

6 SCHEME DEVELOPMENT AND ASSESSMENT

6.1 INTRODUCTION

6.1.1 Schemes are a continuous thread throughout the Study, but within the analytical process leading to a recommended Transport Plan they follow from the Strategies and lead into Option packages. Scheme development and assessment started with the allocation of schemes to strategies and continued, informing the development of Options, through to the final stage of selecting the Preferred Option. The identified schemes have been developed individually to reveal their characteristics and potential contribution. This Section describes the process by which interventions and schemes were introduced into the Study and then subject to a logical sequence of investigation and assessment. The main stages were:

- i) generation of ideas and suggestions
- ii) creation and maintenance of the Long List of schemes
- iii) development in response to strategies and Options
- iv) assessment under GOMMMS appraisal methods
- v) summary appraisals using GOMMMS Appraisal Summary Tables

6.1.2 The process is subservient to and ultimately merges into Option development, the extent of development and assessment being led by the issues arising. Scheme development and assessment created a large volume of results, which are therefore treated as background information, used in this Report in support of the assessments of Options in Section 7, as noted in para. 6.6.7, but also in Sections 10 and 11 on phasing and costs.

6.1.3 As part of the open inclusive approach of the Study, the starting point adopted for schemes was to gather the large amount of existing information across the transport spectrum by consultation with all transport providers, authorities, and interested groups.

6.1.4 Throughout the Study suggestions were invited from the Project Management and Wider Reference Groups. New investigation by Pell Frischmann Consultants added further schemes.

6.1.5 Schemes were assessed using the GOMMMS appraisal methodology (described in Working Paper 22) based on the Government's five main criteria for transport: Environment, Safety, Economy, Accessibility, and Integration.

6.2 THE LONG LIST OF SCHEMES

6.2.1 Every scheme identified was recorded in a reference list – The 'Long List' of schemes. This list was used as a reference to feed both the Strategies and Options, and eventually contained over 150 schemes as listed in Appendix 6.1.

6.2.2 The list contains a wide variety of items from specific major civil engineering works, transport services, controls, campaigns, policies, and regulations. The term 'Interventions' was employed as a generic term to cover actions to change the transport situation, including those, such as information campaigns, not directly including physical works.

- 6.2.3 The list was divided into modes of transport and methods of influencing demand as shown in Table 6.1. There is a good spread in the main transport modes, but fewer cycling, walking, and management schemes because the cycling and walking schemes were listed as generic measures, i.e. with multiple or policy applications. Appendix 9.2: A Strategy for walking and cycling, sets out how they may be applied, including individual schemes. The Demand Management measures are mainly generic in nature. Some of the Rail and Highway schemes contribute to freight movement and can therefore be regarded in part as freight schemes.

Table 6.1 Categories of Schemes in the Long List

Category of scheme	Numbers of schemes in Long List
Heavy Rail	27
Light Rail	17
Bus	24
Highway	30
Traffic Management	13
Cycle	10
Pedestrian	5
Demand Management	9
Freight	9
Travel behaviour	9

6.3 DO MINIMUM SCHEMES

- 6.3.1 Some of the schemes identified were already firm commitments in one or other of the transport providers' programmes. These were placed in a separate category, the 'Do Minimum' situation, which represents the state of the future infrastructure without any interventions from this Study, and against which Study Options were to be compared. The transport providers assisted in determining which of their respective schemes were Do Minimum, and the full list of schemes has been shown in Table 3.1.

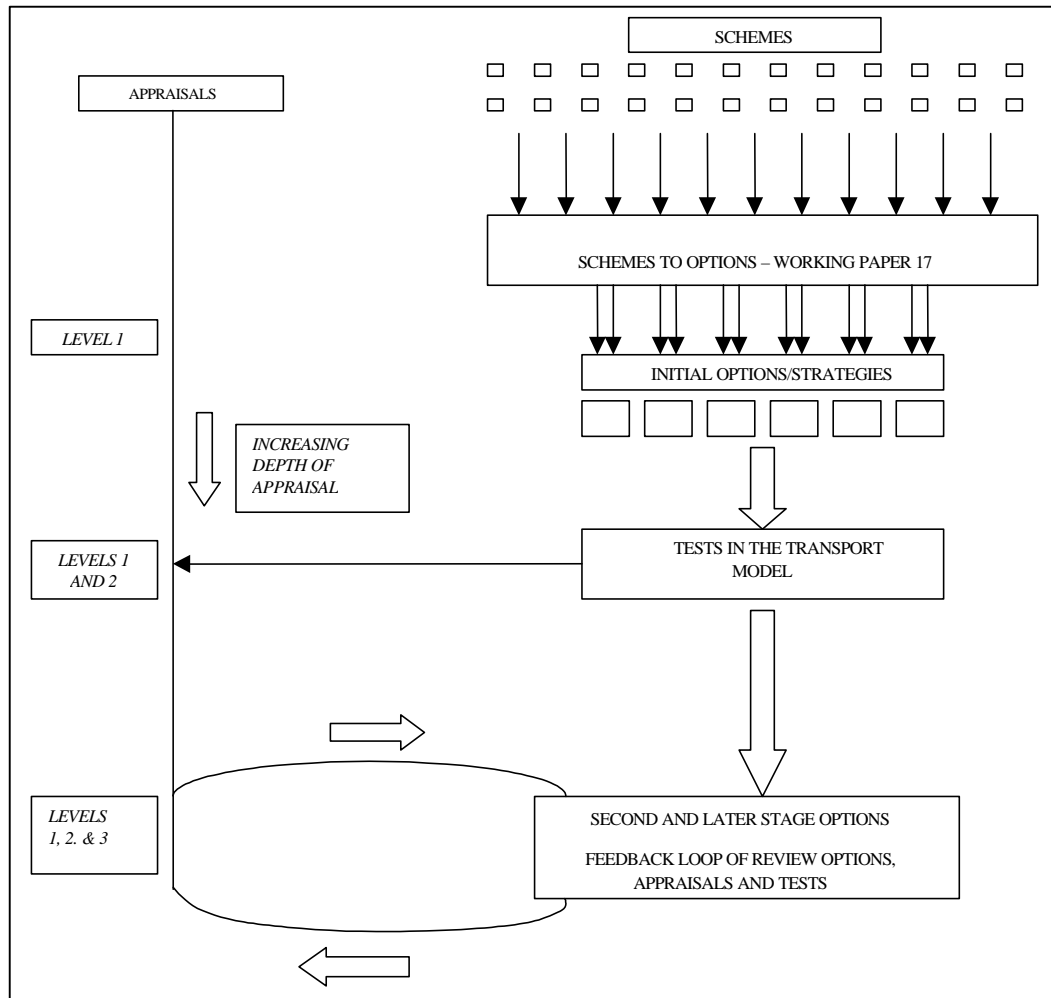
6.4 SCHEME DEVELOPMENT AND ASSESSMENT

- 6.4.1 Guidance on the scope of assessment required on individual schemes in order to arrive at a Preferred Option is set out in the Department of Transport publication 'Guidance on the Methodology for Multi Modal Studies' (GOMMMS). The underlying principle is that appraisal has to be sufficient to inform the decisions required to reach a Preferred Option. In general schemes remained under consideration in groups or as components within Option packages unless and until the appraisals give a supportable and objective indication that they should be discarded.
- 6.4.2 However, there are practical limitations on the amount of testing and appraisal, and an important objective is to produce conclusions that are manageable and not over complex.
- 6.4.3 In practice this has resulted in a varying level of detailed investigation of schemes. Generally the schemes in the final Options needed more investigation, but key issues and impacts required attention across the range especially for some of the major highway schemes.

6.5 SIFTING

6.5.1 The task of evaluating and reducing the Long List into a set of coherent multi mode packages of schemes was approached by adopting an iterative process of definition, testing, and appraisal in increasing detail as shown on Figure 6.1.

Figure 6.1. Option Development and Parallel Appraisal



6.5.2 As Figure 6.1 shows, sifting effectively continued through to the final stages of selection of the Preferred Option. Table 9.3 shows the final numbers of schemes in each category compared with the initial numbers in Table 6.1.

6.6 SEQUENCE OF APPRAISAL

6.6.1 To cope with the potentially large volume of assessment, the sequential and iterative approach referred to in the preceding paragraphs was adopted. Appraisal has been carried out in three levels, of increasing depth:

6.6.2 Level 1 All initial schemes

Level 1 is relatively coarser appraisal than the AST (Appraisal Summary Table). It takes a common sense look at the schemes and provides three indicators:

- An overall appraisal rating
- Ratings of each of the main impacts identified in GOMMMS
- A guide on whether the scheme needs appraising in greater depth

Many schemes on examination do not need to be investigated in greater depth, but were reviewed when they were included in an Option for testing. Outputs from Level 1 appraisal include a Summary Sheet, a small-scale map to locate the scheme, a short description and background of the scheme and a basic Appraisal Table.

6.6.3 Level 2 Schemes retained after first sifting

Level 2 is based on the Appraisal Summary Table (AST), but using only the matrix methods. The GOMMMS guidance and NATA (New Approach to Transport Appraisal) breaks down the impacts into further sub divisions, enabling a more detailed appraisal table to be prepared. Many schemes need not be individually appraised at any greater depth than this unless or until they are reviewed within 'live' Options.

Level 2 outputs include ASTs with supporting environmental Appraisal Forms, tables of more detailed aspects of impact and maps showing the location and general form of the schemes.

6.6.4 Level 3 Schemes with the potential for significant impacts

A detailed investigation of individual attributes of selected schemes including scheme layouts and appraisal worksheets from GOMMMS covering Environmental, Economic, Safety, Accessibility and Integration impacts which provide inputs to the final scheme AST. Detailed supporting data and calculations are included within relevant sections.

In some cases it is not practical to quantify the contributions of individual schemes. For example, increased patronage of public transport results from a number of schemes promoting better quality services.

6.6.5 Some interventions and schemes overlapped with others, some were impractical, or not within the ambit of the Study, or did not contribute positively, or otherwise were not suitable for a Preferred Option.

6.6.6 The status of schemes was reviewed in stages. They were either retained, suspended, amalgamated with others, or rejected. The process adopted has placed emphasis on taking an objective view. Each decision is accompanied by reasoning, providing an audit trail for the decisions taken. GOMMMS acknowledges that this task requires judgements to be made. Full details of retained, suspended and amalgamated schemes for the A453 MMS are contained in Appendix 6.2.

6.6.7 Developing and assessing 150+ schemes whilst continuously reviewing their place in the Option packages entailed a large volume of data. The results are therefore not recorded directly. The ASTs in Section 7 include those assessments relevant to the derivation of the Preferred Option. Appendix 6.2 uses and refers to scheme assessments, whilst Working Papers 27: An Assessment of Bypass schemes, and 35: The Case for Dual or Single Carriageway Improvement between M1 J24 and Clifton, and Appendices in Section 9, incorporate scheme assessments in various degrees.

6.7 APPRAISAL

6.7.1 The GOMMMS approach to assessment uses Appraisal Summary Tables (ASTs) to display the effectiveness of the scheme or Option against the 5 Government Objectives and 21 sub-objectives, compared with what would happen without the recommendations i.e. the Do minimum situation. GOMMMS methodology is summarised in the following paragraphs and described in more detail in Working Paper 22. The results, obtained from the worksheets and sub-objective assessments, are presented on the AST, initially for each scheme and ultimately for each Option including the Preferred Option (see tables for Combined Options in Section 7). From this a judgement can be derived to the extent to which the Government's objectives or local objectives for transport are met by the scheme or Option.

6.7.2 GOMMMS sets out the way in which appraisal is to be carried out in the Study. It is intrinsic from the start, applying to the initial interventions and schemes and being carried through to the final Options. The appraisal follows the Government's five main objectives for transport, of Environment, Safety, Economy, Accessibility, and Integration. These are broken down into 21 sub objectives described below. The process is described in more detail in Working Paper 22.

6.7.3 Environment

Noise

The appraisal approach required by GOMMMS is based on the differences in the 'estimated population annoyed by noise' between the Do Minimum situation and Scheme or Option. The worst scheme, in terms of noise, is the one with the greatest increase in people annoyed compared to Do Minimum.

Local Air Quality

Road traffic is the major source of local air pollution within towns and cities, generating fine particulates (PM₁₀) and Nitrogen Dioxide (NO₂). Based on the Design Manual for Roads and Bridges (DMBR) assessment, GOMMMS requires an assessment process that categorises areas along the proposed routes into 'winners' and 'losers'. Winners experiencing an improvement in air quality and losers experiencing higher pollution levels with the scheme in place.

Greenhouse Gases

Carbon Dioxide is considered to be the most important greenhouse gas and is used as the key indicator when assessing the impact of transport schemes on the regional air quality. The greenhouse gas sub-objective assesses Study-wide emissions only and the overall change in CO₂ emissions is expressed in tonnes.

Landscape

The Landscape objective assesses the impacts on the characteristics of the land and the way in which they are perceived. The GOMMMS methodology requires the completion of a worksheet describing the key characteristics of the landscape affected, the importance of the characteristics and the effect the proposals will have upon the landscape. The overall assessment of the Scheme/Option is summarised using the following 7-point assessment scale,

Large Benefit
Moderate Benefit
Slight Benefit
Neutral
Slight Adverse
Moderate Adverse
Large Adverse

Townscape

The Townscape objective assesses the impacts on the physical and social characteristics of the built environment. A worksheet based appraisal is required describing the key urban characteristics impacted, the importance of the characteristics and effect the schemes will have upon the townscape. Again the overall assessment is summarised using the seven-point scale outlined above

Biodiversity

Based on advice from English Nature, the GOMMMS appraisal requires a description of the earth heritage (geology) and biodiversity features close to any proposals. The scale and importance of the features are appraised and the magnitude of the effects of the Scheme or Option upon the features is appraised using the seven-point scale.

Heritage of Historic Resources

The Heritage objective assesses the impacts on the man made historic environment, including buildings, parks, designed landscapes and historic monuments. A worksheet based appraisal is required describing the heritage characteristics affected, the importance of those characteristics and the effect schemes will have upon the townscape. Again the overall assessment is summarised using the seven-point scale.

Water Environment

The approach to the appraisal of the water environment is based on guidance prepared by the Environment Agency and DMRB assessment methodology. The methodology requires an appraisal of the activities proposed and the potential impacts, as well as an appraisal of the importance and value of the water environment. GOMMMS worksheets are used.

Physical Fitness

In recognition of the links between transport, the environment and health, the Physical Fitness sub-objective assesses changes between the Do Minimum and Scheme/Options in the extent of walking and cycling trips lasting 30 minutes or more. The overall assessment is summarised using the seven-point scale.

Journey Ambience

This sub-objective appraises changes to the quality of journeys arising from the implementation of a scheme or option. Changes to on-route facilities, signing, road standards and alignments and cleanliness and environments on public transport are all considered within the Journey Ambience sub-objective. A summary assessment is given using the seven-point scale.

6.7.4 Safety

Accidents

Numbers of road user accidents and the number of casualties are the key indicators for the assessment of accidents. Monetary values are placed on the prevention of accidents and casualties to provide an estimate of the accident benefits of a scheme or Option. Changes in accident numbers and monetary benefits between the Do Minimum and with a scheme/Option in place are required.

Security

GOMMMS requires that the appraisal of security within a scheme be based upon the changes in personal security and the number of people affected. A summary assessment is given using the seven-point scale.

6.7.5 Economy

Transport Economic Efficiency

Assessment of this sub-objective is made by performing a transport cost/benefit analysis using the Department of Transport's TUBA method (Transport User Benefit Appraisal), which costs use benefits, transport operations, investment and revenues. For this Study it is applicable to the Option package rather than an individual scheme. TUBA compares the benefits to users of the transport system with the costs of introducing changes. It takes account of when the costs are incurred and the benefits accrued, discounted over a 30-year period to provide a measure of the present day financial value of the investment required for an Option.

Reliability

Appraisal under the reliability sub-objective aims to define the change in journey time reliability for public and private transport users.

Wider Economic Impacts

Appraisal is made where a scheme is likely to assist or hinder local economic regeneration in areas identified for regeneration in local plans.

6.7.6 Accessibility

Option Values

Changes in Option Values arise when a scheme significantly changes the availability of a transport service e.g. in terms of a new mode, service or frequency. Option values relate to the number of people that could use the service, even if they do not intend to do so regularly.

Severance

Appraisal under the Severance sub-objective attempts to assess the impact on pedestrian movements caused by implementation of a scheme. Comparisons are made between the scheme and Do Minimum situations and a summary assessment is given from the seven-point scale.

Access to the Transport System

For those without a car, access to public transport is critical. The appraisal approach recommended by GOMMMS analyses the public transport routes and estimates the number of people without access to a car who do not have easy access to at least an hourly public transport service.

6.7.7 Integration

Transport Interchange

A large factor in providing an integrated transport plan is the provision of interchanges in order to promote transfer between modes. The appraisal of the sub-objective aims to quantify the changes made to interchanges with the implementation of a scheme and to estimate the number of users affected.

Land Use Policy

Appraisal of the land use policy sub-objective aims to assess the extent to which a proposed scheme is integrated with local, national, regional and strategic land use proposals and policies and with proposals and policies concerning transport. A summary assessment is given using a three-point scale (Beneficial, Neutral, Adverse).

Other Government Policies

The impact on other Government policies is assessed in order to ensure that a scheme is consistent with other policies beyond transport such as access to education and healthcare.