emissions will be more accurate the more disaggregated

³⁵ Tonnes of carbon equivalent may be converted to emissions of CO₂ by multiplying by the factor 44/12, and vice versa.

the data is on traffic flow by vehicle type. If this is not available, use of aggregated data could lead to significant errors, and an expert view may be required in order to determine the validity of any conclusions.

- 7.6.7 To estimate changes in CO₂ emissions the [COBA](#) and [TUBA](#) appraisal programs now use estimated changes in fuel consumption, and also calculate the present value of the damages associated with their impacts as an automatic output. The model estimates fuel consumption for every year in the appraisal period for both scenarios, distinguishing between petrol and diesel fuel usage, then converts this into carbon emissions.
- 7.6.8 It should be noted that from April 2008, the Renewable Transport Fuel Obligation will require that by 2010, 5% of total aggregate fuel sales is made up of biofuels, and so result in a reduction in the grams of carbon released per litre of fuel burnt. The level of Obligation has been set as follows: In 2008 biofuels are expected to account for about 2.5% of existing fuel, rising to 3.75% in 2009 and then 5% in 2010. The proportion of biofuels is assumed to remain at 5% thereafter. The [COBA](#) and [TUBA](#) appraisal programs assume biofuels save 50% of carbon relative to conventional fuels in 2005 and that this increases linearly to 75% in 2020.
- 7.6.9 Where [COBA](#) and [TUBA](#) are not used, the [WebTAG Unit 3.3.5](#) global emissions excel spreadsheet can be used to generate the same outputs. Carbon emissions can be estimated using the [DMRB 11.3.1](#) spreadsheet and then entered into the [WebTAG Unit 3.3.5](#) global emissions excel spreadsheet in tonnes for the 'with scheme' and 'without scheme' scenarios for each of the 60 years of the appraisal period. The spreadsheet gives the NPV of the change in carbon emissions for the scheme in question, and the upper and lower bound NPV to inform sensitivity analysis.
- 7.6.10 For emissions from rail, emissions should be calculated on a similar basis. However, until such time as more robust evidence to use for the estimation of emissions from rail is available, the [Rail Emission Model Final Report](#) that was produced for the Strategic Rail Authority³⁶ should

³⁶ A report on rail emissions with detailed data on individual train types was first published by the Strategic Rail Authority in November 2001. It is now available from the Department for Transport:

be used as source emission factors and detailed data for individual diesel and electric train types.

- 7.6.11 The monetary values on which the calculation of NPV is based relate to the additional global damage from each additional tonne of carbon released into the atmosphere, termed the 'Social Cost of Carbon' (SCC). This presently is held to be £70/tC as a central estimate within the range of £35 to £140/tC in 2000 prices for the global damage cost of carbon emissions. This also rises by £1/tC per year in real terms to reflect the increasing marginal cost of emissions over time³⁷.

Appraisal Method for Stage 2

- 7.6.12 For this more advanced stage, more detailed emission functions for different vehicle types and fuels used should be factored in. These are dependent on average traffic speed (as per [DMRB method](#)³⁸ for the calculation of road traffic emissions). It can also go further to estimating changes in air quality or level of exposure as indicators (see further details below). While pollution concentration estimates are useful for comparing with air quality standards, emission levels are sufficient for comparing the relative performance of different options.
- 7.6.13 Global air pollution is assessed by the overall changes in emissions CO₂ (carbon dioxide) on the entire proposal network and beyond. For CO₂, an estimate of the total exhaust emissions usually needs to be complemented with an estimate of the power station emissions, since for global emissions it does not matter where they are generated – all emissions contribute in the end to the same global impact. This is particularly relevant for the assessment of the emission impacts from electricity powered modes, since they produce no emissions at the point-of-use.
- 7.6.14 If [COBA](#) or [TUBA](#) are not used to obtain the value of the change in carbon emissions for the 'with scheme' and 'without scheme' scenarios,

Rail Emissions Model Final Report (November 2001) Strategic Rail Authority/AEA Technology Environment <http://www.dft.gov.uk/pgr/rail/researchtech/research/railmissionmodel>

³⁷ This follows current DEFRA guidance originating from: Clarkson & Deyes (January 2002) - **Estimating the Social Cost of Carbon Emissions** - GES Working Paper 140.

³⁸ Highways Agency (2004) – [Design Manual for Roads and Bridges](#) – Vol.11. Section 3, Part 1.

this can be estimated using the DMRB 11.3.1 spreadsheet and then entered into the WebTAG global emissions spreadsheet (see [WebTAG Unit 3.3.5](#)). As only the opening year will have been assessed as part of the DMRB regional assessment, a forecast year will also have to be estimated and information for other years derived by interpolation and extrapolation as described above.

- 7.6.15 The greenhouse gas assessment is generally undertaken at DMRB Stage 3 together with a regional assessment for emissions of oxides of nitrogen, PM₁₀, carbon monoxide, and hydrocarbons. However, the greenhouse gas estimates should be undertaken for the AST at all stages of the assessment.

Required Inputs

- 7.6.16 The input data required depend on the appraisal level. For the assessment of exhaust emissions, the key inputs are as shown in Table 7.5 (similar for all modes).

TABLE 7.5. INPUTS FOR CALCULATION OF AIR POLLUTANT EMISSIONS

Road	Rail	Air
Traffic flow	Train frequency	Aircraft flow
Traffic composition	Vehicle type (diesel/electric)	Type of aircraft
Traffic speed	Train speed	Power/speed

Impact Distribution

- 7.6.17 Regional and global effects, such as contribution to acid precipitation and emissions of greenhouse gas emissions contributing to climate change, are obviously experienced over a much wider area, beyond national boundaries, on a cumulative basis. Hence, no distributional analysis is required for global emission impacts.

Output and Presentation

- 7.6.18 In quantitative terms, the AST should present the total change in tonnes of carbon emitted between the 'with scheme' and 'without scheme' scenarios for the whole appraisal period (which is the sum of the changes in each year) and also for the scheme opening year. In this instance, a positive value will indicate the scheme has an adverse impact.
- 7.6.19 The Overall Assessment column of the AST should give the NPV of the total change in carbon emissions between the 'with scheme' and 'without scheme' scenarios over the whole appraisal period and copy it into the Analysis of Monetised Costs and Benefits table. A positive value will reflect a net benefit, i.e. there has been a reduction in the change of carbon emissions over the whole appraisal period in comparison to the 'without scheme' case.
- 7.6.20 The AST should also indicate any special features of the appraisal, along with an indication of the key drivers which are responsible for any change in conditions. Any uncertainties involved in the calculation of emissions should also be identified in the assessment column.

7.7 Landscape and Townscape

Impact Description

- 7.7.1 The landscape character of a place is derived from the underlying geology, natural processes and human activity on the land over the years. Townscape relates to the physical and social features of the urban environment, hence is applied to built-up areas.
- 7.7.2 Both aspects are concerned with any visual impact caused by the implementation of the scheme under consideration.

Appraisal Method for Stage 1

7.7.3 The assessment of landscape and visual impacts in rural or urban areas should follow the approach set out in detail in [DMRB](#)³⁹ and guidance issued by the [Landscape Institute](#) and the [Institute of Environmental Management and Assessment](#) (IEMA)⁴⁰. This broadly consists of:

- Identifying any impacts (number and type) and their locations;
- Describing the features, importance and designation of these locations (e.g. designated sites, Areas of Outstanding Natural Beauty (AONBs), conservation areas of local, regional, national or European importance); and
- Determine the scale of the impact.

7.7.4 Environmental features will include those that are covered under national and local designations (this is not only valid for Landscape and Townscape, but also for all the following environmental appraisal criteria described below).

7.7.5 National designations include the five AONBs and the three National Parks in Wales, whereas examples of local designations include:

- Country parks;
- Historic parks, gardens and landscapes⁴¹;
- Local conservation areas; and
- Heritage Coasts (non-statutory designation).

7.7.6 A qualitative approach is usually sufficient at appraisal Stage 1.

³⁹ Volume 11, Section 3, Part 5.

⁴⁰ Guidelines for Landscape and Visual Impact Assessment. 2nd edition (2002) Landscape Institute and Institute of Environmental Management and Assessment

⁴¹ Cadw ICOMOS Register of Landscapes of Outstanding Historic Interest in Wales.

Appraisal Method for Stage 2

- 7.7.7 Stage 2 will need to follow the same method as for Stage 1, however, a greater level of detail and as much quantitative assessment on the extent of the impact as possible will be expected.
- 7.7.8 A site visit (preferably by an expert) could be valuable in undertaking these tasks and further expert analysis and advice may be necessary in Stage 2.
- 7.7.9 An important resource in undertaking landscape assessments in Wales is the [LANDMAP Methodology](#). This is the national information system, devised by the [Countryside Council for Wales](#), for taking landscape into account in decision-making.
- 7.7.10 [LANDMAP](#) separates the landscape into five aspects:
- **Geological Landscape:** this is the study of the geology, geomorphology and hydrology of the area.
 - **Landscape Habitats:** looks at the distribution of vegetation and habitats and the basis for landscape ecology.
 - **Visual & Sensory:** this aspect identifies those landscape qualities that are perceived through the senses. It deals with the individual physical attributes of landform and land cover, as well as their visual patterns of distribution and sensory characteristics, and the relationships between them in a particular area.
 - **Historic Landscape:** focuses on how archaeological and historical sites relate to each other and to the surrounding landscape.
 - **Cultural Landscape:** this considers the relationship that exists between people and places, how people have given meaning to places, how the landscape has shaped their actions and their actions have shaped the landscape.
- 7.7.11 The process for gathering, organising and evaluating [LANDMAP](#) Information into a nationally consistent dataset is similar for each of the five Evaluated Aspects and involves the following steps:
- **Step 1:** Classifying and mapping distinct Aspect Areas;
 - **Step 2:** Completing a detailed data capture form for each Aspect Area identified through desk and field work as appropriate;

- **Step 3:** Preparation of an accompanying Technical Report; and
- **Step 4:** Submission for Quality Assurance assessment to ensure consistency and accuracy (for studies based upon the 2003 methodology update).

7.7.12 However, it is important that information from [LANDMAP](#) on landscape effects is not “double counted” when the appraisal is covered under other topics such as Heritage (historic landscapes) and biodiversity.

Required Inputs

7.7.13 [LANDMAP](#) will ultimately cover the whole of Wales, and will provide the starting point for landscape characterisation. It will also be important to determine whether any environmental impact assessments have been undertaken, since these will provide valuable information to the appraisal, avoiding any duplication of effort.

7.7.14 In Stage 1, no hard data is required for the assessment of this criterion, however, a map overlaying the scheme on the local area, showing the main environmental features, is useful to help determine the scope for any impacts. Such environmental features map can be displayed geographically using GIS, overlaid on other background information (e.g. population density, designated areas, etc.) available from [national statistics online](#), local authorities and various environmental data sources (see Table F7.1). Strategic and/or detailed constraint maps should be prepared showing how the entire proposed transport scheme may affect the neighbouring existing environmental features and the hinterland in general.

7.7.15 Welsh national designated site boundaries in a digital GIS-ready format can be purchased from the [Countryside Council for Wales](#) whilst local designations can be requested from the local authorities/unitary authorities. It is important to acknowledge the data originators via correct copyright permissions in whatever mapping applications are used.

7.7.16 For Stage 2, in addition to the analysis required for Stage 1, estimates of the number and type of feature affected, as well as the degree of impact, may also be required.

Impact Distribution

- 7.7.17 Landscape and visual impacts can be experienced over wide areas, depending on the scale of the proposal and the sensitivity of the landscape. This is particularly the case if new infrastructure is in an elevated position, or in a relatively flat setting, where impacts on views may be possible from great distances. In such cases, it may be difficult to determine the number of people adversely affected and the degrees to which they are affected. More generally, however, effects are likely to be limited to the immediate vicinity of specific proposals. It is useful, as a minimum, to determine, and if possible to characterise the population most affected by the proposal. Clearly, the level of detail of the distributional analysis in Stage 2 should be more detailed than in Stage 1.

Output and Presentation

- 7.7.18 At early stages of proposal development, a constraints plan and a statement of the likely effects of the proposal should be prepared. A brief visual survey also will be required. Limitations and assumptions made should be made clear.
- 7.7.19 More detailed analysis of the landscape and the proposals will be required at later stages of the proposal development (possibly with estimations of the number, location and type of species affected). Again, all known information of relevance should be reported, together with a statement of the limitations and assumptions.
- 7.7.20 Maps will help greatly the presentation of results and their use is encouraged whenever possible.
- 7.7.21 The qualitative impacts will be summarised using a seven-point scale for determining their significance.

7.8 Biodiversity

Impact Description

- 7.8.1 These relate to the loss, damage or disturbance of fauna and flora species, ecosystems and habitats. It also refers to any enhancement of biodiversity.

Appraisal Method for Stage 1

- 7.8.2 The methodology for appraising the effects of proposals on biodiversity and earth heritage broadly follows the approach to appraising QoL capital set out in Appendix E (E3.1). Applied to biodiversity, the approach in summary is to:

- Describe sequentially the characteristic biodiversity and earth heritage features;
- Appraise environmental capital – using a set of indicators, this is done by assessing the importance of these characteristic features, why they are important, and their inter-relationships;
- Describe how proposals impact on biodiversity and earth heritage features, including effects on its distinctive quality and substantial local diversity; and
- Produce an overall assessment of the significance of the impact based on a seven-point scale.

- 7.8.3 International and national biodiversity designations include:

- Special Sites of Scientific Interest (SSSIs);
- Sites designated under the Ramsar Convention on Wetlands;
- Special Protection Areas (SPAs) under the EU Directive on the conservation of wild birds;
- Special Areas of Conservation under the EC Habitats Directive;
- Local Nature Reserves (LNRs);
- National Nature Reserves (NNRs);
- Wildlife Sites;
- Marine Nature Reserves;
- Biogenetic Reserves designated by the Council for Europe; and

- Biosphere Reserves designated by UNESCO under its Man and the Biosphere programme.

7.8.4 Where strategic level or corridor studies involve options with clearly defined routes and modes of transport, the principles of the appraisal process are the same as those described in the “Landscape and Townscape” section above. Where the strategic study does not provide clear definition of routes or possible modes of transport, a more strategic level of appraisal will be necessary. Account should also be taken of the advice on assessing ecology and nature conservation effects given in the [DMRB](#), Volume 11, Section 3, Part 4.

7.8.5 It should be noted that where the proposal comes under the provisions of the Habitats Directive, an initial screening assessing its potential to affect a relevant conservation site is required. The initial screening is simply a matter of determining whether the proposal is located within the relevant distance of a protected site (i.e. a Natura 2000 Site or Ramsar Site). If it is, an appropriate assessment will be required, and further advice on this is available from the EU Habitats and Birds Directive Handbook⁴². If the initial screening shows the proposal is beyond the relevant distance, then further action would not normally be required, however, it is important to bear in mind that activities outside these distances could still have potential to affect a protected site, although such cases are likely to be exceptional. Where it is unclear whether a conservation assessment is required, the proposal should be discussed with the [Countryside Council for Wales](#) as early as possible. Again, it should also be noted that the Welsh Assembly Government has recently consulted on a new Annex to TAN 5 on Appropriate Assessment⁴³, and although this refers to local authority land use plans only it provides useful background and context.

7.8.6 A qualitative approach is usually sufficient at Stage 1 appraisal.

⁴² Environment Agency, Natural England & Countryside Council for Wales. EU Habitats & Birds Directives (The Handbook is regularly revised and updated. For more information about the latest version of these documents see: <http://www.environment-agency.gov.uk/subjects/conservation/295641/>

⁴³ David Tyldesley and Associates (2006) - Draft Annex To Technical Advice Note 5: Nature Conservation And Planning – “*Draft Guidance The Assessment Of Development Plans In Wales Under The Provisions Of The Habitats Regulations*” - Consultation Version 20 October 2006 - Welsh Assembly Government.

Appraisal Method for Stage 2

- 7.8.7 Stage 2 will need to follow the same method as for Stage 1, however, a greater level of detail and as much quantitative assessment on the extent of the impact as possible will be expected.

Required Inputs

- 7.8.8 A key starting point is considering areas that are protected in terms of nature conservation. About 70% of the Welsh coastline is safeguarded in one way or another. Also, 10% of all the land area in Wales is designated as Sites of Special Scientific Interest (SSSI). These are important places for wildlife habitats, plants and animals, geological features and landforms, and are the central core of the statutory conservation system in Wales.
- 7.8.9 The [Countryside Council for Wales](#) maintains a web-based [interactive map](#) that has information on more than 1,500 of Wales' protected sites. This provides a good starting point for identifying important biodiversity resources in the area of study. It is also essential to consult with the [Countryside Council for Wales](#) on the current extent and status of statutory and non-statutory designations. The [National Biodiversity Network](#)⁴⁴ site also provides a source of official data.
- 7.8.10 Each local authority in Wales has a Local Biodiversity Action Plan (LBAP) identifying habitats and species which require action for conservation. When assessing the impact of a transport proposal, habitats and species listed under section 74 of the Countryside and Rights of Way (CROW) Act 2000, should also be considered.

Impact Distribution

- 7.8.11 Biodiversity is seen as something having collective value to society, and the distributional effects of impacts on biodiversity typically may not therefore need to be considered. However, there may be loss of a site that has a particular impact on a local community which may also suffer

⁴⁴ The NBN Trust. National Biodiversity Network. <http://www.nbn.org.uk/>

from other forms of deprivation, including environmental deprivation, and in such cases the distributional impacts of biodiversity loss may warrant consideration.

Output and Presentation

- 7.8.12 At early stages of strategy or scheme development (e.g. Stage 1), a constraints plan and a statement of the likely effects of the proposals should be produced. Limitations and assumptions made should be made clear in each case.
- 7.8.13 At later stages of development (e.g. Stage 2), a more detailed analysis of the important features, possibly including walkover surveys, will be required. Again, all known information of relevance should be included, together with a statement of the limitations and assumptions. The representation of the expected impacts on a local map would be preferred.
- 7.8.14 The evaluation of the effects should be made based on the seven-point scale of significance.

7.9 Soil

Impact Description

- 7.9.1 Transport schemes can have an impact on the soil of an area, which in turn can strongly influence the vegetation and general habitats the area can support. They may also have an effect on local agricultural and horticultural practices.
- 7.9.2 The converse can also occur, whereby poor soil conditions can constrain the proposed development (e.g. contaminated land).

Appraisal Method for Stage 1

- 7.9.3 Based on the [DMRB](#)⁴⁵ appraisal method for soils, the assessment at appraisal Stage 1 starts with obtaining background information to identify the possible constraints associated with the location of the proposal in question. This includes details of the location and nature of any designated sites in the study area. Agricultural soil quality information should be gathered where available.
- 7.9.4 Some of the designated sites will overlap with the Biodiversity appraisal, described above, but there may be additional information from the planning authority. In particular, seek locations of contaminated land.
- 7.9.5 In addition, obtain information on the geology of the area from the [British Geological Survey](#), and on the agricultural quality of the land ([Agricultural Land Classifications from DEFRA](#)).
- 7.9.6 The suggested representation and write up of this stage in the soil assessment would be:
- A GIS map covering the whole study area, with any schemes marked on the map, along with the geology of the area and designations.
 - An additional map showing ALC would be useful.
 - An accompanying statement describing the characteristics of the designated sites, geology and soil types, contaminated areas and any other related constraints.

⁴⁵ Volume 11, Section 3, Part 11.

Appraisal Method for Stage 2

- 7.9.7 When the scheme is becoming more developed/detailed, the [DMRB](#) appraisal method for Stage 2 recommends an assessment of what needs to be considered (and possibly mitigated against) when the scheme is being built/operated, or the plan is underway.
- 7.9.8 Potential impacts should be appraised in two steps:
- **Magnitude:** Determined by appraising the effects predicted for exposed attributes, this should be categorised on a scale consistent with the consideration of other types of impact.
 - **Significance:** Determined by considering the magnitude of the effect together with the importance of the feature or resource that is affected.
- 7.9.9 Initially, it is important to check that no new sites have been designated since appraisal at Stage 1, or further areas of contaminated land identified.
- 7.9.10 If, at Stage 1, an area of contaminated land was identified as likely to be affected by the proposal/plan, consideration for site investigation work should take place. The levels of any soil contaminants which are detected will need to be assessed in accordance with the current guidelines of the Interdepartmental Committee on the Redevelopment of Contaminated Land (ICRCL).
- 7.9.11 Also, if the proposal was identified as possibly impacting on geological conservation sites at Stage 1, the appropriate statutory body should be contacted to confirm if any further work is required.
- 7.9.12 The suggested results of this stage of assessment to include in the report are:
- A statement describing the geological interest of the area and an assessment impact of the scheme/strategy (including options if available). This assessment should include accepted mitigation measures.
 - A statement of the likely effect of the scheme/strategy on soils and on contaminated land.

Required Inputs

7.9.13 The key information required to evaluate effects on the soil environment are:

- **Environmental constraints:** The [Countryside Council for Wales](#) maintains a web-based [interactive map](#) that has information on more than 1,500 of Wales' protected sites. This is a good resource for identifying sites with delicate soil resources in the area of study. It is also important to consult with the [Countryside Council for Wales](#) on the current extent and status of statutory and non-statutory designations. The [British Geological Survey](#) may also have relevant data for geological designations.
- **Agricultural land quality:** ALCs can be obtained from [DEFRA](#).
- **Contaminated land:** Where the land has been contaminated by waste and residues from former industrial process, the presence of toxic or other hazardous material may pose threats to human health or impose other constraints. Local authorities should be asked for information on contaminated sites, or the data may be available from the [Environment Agency](#).

Impact Distribution

7.9.14 As with biodiversity, the condition of soil is a matter of collective concern. The distributional effects of impacts on soil do not normally therefore need to be considered.

7.9.15 The only exception relates to possible contamination of land on which people depend either directly (because they live on it) or indirectly (their livestock grazes it, for example). Where this is a possibility, the distributional effects should be considered alongside analysis of the distribution of benefits, such as time savings in the case of a transport infrastructure project. If, for example, damage is expected to householders' land in a particular location (and mitigation measures cannot avoid this damage), it is important that the locations in question and the socio-demographic profile of those affected is set out.

Output and Presentation

- 7.9.16 For Stage 1, a statement of the likely effects of the proposals should be produced. Limitations and assumptions made should be made clear in each case.
- 7.9.17 For Stage 2, a more detailed analysis of the important features will be required, together with a statement of the limitations and assumptions. The representation of the expected impacts on a local map would be preferred.
- 7.9.18 An assessment of the significance should be made based on the seven-point scale.

7.10 Heritage

Impact Description

- 7.10.1 In this context, heritage is taken to comprise:
- Buildings (singly or in groups) of architectural or historic importance;
 - Areas, such as parks, gardens, other designed landscapes or public spaces, remnant historic landscapes, archaeological complexes and heritage coasts;
 - Sites (e.g. ancient monuments, places with cultural or historical associations such as battlefields, preserved evidence of human effects on the landscape, etc.);
 - Individual artefacts that form part of the overall archaeological resource; and
 - The sense of identity and place which the combination of these features provides.

Appraisal Method for Stage 1

- 7.10.2 The methodology for appraising the effect of proposals on heritage follows the four stage general approach to appraising 'environmental capital' set out above, leading to an overall assessment of the

significance of the impact. Applied to heritage, the approach for Stage 1 is:

- Describe sequentially the characteristic features of the heritage;
- Appraise environmental capital, using a set of indicators to evaluate the importance of these characteristic features, why they are important, and the inter-relationships between heritage features;
- Describe how proposals impact on the heritage features, including effects on its distinctive quality; and
- Produce an overall assessment of the significance of the impact based on a seven-point scale.

7.10.3 The appraisal should provide an assessment of the scale and seriousness of impacts on historic heritage in specific terms, and the cumulative effect across the study area as a whole. The time period for consideration of impacts should include the worst-case scenario, whenever this would arise, and the situation 15 years after implementation of the proposals.

Appraisal Method for Stage 2

7.10.4 The method for Stage 2 is the same as for Stage 1 (above) but a greater level of detail and a quantification of impacts will be expected in Stage 2.

Required Inputs

7.10.5 Information on historic and heritage resources is available from [Cadw](#). [Cadw](#) is the Welsh Assembly Government's historic environment service that has responsibility for protecting, conserving, and promoting an appreciation of the historic environment of Wales. [Cadw](#) is able to provide information on:

- Buildings of architectural or historic interest;
- Scheduled ancient monuments;
- Historic parks, gardens and landscapes; and
- Conservation areas.

- 7.10.6 Other information may also be available from the relevant local authority.

Impact Distribution

- 7.10.7 Heritage is seen as something having collective value to society. The distributional effects of impacts on heritage do not therefore need to be considered.

Output and Presentation

- 7.10.8 For Stage 1, a statement of the likely effects of the proposals should be produced. Limitations and assumptions made should be made clear in each case.
- 7.10.9 For Stage 2, a more detailed analysis of the important features will be required, together with a statement of the limitations and assumptions. The representation of the expected impacts on a local map would be preferred.
- 7.10.10 An assessment of the significance should be made based on the seven-point scale.

7.11 Water Environment

Impact Description

- 7.11.1 Effects on the water quality include any changes likely to occur to the existing water courses (including rivers, ponds, lakes, wetlands and underground water resources).

Appraisal Method for Stage 1

- 7.11.2 In Stage 1 of the appraisal process, the water features in the study area that may be affected should be identified. The nature of the proposal may vary widely, and would obviously have different potential impacts on the water environment. Impacts during construction of new transport infrastructure should be identified separately from those

arising from transport operations (such as promotion of cycling or walking, improvements to bus services or traffic flow control technologies). The potential impacts arising from the proposals should be identified during the environmental impact assessment process. Once the potential impacts of the proposal have been identified its zone of influence can be determined. For releases to a watercourse, for example, this may be the length of river over which a noticeable change in quality is predicted, while for the creation of new hardstanding, it may represent the area that could be exposed to an increased flood risk.

- 7.11.3 The value of the water environment within the study area should then be characterised by identifying and analysing its attributes. This process is consistent with an environmental capital approach because the water environment is being assessed in terms of the services it provides rather than on purely measurable criteria. Determining the value of different attributes will depend on the location of the proposal and factors such as quality, scale, rarity and substitutability. However, because the majority of the available water data is based on its quality, these can help to indicate the value of the attributes or services provided by a water feature.
- 7.11.4 For example, it may be possible to make judgements of value based on the quality indicators provided (e.g. The Environment Agency's General Quality Assessment (GQA) Grade A is more important than GQA Grade C). However, in most cases, the other factors such as scale, rarity and substitutability will also be important. For large study areas quality data may be the only basis for evaluation, because it will not be practical to identify and collate information on these other factors.
- 7.11.5 Potential impacts should be appraised in two steps:
- **Magnitude:** Determined by appraising the effects predicted for exposed attributes, this should be categorised on a scale consistent with the consideration of other types of impact.
 - **Significance:** Determined by considering the magnitude of impact together with the importance of the feature or resource that is affected.

Appraisal Method for Stage 2

- 7.11.6 The method for Stage 2 is the same as for Stage 1 (above) but a greater level of detail and a quantification of impacts will be expected.

Required Inputs

- 7.11.7 The key information required to evaluate impacts on the water environment are:
- **Quality:** The physical condition of the water environment is monitored by the Environment Agency. Quality indicators at a national, or regional, level are held, as well as information on individual water courses. Nationally the [Environment Agency has digital datasets](#) available for Chemical GQA, Rivers and Catchment Areas, Groundwater Vulnerability, Source Protection Zones, EC Designated Fisheries, and Floodrisk zones, and it should be possible to use these in conjunction with GIS data on the proposals⁴⁶.
 - **Scale:** How the water resource matters to both policy makers and stakeholders, at all levels. This is unlikely to be relevant at a national or global scale (assuming that biodiversity interests are appraised independently), however major aquifers, floodplains, or fisheries may be crucial at a regional or local scale. Generally, the greater the scale at which the attribute is valued, the greater its importance, but care needs to be exercised in making this judgement (for example, where the feature is of great value to a community as the only source of potable water, or for providing a significant proportion of local employment, its importance will far outweigh its scale).
 - **Rarity:** Whether the water attribute is commonplace or scarce, at the scale at which it matters. For example, an attribute that is abundant nationally (such as potable water) will be of high importance if it is locally rare.
 - **Substitutability:** Whether water attributes are replaceable over a given time frame. Although it is possible for most water attributes to be substituted by some means, this will not always be viable. Substitution should therefore be considered in terms of whether it is feasible rather than whether it is possible.

⁴⁶ This is available from the [Environment Agency Website](#).

Impact Distribution

- 7.11.8 The water environment is seen as something having collective value to society. The distributional effects of impacts on the water environment do not normally therefore need to be considered.
- 7.11.9 The exception relates to any negative effects of a proposal on specific locations where people live. In such cases, it will be appropriate to present information concerning the socio-demographic circumstances of these individuals, to be compared with those of the beneficiaries of the proposal.

Output and Presentation

- 7.11.10 The overall impacts of the proposal should be summarised by a qualitative comment and an overall assessment of the significance of the impact from the seven-point scale. This analysis should state whether features and elements present in the water environment are typical of the locality and summarise the overall effect of the proposal on the water environment.

8 SOCIAL IMPACTS

8.1 Overview

8.1.1 Most transport interventions have a social perspective. If they are not intended directly to improve quality of life (by making important journeys possible, for example), they are expected to have at least indirect social effects. A proposal designed to facilitate economic development is desirable because it will bring jobs and thereby directly change local people's lives for the better.

8.1.2 Social objectives, such as improving quality of life, health and welfare are central to policy in Wales, as in other places. This is apparent from '[Wales: A Better Country](#)', the strategic agenda for the Welsh Assembly Government:

"We will continue to promote social inclusion by focusing all of our policies – economic, health, education, transport, housing, the Welsh language and culture and the environment – on building stronger and more sustainable communities across Wales".

8.1.3 Hence, it is essential that the appraisal process addresses the subjects which have been established as policy priorities in Wales and which are meaningful to most people, including concepts such as health and social inclusion. The challenge is to reflect these objectives into standard project appraisal, as:

- For now, and for the foreseeable future, many social impacts of transport proposals show no sign of being monetised, and some are difficult even to quantify. Under the social impact area are some of the less well-established and less quantifiable criteria in transport appraisal. English and Scottish experience has shown that, the less established an appraisal method is, the less influence its results will tend to have on decision-making. Given the importance of the topics under this heading to Wales, it is highly desirable to further develop appraisal methods which would enhance the weight of such objectives in the decision-making process;
- Whilst cost-benefit analysis does a reasonable job of capturing actual impacts, it does less well with the changes in potential benefits. It is often suggested, for example, that people benefit

from the opportunity to use a new, improved or safer transport option even if they do not take advantage of it; and

8.1.4 In order to determine the criteria covered within the social impacts, two specific considerations apply:

- The need to keep the scope of project appraisal manageable by retaining well-established appraisal concepts and methods;
- That social impacts should not be given lower priority in project appraisal.

8.1.5 A balance has therefore been struck which means that the social impacts contain an intuitive collection of impact areas, which have not been covered elsewhere, whilst the better established areas of economy and environment remain, as far as possible, consistent with established practice. The topics covered under social impacts are as follows:

- Transport safety;
- Personal security;
- Permeability;
- Physical fitness;
- Social inclusion; and
- Equality, Diversity and Human Rights.

8.1.6 In the remainder of this chapter, each of the social impact topics is dealt with in turn. In line with the other appraisal areas, the assessment in Stage 1 (relevant for strategies and schemes) will be less detailed than for Stage 2 (for schemes only). The appropriate level of detail for plans is as covered in previous sections of the guidance. A worked example of undertaking the appraisal of the social impacts is provided in Appendix C.

8.2 Transport Safety

Impact Description

8.2.1 The promotion of a safer transport system is a key priority for Wales. “Transport safety” is generally intended to imply “freedom from risk of transport accident” and under this criterion are generally found estimates of the number of personal injury accidents avoided, changes

in the severity of accidents and damage to property that would result from a transport proposal.

- 8.2.2 In WeITAG, the scope includes accidents on both the highway and rail networks and could include accidents that occur off-road to cyclists, pedestrians or equestrians. In reality, the very low frequency of personal injuries on the rail network makes estimation difficult and the lack of data for those travelling in non-motorised environments poses a similar obstacle to measuring safety impacts here.
- 8.2.3 Whilst the methods introduced below are derived from established practice for the appraisal of highway schemes it is very important that planners should not approach scheme development from the perspective of separating vulnerable road users from motorised traffic as the preferred means of reducing personal injury accidents. It is important instead to remember the negative permeability and social inclusion impacts that can follow from such separation measures. There are many ways of reducing transport safety problems, the most effective of which is arguably the global reduction of traffic speeds. Moreover, there is evidence that increased activity on the part of vulnerable road users makes them safer. It is therefore incumbent on planners to bear in mind all the interactions amongst transport users when considering safety impacts. Planners will be expected to demonstrate that they have considered all options in working towards achieving safety objectives.

Appraisal Method for Stage 1

- 8.2.4 At this stage, it is unlikely that analysis will have been carried out in sufficient detail to enable calculation of quantified accident impacts. But it should be possible to make an informed statement about whether the proposal is likely to have a material effect on accident frequencies or their severity, whether positive or negative.

Appraisal Method for Stage 2

- 8.2.5 The following guidance refers to the [DMRB](#)⁴⁷ method which is best suited to major highway infrastructure schemes. Some more locally-focused interventions (such as traffic calming initiatives) will not be suited to accident estimation using this method and planners are encouraged therefore to investigate use of other tools provided they are proven robust. For example, local authority road safety officers may be able to assist in estimating safety benefits from local schemes. There are established methods for this, founded on the “first year rate of return” calculus. There is nothing preventing the use of estimates made this way in the WeITAG appraisal process provided all figures are justified and annualisation is carried out accurately. Planners are referred to the Department for Transport’s [Road Safety Good Practice Guide](#)⁴⁸ and associated Appendix A⁴⁹ which provides examples of interventions and an indication of their average cost and rates of success. The [UK-MoRSE](#) research facility also provides a range of information about various safety measures.
- 8.2.6 The [DMRB](#) method can be used to estimate the changes in the number and severity of road accidents, as well as any damage to property. The same approach is used in the Scottish Transport Appraisal Guidance ([STAG](#)) and in the Department for Transport’s on-line appraisal resource ([WebTAG](#)).
- 8.2.7 Estimates are based on average accident rates, as a function of road types and severity levels (slight, serious and fatal). These rates change gradually over time, to reflect improvements in safety standards by the automobile industry. The accident rates and accident reduction factors, in terms of the personal injury accidents per million vehicle-kilometres (2000 base), for 15 different road types and different speed limits, are

⁴⁷ Highways Agency, Design Manual for Roads and Bridges [DMRB](#) (2001) Economic Assessment, Volume 13.

⁴⁸ Published: 8 October 2001. Modified: 21 February 2006

⁴⁹ Published: 13 December 2006

given in [DMRB](#)⁵⁰. DMRB also provides, per severity level, road type and speed limit:

- The average number of casualties per accident (2000 base);
- The number of casualties per accident reduction factors β ; and
- The proportions of fatal, serious and slight accidents on links.

8.2.8 In addition, the method also provides a monetary valuation of casualty and accident costs by severity level (2002 values and prices). This valuation is not taken into account in the TEE criterion, to avoid double-counting, but is reported within the “Analysis of the Monetised Costs and Benefits”. Finally, [DMRB](#) provides the assumed compound annual percentage rates of growth for accident values.

8.2.9 Care should be taken when using the various rates available for calculation and evaluation of accident savings, given the different base years underlying certain sets of reference values.

8.2.10 There may be circumstances in which the planner believes it necessary to carry out additional analysis to pick out details which the standard method of analysis may not capture. The planner is actively encouraged to pursue these, but to take great care over any such research, be it quantitative or qualitative.

8.2.11 Changes in accidents to users of public transport⁵¹ can be assumed to be negligible, as per current UK Government advice.

Required Inputs

8.2.12 The basic inputs for the estimation of accident impacts are the changes in vehicle-km and average traffic speed. The difficulty is to disaggregate the amount of travel (vehicle-km) per road type, according to the 15 different classifications, as described above. It is often possible, however, to make a certain correspondence between the road

⁵⁰ Highways Agency, Design Manual for Roads and Bridges [DMRB](#) (2003) Economic Assessment, Volume 13, Section 1, Part 2, Chapter 4, March 2003.

⁵¹ Note that other casualties occurring on the railway (eg involving foul play) are not included in WeITAG appraisal of safety impacts.

types in the transport model and the road classification in the safety methodology.

Impact Distribution

- 8.2.13 Accident impacts will generally be applicable to road network users, in which case no further elaboration on distribution is necessary. However, where the proposal will affect a clearly defined area or corridor, the planner could analyse the socio-economic situation for that area compared with neighbouring areas or Wales as a whole, to establish whether the impacts (good or bad) are likely to be experienced, for instance, by a group of atypical wealth or particular disability.

Output and Presentation

- 8.2.14 Three sets of outputs are expected:
- Change in annual personal injury accidents and damage to property resulting from the proposal (reference year is when scheme comes into operation);
 - Change in balance of severity (slight, serious and fatal injuries); and
 - Total discounted savings (the present value of the changes in accident rates, monetised according to current guidance).
- 8.2.15 The first of these is particularly important because it is a more intelligible number than the discounted savings and enables decision-makers to understand very rapidly what would happen in the average year if the proposal went ahead.

8.3 Personal Security

Impact Description

- 8.3.1 The term “personal security” in WeITAG is intended to mean relative freedom from risk or fear of attack or robbery and extends to the transport user’s personal possessions, including bicycles. If the transport proposals under consideration are considered to affect

personal security of users, this needs to be taken into account within the appraisal framework.

- 8.3.2 The distinction between risk and fear is important: appraisal must take account of both the actual incidence of such events and their perceived frequency. A proposal which has a material impact upon users' perceptions of security is significant even if actual risks are unchanged.
- 8.3.3 The degree of security which individuals feel when using the transport network is of great importance, particularly for vulnerable users. It can influence the choice of mode, destination and time of travel, all of which have potential secondary impacts in terms of social inclusion, environmental quality and economic prosperity.
- 8.3.4 Features which increase the sense and perception of security include better lighting, CCTV, informal surveillance and staffing.

Appraisal Method for Stage 1

- 8.3.5 Strategies and schemes at an early stage of development will not ordinarily be defined sufficiently for any detailed analysis of personal security impacts to be carried out. In such cases, planners should assess whether personal security as defined above is expected to improve, deteriorate or remain the same as a result of the implementation of the strategy or scheme.

Appraisal Method for Stage 2

- 8.3.6 It is not realistic to attempt to measure actual incidents of robbery or attack whilst in transit or waiting for public transport (because the numbers are small and events would, in most cases, appear to be located randomly). Even if it were a realistic option, this would be to miss the point because it is perceived security which influences travel decisions and determines an individual's enjoyment or not of a journey.

8.3.7 The method to adopt for public transport proposals is that set out in [WebTAG Unit 3.4.2](#). It is based on how the proposal performs against certain security indicators, as follows:

- Site perimeters, entrances and exists (how well they are marked, design, whether there are physical barriers and the use of materials);
- Formal surveillance (CCTV, their number and location, facilities design affecting staff surveillance);
- Informal surveillance (materials, design, visibility, proximity to other activities);
- Landscaping (features contributing to visibility and sense of security);
- Lighting and visibility (quality and sufficiency of lighting, obstructions hindering visibility and CCTV coverage); and
- Provision of emergency call, help points and public telephones.

8.3.8 [WebTAG Unit 3.4.2](#) includes a worksheet which may aid the planner in setting out the principal impacts of a proposal. Planners may well identify other relevant impact areas which the guidance does not cover. It is legitimate to include these in the appraisal statement.

8.3.9 For other transport modes, a qualitative analysis will be satisfactory, based on the principles set out above for public transport schemes.

Required Inputs

8.3.10 This will generally be a qualitative exercise as relatively little reliable quantitative information is available to support the estimation of personal security impacts. That said, it is legitimate to include quantitative inputs if they have been arrived at through a robust analytical method. An estimate of the number of users affected will enhance the quality of the results.

8.3.11 Because much of security is a matter of perception, it may be appropriate to study site plans and drawings from the perspective of their levels of natural and synthetic security.

Impact Distribution

- 8.3.12 Normally, increased personal security will benefit all users, but vulnerable groups in society, such as women, the elderly or mobility impaired are likely to place greater value on security and therefore are likely to be affected most. Planners should try to describe which groups in society will be affected and how the impacts will be distributed across affected groups.

Output and Presentation

- 8.3.13 The planner should provide a summary of the impacts in qualitative terms, providing any quantitative estimates where these are available, and reliable. If empirical evidence exists concerning the impacts of similar interventions in other locations, this should also be included in the report.

8.4 Permeability

Impact Description

- 8.4.1 This aspect of social impacts is intended to capture the impact of a proposal upon the movement of people in its vicinity on foot, by bicycle and on horseback. In essence, this impact relates to any change in the ease with which people in the affected area can travel by non-motorised modes.
- 8.4.2 This subject is taking on increasing importance as more thought is given to the role of urban design in the achievement of sustainable development. Previously known as “severance”, it has moved from being a peripheral consideration when constructing large pieces of transport infrastructure such as roads and railways. It is now a key factor in the development of transport proposals. Planners may well find themselves appraising a proposal which has been conceived wholly with the aim of improving permeability.
- 8.4.3 This impact needs to take account both of freedom of movement pure and simple (the capacity to travel in any given direction without being obstructed by a transport corridor or site) and of capacity to reach key

services. There is a need to be aware, as well, of the fact that people's travel patterns (and, therefore, perceived needs) are moulded by what is possible. Those living beside a motorway, for example, will not typically attempt to access services located on its other side. If that motorway were removed, their travel patterns might alter quite quickly to take in destinations that were previously out of reach.

Appraisal Method for Stage 1

- 8.4.4 The approach to appraisal for Stage 1 should reflect the degree of detail available concerning the strategy or scheme. In most cases, it is expected that proposals will not be defined in such detail as would enable an appraisal to be carried out to the standard of Stage 2 (see below) but, if such data is held, an approximate appraisal using the WebTAG method is recommended.
- 8.4.5 In other cases, planners should consider all the populations that stand to be affected by the strategy or scheme and arrive at a reasoned view of how permeability will be affected. The picture may be mixed: some unmotorised trips would become easier whilst others would be affected negatively by proposals. A textual summary of these impacts is appropriate.

Appraisal Method for Stage 2

- 8.4.6 The planner is advised to use the method set out in [WebTAG Unit 3.6.2](#) ("Severance"), with the following supplementary observations:
- A distinction should be drawn between the two levels of access described in 8.4.3;
 - The use of all rights of way accessible to walkers, cyclists and equestrians (including footpaths and bridleways) should feature in assessment; and
 - The importance of the impact should be borne in mind: the proportion of total current trips that will be affected by the proposal.

- 8.4.7 These considerations should accompany the question of limitations of permeability (called “levels of severance” in [WebTAG](#)), which addresses the degree of hindrance posed or removed by the proposal.
- 8.4.8 Where detailed analysis is required because a proposal is likely to have complex effects on permeability, the planner is advised to apply the method set out in [DMRB](#) (Volume 11, Section 3, Part 8).

Required Inputs

- 8.4.9 These are as set out in [WebTAG Unit 3.6.2](#). In addition, planners should consider conducting counts and targeted market research where proposals are expected to have a significant effect upon permeability. Where proposals are being brought forward with the aim of improving permeability, there should be a reasonable quantity of data concerning desired and actual movement by non-motorised modes, which the planner should include in the analysis.

Impact Distribution

- 8.4.10 The population affected by the proposal can be disaggregated according to its socio-economic characteristics or geographic location, to enable the relative prosperity of the group to be made explicit.

Output and Presentation

- 8.4.11 This is as set out in [WebTAG Unit 3.6.2](#). Where planners have made use of additional qualitative or quantitative data and analysis, this should be included in the statement. The geographical distribution of the impacts represented on a map could be an advantageous presentation method, particularly if relevant socio-economic characteristics (such as the Index of Multiple Deprivation) can be overlaid on the same map.

8.5 Physical Fitness

Impact Description

- 8.5.1 Health remains a high priority in Wales. This criterion reflects the contribution to physical fitness and general well-being that can be made by travelling on foot, by bicycle or on horseback. The term “physical fitness” has been chosen because it is the aspect of general health that can be most closely associated with active travel. Though there is a link between physical activity and mental health, for example, it is less well-defined.
- 8.5.2 The link between health and transport is reflected in several ways in this guidance. Walking and cycling schemes potentially offer large benefits to users and the local economy. These include increased fitness through physical activity, safety and environmental benefits that add to journey ambience and the numerous benefits that arise through decongestion such as time savings, reduction in accidents and reduced carbon emissions.
- 8.5.3 The importance of the health benefits from increased physical activity when travelling has been demonstrated recently in a research published by [Sustrans](#)⁵² and commissioned by the Department for Transport. This research found that cash spent on cycling and walking could save the NHS considerable amounts of money.
- 8.5.4 Physical fitness impacts are complex and relate to the length, intensity and frequency of exercise taken. Broadly speaking, the more, the better, provided intensity is within safe limits. Different people may find different types of physical exercise more or less strenuous.
- 8.5.5 In March 2007, the Department for Transport released draft guidance for consultation on the appraisal of walking and cycling schemes as [WebTAG Unit 3.14.1](#).

⁵² How Transport can save the NHS – Research by Sustrans, Leeds University, University of Bolton, on behalf of DfT - 2006

Appraisal Method for Stage 1

- 8.5.6 At this stage, it is unlikely that numbers of trips by any mode will have been estimated. It is therefore sufficient for the planner to reach a **reasoned** view as to whether travel by active modes can be expected to increase or decrease as a result of the proposals. Where more can be said with confidence about any distribution implications, this should also be included in the short qualitative statement.

Appraisal Method for Stage 2

- 8.5.7 The method used will depend on the extent and detail of data available. Ideally, the planner will be able to predict changes in the absolute number of kilometres travelled by each mode (walking and cycling), reflecting journeys made by these modes alone as well as public transport trips involving walk/cycle stages.
- 8.5.8 The planner will not ordinarily have data of this quality available though efforts should be made to collect it for proposals likely to have significant impacts on levels of walking, cycling or horse-riding. Where analysis only indicates trip numbers by motorised modes, it will be sufficient to estimate the absolute change in numbers of public transport trips, as a proxy for the increase or reduction in number of walk/cycle stages.

Required Inputs

- 8.5.9 This depends on the appraisal method (as explained above).

Impact Distribution

- 8.5.10 It is well established that there is a strong link between poverty and poor health. It may therefore be important to attempt to show the relative prosperity of the affected group in comparison with the Welsh average, using a socio-economic indicator such as income quintiles or the Index of Multiple Deprivation.

Output and Presentation

- 8.5.11 This depends on the appraisal method, itself a product of the nature of the data available to the planner. If the planner is able to present estimates of absolute distances travelled on foot and by bicycle, these should be set out separately as numbers of kilometres per day. If public transport trips are being used as a proxy for walk stages, it is sufficient to set out the size of the increase or decrease in absolute numbers per day. Where estimates are being made independently of any modelled output, this should be made clear in the appraisal statement.
- 8.5.12 If the planner is in a position to estimate trip lengths in addition to absolute change in distance travelled, their distribution should be set out in graphical form.

8.6 Social Inclusion

Impact Description

It should be made clear at the outset that social inclusion and accessibility are seen as being effectively synonymous for the purposes of WeITAG. The argument is as follows: accessibility is the measurement of the relative ease with which people can get to the destinations and obtain the services that are important to them. Social inclusion, meanwhile, is the degree with which members of society are able to lead a full life. Its converse, social exclusion, is the situation faced by many people whose choices are limited by a range of barriers, a key one of which is a lack of suitable transport. Social inclusion clearly has a wider reach than accessibility – poverty or low educational attainment can often be more significant barriers to a full life than a limited local public transport network – but, in the context of WeITAG, the area of discussion is transport and social exclusion is therefore understood to be the degree to which a lack of accessibility hampers individuals' quality of life. "Social inclusion" has been chosen as the title for use in WeITAG because it is less technical than "accessibility". Another good argument for its use is that it focuses attention on the purposes transport serves (getting people to their destinations) when it is often possible to forget that transport is not an end in itself.

- 8.6.1 When dealing with social inclusion in WeITAG, particular interest is focused on those whose options in life are limited by not having the transport they would wish. It is true that those who have access to cars can face difficulty in reaching important destinations (if money is tight, they may not be able to afford fuel to make long trips, for example) but the reality is that those who do not have access to a car are much more likely to find it hard to make important journeys: the distance may be too great for walking or cycling (always assuming the individual is able to travel in these ways) and the public transport network may not offer services that are affordable, accessible, reliable and timely. This is the key way in which social inclusion is distinct from the Transport Economic Efficiency element of this appraisal process: it (the TEE) values all impacts, positive and negative and so will capture, amongst other things, marginal changes for the better experienced by those whose options are already good. Here we are interested in particular, possibly marginalised, subgroups of society and the impact of proposals on them.

The Social Inclusion Report

- 8.6.2 It is possible to expend significant effort on identifying and quantifying the social inclusion impacts of transport proposals. It is desirable to strike a balance between the amount of effort devoted to appraisal of these impacts and its usefulness to the decision-makers. For example, the social inclusion impacts of certain types of proposal will be negligible. In such cases, this aspect of the appraisal will almost certainly not influence the decision on scheme approval. In contrast, certain proposals will have been conceived with the explicit goal of overcoming a number of social inclusion problems, say, and it is therefore reasonable to expect quite significant impacts under this heading.
- 8.6.3 The concept of the “social inclusion report” is a practical response to this range. Like the [Economic Impact Report](#), it is designed to elicit a full statement of impacts in circumstances where they are expected to be significant or critical, with the understanding that the appraisal task will be “light” in all other cases.
- 8.6.4 Unlike the [Economic Impact Report](#), there is no formal guidance yet for a Social Inclusion Report, and further advice may need to be sought from the Welsh Assembly Government (specific guidance on the subject is under consideration by the Welsh Assembly Government and

is also being contemplated by the UK Government, and is expected to be incorporated in WebTAG). Similar principles and requirements for accounting for all relevant impacts in a comprehensive manner would apply. The criteria which will determine whether a Social Inclusion Report is required as part of the appraisal of a given proposal are set out below:

Test 1: Nature of planning exercise

- 8.6.5 If the key objectives of the strategy or scheme are to improve social inclusion, the compilation of a Social Inclusion Report will normally be mandatory. For Regional Transport Plans, a Social Inclusion Report would not be feasible.

Test 2: Cost of proposal

- 8.6.6 If the total cost of the proposal (including private contributions) exceeds £10 million, a Social Inclusion Report will be required.

Test 3: Area affected

- 8.6.7 If the proposal would significantly affect one or more defined regeneration areas in Wales, a Social Inclusion Report is required. By “significantly affect” is meant: location of proposal is either within (partially or wholly) a defined regeneration area or will affect travel between a regeneration area and a Key Centre (as the term is applied in the Wales Transport Plan) up to fifty miles away from its perimeter.

Test 4: Purpose of proposal

- 8.6.8 If the proposal has been conceived on the basis that it will meet defined social inclusion objectives, it is recommended that a Social Inclusion Report is compiled. In the case of small proposals, planners may feel that the standard appraisal method (set out below) will suffice but it is more than likely that the indicators will not be fine enough to enable the full impact of the proposal to be judged.

Test 5: Significant results from standard social inclusion appraisal

- 8.6.9 8.6.12 et seq. set out the guidance on the standard appraisal method. If the standard appraisal method produces “large positive” or “large negative” results, this is evidence that the proposal may have a significant social inclusion impact. In such cases, a Social Inclusion Report is required.

Test 6: Inconclusive results from standard social inclusion appraisal

- 8.6.10 For various reasons, the standard social inclusion appraisal may not produce a conclusive result:
- The nature of the proposal may be such that the defined indicators will not capture its impacts (e.g. an expansion of the local cycle network or the introduction of a night bus);
 - The picture may be mixed, with one indicator moving in a positive direction whilst another moves the opposite way; and
 - The planner may feel that simple movement in a positive or negative direction is not a sufficient indication of the proposal’s impacts.
- 8.6.11 In any such circumstances, a Social Inclusion Report is recommended. The more criteria are met, the greater the need for a Social Inclusion Report.

Appraisal Method for Stage 1

- 8.6.12 The reality of social inclusion is that it is extremely complex: each individual's circumstances, options and preferences are different and a transport proposal's impacts will reflect this detail. A perfect method for gauging social inclusion impacts would allow for all this complexity so that the exact effect of a proposal would be understood in the context of the affected individuals' precise circumstances. As with all aspects of appraisal, some simplification is necessary in order to make the task manageable. Though it is not primarily intended as a mechanism for appraisal, accessibility planning offers some tools which will serve the purpose well.
- 8.6.13 The [Wales Transport Strategy](#) set out a number of outcomes, the first three of which can be recognised as having a "social inclusion" character. Associated with these outcomes are national indicators which have been developed directly for the purpose of measuring progress or otherwise towards the outcomes. These are set out in table 8.1.
- 8.6.14 The main purpose of the national indicators is for monitoring the progress of the [Wales Transport Strategy](#), and at best they can do an imperfect job of showing social inclusion impacts. The fact that a school is within reach does not mean that it will have places or that its performance is satisfactory to the pupil or their parent. Simply being able to reach a hospital does not ensure that the treatment needed is provided at that location. Equally, the time thresholds may seem far more reasonable for an urban setting than a rural one. Some locations are simply more remote than others. Again, public transport journey time is only one dimension of the overall "cost" of making a journey and it must therefore be seen as a proxy rather than a complete summary. For these reasons, if social inclusion impacts are likely to be significant, fuller analysis is required as part of the social inclusion report. In the majority of cases, though, the indicators will provide a reasonable guide to the likely impacts of a proposal.

TABLE 8.1. CORRELATION BETWEEN WTS SOCIAL OUTCOMES AND NATIONAL INDICATORS

WTS OUTCOMES	NATIONAL INDICATOR
1. Improve access to healthcare	S1. Proportion of households within 30, 60 and 90 minute travel time threshold(s) of a NHS District General Hospital between 10am and 12pm on a Tuesday (i) by public transport and (ii) by car
2. Improve access to education, training and life-long learning	S2. Proportion of people aged over 16 within 30, 60 and 90 minute travel time threshold(s) of 'Learning Providers' (as recognised within the WAG National Planning Framework) between 7am and 9pm on a Tuesday (i) by public transport and (ii) by car
3. Improve access to shopping and leisure facilities	S3.1. Proportion of households within 30, 60 and 90 minute travel time thresholds of a 'Key Centre' between 10am and 12pm on a Tuesday (i) by public transport and (ii) by car S3.2. Proportion of households within 30, 60 and 90 minute travel time thresholds of a 'Key Centre' between 8pm and 10pm on a Saturday (i) by public transport and (ii) by car

8.6.15 The social inclusion report introduced above makes it inappropriate to require detailed appraisal of social inclusion for proposals so a subset of these measures has been chosen for use in appraisal against this criterion. In particular, access by car is not being retained because changes in the ease of getting to key destinations by car are adequately captured under the economy heading (TEE). Also, access to facilities by walking or cycling are not taken forward into the appraisal for three reasons:

- Walking and cycling are dealt with to some extent under the heading of permeability; and
- The expectation is that proposals affecting walking and/or cycling in a significant way will typically be subject to a social inclusion report; and

- The focus on walking/cycling to shopping and leisure facilities in the national indicators means that the capacity to reach health or learning facilities by these modes could be ignored.
- 8.6.16 Finally, the 30-minute threshold is not applied in WelTAG because the guidance needs to be valid for all of Wales and a great many places do not enjoy 30-minute access to key destinations despite being reasonably well-served by public transport. It is feared that retention of the 30-minute threshold would unfairly bias the appraisal method in favour of urban proposals where increased 30-minute catchments could quite readily be seen.
- 8.6.17 The set of eight indicators to be used in appraising social inclusion impacts is therefore as follows:
- 1) Proportion of households within a) 60 and b) 90 minute public transport travel time threshold(s) of a NHS District General Hospital between 10:00 and 12:00 on a Tuesday;
 - 2) Proportion of people aged 16-74 within a) 60 and b) 90 minute public transport travel time threshold(s) of 'Learning Providers' (as recognised within the ELWa National Planning Framework) between 7:00 and 9:00 on a Tuesday;
 - 3) Proportion of households within a) 60 and b) 90 minute public transport travel time thresholds of a 'Key Centre' between 10:00 and 12:00 on a Tuesday; and
 - 4) Proportion of households within a) 60 and b) 90 minute public transport travel time thresholds of a 'Key Centre' between 20:00 and 22:00 on a Saturday.
- 8.6.18 The goal of the appraisal is to establish which of these numbers would change as a result of the scheme, and whether they would increase or decrease.
- 8.6.19 This should be straightforward in the vast majority of cases: if a proposal is going to lead to a denser public transport network (in terms of coverage or frequency) or a more physically accessible network (through vehicle and/or stop design), it is reasonable to conclude that

the above proportions will increase. In the case of a higher frequency, this is because average wait time will decrease and, for multi-stage journeys, interchange time will too. Strictly speaking, network accessibility improvements will not bring additional households within a given journey time but, because of the large numbers of people who have mobility impairments of some kind, it is reasonable to use a slightly fuller interpretation of the indicator here.

- 8.6.20 Similarly, if public transport is going to become quicker or more reliable as a result of the proposal (through road-space reallocation or other priority measures etc), one or more of the indicators is likely to increase. The reasoning in the case of quicker public transport is obvious; where services become more reliable, this reduces both average wait time and average journey time so, given that the indicators should be based on average journey time, this implies an increase in the indicators.

- 8.6.21 Matters become more complex if the changes to the public transport offer are not going to be uniformly positive. If, for example, a train line is going to be extended but this is going to involve the closure of a station, there will be some winners and some losers. Planners will have to devote some time to estimating the balance of impacts in such cases.

- 8.6.22 Many schemes will have no significant impact on the public transport offer and this will mean that the indicators will not alter. Planners should not speculate on the likely response of bus operators (or local authorities) to highway changes. For example, if a bypass is proposed for a community, it may be the case that new services will eventually be offered as a result of the new link. But planners should only predict increased accessibility by public transport if the new services are clearly part of the proposal. Similarly, planners are advised against making blanket statements about increased indicators in the context of highway schemes intended to make road travel faster or more reliable. Many strategic schemes have only negligible impact upon public transport services and those that do affect public transport may not alter the ability of households/individuals to get to key services.

- 8.6.23 It is rare that a proposal is put forward that would have a detrimental effect on public transport but this should not be excluded from consideration.



- 8.6.24 Planners should not forget that the relocation of one or more services (such as health provision) can have a radical effect on the numbers of people falling within given journey time thresholds. In the early stages of the planning process, non-transport interventions should have been given thorough consideration, to establish whether they would constitute a better way of meeting defined objectives than a transport proposal.
- 8.6.25 In reality, if the extent of change is to prove significant for a proposal, it is likely that a social inclusion report will be triggered, leading to a more thorough analysis of social inclusion impacts than required for the standard appraisal. Planners are therefore advised to estimate the extent of change only where this is either quite easy or a natural by-product of other analysis taking place.
- 8.6.26 As this is not a demanding appraisal task, it is envisaged that it should be relatively easy to carry out both for strategies and for schemes that have not been developed in detail.

Appraisal Method for Stage 2

- 8.6.27 Planners should revisit their findings from Stage 1 and check that all assumptions made then still hold. In addition, where possible, the extent of the change should now also be estimated. To be able to estimate the extent of the change, it is necessary first to establish the affected population, or “domain”. For example, in the case of a new bus route linking a village to a nearby town, say, we could look at those living within 400m of the bus stops at one extreme, or the entire Welsh population at the other. Changes in percentages within a given travel time from a centre would be dramatic in the first case but negligible in the second. The best way round this is to deal with actual numbers rather than percentages, since this will allow decision-makers to consider the magnitude of change that would be achieved for a given proposal’s cost. It is well established that adequate public transport is more expensive to deliver in sparsely populated areas than densely populated ones so it will be necessary for decision-makers to take this into account when making their decisions. As the discussion below will show, estimation is likely to be a laborious exercise and so should not be attempted without a ready source of detailed data on which to draw. Such sources are generally associated with network models, which will exist for certain areas of Wales.

Required Inputs

- 8.6.28 The accurate estimation of accessibility is a far from trivial exercise as initial comments in the “impact description” section made clear. As accessibility planning becomes more well established in Wales, there will be an increasingly rich dataset together with analysis tools with which to query it. For now, GIS datasets do exist showing the locations of key amenities such as hospitals, primary healthcare facilities, schools and major centres. In the case of schemes with a local focus, it is therefore likely to be possible to make a reasonable estimate of impact.
- 8.6.29 Journey time requires some explanation. Public transport services are normally divided into those which are frequent enough that the user “turns up and goes” and less frequent services which imply that the user will plan to catch a particular timed departure. Where the service is “turn up and go” (generally agreed to be a frequency of four departures per hour or more), it is standard to assume half the headway (time between departures) as the predicted wait time. Hence, if the frequency is six trains per hour, this implies a headway of ten minutes and, therefore, an expected wait time of five minutes, which should be incorporated into the total journey time (alongside walk time at either end of the motorised stage).
- 8.6.30 Where services are less frequent, a blanket assumption is needed to reflect the inconvenience of having to fit in with the timetable. It is suggested that planners assume 20 minutes though it is understood that actual wait time is likely to be much less than this in the majority of cases.

Impact Distribution

- 8.6.31 The focus on specific groups of interest makes it unnecessary to explore distribution in any further detail under this heading.

Output and Presentation

- 8.6.32 Having carried out the appraisal as described above, the planner should have as a minimum a series of answers of the form “increase/no change/decrease” for each of eight indicators. Whilst these summaries

should be set out in full in the appraisal report, it is necessary to distil the ratings into a single measure for the appraisal summary table. The rules in Table 8.2 apply.

TABLE 8.2. PRESENTATION OF RESULTS OF SOCIAL IMPACT ASSESSMENT

Circumstances	Significance⁵³
One or more “decrease” and no “increase”; “decrease” cases outnumber “increase” cases by two or more	Moderate negative
One more case of “decrease” than “increase”	Slight negative
All “no change” or equal numbers of “increase” and “decrease”	Nil impact/neutral
More cases of “increase” than “decrease”	Slight positive
6 to 8 cases of “increase” and no “decrease”	Moderate positive

- 8.6.33 It will be immediately obvious that this method for the assessment of impact significance is approximate to say the least. Planners may feel that they are constrained to grade a proposal as slight positive according to the above guidelines despite its having very significant positive effects on one or more of the key indicators. For this reason, the rule of thumb is that a social inclusion report should be triggered in cases where planners feel that the significance assessment method does not do the proposal in question justice.

8.7 Equality, Diversity and Human Rights

Impact Description

- 8.7.1 The Welsh Assembly Government is committed to delivering services that meet the needs of all citizens in Wales and are compatible with human rights legislation. The Assembly will ensure that all demographic groups, particularly under-represented groups, can take advantage of transport services. Therefore, all transport proposals

⁵³ A five-point scale has been chosen in preference to a seven-point scale in recognition of the coarseness of this analysis.

seeking public funding and/or the approval of the Welsh Assembly Government must take account of differing needs and their equality impacts.

- 8.7.2 The [Wales Transport Strategy](#) promotes the Welsh Assembly Government's commitment to mainstreaming equality and human rights, which is defined as 'respecting and integrating diversity and equality of opportunity into everything that it does'. The [Wales Transport Strategy](#) aims to contribute towards achieving this goal by improving equality of access to transport, sites, services and facilities and by emphasising the importance of planning facilities and services, where accessibility for all should be a core consideration.
- 8.7.3 The Welsh Assembly Government has a statutory duty to promote equality through their strategic policies. The statutory equality duties, shown in Table 8.3, are placed on all public sector services. They focus on gender, race and disability, although the appraisal should consider all equality impact groups including age, sexual orientation, religion or belief and human rights generally.

Appraisal Method for Stage 1

- 8.7.4 At Stage 1, all positive and negative impacts, particularly disproportionate impacts, arising from the strategy or schemes(s) should be qualitatively assessed against the following equality impact groups:
- Race, ethnicity, colour or nationality;
 - Sex or marital status;
 - Disability: physical, sensory or mental
 - Age;
 - Religion or belief;
 - Sexual orientation;
 - Welsh language;
 - Other: Lone parent, economic inactivity, social and multiple deprivation.
- 8.7.5 Issues relating to compatibility with human rights legislation should be considered here also.

TABLE 8.3. STATUTORY EQUALITY DUTIES

Race	
Statutory Equality Duties	<ul style="list-style-type: none"> • To promote equality of opportunity • To eliminate race discrimination • To promote good race relations
Relevant guidance/publications	<p>Race Equality Scheme (2005-2008). Sets out the Assembly's strategy and policies for promoting race equality in Wales.</p> <p>Race Relations (Amendment) Act 2000. This Act came into effect in April 2001. It amends the Race Relations Act 1976 to impose a general duty, and a series of specific duties, on specified public bodies in Britain.</p>
Disability	
Statutory Equality Duties	<ul style="list-style-type: none"> • To promote equality of opportunity between disabled people and other people • To eliminate discrimination that is unlawful under the Disability Discrimination Act • To eliminate harassment of disabled people that is related to their disability • To promote positive attitudes towards disabled people • To encourage participation by disabled people in public life • To take steps to meet disabled people's needs, even if this requires more favourable treatment
Relevant guidance/publications	<p>Disability Discrimination Act (2005) Amends the Disability Discrimination Act 1995. Places a duty on authorities and their members not to discriminate against disabled persons.</p> <p>Disability Equality Scheme Sets out how the Welsh Assembly Government promotes equality of opportunity for disabled people.</p> <p>Accessible Venues Guidance The Welsh Assembly Government recognises that if disabled people are to fully participate in society they require equal access to goods, services and premises. The guidance should be used as a tool for assessing how best to meet the needs of disabled people.</p>
Gender	
Statutory Equality Duties	<ul style="list-style-type: none"> • To eliminate discrimination and harassment • To promote equality of opportunity between men and women
Relevant guidance/publications	<p>Gender Equality Scheme This scheme sets out how the Welsh Assembly Government plans to promote equality of opportunity for women and men in Wales.</p>

- 8.7.6 An evidence gathering process should be adopted to appraise the transport strategy or scheme against all possible impacts on equality, diversity and human rights. Evidence can be gathered through additional demographic research and data collection, such as census data. In addition, focus groups, surveys and/or consultations can be undertaken if further work is required to identify potential impacts. All demographic groups, including minority and hard to reach groups, should be given equal opportunity to participate in the planning and delivery of transport strategies and/or schemes. Furthermore, all transport research and statistical gathering should be fully representative of all sectors of the population. Evidence gathering could include:
- Who are the stakeholders and do they represent the diversity of the local population?
 - Does the strategy or scheme comply with legal requirements for equality, diversity and human rights?
 - Is the strategy or scheme discriminatory (directly or indirectly) towards any social group?
 - Can any discrimination or potential human rights infringement be objectively justified?
- 8.7.7 Where the delivery of the strategy or scheme impacts positively or negatively on equality target groups, the impacts must be objectively evaluated. Alternatives should be considered if the strategy or scheme causes potential adverse impact or unlawful discrimination and the consequences for not adopting any change should be made explicit. Where applicable, a statement of proposed mitigation should be included.
- 8.7.8 If the strategy or scheme has no discriminatory affect on an equality impact group, the Stage 1 assessment should be recorded as 'neutral' and further assessment is not required. Where an equality impact is identified, this impact is required to undergo an [Equality Impact Assessment](#). The Welsh Assembly Government [Equality and Human Rights Division](#) and the Department's Equality Support Unit should be consulted at this stage if there is any doubt as to the requirement for a full [Equality Impact Assessment](#).
- 8.7.9 Any impact, positive or negative, should be considered in isolation when assessing the need to perform an [Equality Impact Assessment](#). For example, a positive impact does not offset a negative impact, thus

negating the need to progress to perform an [Equality Impact Assessment](#).

- 8.7.10 Further information on completing an Equality Impact Assessment is given in section 9.2.

Appraisal Method for Stage 2

- 8.7.11 Strategies as well as schemes are required to undergo an Equality Impact Assessment if an impact is identified at Stage 1. Consequently, the Equality Impact Assessment should not be considered as a Stage 2 assessment given that strategies are not required to be appraised at Stage 2 level.
- 8.7.12 Further appraisal at Stage 2 is not required.

Required Inputs

- 8.7.13 At Stage 1, qualitative information on the actual or potential impact on equality groups should be presented alongside actions to eliminate, minimise or mitigate impacts. A summary should be reported alongside the AST (see Table 10.4). If required, an Equality Impact Assessment should be presented in the Appraisal Report and the full Equality Impact Assessment should be included as an Appendix.

Impact Distribution

- 8.7.14 The purpose of including an assessment of equality, diversity and human rights impact is to ensure that the strategy or schemes promotes equality to all population groups and do not unjustifiably infringe people's human rights. The assessment should ensure the equality groups, identified in paragraph 8.7.4, are not subjected to discrimination.

8.7.15 For more information and support, contact the [Welsh Assembly Government Equality and Human Rights Division](#) or the Department for the Economy and Transport's Equality Support Unit

Equality.Support@wales.gsi.gov.uk
029 2082 8869



9 OTHER APPRAISAL REQUIREMENTS

9.1 Introduction

9.1.1 Two additional assessments are required in addition to the economy, environmental and social appraisal outputs described in the preceding chapters. These are:

- Health Impact Assessment (mandatory); and
- Equality Impact Assessment (please see section 8.7 for requirement criteria).

9.1.2 Appraisal Summary Tables 10.3 and 10.4 must be completed for each element.

9.2 Health and Wellbeing

Public Health Strategic Framework for Wales

9.2.1 The Welsh Assembly Government is developing a Public Health Strategic Framework for Wales: 'A Healthy Future.' The framework has two main goals:

- To improve the quality and length of life;
- To promote equity in health and wellbeing.

9.2.2 Part of the work to develop 'A Healthy Future', and to achieve the two goals, involves connecting up actions already being undertaken across the different sectors that contribute to improvements in health and prevent poor health. This includes maximising the use of tools, such as the Health Impact Assessment (HIA), which are available to consider whether and how policies and initiatives may affect people's health and wellbeing. In terms of promoting equity in health and wellbeing, HIA can also help to identify whether policies and initiatives could lead to differences in health and well being where the differences are unfair, but avoidable.

What is HIA?

9.2.3 HIA is defined as:

*'A combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population. In other words it is a process that considers the wider effects of local and national policies or initiatives and how they, in turn, may affect people's health.'*⁵⁴

How to Complete a HIA

9.2.4 The completion of a HIA is a mandatory requirement of WelTAG; however, there is no set procedure for conducting an assessment. HIA should be developed to suit the circumstances, making the best use of resources and time available. To this regard, the impact of a transport proposal on health and wellbeing can be demonstrated by extracting relevant components of the WelTAG output and re-defining them in accordance with the conditions of HIA.

9.2.5 Planners should begin with an information gathering exercise. This should involve the actions listed below:

Action	Description
Liaise with WHIASU	The Welsh Health Impact Assessment Support Unit (WHIASU) is an all-Wales service and part of a wider strategy to improve health and reduce inequalities and to assist organisations to respond to Health Challenge Wales. Planners should approach WHIASU for guidance and support on HIA issues in WelTAG.

⁵⁴ Welsh Health Impact Assessment Support Unit (WHIASU)

Demonstrate the interaction between WeITAG criteria, TPOs and HIA criteria	Table 9.1 demonstrates the interaction between WeITAG appraisal criterion and the 'Factors that Determine Health' from the 'Template for Health Impact Assessment' ⁵⁵ . The final column, which shows the interaction between Health criteria and TPOs, should be completed by the planner.
Participation	<p>Participation is a key process in completing a meaningful HIA. Advice should be sought from WHIASU regarding the participation of certain individuals or organisations, however the following should be considered:</p> <ul style="list-style-type: none"> • Public Health Strategy Division, Welsh Assembly Government; • Local Health Board; • Wales Spatial Plan Managers; • Director of Public Health; • Health and Well-being strategy manager; • Community Cohesion Officer; • Voluntary organisations. <p>Detailed guidance on the approach to Participation is provided in Chapter 11. Depending on the nature of the scheme it might be appropriate to facilitate a HIA workshop or a 'break out' workshop as part of a wider participation event.</p>

9.2.6 The interaction between 'factors that determine health' and WeITAG criteria provides guidance for completing the HIA. Indeed these interactions show how WeITAG performs the HIA, thus negating the need to generate new analysis.

⁵⁵ How to use Health Impact Assessment: A Short Guide. *Welsh Health Impact Assessment Support Unit, School of Social Sciences, Cardiff University*

<http://www.wales.nhs.uk/sites3/Documents/522/HSCWBSfinalguidance.doc>

- 9.2.7 Table 9.2 (A and B) show the Template for a HIA screening or appraisal tool from the WHIASU 'Short Guide to Health Impact Assessment'. Table 9.2 should assist planners with the preparation of the HIA Summary Table (see Table 10.3), which is a mandatory requirement in WeITAG.



TABLE 9.1. INTERACTION BETWEEN WELTAG CRITERIA AND HEALTH

<i>Factors that Determine Health</i>	<i>.9 WeITAG Appraisal Criteria</i>	<i>TPOs</i>
Individuals Lifestyle / capacities affecting health: Smoking, nutrition and health eating, physical activity, alcohol / drug misuse, sexual health, propensity to use health and care services, skills and knowledge, training and education.	<ul style="list-style-type: none"> • <i>Physical Fitness</i> 	
Social and Community Influences affecting health: <i>Family:</i> Structure and function, Parenting <i>Community:</i> Social support mechanisms, social networks, neighbourliness, peer pressure, community divisions, degree of isolation, historical identity, cultural and spiritual ethos.	<ul style="list-style-type: none"> • <i>Social Inclusion</i> • <i>Heritage</i> 	
Living conditions: Built environment, civic design and planning, housing, noise, smell, air and water quality, physical view and outlook, public safety, waste disposal, road hazards, injury hazards, Safe play spaces.	<ul style="list-style-type: none"> • <i>Noise</i> • <i>Local Air Quality</i> • <i>Landscape and Townscape</i> • <i>Water environment</i> • <i>Transport safety</i> • <i>Personal security</i> 	
Working conditions: Employment, workplace conditions, occupation, income.	<ul style="list-style-type: none"> • <i>EALI</i> 	
Services: (access to and quality of) Medical services, caring services, careers advice and counselling, shops and commercial services, public amenities, transport, education and other services. Access to information technology.	<ul style="list-style-type: none"> • <i>Permeability</i> • <i>Social Inclusion</i> • <i>TEE</i> 	
Socio-economic, cultural and environmental and Sustainability factors: Biological diversity, efficient use of resources, pollution, diversity / local distinctiveness, climate. <i>Macro-economic factors:</i> Political climate, GDP, economic development, policy climate.	<ul style="list-style-type: none"> • <i>Bio-diversity</i> • <i>Greenhouse Gas emissions</i> 	



TABLE 9.2. TEMPLATE FOR A HIA SCREENING OR APPRAISAL TOOL

Project title and brief description of the proposal:						
Key aims and objectives:						
Table A	Target	Those on low income	Older people	General population	Minority ethnic groups	Children and young people
	Groups					
Factors that determine health						
Individuals Lifestyle / capacities affecting health: Smoking, nutrition and health eating, physical activity, alcohol / drug misuse, sexual health, Propensity to use health and care services Skills and knowledge, training and education						
Social and Community Influences affecting health: Family: Structure and function, Parenting Community: Social support mechanisms, social networks, neighbourliness. Peer pressure. Community divisions, degree of isolation. Historical identity, Cultural and spiritual ethos.						
Living conditions: Built environment, civic design and planning, housing, noise, smell, air and water quality, physical view and outlook, public safety, waste disposal, road hazards, injury hazards, Safe play spaces.						
Working conditions: Employment, workplace conditions, occupation, income.						
Services: (access to and quality of) Medical services, caring services, careers advice and counselling, shops and commercial services, public amenities, transport, education and other services. Access to information technology.						
Socio-economic, cultural and environmental and sustainability factors: Biological diversity, efficient use of resources, pollution, diversity / local distinctiveness, climate. Macro-economic factors: Political climate, GDP, economic development, policy climate.						
Others**						



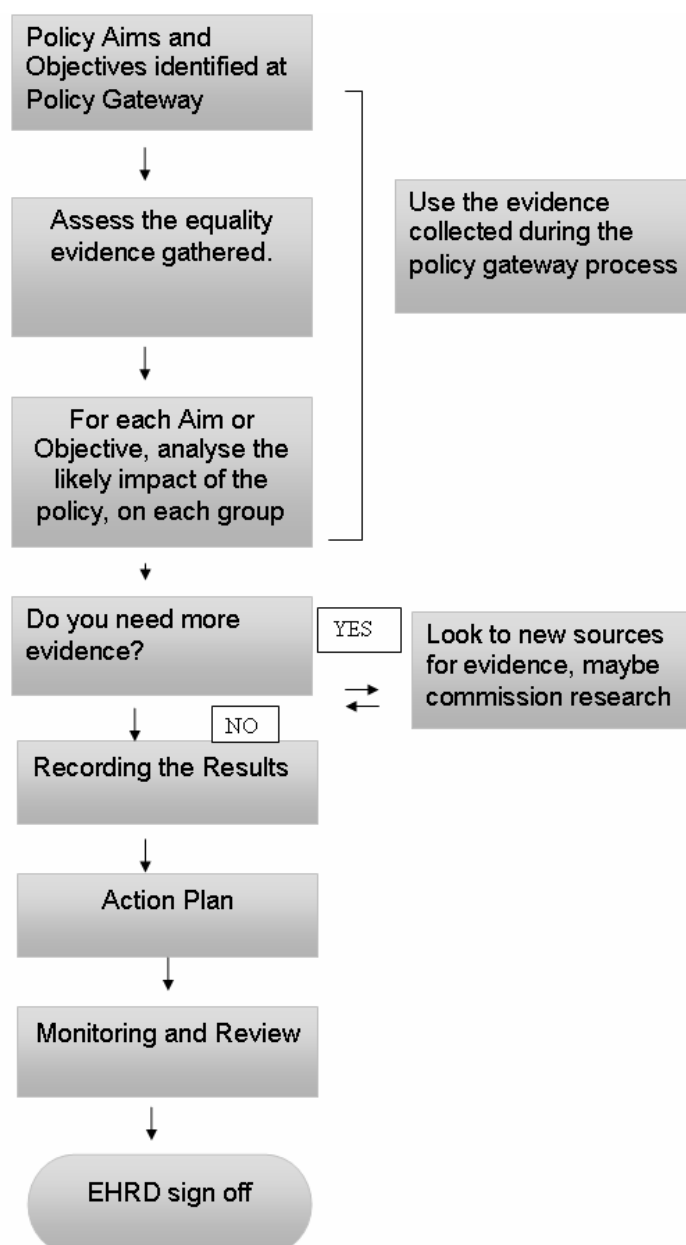
Table B	Describe
What positive effect(s) is the proposal likely to have for people's health and well being, and for which groups within the population?	
What negative effect(s) is the proposal likely to have for people's health and well being, and for which groups within the population?	
If negative impacts were identified for one or more group within the population, are there ways in which these can be removed or mitigated?	
Is further investigation, information and evidence collection needed to find potential solutions?	
Are there opportunities to build in more actions to improve people's health as a part of the proposal. Are there sources of information or experience else where that may help explore this question more fully?	



9.3 Equality Impact Assessment

- 9.3.1 A record of the potential impact of the strategy or scheme on equality groups will have been completed at Stage 1 (see section 8.7). Where an equality impact is identified in Stage 1, this impact is required to undergo an [Equality Impact Assessment](#). The Welsh Assembly Government [Equality and Human Rights Division](#) and the Department's Equality Support Unit should be consulted at this stage if there is any doubt as to the requirement for a full [Equality Impact Assessment](#).
- 9.3.2 The purpose of an [Equality Impact Assessment](#) is to determine how and to what extent the strategy or scheme affects different social and demographic groups. The assessment will determine the most appropriate actions necessary to address any inequalities and remove adverse effects. The [Equality Impact Assessment](#) process is summarised in Figure 9.1.
- 9.3.3 WeITAG does not provide guidance on completing a full [Equality Impact Assessment](#). Comprehensive guidance, including toolkits on completing the assessment, can be obtained from the Welsh Assembly Government's [Equality and Human Rights Division](#).
- 9.3.4 An [Equality Impact Assessment](#), if required, should be presented in the WeITAG Appraisal Report.

FIGURE 9.1. THE EQUALITY IMPACT ASSESSMENT PROCESS



10 APPRAISAL SUMMARY

10.1 Purpose

- 10.1.1 Decision-makers need to see the results of the appraisal process in a clear and structured document which highlights the principal outcomes. Appraisal Summary Tables (ASTs) present the core findings of the economic, environmental, social and other impacts from each proposal.
- 10.1.2 The objective of preparing ASTs is to facilitate the interpretation and comparison of results, particularly if different options (schemes or groups of measures) are considered. For this, the summary needs to be succinct, with full details provided in the body of the report. Providing the appraisal results in a standard format enables a consistent view to be taken by the decision-makers about the relative merits (or otherwise) of different proposals or proposal options.
- 10.1.3 It is essential that the ASTs incorporate the results from the appraisal of the impacts within the national impact areas and TPOs.
- 10.1.4 The information in the AST gives a measure of the overall 'value for cost'⁵⁶ of each option, taking into account not just the economic worth, but also other monetised or non-monetised, qualitative or quantitative information. The ASTs enable individual judgement to be made about the relative significance and trade offs of the various positive and negative impacts.
- 10.1.5 The ASTs do not replace the findings in the appraisal report, and cannot incorporate all the aspects appraised in greater level of detail. As such, ASTs should never be seen in isolation from the main report, in order to avoid the risk of trivialising the appraisal process.

⁵⁶ Note the distinction between this term and "value for money". "Cost" here is intended to cover all negative impacts brought by the proposal, including those that have a monetary value.

10.2 The Appraisal Summary Tables

10.2.1 Templates for completing Appraisal Summary Tables are presented in this Chapter. They are:

Table No.	Description	Status
Table 10.1	Appraisal Summary Table for Stages 1 and 2.	Mandatory at Stages 1 and 2
Table 10.2	A comparison of the performance of multiple options	Mandatory at Stages 1 and 2, if more than one option.
Table 10.3	Reporting the results of the Health Impact Assessment	Mandatory at Stages 1 and 2
Table 10.4	Reporting the results of the Equality Impact Assessment	See section 8.7 for requirements

Guidance on Completing Table 10.1

10.2.2 The AST template is the same for Stages 1 and 2. The significant change is the level of detail presented at each stage.

10.2.3 If a prioritising/weighting/ranking system has been adopted to give greater emphasis to more important TPOs, this should be made explicit in the AST.

10.2.4 Guidance on completing each field within the AST is given below. A worked example is given in Appendix C:

Assessment	Describe qualitatively or demonstrate quantitatively or monetarily how the option performs against the objectives.
Distribution	Set out the significant distributional implications of the effects described in the assessment. Examples include ⁵⁷ : <ul style="list-style-type: none"> • Wealth – the relative income of the group affected or the distribution of income amongst those affected; • Demography – ethnicity, age; Transport options – car availability.
Assessment of significance	Seven-point score system, as used by guidance elsewhere in the UK. The aim is to provide an indication of the magnitude of the impact. As far as possible, significance scores should reflect the absolute performance of an option under each criterion. Where it is not possible to judge this, they should reflect the relative option performance, enabling comparison. Planners will have to use their judgement in cases where a proposal would cause positive impacts in a certain geographical area but negative impacts elsewhere, using the assessment column to record this in brief (and providing further details in the report as necessary).
Public and other stakeholder acceptability	Whether the proposal is likely to be accepted by the public and stakeholders, which groups are likely to oppose and what are the grounds for opposition.
Technical and operational feasibility	Whether there are any barriers to the implementation and/or operation of the scheme, which would be advantageous or disadvantageous in relation to other options.
Affordability and deliverability	An indication of whether these costs can realistically be funded and the proposal can be delivered. If not, the option could be discarded at this stage.
Risks	What are the risks associated with the proposal implementation and how they could be minimised.

⁵⁷ The development of TPOs should have helped to identify the groups of interest from the perspective of distribution. They could therefore be used as a starting point but should not be seen as exhaustive, since undesired secondary outcomes of transport proposals may affect other groups negatively.

Guidance on Completing Table 10.2

- 10.2.5 There will normally be more than one option being appraised, thus it is very useful for the decision maker if the relative performances of all options are summarised. Table 10.2 provides the template for such a summary, which comprises a brief description of the assessment and/or the assessment summary. This table does not provide an answer, but the basis for trade-offs to be made in order to enable informed decisions.
- 10.2.6 Whilst planners are expected to arrive at an assessment of significance for all criteria at both stages of the appraisal, it is not expected that the scores will be used by the Welsh Assembly Government to make comparisons across proposals of very different types or sizes. A moderate adverse impact on heritage might prove an acceptable price to pay for the very significant other benefits that a major transport infrastructure scheme would bring. The same negative impact would probably be sufficient to demonstrate that a small local scheme did not merit approval. This example hopefully serves to show that deciding between very different proposals is an art rather than a science. Significance scores are generally more helpful when alternative options for a single scheme are being compared.



TABLE 10.1. APPRAISAL SUMMARY TABLE

Option Description:			
Appraisal Criteria	Assessment	Distribution	Significance
<i>Welsh Impact Areas</i>			
<i>Economy</i>			
Transport Economic Efficiency			
EALI			
<i>Environment</i>			
Noise			
Local Air Quality			
Greenhouse Gas Emissions			
Landscape and townscape			
Bio-diversity			
Heritage			
Water environment			
Soils			
<i>Society</i>			
Transport safety			
Personal security			
Permeability			
Physical fitness			
Social inclusion			
Equality, Diversity & Human Rights			
<i>Transport Planning Objectives</i>			
TPO 1			
TPO 2			
TPO n			
Public acceptability:			
Acceptability to other stakeholders:			
Technical and operational feasibility:			
Financial affordability and deliverability:			
Risks:			



TABLE 10.2. SUMMARY OF APPRAISAL OF DIFFERENT OPTIONS

	Summary of significance/other quantitative finding		
Appraisal Criteria	Option 1	Option 2	Option 3 (etc)
<i>Welsh Impact Areas</i>			
<i>Economy</i>			
Transport Economic Efficiency			
EALI			
<i>Environment</i>			
Noise			
Local Air Quality			
Greenhouse Gas Emissions			
Landscape and townscape			
Bio-diversity			
Heritage			
Water environment			
Soils			
<i>Society</i>			
Transport safety			
Personal security			
Permeability			
Physical fitness			
Social inclusion			
Equality, Diversity & Human Rights			
<i>Transport Planning Objectives</i>			
TPO 1			
TPO 2			
TPO n			
Public acceptability:			
Acceptability to other stakeholders:			
Technical and operational feasibility:			
Financial affordability and deliverability:			
Risks:			



TABLE 10.3. HEALTH IMPACT ASSESSMENT SUMMARY TABLE

Option Description:			
Appraisal Criteria	Assessment	Distribution	Significance
<i>Health Impact Assessment</i>			
Lifestyle / capacities affecting health			
Social and Community			
Living conditions			
Working conditions			
Services (access and quality)			
Socio-economic, cultural and environmental and sustainability factors			
Macro-economic factors			
Others			

TABLE 10.4. EQUALITY, DIVERSITY & HUMAN RIGHTS SUMMARY TABLE

Option Description:			
Appraisal Criteria	Assessment	Distribution	Significance
<i>Equality, Diversity & Human Rights</i>			
Race, ethnicity, colour or nationality			
Sex or marital status			
Disability: physical, sensory or mental			
Age			
Religion or belief			
Sexual orientation			
Welsh language			
Other: Lone parent, economic inactivity, social and multiple deprivation			



11 PARTICIPATION

11.1 Overview

- 11.1.1 In WeITAG, the word “participation” describes activities designed to involve stakeholders in all aspects of the planning process. This term is preferred because it has an active sense: those who participate in planning do so in their own right. This is in contrast to “consultation” where the participant is brought in at the discretion of the planner. The Welsh Assembly Government uses the word “consultation” to describe the process of presenting proposals to stakeholders, seeking their comments and acting on the results. On this basis, consultation can be seen as a subset of participation.
- 11.1.2 Phrases such as “we consulted widely” or “we consulted over an extended period” are frequently heard in the context of transport proposals. What is seldom heard is “we consulted well”, or “we listened and you can see how our proposals have changed accordingly”. WeITAG provides the foundation to develop meaningful participation aimed at involving the relevant people in the development and delivery of proposals.
- 11.1.3 The appearance of participation towards the end of this guidance does not reflect the stage at which participation should be undertaken. On the contrary, participation should be ongoing from the outset.

11.2 Purpose of Participation

- 11.2.1 The principal reasons for encouraging participation are that:
- A better final decision will be reached; and
 - The implementation of that decision will be easier, cheaper and quicker.
- 11.2.2 Associated goals are:
- To get the public and organisations to feel a sense of ownership over policies; and
 - To demonstrate the Welsh Assembly Government’s commitment to open and responsive government.

11.3 Policy and Legislative Framework

- 11.3.1 Whilst planners should initiate participation activities of their own accord, their methods should comply with existing legislative and policy requirements. Some of the key requirements to consider when developing a Participation Strategy are:

EU Directive 2003/35 Aarhus Convention	European legislation has introduced consultation within the assessment of environmental impacts (e.g. SEA and EIA). By consulting as part of the appraisal process, planners automatically comply with these statutory requirements.
Transport and Works Act 2006	This Act requires consultation on proposals at defined stages. Inspectors considering planning applications for highway schemes will always wish to see evidence of consultation.
DMRB	Should the WeITAG process lead to a road proposal or a proposal which includes a roads element, then public consultation and participation needs to meet the requirements in the DMRB.
Data Protection Act 1998 Freedom of Information Act 2000 Disability Discrimination Act 2005	Care must be taken, when carrying out participation, of any implications of these Acts.
Welsh Language Act 1993	The Welsh Assembly Government's commitment to the Welsh language was also stated in One Wales . Participation, including all materials, should be conducted in Welsh and English languages. Interpreters must be available as appropriate.



11.3.2 Whilst legislation and other guidance (such as RTP guidance) are generally clear about when consultation should take place, they rarely set out how it should be done. As a consequence, there is considerable scope to comply with legislative requirements without carrying out participation to a high standard. These requirements should therefore constitute a baseline which planners should aim to exceed by a healthy margin.

11.4 Guiding Principles

11.4.1 Whilst Wales is not bound by guidance issued by the Cabinet Office, the following extract from its [Code of Practice on Consultation](#)⁵⁸ is reproduced because it represents good sense.

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

⁵⁸ Code of Practice on Consultation (September 2005). The Better Regulation Executive, Cabinet Office. <http://www.berr.gov.uk/files/file44364.pdf>

11.5 Application to Strategies and Schemes

- 11.5.1 The principal differences between strategies and schemes are scope and detail. A strategy will typically stand to influence a larger part of the country (and, therefore, a larger group of people) than a scheme. Planners can therefore expect to use different methods to encourage participation for strategies than for schemes.
- 11.5.2 It is a common misconception that participation should only happen once there is something well defined to discuss. On the contrary, it is beneficial to conduct meaningful participation at the strategy stage, which will provide the foundation for more collaborative and successful participation during later stages. The principles that apply to carrying out participation well at scheme level apply equally to carrying out participation well at strategy level.

11.6 Developing a Participation Strategy

- 11.6.1 Participation should feature at all stages, from the development of TPOs, through consideration and sifting of options to the appraisal and refinement of a preferred scheme. Therefore, Planners should be thinking about participation from the outset and should aim to develop a participation strategy in tandem with the programme for the planning process itself. A participation strategy need not be either a lengthy or complex document. What is most important is that the planner shows that consideration has been given to all the questions concerned.
- 11.6.2 A participation strategy will set out the following in a clear form:
- Objectives and constraints;
 - How the participation process will inform the wider planning process;
 - Who will be encouraged to participate;
 - The timing of participation activities;
 - The methods which will be used;
 - How the participation will be managed, including points such as response times to enquiries and comments, and provision of feedback to participants; and
 - How the participation process will be evaluated at its conclusion.

11.6.3 Detailed guidance on each of the bullet points above is contained in Appendix G. Also contained in Appendix G are details on:

- The Principles of Participation; and
- Methods of Participation

11.7 Reporting

11.7.1 The reporting requirements relating to the participation process are set out in 5.7.8.

11.8 Evaluation - Learning from the Process

11.8.1 Whilst no participation strategy will leave all stakeholders entirely satisfied, some work better than others. By establishing what went well and what could have gone better; the planner can ensure that subsequent participation strategies are more effective. The planner should therefore devote some effort to finding out to what extent the objectives for the participation strategy was actually met and why. This may not require any additional research – it may be sufficient for those involved to meet briefly and review the experience. If certain points have proved particularly contentious or the planner has been forced to revise the planning approach because of stakeholder opposition, it may be appropriate to carry out a limited survey to establish why this was and whether a different approach would have made matters better.

12 MONITORING AND EVALUATION

12.1 Definitions

- 12.1.1 It is essential that, once implemented, a new proposal be subject to planned evaluation and monitoring, in addition to regular revalidation of the proposal throughout its development.
- 12.1.2 Monitoring is defined as “an on-going process of watching over the performance of a project identifying problems as these arise and taking appropriate action”, while Evaluation is used for “specific, post-implementation events, designed to assess the project performance against established objectives and to provide in-depth diagnosis of successes as well as deficiencies”. Therefore, by gathering and interpreting information, monitoring and evaluation will track trends, assess how the proposal performs against its objectives (in the short, medium and long terms), identify any deficiencies and emerging issues, and allow adjustments to be made.

12.2 Monitoring and Evaluation Plan

- 12.2.1 A monitoring and evaluation plan is a required output from the planning and appraisal process, both for strategies and schemes, and will be a condition of funding or approval. This plan will require the development of indicators at a number of levels (e.g. regional indicators, sub-regional indicators, local indicators and secondary indicators), and will enable the Welsh Assembly Government to determine the proposals which have been effective and resource efficient. The plan needs to be consistent with the monitoring guidance in the [Wales Transport Strategy](#), the Wales Transport Strategy Draft Monitoring Plan and, if relevant, the Regional Transport Plans.
- 12.2.2 The Wales Transport Strategy Draft Monitoring Plan performs the following functions:
- Sets out the National Transport Indicators for monitoring the [Wales Transport Strategy](#);
 - Provides guidance on the development of Regional Indicators for monitoring the Regional Transport Plans;

- Provides advice on the monitoring of individual strategies or schemes; and
- Provides information on sources of information and availability.

12.2.3 The performance of the proposal should be assessed against the TPOs at different stages:

- Soon after implementation;
- At a specific time after implementation, recognising that certain transport proposals require time before the full benefits can be realised; and
- At regular monitoring intervals (annually), to assess the ongoing effectiveness of the proposal. There is flexibility in the setting of these intervals in that different proposals may need to be monitored more regularly than others.

12.2.4 It is important to try to distinguish the monitored impacts of the proposal from any other impacts brought about due to reasons other than the proposal (e.g. further changes in the network, the introduction of a new mode, or other long term socio-economic changes), otherwise the results of this exercise will be misleading. It is not possible to prescribe how this can be achieved in every case, since each situation can be very different. Even when the availability of data is a problem, the planner will be expected to demonstrate that what is being monitored is as close as possible to the impacts of the scheme or strategy. An example could be the monitoring of CO₂ emissions from a new road scheme, which creates increasing traffic volumes year on year. If after 15 years cars stopped (or drastically reduced) producing CO₂ emissions due to technological improvements, one could not attribute these benefits to the scheme.

12.2.5 Monitoring and evaluation will provide evidence of the successes and failures of the implemented proposal. The data required in this stage may include some of the following:

- Passenger usage on public transport, cars, cycles and walking;
- Journey time;
- Safety records;
- Operation costs;
- Employment; and
- Environmental impacts.

12.2.6 There is no prescription as to the structure and contents of the monitoring and evaluation plan, and it does not need to be resource-intensive. The important aspect is that it sets out what will be monitored (indicators), when and how. Risk assessment plans should also form part of the monitoring process and, in particular, the monitoring and evaluation plan.

12.2.7 The final task in the monitoring and evaluation plan should be the production of a monitoring and evaluation report, but this is outside the scope of WeITAG.

12.3 SEA Requirements

12.3.1 The SEA Regulations for Wales require that all competent authorities (including local authorities and the Welsh Assembly Government) monitor and evaluate the significant environmental impacts from a strategy (i.e. plans and programmes subject to the SEA Directive). It prescribes the production of a monitoring report in order to identify unforeseen significant adverse effects at an early stage and be able to undertake appropriate remedial action (as required by Article 10).

12.3.2 These monitoring arrangements do not, necessarily, have to be set up with the purpose of complying with the Regulations, and can be existing monitoring activities set up for other reasons (e.g. in relation to local air quality management strategies). The Regulations do not specify what form this monitoring and evaluation should take.

12.3.3 Responsible Authorities are encouraged to consider how to react if monitoring reveals adverse effects. While the SEA Directive and Regulations do not create new obligations on environmental protection, other legislation or policies may require action on the part of the Responsible Authority or another body (refer also to the SEA Practical Guide). Details of any contingency arrangements could be included in the mitigation measures set out in the Environmental Report. This may include giving feedback to those responsible for plans and programmes higher up in the hierarchy on the effects of these plans and programmes.

12.3.4 Further details concerning the SEA requirements are presented in Appendix E.

13 GLOSSARY AND TERMINOLOGY

3Rs: Regeneration, Renewal and Regional Development

AONB: Area of Outstanding Natural Beauty.

Appraisal: refers to the ex-ante analysis of a proposed investment proposal to determine its merit and acceptability in accordance with established decision-making criteria.

Assessment: term used to describe either appraisal or evaluation.

AST: Appraisal Summary Table.

Benefit-Cost Ratio (BCR): the present value of the benefit stream divided by the present value of the cost stream.

Cadw: [Cadw](#) is a Welsh word which means 'to keep'. Cadw's mission is to protect, conserve, and to promote an appreciation of the built heritage of Wales.

CO₂: Carbon Dioxide.

Cost-Benefit Analysis (CBA): conceptual framework applied to any systematic, quantitative appraisal of a public or private proposal to determine whether, or to what extent, that proposal is worthwhile from the perspective of welfare economics. CBA differs from a straightforward financial appraisal in that it considers all gains (benefits) and losses (costs) regardless of to whom they accrue. CBA usually implies the use of accounting prices. Results may be expressed in many ways, including internal rate of return, net present value and benefit cost ratio.

DEFRA: Department of Environment, Food and Rural Affairs

DETR: Department for Transport, Environment and the Regions (1997-2001)

DfT: Department for Transport (2002-present)

DTLR: Department for Transport, Local Government and the Regions (2001-2002)

Discount rate: the annual percentage rate at which future values are discounted to the present. Financial discount rate and economic discount rate may differ, in the same way that market prices may differ from accounting prices.

Discounting: the process of adjusting the future value of a cost or benefit to the present by a discount rate, i.e. by multiplying the future value by a coefficient.

EALI: Economic Activity and Location impacts.

EIA: Environmental Impact Assessment.

EIR: Economic Impact Report

Evaluation: Retrospective analysis of a proposal to assess how successful or otherwise it has been, and what lessons can be learnt for the future. The terms 'Policy evaluation' and 'Post-project evaluation' are often used to describe evaluation in those two areas.

GIS: Geographic Information System.

GOMMMS: Guidance on Methodologies for Multi- Modal Studies

GQA: General Quality Assessment.

GVA: Gross Value Added.

HIA: Health Impact Assessment.

IEMA: Institute of Environmental Management and Assessment.

IMD (Index of Multiple Deprivation): The IMD represents how deprived an area is in terms of a combination of the following domains at different levels of significance (weightings in brackets): Income (25%); Employment (25%); Health Deprivation and Disability (15%); Education, Skills and Training (15%); Housing (10%); and Geographical Access to Services (10%). Information about the IMD can be obtained from the [Office of National Statistics](#).

Monitoring: the systematic examination of the state of advancement of an activity according to a predetermined calendar and on the basis of significant and representative indicators.

Multi-Criteria Analysis: an assessment method that considers performance against many objectives and that can include the attribution of a weight to each measurable objective.

NATA: New Approach To Appraisal

Net present value (NPV): the quantity that results when the discounted value of the expected costs of an investment are deducted from the discounted value of the expected benefits.

NNR: National Nature Reserve.

NO_x: Nitrogen Oxides.

Objective 1: Was an EU funding programme between 2006-2006. The Objective 1 scheme has been replaced by the EU [Convergence Programme](#).

Objective 2: Was an EU funding programme between 2006-2006. The Objective 1 scheme has been replaced by the EU [Regional Competitiveness and Employment Programme](#).

PM: Particulate Matter.

PM10: Particulate matter measuring 10 micrometres (µ) or less, the generally accepted measure in UK and Europe

Programme: a co-ordinated series of different proposals where the policy framework project purpose, the budget and the deadlines are clearly defined.

Project: it refers to an investment activity upon which resources (costs) are expended to create capital assets that will produce benefits over an extended period of time, and that logically lends itself to planning, financing, and implementing as a unit. A project is thus a specific activity, with a specific starting point and a specific ending point, that is intended to accomplish a specific objective. It can also be thought of as the smallest operational element prepared and implemented as a separate entity in a national plan or program. A project may produce benefits that can be valued in money terms or it may produce benefits that are intangible.

Project evaluation: the last phase of the project cycle. It is carried out to identify the success factors and the critical areas in order to understand and to disseminate the lessons learnt for the future.

Present Value (PV): the quantity obtained when a sequence of money values is discounted to a reference year and summed.

QoL: Quality of Life.

QRA: Quantified Risk Assessment.

RAILPAG ([Rail Project Appraisal Guidelines](#)) aim at providing a common framework for the appraisal of railway projects across the EU. Promoters are recommended to follow this best practice in Cost Benefit Analysis in presenting financing proposals to the European Commission or the European Investment Bank.

ROAMEF: Rationale, Objectives, Appraisal, Monitoring, Evaluation and Feedback

RPI: Retail Price Index.

RTP: Regional Transport Plan.

SAC: Special Areas of Conservation.

SEA: Strategic Environmental Assessment.

SMART Objectives: Objectives which are specific, measurable, attainable, relevant and timed

SPA: Special Preservation Areas.

SSSI: Site of Special Scientific Interest.

STAG: Scottish Transport Appraisal Guidance.

Stakeholder is any individual or group with an interest in the proposal under consideration. Members of the public are therefore stakeholders, just as elected members are.

TAN: Technical Advice Notes giving guidance to local authorities on planning subjects

TEE: Transport Economic Efficiency.

TPOs: Transport Planning Objectives

WebTAG: The Department for Transport's website for guidance on the conduct of transport studies

WeITAG: Welsh Transport Planning and Appraisal Guidance.

WIAs: Welsh Impact Areas

WTS: Wales Transport Strategy.

14 REFERENCES AND BIBLIOGRAPHY

Better Regulation Executive(2004) *Code of Practice on Consultation*
<http://www.berr.gov.uk/files/file44364.pdf>

Countryside Council for Wales: <http://www.ccw.gov.uk/>

Countryside Agency, English Heritage, English Nature and the Environment Agency (Prepared by CAG Consultants and Land Use Consultants) (2001) *Quality of Life Capital: Application Guide for Statutory and Non-Statutory Plans*.
http://www.countryside.gov.uk/Images/stat_plans_1-10_tcm2-8881.pdf

Commission for Integrated Transport (2004) *A Review of Transport Appraisal: Advice from the Commission for Integrated Transport* October 2004.

David Tyldesley & Associates and The Welsh Assembly Government (2006) Draft Annex to Technical Advice Note 5 Nature Conservation & Planning: Draft Guidance: The Assessment of Development Plans in Wales under the provisions of the Habitat Regulations Consultation Version October 2006

Department for Environment, Food and Rural Affairs, 2005. The UK Government Sustainable Development Strategy, TSO, London.
http://www.sustainable-development.gov.uk/publications/pdf/strategy/SecFut_complete.pdf

Department for the Environment, (1995), "Calculation of Railway Noise", HMSO.

Department for the Environment, Transport & The Regions (1998a) *A New Deal for Transport: Better for Everyone*
http://www.dft.gov.uk/162259/187604/A_new_deal_for_transport_be1.pdf

Department for the Environment Transport and the Regions, 1998b, *A New Deal for Trunk Roads in England: Guidance on the New Approach to Appraisal (NATA)*.

Department for the Environment, Transport & The Regions (1998c) *Guidance on Enhancing Participation in Local Government*

Department for Environment, Transport & The Regions (1999a) Government's response to the SACTRA report on "Transport and the Economy",
http://www.dft.gov.uk/stellent/groups/dft_control/documents/contentservertemplate/dft_index.hcst?n=11294&l=1

Department for the Environment, Transport and The Regions (1999b), *Developing a consistent cost-benefit framework of multi-modal transport appraisal*. University of East Anglia, Robert Sugden.

Department for the Environment Transport and The Regions, (2000a), *Guidance on the Methodology for Multi-Modal Studies (GOMMMS)*

Department for the Environment, Transport & The Regions (2000b) *Environmental Impact Assessment: A Guide to Procedures*.
<http://www.communities.gov.uk/publications/planningandbuilding/environmentalimpactassessment>

Department of Health (2007) *[Draft Guidance on Health in Strategic Environmental Assessment: A Consultation](#)*.

Available at
http://www.doh.gov.uk/en/Consultations/LiveConsultations/DH_073261

Department of Transport and Welsh Office (1988) *Calculation of Road Traffic Noise*, London: HMSO.

Department of Transport (1995) *Calculation of Rail Noise*, London: HMSO,.

Department for Transport, Local Government & The Regions(2001) *Appraisal of Major Public Transport Schemes: Detailed*.

Department for Transport(2002) (The Application of the QUADRO Manual, Volume 14 Economic Assessment of Road Maintenance, Section 1 The QUADRO Manual Part 0 (see also Parts 1 to 7)
<http://www.dft.gov.uk/pgr/economics/software/quadro4/>

Department for Transport (2003a) *Guidance on Preparing an Economic Impact Report*.
http://www.dft.gov.uk/stellent/groups/dft_transstrat/documents/page/dft_transstrat_023022.pdf

Department for Transport (2003b), 'Variable Demand Modelling Advice' (VADMA), .
http://www.dft.gov.uk/stellent/groups/dft_control/documents/contentservertemplate/dft_index.hcst?n=11363&l=3

Department for Transport, (2004a), A Long-term Strategy for a Modern, Efficient and Sustainable Transport System.
http://www.dft.gov.uk/stellent/groups/dft_about/documents/divisionhomepage/031259.hcsp

Department for Transport (2004b) Accessibility Planning in Local Transport Plans,

Department for Transport (2004c) Technical Guidance on Accessibility Planning in Local Transport Plans,

Department for Transport (2004d), *The Future of Transport, A Network for 2030*, July
<http://www.dft.gov.uk/about/strategy/whitepapers/fot/thefutureoftransportwhitepaper5710>

Department for Transport (2004e) *TUBA Guidance* Prepared by Mott MacDonald.
<http://www.dft.gov.uk/pgr/economics/software/tuba/>

Department for Transport (2004f) *Procedures for dealing with optimism bias in transport planning Guidance Document* June 2004

Department for Transport (2006) *Transport and Works Act orders - A brief guide*.

Environment Agency, Natural England & Countryside Council for Wales. *EU Habitats & Birds Directives (The Handbook is regularly revised and updated. For more information about the latest version of these documents see:*
<http://www.environment-agency.gov.uk/subjects/conservation/295641/>

European Commission (1985), Directive 85/337/EEC on the Assessment of the Effects of Certain Public and Private Projects on the Environment as amended by Directive 97/11/EC and Article 3 of Directive 2003/35/EC .
<http://europa.eu.int/comm/environment/eia/full-legal-text/85337.htm>

European Commission (2001), Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001, on the assessment of the effects of certain plans and programmes on the environment.

European Commission (undated), *Guide to Cost-Benefit Analysis of Investment Projects*, Evaluation Unit, DG Regional Policy.
<http://www.dgfcyft.sepg.minhac.es/aplweb/pdf/DescargasFondosComunitarios/costes%20de%20beneficios.pdf>
http://europa.eu.int/comm/regional_policy/sources/docgener/guides/cost/guide02_en.pdf

European Civil Aviation Conference (1997), *Standard Method of Computing Noise Contours around Civil Airports*, ECAC document n° 29, 1987 (2nd edition 1997).

Fowkes, T. (2006) *The Value of Freight Travel Time Savings and Reliability Improvements – Recent Evidence from Great Britain* Presented at the AET conference, University of Leeds

Fowkes, A.S.; Firmin, P.E.; Whiteing, A.E.; Tweddle, G. (2003) *Freight Road User Valuations of Three Different Aspects of Delay* in Logistics Solutions 5, pp.15-21 2003 (published by National Institute for Transport and Logistics)

Highways Agency(2005) (as amended) *Design Manual for Roads and Bridges (DMRB), Environmental and Economic Assessments, Volumes 11 and 13*, London: HMSO.

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

Highways Agency (1993), *Design Manual for Roads and Bridges (DMRB) , Scheme Assessment Reporting TD 37/93, Volume 5, Section 1*. London: HMSO.

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

HM Treasury (1995) *A Framework for the Evaluation of Regeneration Projects and Programmes*

HM Treasury (2003) *The Green Book, Appraisal and Evaluation in Central Government*, Available online at: <http://greenbook.Treasury.gov.uk/index.htm>

HM Treasury 2005 *Managing risks to the public: Appraisal guidance* Available online at http://www.hm-treasury.gov.uk/consultations_and_legislation/greenbook_consultations/consult_greenbook_index.cfm

ICAO (1988) *Recommended Method for Computing Noise Contours Around Airports*, ICAO Circular 205-AN/1/25

Institution of Highways and Transportation (1996) *Guidelines on Developing Urban Transport Strategies*

Bates, J.; Mackie, P.; Nellthorp, J.; & Forster, D. (2004) *Evaluation of the Multi-Modal Study Process: Modelling and Appraisal*, Commissioned by the Department for Transport.

Landmap: <http://landmap.ccw.gov.uk/>

Landscape Institute and Institute of Environmental Management and Assessment(2002) *Guidelines for Landscape and Visual Impact Assessment - Second Edition* Spon.

National Statistics (2005), *Transport Statistics Bulletin, Survey of Van Activity 2004*

<http://www.dft.gov.uk/pgr/statistics/datatablespublications/freight/surveyvan/>

Nomis: <http://www.Nomisweb.co.uk/>

Office of the Deputy Prime Minister, (2004) *Assessing the Impacts of Spatial Interventions Regeneration, Renewal and Regional Development* (The 3Rs guidance)

<http://www.communities.gov.uk/documents/corporate/pdf/146865>

Ollerhead, J.B, Rhodes, D.P, Viinikainen, M.S, Monkman, D.J, Woodley, A.C, (1998) *The UK Civil Aircraft Noise Contour Model, ANCON: Improvements in version 2, R&D Report 9842*

Richardson, A.J., Ampt, E.S. & Meyburg, A.H. (1995) *Survey Methods for Transport Planning*. Melbourne: Eucalyptus Press.

Transport Scotland (2006) *Scottish Transport Appraisal Guidance* ([STAG](#))

<http://www.transportscotland.gov.uk/reports/scottish-transport-analysis-guidance/scottish-transport-appraisal-guidance/j7666-00.htm>

Leeds University, Sustrans & University of Bolton (on behalf of DfT), (2006) *How Transport can save the NHS*

Transport Research Laboratory (2004) *The Demand for Public Transport: A Practical Guide* The “Black Book”, TRL Report TRL 593.

<http://www.demandforpublictransport.co.uk/TRL593.pdf>

WebTAG

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

Welsh Assembly Government (2002) *A Winning Wales. The National Economic Development Strategy of the Welsh Assembly Government – Refresh April 2004*;

<http://wales.gov.uk/about/strategy/strategypublications/strategypubs/935814/?lang=en>

Welsh Assembly Government (2003) *Wales: A Better Country. The Strategic Agenda of the Welsh Assembly Government* Available online at:

<http://new.wales.gov.uk/topics/sustainabledevelopment/publications/280578/?lang=en>

Welsh Assembly Government (2006) *Draft Guidance on Regional Transport Plans*, Halcrow Group Ltd.

Welsh Assembly Government (2008) *One Wales: Connecting the Nation, The Wales Transport Strategy*.

Welsh Statutory Instrument 2004 No. 1656 (W.170) - *The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004*.

