PELL FRISCHMANN

A453 CORRIDOR MULTIMODAL STUDY
INCEPTION REPORT

ADOPTED REPORT

27 April 2000

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FRAMEWORK OF CONTENTS

1. INTRODUCTION

1.1 Purpose of the Inception Report

This Inception Report has been prepared to outline the overall approach proposed by the Pell Frischmann Joint Venture to the A453 Corridor Multimodal Study. The report builds upon the general description provided in the Tender Quality Submission, expands the description of the approach to the various study phases and seeks to focus the approach to the particular characteristics of the A453 Corridor.

This document is not intended to define a method which will be rigidly applied, rather to define a framework within which the methods will be applied and adapted to the characteristics and requirements of the A453 Corridor as these become clearer during the early stages of the Study. The Inception Seminar of Friday 11th February has been particularly helpful in identifying issues of importance to the Wider Reference Group (WRG), although these have yet to be fully assimilated.

1.2 Study Objectives

The overall aims of the study may be summarised as follows:

- Carry out an in-depth appraisal of the total Transport needs of the A453 Corridor at present and for the period up to the year 2021 considering:-
  - i. the contributions which different modes of transport can make to developing alternative solutions to problems identified; and
  - ii. the potential effects, and their incidence, of an integrated transport approach

- Identify viable sustainable and costed options for measures to address existing and future problems; and

- Recommend a:-
  - i. long term strategy to address strategic transport problems in the Study Area.
  - ii. plan to address the most urgent transport problems across all modes, looking in particular at opportunities to induce modal transfer, whilst ensuring consistency with the long term strategy; and
  - iii. detailed range of measures necessary to implement the strategy, showing the incidence of potential benefits and disbenefits and cost effectiveness.

The overall context for the study emanates from the wide ranging debate on transport issues which started in the late 1980's and resulted in the publication of the White Paper (cm3950) in July 1998 and subsequent 'daughter' papers focussing on particular policies including "A New Deal for Trunk Roads in England" The White Paper includes the statement "This White Paper signals a new direction for transport in which everyone must play a part if we are to succeed."

The transport debate has led to a recognition of the need for a radical change in transport policy; a need to create a more integrated transport system, a need to secure mobility that is sustainable; a need for a new approach; a move away from 'predict and provide' policies; a move to control car traffic through demand management.

Although the document is currently under revision, the principles outlined in Planning Policy Guidance Note 13 (PPG 13) still provide an excellent framework for transport planning namely:

- Integration of land use and transportation planning
- Reduction in the need to travel
- Promotion of travel by the more environmentally friendly means, such as walk, cycle and public transport
- Reduced dependence upon the private car, especially for the journey to work.

The challenge is to identify a package of measures compatible with these objectives and philosophies which address both strategic and local issues and which is both deliverable and publicly acceptable.

1.3 Overall Approach

In order to meet this challenge, Pell Frischmann have derived an approach within the framework provided by the DETR Reference Guidance on Methodology for Multimodal Studies (GOMMS) of 7th September 1999.

We propose an approach comprising five broadly sequential phases of work and two phases which will be continuous throughout the study duration.

The five sequential study phases will comprise:-

- Surveys and Transportation Model
- Strategy Development
- Option Identification
- Option Appraisal
- Recommendations and Programme Implementation

The two continuous phases will comprise:-

- Consultation
- Reporting

1.3.1 Sequential Phases

The survey phase will include three main elements, travel surveys, transport network inventories and planning and environmental data collection, and, the review of any data services/documents outstanding from the inception stage.

The specification of the transportation model will be adjusted in detail in order to reflect as many identified issues as is possible within the constraints of technology and resources. Model development will generally follow the established stages of calibration against survey data to establish suitable parameter values, validation at the present year (2000) and forecasting to reflect a committed scenario for each forecast year.

Problem identification and issue identification will comprise the starting point for the development of both strategies and options. The process will include consideration of measures to influence the level and nature of travel demand and their implications as well as the potential of all modes of transport to contribute to an integrated/package of measures and investments likely to be necessary to resolve the complex mix of strategic and local issues within the corridor. Whilst nothing is ruled in or out at this stage, it is difficult to envisage a single scheme/measure which would address sufficient issues to provide a preferred solution.

Appraisal of both strategies and options will follow the New Approach to Appraisal (NATA) and will be summarised using the Appraisal Summary Table (AST). Key activities will involve the identification of issues, problems, local objectives and key indicators through the consultation process.

The Implementation Programme and Recommendations will take account of implementation constraints and funding issues and issues of timescale such as legislative and lead time factors.

1.3.2 Continuous Phases

A continuous programme of consultation is proposed focusing on key stages of the project in order to ensure that the study approach is seen to be transparent, recognises local issues, and to maximise public acceptability of the option which emerges as preferred. The programme proposed is focussed on GOMMS but includes consultation at additional stages to ensure a feeling of inclusion on the part of the wider local community.

Clear and comprehensible reports will be generated at key stages of the study to describe study methods and findings and seek views from the management groups. Work programmes and expenditure will be monitored continuously to ensure delivery of the project to target.

1.4 The Inception Report

In preparation of this Inception Report we have sought to focus the study approach towards the characteristics of the study area and transport related issues within or impacting upon it.

In parallel with visits to the study area and reviewing the wide range of relevant documentation on Transport related issues available from a range of sources, we have sought to reflect the views of the WRG on issues of importance to them through the medium of the Inception Seminar held on Friday 11th February.

This process has identified a wide range of issues impacting in the study area, and full assimilation and understanding of these issues and their implications is difficult at this early stage of the study. We have therefore sought to outline an approach which can be refined in detail as the true implications of the issues become clearer.

In Chapter 2 of the report, we summarise the main characteristics of the Study Area largely with respect to transport and Chapter 3 identifies key issues arising from the Inception Seminar, document reviews and site inspections. Chapter 4 outlines the proposed approach to transportation modelling and surveys, whereas Chapters 5 and 6 describe the all important approach to the development and appraisal of strategies and options. Chapter 7 focuses on consultation and media involvement and Chapter 8 on recommendation and programme of implementation. In Chapter 9

we provide an updated programme of work, identifying key issues of interface with the M1 (North-South) Study.

Supplementary volumes include Data and Literature Reviews completed to date, the Inception Seminar Report and a technical appendix on the Transportation Model.

2. STUDY AREA CONTEXT

2.1 Overview of Study Area

Figure 2.1 shows the study area, as defined by the yellow line. The area extends from the Greater Nottingham area in the east to the City of Derby in the west, and East Midlands Airport / Kegworth in the south. It includes several other large settlements including Long Eaton, Stapleford and Borrowash.

2.2 Road Networks

The A453 is the main link from Junction 24 of the M1 to Nottingham. At the North Eastern end it links into the A52 Nottingham Ring Road and crosses the River Trent using Clifton Bridge. The River Trent is a significant barrier to North South movement in the Study Area. There are 5 bridges across the River Trent in the study area, Clifton Bridge (A52), the M1, B6540, the A50 and the old A6 at Cavendish Bridge. Further East there are two bridges between Nottingham and West Bridgford (Trent Bridge and Lady Bay Bridge). There are two bridges across the River Derwent in the study area, the B5010 near Borrowash and the A5111 link from the A6 to the A52. A new bridge gives access from the A52 to the Pride Park development area, just west of the study area.

The principal trunk roads in the study area in addition to the A453 are as follows:

- A52 which is the principal route between Derby and Nottingham
- A6 which runs from the south east of the study area to the north west
- A50 Derby Southern bypass which links the M1 with the A38 and to Stoke beyond, it also provides a bypass of Shardlow for the A6 between the M1 and Alvaston
- A42 which runs from the South West of the study area to the M1, providing a link from the M42 and Birmingham into the study area

There is one other significant A road in the study area. This is the A6005 which provides an alternative route from Nottingham to Derby through Beeston, Long Eaton and Borrowash.

Although not within the study area, the B679 provides an alternative route from the A453 into central Nottingham, via Trent Bridge rather than Clifton Bridge, and the A46/606 provides an alternative strategic route from Leicester to Nottingham.

2.3 Public Transport networks

There are a number of railway lines within the study area. The main line from London splits at Trent Junction where the line crosses the River Trent. The majority of London to Sheffield services run via Derby, with the other line leading off into Nottingham. However, connections are available at Leicester between slow and fast London services at Leicester for passengers from Nottingham. In addition there is a direct line from South to North through Toton Yard which is mainly used by freight trains. There is a further freight only line from just north of Trent Junction which provides a link across to Willington power station on the Derby to Birmingham line.

With regards to the passenger train services provided on these lines, the following list gives a summary of weekday service frequencies, listed by section of line and by operator.

- Midland Mainline Inter city services from London to Nottingham
  Hourly fast service from 05:32 to 19:32 (15 trains) to London
  Hourly stopping service from 05:54 to 21:32 (17 trains) to London
  Hourly fast service from 07:55 to 22:00 (16 trains) from London
  Hourly stopping service from 06:35 to (17 trains) from London

- Midland Mainline Inter city services London to Derby (Sheffield)
  Hourly fast service from Sheffield to London
  Hourly stopping service to London
  Hourly fast service from London
  Hourly stopping service from London

- Central Trains regional services Nottingham – Derby (Birmingham/Cardiff/Stoke)
  43 trains Nottingham to Derby (Limited number of trains stop all stations, most stop at Long Eaton)
  47 trains Derby to Nottingham
  NB Attenborough , Beeston and Spondon stations in the study area not served by all trains.

- Central Trains Lincoln – Nottingham – Birmingham/Coventry (via Leicester)
  Hourly service to/from Coventry (12 return journeys per weekday)
  Ltd service to Birmingham via Leicester
  Many of these services call at Beeston.

- Central Trains (Norwich) Nottingham to Sheffield (Manchester/Liverpool)
  Hourly service each way 06:36 to 21:42 northbound 06:40 to 23:39 southbound.
  Plus limited number of early morning / late evening London – Sheffield services operated by Midland Mainline, via Nottingham.
  Combined service 18 northbound, 20 southbound per weekday. Most services stop at all stations, some don't stop at Langley Mill just outside the study area.

Bus services are provided by a number of operators in the study area. In the Greater Nottingham area the main bus operators are Nottingham City Transport (NCT) /Pathfinder, South Notts and Barton buses. There are a number of smaller operators who operate across the area. Trent buses operate services towards Derby, and Arriva operate services towards Leicester.

As might be expected, the urban area of Greater Nottingham has the most comprehensive network of services in the study area. The more rural areas have a less frequent level of service, with only limited evening services. City of Nottingham Council and Nottinghamshire County Council produce a comprehensive Travel Planner leaflet for the City and County areas, which gives details of routes, operators and approximate service frequencies.

The Clifton area is well served during the day with most parts of the estate provided with a 7-8 minute frequency to the City centre via Clifton Bridge and the Meadows area as well as a combined frequency of about 10 minutes for services via West Bridgford. Nottingham Trent University has a campus in Clifton, which is served by a number of routes from the City centre as well as a dedicated limited stop hourly daytime service, which runs from the City Centre campus to the Clifton campus. Clifton is also linked to the Lenton lane industrial area, the Queens Medical Centre and Arnold via the Ring Road with a direct bus service (route 53/54). A direct service also operates from Clifton to Beeston, however this runs via the City Centre. This service runs every 15 minutes at peak hours

and 30 minutes off peak. A 15 minute service operates during the day on a service that links Nottingham, Clifton and Loughborough, with a 6 minute peak hour frequency as far south as Gotham. An hourly service links Nottingham, Clifton and East Midlands airport. The Clifton area is also served by the Nightrider late night bus network, with 4 services between midnight and 3am.

The wider study area is served by a comprehensive network of services. Derby and Nottingham are linked by a combination of local services serving intermediate destinations such as Long Eaton, Stapleford, Sandiacre and Borrowash. Most of these services have a 15 minute service frequency during the day. Limited stop express services operate more infrequently (at least hourly) with journey times that are more competitive with the private car. There are a number of local services that link Derby, Nottingham, Loughborough and intermediate destinations with East Midlands Airport as well as express limited stop services.

National Express Coaches operate a number of express coach services from Nottingham through the study area, including 8 daily services to London. Regular services also link Nottingham with Birmingham, Leicester, and Sheffield. Flightlink services provide direct services to Luton, Heathrow and Gatwick airports 8 times daily each way.

2.4 Travel Characteristics of the A453 Corridor

A wide range of journey types by various modes of transport combine to produce the total travel demand in the corridor, and the A453 route is used here as an illustration.

The A453 has 6 different roles which have been identified as follows:-

- Strategic movements – J24 of the M1 is the confluence of the M1, A42(M42), A50 and A6
  - provides main access from M1 south into Nottingham

- Inter city movements between Nottingham and Derby
  - A453/A50/A6 as an alternative to the A52 and A6005 routes. There also appears to be evidence that the opening of the A50 Derby Southern bypass has increased strategic movements from Nottingham to Stoke and beyond

- Hinterland to Nottingham
  - journeys from the immediate area such as Gotham, Barton in Fabis and Kingston on Soar

- Local movements within Clifton
  - the A453 provides the main link between some parts of Clifton Village

- Frontage access onto the A453

- Local pedestrian and cycle movements.

Major Travel demands Generators include:
- Nottingham Trent University
- Ratcliffe on Soar power station
- East Midlands Airport
- Business Parks near to the Airport
- the British Gypsum quarry at East Leake

- the Lenton Lane industrial area
- the Boots complex at Beeston

A well used park and ride facility is located at Queens Drive on the A453 just inside the Ring Road.

2.5 Land-Use, Planning and Environment

The context for the study area in land-use, planning and environmental terms is set out in a number of policy documents at a local, county and regional level as illustrated on the table below and Figure 2.1.

These policies set the context for the future development of the area, and as such impact directly on the aims and aspirations of this study, shaping its objectives and constraints.

ADMINISTRATIVE AREA	POLICY DOCUMENT
REGION	
East Midlands Region	Draft Regional Planning Guidance for the Spatial Development of the East Midlands (November 1999) Regional Economic Development Strategy
COUNTIES	
Nottinghamshire	Nottinghamshire Structure Plan Review (November 1996)
Leicestershire	Leicestershire Structure Plan 1991-2006
Derbyshire	Derbyshire Structure Plan
UNITARY AUTHORITIES	
Nottingham City Council	City of Nottingham Local Plan (October 1997)
Derby City Council	City of Derby Local Plan (April 1998)
DISTRICT/BOROUGH AUTHORITIES	
Erewash Borough Council	Erewash Borough Local Plan (September 1994)
Broxtowe Borough Council	Broxtowe Local Plan, Deposit Draft (January 2000)
Rushcliffe Borough Council	Rushcliffe Local Plan, Deposit Draft (February 2000)
North-West Leicestershire District Council	North West Leicestershire Local Plan (February 1995)

In the Supplementary Report Volume 1 to this report, entitled Date and Literature Reviews, these planning policy documents have been reviewed. Those elements that will be expected to have an impact in relation to the study area in planning, environmental and land-use terms have been

brought to the fore, and it is expected that a more detailed analysis of these will form an integral part of the later stages to this study.

2.6 Transport Strategy Context

The A453 Multi-Modal Study has been commissioned in the context of evolving national and local Transport Policy. The Government's White Paper on Integrated Transport ("A New Deal for Transport – Better for Everyone") and associated daughter documents and Trunk Roads Review Report ("A New Deal for Trunk Roads") set out this Policy. The Interim Regional Transport Strategy for the East Midlands provides regional context. Also the new 5 year Local Transport Plans that Local Authorities have been asked to produce, have an emphasis on providing integrated solutions to transport problems. A broad package of measures is required to achieve the Government's objectives. In the A453 study area the Local Transport Plan for Greater Nottingham, Central Leicestershire and Derby joint along with plans for Nottinghamshire County Council, Derbyshire County Council, Leicestershire County and appropriate districts will all be considered in formulating strategies and options.

2.7 M1 North-South Corridor Study

The Government Office for the East Midlands has also commissioned a 24 month Multi-Modal Study of North – South Movements on the M1 between Junction 21 near Leicester and Junction 30 near Sheffield. This study will focus on strategic North – South movements along the M1. There is however a significant overlap between the A453 study and the M1 North –South study. The A453 study area is entirely within that specified for the M1 study. There is a need to ensure that the two studies are consistent in terms of the strategy and measures proposed. There will also be overlap in terms of data collection and survey requirements as will be outlined in section 4 on Transport Modelling. A further multi-modal study for the Birmingham-Nottingham Corridor is proposed for tranche 2 of the DETR studies.

3.0 ISSUE IDENTIFICATION

3.1 Document Reviews

3.1.1 A large number of documents that were considered to be appropriate were assembled from local authorities and other agencies based upon a list of documents supplied by the Government Office. Each of these has been read and reviewed in the context of the A453 study. The detailed reviews have been included as Working Papers in the Supplementary Report Volume 1. A summary of the most relevant points from the reviews is included in this section.

3.1.2 "A453 through Clifton – Justification for the implementation of a transport demand management trunk road pilot scheme", Nottingham City Council in September 1998.

This document sets out an alternative approach for addressing the transport problems experienced in the Clifton area of Nottingham, with particular reference to the A453. This is set against the background of Government Policy, including the Trunk Roads Review, which suspended work on the "red route" option for on-line improvements to the A453. It outlines the problems currently experienced on the A453, and refers to the Greater Nottingham Transport Strategy and its positive pro-choice approach to effecting modal switch. A list of objectives for a Transport Demand Management approach and a package of measures which meet these objectives are outlined. Public participation is encouraged, and extensive before and after monitoring essential. 2 plans are included which illustrate alternative strategic routes to the A453 and the package of measures suggested for investigation.

3.1.3 "Local Transport Plan for Greater Nottingham – Provisional Plan 2000/01 – 2004/05" Nottingham City Council and Nottinghamshire County council, July 1999.

The transport strategy for the Greater Nottingham area has been jointly produced by Nottingham City Council and Nottinghamshire County Council within an evolving national policy of sustainability and integrated land use and transport planning. The strategy has been developed based on the Government's White Paper "A new deal for transport : Better for everyone". There are 4 key elements to the Greater Nottingham Local Transport Plan, namely:

- Policy and strategy formulation, particularly in respect of integrating transport and land-use planning
- Transport demand management
- Management, maintenance and improvement of infrastructure with supporting revenue programmes
- Travel education and awareness to promote safe and sustainable travel behaviour.

The plan has a set of intentions. Of particular relevance to the A453 study are the aim for greater partnership working, and measures to actively involve local people, businesses, transport operators, user groups and environmental organisations at all stages of the Plan presentation.

The list of Nottingham's Transport Objectives is very relevant. In particular the objective to relieve communities from the adverse impacts of through traffic (heavy goods vehicles in particular) is relevant to the A453 in particular as well as the A52, and A6005. Also the objective to maintain and enhance Greater Nottingham's accessibility to regional, national and international markets, particularly by modes other than the car is relevant. The removal of social exclusion is of particular

relevance to Clifton. There are also objectives relating to improved air quality and road safety improvements.

A series of targets have been set for the Plan Area, which broadly aim to reduce car use and increase walking, cycling and public transport use. This is to be achieved by commitment to Park and Ride, Bus Quality Partnerships etc as well as increased parking charges. The A453 and A52 corridors are identified as important, with local businesses demanding better links to the national road network, particularly the M1.

Nottingham has been proposed to be established as a Centre of Excellence for Integrated Transport. The development of the Nottingham Express Transit (NET) system, promotion of bus services and information, rail development and Park and Ride are key features. Line 2 of the NET is proposed to link the City Centre to Clifton in the A453 Corridor. Bus priorities are being implemented in the West Bridgford area, and there are proposals for Farnborough Road in Clifton. The Highways Agency have proposals for Bus Priorities on the A52 corridor, which will compliment those implemented by the City Council closer to the City centre.

There are policies for District Centre Integration and Interchange. In the Study Area these include the major district centre of Beeston, and the district centres of Clifton and Stapleford. Proposals will be made to improve conditions for pedestrians, and to improve public transport access. There is a link in to the Clifton and Wilford Area Transport Plan which is summarised later.

Proposals are included to create civilised streets. These proposals include local safety schemes, safe routes to school projects, walking and cycling schemes and traffic reduction/Home Zones. In particular the Nobel Road area of Clifton is proposed as a pilot Home Zone , adopting an innovative approach to regenerating the area. This is in addition to area wide traffic calming proposals for the Clifton estate.

An extensive network of off road cycle facilities already exists across much of the study area. Proposals are included for new off road cycle facilities in the Stapleford area and on road lanes along the A6005 between Attenborough and Long Eaton. The establishment of a "Dual Approach" to cycling between the Authority and local employees needs further examination.

Travel demand management proposals include education / awareness, UTC/traffic management, Parking Policy/Commuter Plans and Air Quality management. Of particular importance are the proposals for Nottingham to be a "fast track" pilot for the introduction of a Citywide workplace parking levy. The anticipated year for commencing implementation is 2003/04. The revenue would be hypothecated for expenditure on schemes such as the NET and Bus Quality Partnerships.

Network Management and Maintenance proposals include proposals for freight quality partnerships and upgrading of Coventry Lane (Stapleford) which both have potential impacts on the Study area. The Southern Relief Route scheme will have an impact on Traffic on the south side of the City centre around the Broadmarsh centre in particular. This may have strategic routing implications which the A453 MMS will have to consider.

3.1.4 "Provisional Local Transport Plan for Leicestershire", Leicestershire County Council, July 1999.

NW Leicestershire District Council allocated land on former power station site for a major distribution and storage depot. Inspector at the local plan inquiry ruled against this site. There is a separate report which reviews the impacts of all possible development in the study area.

The possible Kegworth Bypass scheme is briefly referred to, as is East Midlands Airport and Donington Park. Expansion of either of these will be likely to increase traffic problems.

3.1.5 "Local Transport plan A511 Ashby bypass stage 2 Supplementary Information and Appraisal", Leicestershire County Council, July 1999.

This scheme is potentially relevant since the opening of the A50 Derby Southern bypass was supposed to remove traffic from this route. Any improvement to the A511 around Ashby de la Zouche may attract traffic away from the A50 route and so alter forecasts for the Junction 24 area of the M1. This report outlines the schemes status and the traffic model used in the forecasting.

3.1.6 "Derby Joint Local Transport Plan 2000/01 – 2004/05" Derby City Council and Derbyshire County Council, July 1999.

This report covers the whole Derby City area and associated travel to work area, including Borrowash, in the study area. Of particular note are the references to the possible impact of the A50 southern bypass scheme and the A6 Alvaston bypass scheme, which may alter the balance between the A453/A50/A6 route between Nottingham and Derby and the A52 route.
The commitment of the 3 cities of Leicester, Derby and Nottingham to work jointly is relevant, for example joint policies on car parking standards.

Economic activity is discussed, and there is a commitment to reducing the need to travel and promoting alternative modes for travel to work. Significant generators of trips are listed, including the Pride Park development area between the A52 and the A6. Parking provision in the city centre is outlined. The development of bus quality partnerships is mentioned such as the "Spondon flyer".

A section on Corridor assessment outlines problems, issues and opportunities on all corridors into Derby City Centre, including the A52/A6005, and the A6.

3.1.7 "Derbyshire Local Transport Plan 2000/01 – 2004/05" and Technical Annexes, Derbyshire County Council, July 1999.

Very little of the study area is included in this Local Transport Plan area. Long Eaton is the only significant centre included. Long Eaton has a relatively high figure of 10% of journeys to work made by bicycle. Therefore a number of cycle facilities are included in the LTP. Reference is made to the M1 North –South Multimodal study which is welcomed, particularly with regard to freight issues.

3.1.8 "Nottingham Express Transit Line Two :south-west and south-east feasibility study draft report. Appendix G Patronage Forecasts and Economic Evaluation", Nottingham City Council, April 1997.

This report examines the viability of providing LRT routes to the south of Nottingham serving the Clifton and West Bridgford (Rushcliffe) areas of Nottingham. It includes details of patronage forecasting, models used and costs / benefits. This includes trip modelling, future year analysis, non-user benefits and Section 56 style assessment. This is obviously very useful given the potential that LRT may have in terms of affecting modal shift.

3.1.9 "Clifton and Wilford area transport plan", Nottingham City Council, 1998.

The plan was formulated using innovative Consultation measures with local residents which is of great relevance when considering the Consultation planned for the A453 study. An action plan was set up to consider the following list of measures / schemes:- Clifton and Wilford Area bus quality partnership scheme, road safety plan, parking plan, walking and cycling provision and access to jobs and services. Supplementary Report Volume 1 lists the most important issues, problems and possible solutions for travel to work, school, office, shops and leisure. The other appendices show the results of the consultation.

3.1.10 "Nottingham, Park and Ride Survey", Nottingham City Council, September 1998.

The Queens Drive Park and Ride site was included in the survey and the report includes useful facts about the service as well as useful information on the origins of users. The survey also includes a question about possible new sites such as one for Clifton.

3.1.11 "East Midlands Airport, Development Policy (Consultation Final Draft)", East Midlands Airport Ltd, December 1998

This report outlines the airport's plans for development which is based on the 1994 development strategy. It includes revised forecasts for passenger numbers and freight volumes in 2006, 2010 and 2015. The context of national airport policy is discussed and the aim to reduce the amount of long distance surface journeys to airports in the south east. Lower increase in volumes of traffic are forecast and this has implications for the A453 study. The development of the airport in terms of extra staff, related business parks and passengers is assessed. The airport is committed to increasing the proportion of trips arriving by public transport and other sustainable means, and this includes a new Parkway rail station on the Midland Mainline near Kegworth.

3.1.12 "Strategic sub regional development study of the area around J24 of the M1", DTZ Pieda Consulting, November 1999

The overall aim of the study was to identify what types of development would be acceptable in the area, to look at what evidence there is of demand for development, and to derive a series of forecast growth scenarios. They have also examined where the likely development could be accommodated (not exact sites), and the economic, environmental and transport impacts of this. Reference is made to sustainable transport.

There is a section on Transport Sustainability which is of particular relevance. Forecasts suggest that current peak hour capacity problems at Junction 24 will increase into an all day problem due to

general traffic growth, airport expansion and proposed development in the area. A number of scenarios have been modelled with different amounts of development. The A453 approach from Nottingham is likely to be one of the most congested in future. A series of potential solutions to relieve the congested links are outlined in concept. These include grade separation of the A453 over the M1 and Junction 24, or a new bypass linking Junction 23a with the A6 south of Kegworth, and on to the A453 near the River Soar bridge. These need to be included in any options modelled in the A453 study.

A number of improvements for public transport access to the airport are considered. A fixed heavy rail link is ruled out. An extension to the LRT from Clifton would be very marginal and depend on the opening of the Rail Parkway station on the Midland Mainline. Bus links and people movers are also considered.

Detailed figures are listed for the number of passengers , traffic volumes at Junction 24 (by approach) and roundabout turning flows. All of these must be taken into account in both the A453 study and the M1 North – South Study.

3.1.13 Broxtow Local Plan – Deposit Draft, Broxtow Borough Council, January 2000

Broxtow Borough Council has allocated a new business park at Watnall, with access to be provided from the A610, off the M1, and by extending the Nottingham Express Transit (NET) to the site. This is part of a wider development area between Watnall and the M1 to include housing, social and employment developments. In addition, "green commuter plans" are mentioned in relation to this main area of growth.

The Greater Nottingham Area Rail Development Strategy (GNARDS) is supported in the plan with the provision of new stations at Ilkeston North, Ilkeston South and Wollaton. In addition, a number of new road schemes are put forward, the most significant of which are the improvements to the Nuthall Roundabout (A610/A6002/B600).

3.1.14 City of Derby Local Plan, Derby City Council, April 1998

A major area of growth for both housing and employment, has been identified by Derby City Council at Chellaston/Sinfin. Developers are expected to contribute to the costs of a new A514 Wilmore Road link and A514/A50 junction to alleviate the forecast growth in traffic. In addition, an employment site at Pride Park is described as "the most significant redevelopment opportunity within the city". It has potential for major growth.

In terms of specific transportation policies, a number of aspirations are set out in the plan including, in addition to the works outlined above, the Derby Spur Road, Wilmorton Link Road, Derby Inner Ring Road and a Park & Ride facility at the Wyvern Centre.

3.1.15 Erewash Borough Local Plan, Erewash Borough Council, September 1994

In reflecting the aspirations of the Structure Plan, Erewash Borough Council has identified Ilkeston as a priority area for development to promote regeneration through housing and employment development. Within this area 65 acres of land is allocated for housing and 42 acres for employment.

The promotion of Ilkeston has potential traffic impacts and these are recognised in the Erewash Borough Local Plan. Key interventions are seen as being an inner relief road for Ilkeston and the Awsworth Link Road. In addition, the Council supports the re-opening of former railway stations and disused lines are afforded protection to this end, or to serve as recreational routes.

3.1.16 City of Nottingham Local Plan – Nottingham City Council, October 1997

With Derby, Nottingham is likely to have the biggest impact on the A453 study area. A number of significant development alterations are identified. In economic terms, Chilwell Dam Farm will form a new sub-regional business park for Nottingham; key to which is it's links to the M1. In addition to this, will be the growth of Highfields Science Park linked to the University. City centre expansion is planned at the Victoria Centre and Broad Marsh. These developments will provide a new bus station and Light Rapid Transit interchange respectively.

Transportation policy in the plan places an emphasis on public transport with support for the construction of new railway stations, protection of Light Rapid Transit routes and identification of Park & Ride sites. Road schemes are also proposed, most significantly, the city centre southern relief road and the M1 widening between Trowel and Junction 26.

3.1.17 North West Leicestershire Local Plan – Depost Draft, North West Leicestershire District Council, February 1995, Incorporating Proposed Modifications, February 2000

The North West Leicestershire Local Plan incorporates the East Midlands Airport, which is likely to be a key impactor on travel in the study area. The facilities at the airport are set to expand with "airport operational development" being permitted on the site itself and to the west of Gimbo farm. The expansion of the airport is limited to the capacity of the A453, however, a dedicated public transport link between the airport and national rail network is supported. Business parks adjacent to the airport are also promoted.

Growth in the form of housing and employment is also planned at Castle Donington. In particular, for a regional storage and distribution centre covering 200 acres. In transport terms, a number of new rail stations are proposed and key road schemes are identified in relation to the A50, A453 and the A564.

3.1.18 Rushcliffe Borough Replacement Local Plan – Deposit Draft, Rushcliffe Borough Council, February 2000

Much of the 35% increase in housing stock proposed by Nottinghamshire County Council will be located in Rushcliffe. Of the 14,400 new dwellings for the borough, the largest growth areas are allocated at Bingham, RAF Newton and West Bridgford. RAF Newton is included as a potential site for a new settlement. Major employment allocations are adjacent to urban areas and reflect, in particular, the proposed growth of Bingham.

Rushcliffe Borough Council support the Light Rapid Transit and Greater Nottingham Area Rail (GNARDS) Strategies and see the need for improvements linked to Newton and the potential parkway station at Ratcliffe. Key road schemes are identified as being the A46, A453, A52 and the Nottingham Ring Road/A60.

3.1.19 Nottinghamshire Structure Plan Review, Nottinghamshire County Council, November 1996

This document sets out the strategic policy for the development of Nottinghamshire. Sustainable development is promoted, with new employment and housing being linked to public transport networks. 1,770 hectares of employment land is allocated, together with over 69,000 new dwellings between 1991 and 2011.

Support is given to the LRT proposal as "the ideal mode". In addition provision is made for the improvement of existing rail facilities and the promotion of new services and stations. The main programme of road improvements includes the following priorities: M1 widening and improvements, A46 and the A453. A number of other schemes are on hold or identified as longer term, and smaller scale proposals are put forward for sub-areas.

3.1.20 Draft Regional Planning Guidance for the Spatial Development of the East Midlands – Public Examination Draft, East Midlands Regional Local Government Association, November 1999

Central to the Regional Guidance is the consideration of functional relationships with other regions, including major conurbation's such as London, Birmingham and Manchester. Within the region the importance of these links is seen in the continued growth of storage and warehousing development and the further expansion of this is encouraged. Key to the growth of the region is the regeneration of the northern coalfields sub area and two sites are proposed here for designation as Major Investment Sites (MIS). The other key economic generator is the East Midlands Airport, and its careful management is seen as being of great importance.

In terms of housing provision, a total of 363,000 houses are proposed 1996 – 2021. The lowest allocation for new houses falls in Nottinghamshire. Key interventions in transportation terms which are of particular relevance to this study are the management of growth at East Midlands Airport, the efficient movement of freight by reducing reliance on road based transport, and the provision of new public transport infrastructure. Overall transport themes include adopting an integrated approach, Travel Demand Management and Travel Education.

3.2 Inception Seminar

3.2.1 Introduction

The objectives of the Inception Seminar held on 11th February 2000 were:

- Allow the Wider Reference Group to get to know the study team
- Describe the programme for the A453 study
- Outline the continuous involvement of the Wider Reference Group
- Identify initial issues which the Group would like considered in the A453 study.

Following introductory presentations the participants were divided into 4 syndicate groups facilitated by members of the study team for issue identification and discussion.

The report on the Inception Seminar comprises a Supplementary Volume to this Inception Report.

3.2.2 Issues Identified

In all some 133 issues were identified during the syndicate workshops, and some of these actually covered more than one important item.

The range of issues raised was very wide indeed varying from the need for education in sustainable travel behaviour to concerns about displacement of traffic to neighbouring areas, from issues of social equity to the true pricing of environmental factors, from the need to improve accessibility to promote economic development to concerns about the transport and environmental implications of any resulting development, from strategic transport issues to local road safety and environmental issues.

Most encouraging was that most attendees appeared to appreciate the complexity of the issues surrounding the A453 corridor study, and expressed the desire for a 'package' or 'integrated' solution.

In order to help the study team rapidly assimilate issues of most concern, each syndicate was invited to identify up to 10 key issues. These are summarised in Table 3.1 in abbreviated style.

A preliminary assessment of these key issues suggests a predominance of concerns relating to the development and evaluation of strategies and options with desire for an integrated/package solution to reduce the impact of traffic. Particular concern emerged regarding the safety and living environment in the Clifton area. Sustainability and mode shift featured alongside economic development potential and development pressures.

The study approach envisaged is entirely compatible with these concerns and aspirations, particular features include:

- Transportation models capable of addressing the effect of a wide range of possible transport measures on different traveller groups.
- A problem solving approach to the development of strategies and options.
- A recognition of the conflict between strategic effects and local impact.
- An evaluation procedure which permits the identification of local key indicators in the regional context and examination of incidence.
- Readiness to consider measures which affect traveller behaviour and the need for movement as well as to provide the means and choice.

This initial assessment will be extended to recognise all the issues raised during the seminar and to determine the way in which they can be recognised in the study methodology.

Table 3.1 Inception Seminar – Syndicate Key Features

Syndicate 1	Syndicate 2	Syndicate 3	Syndicate 4
Account of development pressures around East Midlands Airport	Multiple roles of the existing A453	Dual A453 to provide bus lane to proposed Parkway	Traffic congestion A6 and Kegworth
Integrated solution to emphasise shifts away from road traffic	Start with a clean sheet, no preconceived solutions	Local community opposes dualling in preference to bypass	Environmental a safety issues in Cli
Fair choices to encourage modal shift	Credibility and transparency of the Study	Quality park and ride would promote modal shift	Community requir time
Public transport should be improved	Quality of life and social exclusion	LRT link to park and ride	Public safety in te accidents, modal s traffic, reduced/re impact on emergen
True costing within modal study should not be looked at in isolation	Package solution preferred	Bus priority park and ride successful elsewhere	New Trent crossing
	Deliverability	Multi occupancy carriageway (lanes?)	Problem identifica focus NATA criter
	Timescale for implementation	Policing of bus lane usage	Inefficient traffic m
	Displacement of traffic to other routes/areas	No underpasses for safety reasons	Would public tra and likely effects
	Sustainability	Bus priority is a cheap but short term solution	Airport area has freight interchange
	Safety improvements	Underground/Mono-rail	Conflict of lo objectives
		New road river crossing to Beeston	

3.3 Site Inspection

3.3.1 Various members of the study team have visited the study area on a number of occasions since the commission to conduct the study was awarded. Visits have been made at both peak and off peak hours and by a variety of modes of transport.

3.3.2 A453 M1 Junction 24 to Nottingham City Centre

It was anticipated that problems would be worst in the morning peak hour, particularly between 8 and 9am. A site visit was therefore made by car on Wednesday 26th January.

The first route driven was from Junction 24 of the M1 to Nottingham City Centre using the A453. We joined the A453 at Junction 24 at 08:10. Traffic flow was heavy and speeds as low as 20mph for traffic in both directions between the M1 and Ratcliffe on Soar Power Station. A number of HGVs were observed near to the Power Station. Left in left out junctions here have removed some of the potential for accidents with slow moving traffic prevented from turning across the carriageway. A Northeast bound minibus was however observed turning right to gain access to the Power Station, at a location where there is no dedicated right turning lane. Traffic flow was uninterrupted between this point and the staggered junction at Barton Lodge. At this point traffic queued to turn right onto a minor lane towards Gotham, which allows mainly light traffic to "rat-run" around delays on the A453 through Clifton. A school bus service experienced difficulty in turning out from Barton in Fabis and then towards Gotham. No right turning lane is provided, despite the turn being hidden around a bend.

Traffic then flowed freely again until a queue of traffic was reached at the edge of the urban area of Clifton, on the approach to the Crusader Roundabout. About five minutes delay was experienced on the approach to this roundabout. Pedestrian provision appeared to be good with Pelican crossings on 3 of the 4 arms of the roundabout. No queues were observed on the other approaches to the roundabout. Once through the roundabout traffic flowed slowly past Clifton Green. No significant queues were observed on the side roads at Clifton Green. A large number of cars were observed entering the grounds of the Clifton Campus of Nottingham Trent University. Traffic continued to move slowly on the approach to the signalised junction at Farnborough Road/Fabis Drive. A long queue was observed on the Farnborough Road approach, the end of which could not be seen. There was also a queue of around 200m back towards Clifton Bridge on the dual carriageway section of the outbound A453.

Continuing on the A453 no delay was experienced beyond this junction. Traffic continued to move freely across Clifton bridge and along Queens Drive past the Park and Ride site. Small amounts of delay were experienced at the signalised junctions along Queens Drive, and on the approach to the Broad Marsh Centre.

3.3.3 A606 from Nottingham City Centre to A52 Ring Road

There was some delay for inbound traffic around the Trent Bridge area, and a short queue at the junction of the B679, A60 and A606. The most significant delays were experienced near to the entrance to the new Asda superstore, both inbound and outbound. There were no queues on any of the approaches to the roundabout between the A52 and the A606.

3.3.4 A52 from A606 roundabout to A60 roundabout

A significant queue was experienced on the northbound approach from the A606 Roundabout, with a delay of about 15 minutes experienced at about 08:45.

3.3.5 A52 from A60 roundabout to Derby

Limited delay was experienced at the roundabout near to the Queens Medical Centre. Serious delays were however observed on the A52 inbound approach to this roundabout. Two lanes of queuing traffic were observed along virtually the entire section between the A6464 Woodside Road Roundabout and the A6514 Ring Road Roundabout. No other significant queues were observed on the A52 until the approach to Derby City Centre. A 2 to 3 minute delay was experienced on the approach to the A52/A61 Roundabout.

3.3.6 A6 from Derby inner ring road to A50 Derby southern bypass

No significant delays were experienced in Derby, either on the ring road or the A6. Small queues were observed on the inbound approaches to some of the signalised junctions near to the City Centre. Once the dual carriageway spur of the A6 was reached traffic flows were very low. Similarly there was relatively little traffic on the A50 with a very small queue of about 10 vehicles on the approach to the Junction 24 roundabout of the M1.

3.3.7 A453 from M1 to Clifton

No delay was experienced until the approach to the Crusader roundabout, where there was still a significant queue at 10am. Traffic flowed freely however along Clifton Lane through to the Farnborough Road junction.

3.3.8 Public Transport

Public transport was used to travel from Nottingham railway station to the Clifton shopping centre on Southchurch Drive. Clear timetable information was provided at the stop, the bus arrived punctually and was a new, high quality vehicle. NCT buses have an exact fares policy which reduces time spent at stops, but may discourage less frequent users. There are a number of Travelcard schemes for regular travellers, as well as off peak offers which makes bus travel cheaper. However these are operator specific and there is little integration between the two main operators at present. There are currently limited bus priority measures on this corridor, associated with the Queens Drive Park and Ride site. Travelling at off peak times, makes it difficult to assess if further bus priority measures are required, or where they could most effectively be introduced.

3.3.9 Non motorised modes

The A453 is a significant barrier to movement in the Clifton area. Pedestrian movements across the A453 are focussed at the Pelican facilities provided at the following 4 locations. The Southern approach to the Crusader roundabout, and just Northeast of the Crusader roundabout where the facility gives access to a bus stop. Further Northeast there is a facility to the east of Green Lane which gives access to Clifton Village and Nottingham Trent University. Finally there is a facility on the Southwest side of the junction with Farnborough Road, which gives access to the Fabis Drive area.

An off road cycle track is provided along the Northern side of the A453 from Nottingham Trent University. This is delineated from pedestrians by a white line. The shared use facility continues along the A453 to Clifton Bridge. Beyond there are off road routes (with give way crossings of side roads) northwards to the QMC/Nottingham University area and also via the Meadows area to the City Centre with grade separated crossings and wide shared use paths away from roads. The network of cycle facilities is comprehensively signed. There is provision for cycle parking at the Queens Drive Park and Ride site.

4. TRANSPORTATION MODELLING

4.1 Introduction

4.1.1 Context

Unlike most of the multi-modal studies which are inter-urban, the Nottingham to M1 Study addresses a corridor, part of which is urban in nature and provides access to the strategic M1 motorway, A50 Stoke to Derby route, Midland Main Line and East Midlands Airport. The A453 through Clifton is particularly congested and on line solutions are likely to cause major environmental impact.

The main objective of this study is to identify solutions which may assist in overcoming these problems. Possible solutions which could be considered will include:

a) Improvements to public transport particularly between Clifton and Nottingham;

b) Measures to encourage the use of cycle and walking for trips within the study area;

c) Park and ride sites located outside the urban area;

d) Restraint measures within the urban area including car parking supply limitations, parking pricing measures and congestion charging;

e) Traffic management measures to give priority to buses and high occupancy vehicles; and

f) Traffic management measures to limit vehicle numbers and speeds in sensitive areas.

4.1.2 Methodology Overview

The effects of measures such as those described above are complex. The nature of these effects is dependent upon existing traveller activity patterns in the context of the overall behaviour of their household unit. Traditional aggregate urban transport demand forecasting models, as generally applied in the UK, have been found to have major limitations in correctly forecasting these effects. However, on the Continent and in North America there has been a move over recent years to develop disaggregate activity based models to forecast traveller responses. These techniques are able to provide much more behaviourally sound and robust forecasts of effects than traditional aggregate models. It is for this reason that we propose to base our transport modelling on the disaggregate activity based VISION package.

The stages of the VISION model may be summarised as follows:

a) Trip Generation - Based on an activity model whose inputs are travel activity chains and detailed demographic data;

b) Trip Distribution - A destination choice model based on functions of attractiveness of alternative destinations and the disutility (often termed generalised cost) of accessing them;

c) Mode Choice - Based on the relative disutilities of travel by alternative modes; and

d) Assignment - Assignment of highway trips using link and/or junction based capacity restraint and assignment of public transport trips which for road based modes is integrated with highway assignment, segregated track systems (e.g. rail) being assigned separately.

4.1.3 Contents

In the remainder of this chapter the availability of data and new data collection requirements are described. The demand modelling and forecasting approach is described in more detail.

4.2 Existing Data and Committed Surveys

4.2.1 Overview

We have reviewed existing local transportation data and models and the relevant national data sources. We have also discussed data collection proposals for the North South movements in the East Midlands Study with the study consultants, WS Atkins. In the light of our review we have identified the main potential data sources as follows:

a) A453 Clifton Lane Study;

b) Census Matrix Tools (CMT) data;

c) CAPRI rail matrix data;

d) The multi-modal National Trip End Model (NTEM);

e) National Travel Survey (NTS) data;

f) Census data;

g) Land Use data; and

h) M1 (North South) Study data collection proposals.

Each of these datasets and their possible contribution to this study are reviewed in the following sub-sections. Additional local survey data sources have been identified by Nottingham City Council.

4.2.2 A453 Clifton Lane Study

The A453 Clifton Lane Study was carried out for the Highways Agency (HA). Roadside interview (RSI) surveys were carried out in the Clifton Area in 1993. Using this data a SATURN network traffic model was developed which covered the A453 Corridor and the competing A52 Corridor. The traffic assignment model was capacity restrained using link based speed flow curves. The assigned trip matrix was factored to represent heavy off-peak periods. A shadow network approach was used to model the effects of trip suppression. The model was subsequently rebased to 1996.

The RSI data for the Clifton Lane Study is now 7 years old. It was undertaken prior to the completion of Derby Southern Bypass which is likely to have significantly altered traffic patterns in the A453 Corridor. The highway model does not include junction delay and does not differentiate between peak

and off peak traffic conditions. The latter differentiation is essential in urban transportation models. In view of the above we conclude that neither the Clifton Lane Study RSI data or network models are usable in this study.

4.2.3 Census Matrix Tools

The Census Matrix Tools (CMT) package has been developed by DETR to provide matrices of journeys to work (only). This data is based on the 1991 Census 10% survey of journeys to work. It has been updated to 1997 based on employment data. Trip matrices can be produced at ward level. It covers all modes of transport including the slow modes, i.e. walk and cycle. It also differentiates between whether the trip maker comes from a car owning or non-car owning household.

The CMT data cannot be disaggregated below ward level, therefore within Greater Nottingham some disaggregation would be necessary. Also it would be necessary to validate the updating to 1997 and further update the matrices to the 2000 base year. With these provisos this data is likely to be useful in this study. It will provide particularly useful data on slow mode trips which are generally not intercepted in on-mode surveys.

4.2.4 CAPRI Rail Matrix Data

The CAPRI Rail Matrix Data has been developed by DETR from rail ticketing data. It is understood to have a base year of 1997. The data has been disaggregated from station to station flows to inter-ward flows based on typical station catchment data. It has also been disaggregated by trip purpose based on assumptions regarding the ticket types used by different types of traveller.

The main limitations of this data are that both the ward distribution of trip ends and the purpose split are wholly synthetic. Since they are based on typical attributes they are unlikely to be correct for individual stations or rail routes. Also in the context of this study it would be necessary to disaggregate the data below ward level.

In view of the above, this data will not on its own provide reliable rail origin and destination data for this study. However, it may be possible to augment with observed data or provide a useful basis for expanding sampled rail survey data to match the whole population of rail trips.

4.2.5 National Trip End Model

A new multi-modal version of the National Trip End Model (NTEM) is under development. The 1998 base year model has been completed, but forecast year model development will not be completed until mid-2000. The model will provide trip ends by purpose by mode. The modes include walk and cycle.

In this study we propose to develop activity based disaggregate demand forecasting models which are calibrated to reflect the specific travel characteristics of the study area. The NTEM is based on national parameters derived from the National Travel Survey (NTS). It will not therefore reflect the specific behavioural and transport accessibility conditions of the Nottingham area.

In view of the above, we would use NTEM only for forecasting trips generated externally to the area covered by our proposed demand model. We note that the Guidance on the Methodology for Multi-Modal Studies (GOMMS) suggests that multi-modal study forecasts are controlled to NTEM. It is our view that this is not appropriate where, as in this case, a detailed local demand model has been applied.

If any control is to be applied it should be on a study area wide all mode basis only and it should be applied only to the forecast reference case.

4.2.6 National Travel Survey

The National Travel Survey (NTS) is undertaken on a continuous basis. It is national in coverage and the sample in 1997, the latest year for which reports are available, was just over 5,000 households. It includes a weekly travel diary and data on household and person characteristics.

We have considered using the NTS data as the basis for developing the disaggregate demand models for this study. However, we have concluded that this is not appropriate as this national database will not represent the particular travel characteristics of this study area. Also we understand from DETR that the NTS database is complex and very difficult to use. In view of the above we propose that NTS data should not be used as the basis for the development of the demand models for this study. However, we feel that it may have a role in validating the local model.

4.2.7 Census Data

Detailed data on household characteristics for the study area is available from the 1991 Census. This provides the household characteristic data which is required for the development of disaggregate travel demand models.

Unfortunately the census data is now 9 years old and is not updated at a detailed level. In consequence it will be necessary to synthesise 2000 disaggregations, which will reduce their accuracy. Particular features which need to be reflected are the increasing proportion of pensioners and the decline in household size caused mainly by the break-up of traditional household structures.

4.2.8 Land Use Data

We have not as yet been able to identify any detailed source of land use data for the study area.

Disaggregate demand models require some measure of activity at attraction locations within the study area. Most appropriate measures include employment for journeys to work, education places for journeys to school and gross retail floor area for shopping. In lieu of this it will be necessary to use employment data as a proxy for more detailed land use data.

4.2.9 North South Movements in the East Midlands Study

We have had preliminary discussions with WS Atkins the consultants for the North South Movements in the East Midlands Study. They are currently undertaking a scoping study therefore their data collection and demand modelling proposals are not finalised. However, we understand that at this stage their person trip demand forecasting model is likely to include collection of the following data and have the following features:

a) RSI data along screenlines east and west of the M1 covering all roads which have junctions with the M1 between Loughborough and Sutton in Ashfield;

b) Strategic network models based on SATURN and SATCHMO;

c) Strategic mode choice models based either on coefficients derived from previous studies or from new stated preference (SP) surveys; and

d) A freight model based on data from the Continuing Survey of Road Goods Transport (CSRGT) data, possibly supplemented by surveys with major companies with major distribution operations, e.g. Boots.

In relation to Road Side Interview (RSI) data collection we have been in discussion with WS Atkins about the co-ordination of surveys for both studies. As their network models will be developed after the network models for the Nottingham to M1 Study they will not be able to be used in this study. In any event as their focus will be strategic they will not meet the more local and urban needs of this study. If available in time the strategic mode choice coefficients could be used in this study for long distance choice, e.g. London to Nottingham. However, they would not be appropriate for more local choices where bus rather than rail will be the predominant public transport mode and slow modes are an option. In relation to freight data, the CSRGT origin and destination data cannot be disaggregated below county level. In consequence it is not appropriate for this more locally based study. However, the interviews with distribution companies with operations relating to the Nottingham area would be of interest to this study.

4.3 New Data Collection

4.3.1 Overview

Having assessed the available data we recommend that the following data collection is undertaken for this study.

a) Household interview surveys in the Nottingham area;

b) RSI surveys on a screenline adjacent to the M1 and across to the A46 plus local sites in the Clifton area;

c) Bus passenger origin and destination surveys covering the south east quadrant of Nottingham;

d) Rail passenger origin and destination surveys covering Nottingham and selected suburban Stations;

e) Park and ride origin and destination surveys covering the Queens Drive Park and Ride site;

f) Walk and Cycle surveys in Clifton;

g) Journey time surveys in the A453 corridor and on competing routes;

h) Count surveys; and

i) Special Generators.

Our proposals for each of these survey types are set out in the following sub-sections. We have been in discussion with the Nottingham City Council who are undertaking their own transportation study which will include surveys. We have also been in discussion with WS Atkins about their survey requirements and proposals for the M1 North – South study. There is considerable scope for economy by combining

the three survey requirements into one comprehensive survey programme which meets the requirements of all the studies.

4.3.2 Household Interview Surveys

The household interview surveys are required for the calibration of the disaggregate models. We propose a sample of 1500 interviews. These interviews would be focused on the south east quadrant of the Greater Nottingham conurbation and adjacent villages. The exact area would be determined by analysis of the CMT data. This would be used to identify those settlements south east of Greater Nottingham which contribute significantly to its journey to work catchment. If settlements are related to Nottingham for journey to work purposes they are also likely to be related to Nottingham for other trip purposes. In consequence they would be covered by the household interview survey.

The interview sample would be drawn from electoral registers using the firsting technique to ensure no bias towards larger households. Sampling would generally be uniform over the study area. However, our initial analysis of traffic data suggests that Clifton is an extremely important traffic generator in the A453 Corridor. In view of this an enhanced sample, comprising approximately one third of the total sample, would be drawn from Clifton.

The interviews would be in two stages. The first stage would comprise a household survey to ascertain household and person characteristics and to record a one day travel diary. This interview would form a screening survey for stated preference (SP) surveys which would be necessary to develop coefficients for the choice models. Travellers who are in scope, i.e. who make relevant trips, for the SP interviews would be identified. An SP questionnaire would be developed which is customised to their current travel behaviour. A follow up SP interview would then be undertaken with the relevant person. The exact number of SP interviews required can only be determined at detailed survey design stage. However, we have based our current estimate on 500 person interviews.

We propose to undertake the surveys using the cost effective method of postal surveys followed up by telephone call back to prompt and/or assist interview completion. This technique has been used successfully by PTV in many studies on the Continent. It is also used extensively in the United States of America. Although postal household interviews have not generally been successful in this country, the experience from other countries suggests that they can be successful if they are supported by telephone call back. However, to ensure that the approach is appropriate for Nottingham we propose a pilot survey of 100 households, which would allow the trialing of this form of household interview. This would also include the trialing of the SP survey designs. If the proposed approach does not prove successful it would be necessary to fall back on face to face interviews. We have based our estimate on the use of the postal technique with telephone call back. The alternative option of face to face interviews would be considerably more expensive and if these are required a significant budget extension would be necessary.

4.3.3 Roadside Interview Surveys

Roadside interview surveys would be required to provide observed data on trips passing through the study corridor or entering/exiting it from/to outside. For highway capacity restraint modelling these would also need to cover competing routes, i.e. A52 and A606. To meet this requirement we propose the following RSI screenline:

- The Erewash/Soar Screenline.

The Erewash/Soar Screenline would run along the rivers Erewash and Soar between the A52 and A453. Following discussions with WS Atkins the screenline was extended east from the A453 across to the A606. Precise site locations need to be verified by site inspections. However, we currently envisage 14 interview sites as follows.

a) A609 between Ilkeston and Trowell;

b) B5010 between Sandiacre and Stapleford;

c) A52 between M1 Junction 25 and B6003;

d) A6005 between Long Eaton and B6003;

e) A453 near Thrumpton turn;

f) Nottingham Road, Gotham between Gotham and Clifton;

g) A60 between Bunny and Bradmore;

h) A46 between Six Hills and A606;

i) A606 between Upper Broughton and A46 junction;

j) Sites at Clifton, currently envisaged to be Brook Hill, Farnborough Road (N), Farnborough Road (S);

k) A52 between A6011 and A606;

l) A6514 between A609 and A52.

We currently envisage that interviews would be undertaken in the inbound direction (towards Nottingham). Interview procedures would be in accordance with DMRB guidelines. The interview period would be consistent with that for the North South Movements in the East Midlands Study. We currently assume that this interview period would be 0700 to 1900. Given the importance of cycling in Nottingham we would interview cyclists and motorcyclists in addition to other motorised vehicle drivers. We would also collect information on parking type in Nottingham, as this is an important factor in determining mode choice. Manual classified counts would be undertaken in both directions during interview. Automatic traffic counts would be undertaken at each RSI site for at least one week.

The indicative location of RSI sites is shown in Figure 4.1.

It should be noted that these are our current survey proposals made in the context of Nottingham City Council's survey proposals and WS Atkins' survey proposals. Further changes to the number and location of sites may be necessary following meetings with HETA and other project management groups.

4.3.4 Bus Passenger Surveys

Bus passenger origin and destination surveys would be undertaken on the main urban and inter-urban bus routes in the A453, A6005 and A52 west corridors. Subject to operator agreement these would be undertaken on bus. Control counts of passengers would also be undertaken.

VISUM provides well developed tools to validate and expand patronage data.

4.3.5 Rail Passenger Surveys

Rail passenger origin and destination surveys would be undertaken at Nottingham, Beeston, Attenborough and Long Eaton Stations. Exit/entry counts would also be undertaken at the station. Coverage of Chesterfield, Derby, Loughborough and Leicester will be provided by the M1 (north-south) study.

4.3.6 Park and Ride Surveys

Origin and destination surveys originally proposed at the Queens Drive park and ride site which serves the A453 Corridor will be substituted by data available from Nottingham City Council.

4.3.7 Slow Mode Surveys

Slow mode, i.e. walk and cycle, surveys would be undertaken within Clifton. These would be designed to quantify the main slow mode movements in the area. The location and nature of these surveys would be determined in consultation with members of the Wider Reference Group with local knowledge of Clifton.

4.3.8 Journey Time Surveys

Journey time surveys would be undertaken on relevant sections of the A453, A52, A60/A50 and A6005. These would be undertaken using the moving observer method.

Routes proposed for survey are illustrated in Figure 4.2.

4.3.9 Traffic Counts

In addition to traffic counts at RSI sites additional manual/automatic recorder counts will be required at key junctions and at various locations to complete validation screenlines founded one existing data available from highway authorities. Current proposals include:

a) Turning Counts at each of the 3 main junctions on the A453 within Clifton;

b) A turning count between the A453 and B679;

c) Manual classified counts on the main roads from Clifton to Brook Hill and Gotham on the boundary of Clifton;

d) Classified counts at each of the 3 main crossings of the River Trent within Nottingham; and

e) Classified turning counts at M1 junctions 24 and 25 plus the A42(T)/A453 junction giving access to Donington Park Services.

4.3.10 Special Travel Generators

Bespoke survey specifications will be developed for special travel/traffic generators of key importance to movement within the study area where adequate data is not available from existing sources. Potential sites include the special generators identified in section 2.4 and upto 15 locations for freight surveys indicated in section 4.4.5.

4.4 Base Year Model Development

4.4.1 Study Area and Zoning

The Nottingham to M1 Corridor serves both local traffic, e.g. into Clifton and Clifton to central Nottingham, and longer distance traffic, e.g. London to Nottingham. In view of this the study networks and trip matrices must be able to reflect the transport supply and demand choices for all these trips. To meet this requirement we propose a Remote Study Area (RSA) which is essentially national in coverage. However, zones relatively remote from Nottingham would be highly aggregate, i.e. county level or larger.

Closer to the study corridor we would define an Outer Study Area (OSA). This would be the area over which capacity restraint effects will be applied. This area would cover the main route choices which affect the A453. Based on our experience and understanding of routings in the study area we propose that this OSA would include the whole of the Nottingham conurbation, Derby and Leicester including the A46 and A606.

The proposals for the RSA and OSA will not duplicate those for the North South Study, as the zoning and networks for this study will be focused differently, e.g. zones and networks in Leicester will be more aggregate and designed merely to give the correct choices between the M1 and A46 routes or rail. It would not be practical to take these effects from an external North South Model, as this would preclude the development of a convergent demand model and consistent economic evaluation.

Within the OSA an Inner Study Area (ISA) would be defined. This would be the area where all trips are synthesised. We propose to identify this area using the CMT data. However, our current view is that this would include the whole of Greater Nottingham, i.e. as far west as the M1, and adjacent settlements which form part of the Nottingham journey to work area. It would also include the East Midlands Airport, and adjacent settlements.

The study zoning system would be based on local government boundaries, wards and electoral districts (EDs). Within the ISA, zones would be relatively small, perhaps down to ED level. Zone sizes would become progressively more aggregate with increasing distance from the study area. For remote areas zones would be aggregated to regional level, e.g. the North East. However, some disaggregation would be required if there is a significant rail movement, e.g. splitting Greater London between central London and outer London.

4.4.2 Networks

The highway network would be national in extent. In the RSA only main motorways and trunk roads would be included. These would be at sufficient level of detail to give correct routings into the ISA. Network speeds would be derived from DETR NARNAS database. In the OSA all B roads and above would be included in the network plus strategic unclassified roads. Speeds would be determined using count data and relevant speed flow curves. In the ISA most significant highway routes would be included in the model. Capacity restraint would be applied using trip matrices with link and junction based capacity restraint.

Bus networks would cover the majority of services in the ISA and longer distance routes to adjacent towns. Rail networks would cover the main rail routes to Nottingham, particularly the Midland Main

Line and the routes to Derby and the West Midlands. Park and ride options would be represented in the bus and rail networks as appropriate.

We would consider the development of a separate cycle network within the ISA. This would allow the representation of off highway and segregated cycle routes.

For both public and private transport networks separate networks would be developed to reflect different supply conditions between the am and pm peaks and the inter-peak period.

4.4.3 Observed Trip Matrices

Observed trip matrices would be developed for the ISA from combination of all the relevant existing origin and destination and the data derived from the proposed surveys. For areas of the matrix not covered by RSI or on public transport intercept trips, movements would be derived from the household data. Estimates of observed matrix errors would be calculated from the average sample factors for each matrix cell assuming poisson sampling.

Separate matrices would be built by trip purpose and mode for all day and each model period. The exact trip purpose structure would be defined from the survey data. Based on our experience elsewhere we feel that the purpose disaggregation for person trips is likely to be as follows:

a) Commuting to work;

b) Employers' Business;

c) Education;

d) Shopping and Personal Business; and

e) Social and Recreational.

Travel modes are likely to be:

a) Private vehicle driver;

b) Private vehicle passenger;

c) Bus passenger;

d) Rail passenger;

e) Park and ride user; and

f) Slow mode possibly split between walk and cycle.

Separate matrices would be built for light goods vehicles (LGV) and other goods vehicles (OGV), the differentiation between the two being at 1.5 tonnes unladen weight.

4.4.4 Person Trip Demand Model Development

Demand model development and application will be undertaken in the VISEM module of VISION. A more detailed description of the VISEM demand forecasting model application for this study is set out in a Supplementary Volume. These models will be applied to synthesise all trips and choices within the ISA. They will also be applied to forecast trip choice changes for trip interchanges between the ISA and the OSA and RSA.

The VISEM model contains 4 elements which are as follows:

a) Activity Model - This uses activity chains and disaggregated household demographic data to forecast numbers of trips;

b) Time Period Model - This splits activities between different time periods and produces time period trip matrices;

c) Distribution Choice Model - This allocates trip chains between alternative destinations based on the relative attractiveness of alternative attraction locations and the generalised cost involved in reaching them; and

d) Mode Choice Model - This allocates the trip chains between modes and outputs trip matrices by mode.

The first stage of demand model development will be to derive population structure data by zone for the 2000 base year. In relation to demographic data it will be necessary to project the 1991 Census household disaggregations to 2000 based on the study household survey data and mid-year estimates.

Car ownership data would be based on the 1991 census data projected from 1991 to 2000 using NTEM forecasts for that period and the study household survey data.

For the development of the activity model persons within households would be disaggregated into relatively homogeneous behavioural groups. The exact structure of these groups would be determined from the household data. However, our experience suggests that the following groups are likely to be appropriate for Nottingham, and this will be confirmed during survey analysis:

a) Employed adult with car available;

b) Employed adult with no car available;

c) Non-employed adult with car available;

d) Non-employed adult with no car available;

e) Students, i.e. in further education;

f) School pupils;

g) Pensioner with car available; and

h) Pensioner with no car available.

Also it may be appropriate to split employees between white and blue collar employment as the attraction locations for these employment types are likely to be significantly different.

The second stage of demand model development will be the estimation of the activity chain based trip generation models. From the household data the significant activity chains would be identified. For example, activity chains for a two person household with one employee and school children might be:

Person 1 - Home - School (drop child off) - Work - Home
Person 2 - Home - School (pick child up) - Shop - Home

The first chain would commence in the am peak while the second one would commence mid-afternoon. Probabilities for each chain for each person type within households would then be estimated from the household data. Using zonal household structure data these chains would then be expanded to give the total number of each type of trip chain for each zone.

The third stage of demand model development will be to split the activities between each period of the day, e.g. am peak, inter-peak, pm peak, evening/night. These splits would be calculated from the household interview data.

The fourth stage of demand model development will be to estimate the destination zone choice for each trip within an activity chain in turn. The first trip in the chain is assumed to commence from home, while subsequent trips commence from the chosen destination zone for the previous trip in the chain, until the final trip in the chain links back to home. This gives a wholly geographically consistent activity chain which is a major advantage over aggregate models.

Destination choice is estimated based on a distribution model. This forecasts trip destination probabilities based on the relative attractiveness of each alternative zone and a deterrence function derived from the generalised cost of accessing it. For this study it will be necessary to develop measures of attractiveness based on employment by type, e.g. retail employment would be used as the attractiveness measure for shopping trips. This data will be derived from Department of Employment Census data. Deterrence functions would be estimated for each trip type, i.e. purpose and traveller group, using the survey data and generalised costs derived from the network models. Trip matrices will then be synthesised and compared with observed trip matrices. If necessary residual utilities will be applied to adjust the deterrence functions to match the observed characteristics of particular movements.

The final stage of demand forecasting model development will be the development of modal choice models. The VISEM model estimates mode choice on the basis of the following person, trip and trip chain attributes:

a) The characteristics of the trip maker, particularly car availability;

b) The generalised cost of each of the alternative modes; and

c) Choice constraints within a trip chain, e.g. a public transport trip from home to work cannot be followed by a car trip from work to shopping.

Mode choice is estimated using a logit model. Mode choice is initially estimated for the first trip in the chain. It is then calculated for each subsequent trip taking account of the mode constraints imposed by earlier choices. To ensure that the model is sensitive to policy issues the generalised cost model would include travel cost, e.g. parking charge or fare, in addition to measures of travel time and mode constants representing non-quantifiable aspects of the perception of a mode.

Coefficients to weight each of the elements of generalised cost would be calibrated from the SP data. These coefficients would then be re-scaled to replicate the choices observed in the survey data. If observed mode shares for particular movements differ significantly from the synthetic values, the latter could be adjusted using residual utilities. These represent factors which affect mode choice which cannot be quantified.

The output from the mode choice model would be trip matrices by period by trip purpose by mode.

The above procedures apply only to trips generated by households in the ISA. For trips generated outside but attracted to the ISA or passing through it we propose a simplified approach. This would preferably include strategic distribution and mode choice models based on parameters derived from the North South Study Model. In view of this the structure of these models cannot be fully defined until the structure of the North South Model has been defined.

4.4.5 Freight Demand Modelling

Multi-modal freight demand forecasting is less well developed than multi-modal person trip forecasting. To our knowledge no satisfactory multi-modal freight forecasting model has every been produced. The reason for the difficulty is that freight movements are generally only elements in complex supply chains. They are not, therefore, amenable to the application of the types of models used for person trip forecasting.

In the context of the study corridor, in addition to road based freight, the only significant freight movements by other modes are likely to be by rail. The Railtrack Guide to Freight Connection suggest that within the ISA rail freight terminals are or have recently been operational at Beeston, Toton, Stapleford and Sandiacre and at Ratcliffe-on-Soar Power Station. These all relate to bulk traffic. In addition Toton is one of the inter-modal terminals proposals by the Central Railway promoters.

For road goods vehicle forecasting goods vehicles will be split between LGV, i.e. vehicles of under 1.5 tonnes unladen weight, and OGV, vehicles of over 1.5 tonnes unladen weight. It should be noted that the majority of LGVs do not actually carry freight, but are used primarily for service provision, e.g. by tradesmen.

Observed OGV and LGV trip matrices will be developed from the RSI data for movements crossing RSI screenlines. As there will be no synthetic model other movements will be unobserved. To fill these unobserved areas we would probably develop a simple distribution model assuming a flat deterrence function, using employment places as a proxy for zonal attraction. If necessary the resulting infill matrices would be adjusted to reflect observed classified counts.

For rail freight we would identify the current terminal facilities and their throughputs through discussions with the main rail freight operating company EWS. We would also seek to establish EWS's aspirations for developing enhanced or new railfreight traffic in their area, and their forecasts of new terminal locations and throughputs. Additionally we would approach Central Railways to discuss

the likely impact of their proposed international inter-modal freight terminal at Toton. We would identify the implications of these for the highway network. We would identify any constraints on railfreight operations within the study area. We assume that constraints outside the study area would be addressed in the North South Study.

It will be important to identify likely changes in freight operations within the study areas in terms of scale and modes used. To achieve this we would interview managers concerned with distribution, from a sample of major freight generating companies within the study area, e.g. Boots, Players, Northern Foods and Raleigh. Firms to be interviewed would be selected from relevant commercial directories. The interviews would be carried out generally by telephone or where appropriate face to face. We would seek to establish the scale of their current operations, likely forecast changes and the probability of modal transfer in response to possible transport cost and policy measures, e.g. congestion charging. We would also seek to establish their current problems in relation to the Nottingham to M1 Corridor and what would induce them to change mode from road to rail. For our estimate we have assumed that 15 interviews would be undertaken.

As part of the Local Transport Plan (LTP) process local authorities are encouraged to develop specific proposals in relation to freight. These include the development of quality partnerships with the road haulage industry. The LTP proposals put forward by Nottingham City Council and Nottinghamshire County Council may have a significant impact on goods vehicle flows in the study area. We will discuss these proposals with the relevant local authorities and assess their likely impact.

4.4.6 Assignment

Appropriate trip matrices by mode by purpose by period would be combined to give trip matrices for assignment to the highway and public transport networks for each model period. Assignment will be undertaken using the VISUM program.

For highway trips, capacity restrained incremental equilibrium assignment would be undertaken. Assignment coefficients would be based on HEN2 values adjusted if necessary to reflect Nottingham conditions. Iteration would be undertaken until satisfactory convergence is achieved. Assigned flows would be checked against counts. Where differences highlight network specification inconsistencies these will be recoded to provide a more appropriate representation of supply conditions. Where differences are widespread and systematic, consideration would be given to adjusting the assignment parameters.

For public transport, assignment would be based on public transport lines, i.e. routes. Assignment parameters would be based on HEN2 and the coefficients derived from the SP surveys. If automatic ticketing data is available, modelled boardings would be compared with recorded boardings. Where there are significant differences the network model would be investigated and if appropriate adjusted.

4.4.7 Validation

Model validation would be carried out in two stages as follows:

a) Trip matrix validation; and

b) Assignment validation.

The systemised trip matrices would be validated against the observed trip matrices. In undertaking this validation, account would be taken of the sampling errors of the observed data. This validation would be undertaken at inter-sector level. Where significant differences are evident the demand forecasting models would be investigated and if necessary, adjusted.

Highway assignment validation would be undertaken against independent count data. Account would be taken of the sampling and surveying errors in the observed count data. Synthesised highway route journey times would be validated against observed data allowing for the statistical errors in the observed data. If the validation against the independent data is not satisfactory the models would be adjusted and amended accordingly.

Public transport assignment validation would be undertaken against ticketing and count data where these are available.

4.5 Forecasting

4.5.1 Reference Case Attributes

The study Brief identifies the need to derive transport strategies and plans for the period to 2021. In order to consider both shorter and longer term situations, provide a base reference and provide input to economic evaluation procedures, we envisage the need to prepare forecasts for at least one intermediate years during the period to 2021. Intermediate years will be selected from the range of years for which NTEM data is available in consultation with the Project Management Group. For costing purposes we have assumed 2 forecasting years.

For each year forecast it will be necessary to define a reference case, against which all options can be compared. This is essentially the most likely view of the values of the attributes which define transport supply and demand in the forecast year. These attributes would be defined in consultation with the Steering Group and Wider Reference Group as appropriate. Attributes which will need to be defined will include:

a) The economic context including GDP, fuel price and public transport fares growth;

b) The scale and location of new development including the level of growth to be assumed for East Midlands Airport;

c) Highway schemes, both traffic management and major schemes, to be included in the highway networks including traffic calming proposals for Clifton;

d) Public transport service changes including infrastructure measures which change running speeds, e.g. bus lanes;

e) Policy measures including changes in car parking pricing structures; and

f) Other changes such as increased teleworking or internet based shopping.

These attributes will then provide the basis for forecasting for the reference case.

4.5.2 Reference Case Forecasting

The first stage of reference case forecasting would be to update the inputs to the demand forecasting models to match the reference case definition. Car ownership changes would be forecast by disaggregating the appropriate NTEM forecasts. Household attribute data would be forecast by disaggregating control totals from NTEM to give household and person trip characteristics. In undertaking this account would be taken of trends such as reduced birth rates, increasing life expectancy and trends in household size. The highway and public transport network models would be altered to represent new schemes and service changes. Pricing inputs to the generalised costs would be adjusted to reflect changes in real price.

Goods vehicle trips would be forecast using NRTF factors. If appropriate these would be scaled to represent historic local trends relative to NRTF and/or forecasts from the North South Study. Also consideration would be given to applying growth differentially between zones, e.g. where a major decline or increase in manufacturing and/or distribution activities are expected. Particular attention would be paid to forecasting changes in cargo throughput at East Midlands Airport. Also where significant changes in railfreight terminal sites and/or throughput are forecast, the highway goods vehicle trips would be adjusted to reflect these. It should be noted that it will not be possible to develop a mode choice model to reflect these changes. They will be forecast using professional judgement and/or input from the M1 North-South study.

The forecast year reference case model would be run on the basis of the updated inputs. The model would be iterated between demand forecasting and assignment until satisfactory convergence is reached. The forecasts would be reviewed at an aggregate level, e.g. inter-sector trips and screenline flows, to verify that the forecasting procedures are producing acceptable forecasts.

4.5.3 Option Case Forecasting

For each option model inputs would be defined which represent each aspect of the option. Using the reference case as a starting point the forecast model would then be run for each option. The model would be iterated between demand forecasting and assignment until satisfactory convergence is reached. The option forecasts would be reviewed both at an aggregate level and where appropriate at a detailed geographical level for the likely area of influence of the option. This analysis would determine whether forecast option effects are plausible and whether there are any spurious effects, e.g. caused by localised non-convergence. If necessary the option definition in the model would be adjusted to remove spurious effects.

4.5.4 Economic Evaluation

Economic evaluation of options would be undertaken using the proposed TUBA package, which is currently being developed by DETR. We have seen the summary for TUBA which has been issued by DETR. We anticipate that the transportation model proposed for this study will in general be compatible with its input requirements. However, this cannot be verified until we have received the final specification for TUBA. We have made our estimate on the basis that the proposed model for this study will produce outputs which are suitable for input to TUBA. However, it may be that when the final specification of TUBA is received this will prove not to be the case. In this event additional budget could be required to amend the model to meet TUBA's requirements.

4.5.5 Other Outputs

The VISION package is able to produce a wide range of tabular and graphical outputs. These facilities would be used in full to provide information to allow the study team, Steering Project Management and Wider Reference Group to understand the implications of the forecast reference case and of options designed to improve transport and/or environmental conditions. These outputs would include:

a) Traffic flow information to support the environmental impact assessment;

b) Traffic and passenger flow information to support the planning and design of options, e.g. to assess public transport service and capacity requirements; and

c) Graphical material which will clearly illustrate option impacts to decision makers and/or a wider non-technical audience.

4.6 Reporting

A model validation report would be prepared. This would include a technical report on the content and structure of the models and then demonstrate validation.

A forecasting report would be prepared. This would define the forecast model run inputs and summarise outputs.

5.0 STRATEGY AND OPTION DEVELOPMENT

5.1 Problem and Context Identification

The DETR New Approach to Appraisal (NATA) has been developed to provide a means of choosing between alternative ways of solving the same problem. This procedure is described in greater detail in Chapter 6.

Essentially the approach includes the identification and assessment of issues and problems, the identification of alternatives and the assessment of those alternatives in a consistent manner. The approach is equally applicable to the development and assessment of strategies and options, but the level of application would differ in coverage and detail.

The context for the development of alternatives will include:

- Government transport policy
- Transport strategies for Derby and Nottingham
- The strategy developed for the M1 (north-south) corridor
- The study area context (Chapter 2)
- Issues identified (Chapter 3 Appendix A and Supplementary Volume 1)
- Ongoing consultation

The DETR guidance on the approach to multi-modal studies emphasises the importance of considering the physical features of the study area in terms of the constraints that these may pose for the development of an integrated transportation strategy. It is therefore proposed to carry out an environmental audit of the study area in parallel with the modelling process to draw out those items of sensitive ecological, landscape or heritage importance, important townscape elements, topography and important water features. This will be achieved through site surveys and information from the appropriate bodies such as English Heritage, English Nature, the Countryside Agency and others.

In undertaking this audit the Study Team will evaluate the 'environmental capital' of the study area and will be in a position to ensure that any items of importance in environmental terms will be addressed and protected in the development of the integrated transport strategy, and the recommended options for the implementation plan. This approach is outlined in greater detail in Appendix A.

Specific attention will be paid to those particular locations identified in the brief. These being:

- Nottingham ring road
- The A60
- The rail network
- The A453
- Junction 25 of the M1

- Proposed parkway station; and

- Transport links in areas of new housing

In undertaking this baseline audit of environmental capital throughout the study area, those reports and appraisals already undertaken will be utilised wherever possible to reduce the programme implications of the survey work.

The results of this work would be presented in plan format, both in hard copy, and electronically, to be used in later development of the strategies and options.

5.2 Strategy Development

5.2.1 It is a requirement of the study to develop a strategy that will consider:

- A future year horizon up to the year 2021 (in line with Regional Planning Guidance),
- The strategic problems that could occur if travel demands continue to grow in line with the growth in economic prosperity, and
- The fundamental changes that might be required to deliver a transport system that satisfies national, regional, and local objectives.

5.2.2 The strategy developed for the A453 corridor will be in part dependant upon strategies developed for strategic movements during the M1 (north-south) study and also on the emerging transport strategies for urban areas especially Nottingham and Derby. Conversely the problems and strategies for the A453 corridor may contribute to the wider strategies in an interactive process.

5.2.3 The A453 strategy is likely to consist of a range of measures developed under various headings which contribute to addressing problems and achieving objectives. These will expand on the five objectives set out in Government thinking on integrated transport namely environment, safety, economy, accessibility and integration.

The broad headings under which the strategy will be packaged are:-

- Education and information on sustainable travel behaviour
- Public transport provision
- Cycle and pedestrian facilities
- Demand management
- Traffic management and safety
- Provision for freight
- Telecommunications measures
- Highway infrastructure
- Land-use planning
- Environmental factors

5.2.4 There is a two-way relationship between transportation and land use identified in the DETR approach to multi-modal appraisal. For example, future travel demands will be influenced by future land use, and changes in land use patterns will be influenced by changes in accessibility. In developing a strategy that will reduce the need to travel and create sustainable transport options, this

inter-relationship is a central component. This is reinforced in the consultation draft of PPG13 recently published.

5.2.5 The developing strategy would need to support the specific planning policies and development proposals currently in place within the study area, whilst at the same time seek to influence future transport and land use policies for the study area. This approach would be likely to include:-

- Locating any development within transport corridors or near transport nodes;
- Encouraging mixed development where possible, as advocated in PPG13;
- Increasing development densities and layouts to reduce travel demand;
- Working with local authorities to apply sustainable integrated transport strategies for development proposals.

5.2.6 This approach to the strategy development will necessarily involve a close examination of planning policy in place at a national, regional and local level through PPG's, regional guidance, development plans and local transport plans. The analysis of the strategy against these documents by way of a coarse Appraisal Summary Table (AST) approach should ensure the effective integration of the strategy throughout its conception and development. The development of the strategy for the study area would also reflect the aims set out by the DETR in their document "A New Deal for Transport", in particular with regard to the protection of the natural and built environment.

5.2.7 By identifying the items of importance from the Environmental Audit, a clear picture will be available to help ensure that in developing the multi-modal strategy, any adverse impacts on both the rural and urban environments are minimised as far as possible. Indeed, the strategy will aim to reduce both the direct and indirect impacts of transport on the whole environment. This would relate to noise, atmospheric pollution, vibration, visual intrusion, severance, important habitats, ancient monuments, historic buildings and other conservation considerations.

5.2.8 The development of the strategy would address these environmental concerns to both the wider strategy area and include the specific locations detailed in the brief. A coarse form of the NATA assessment approach would be employed to ensure that a logical and robust strategy is developed for the study area.

5.2.9 The strategy development would be enhanced by a structured consultation exercise. The principles of consultation are set out more fully elsewhere but include the following:-

- A responsive public exhibition day with a facilitated strategy workshop for major stakeholders to obtain acceptability rankings and opinions from the stakeholders,
- A study workshop to evaluate the responses obtained following the receipt of concerns, objectives and opinions from the initial responsive publication, public exhibition comments and reports from facilitated consultations. This would be a facilitated session itself, used to collate the information obtained from the various forums and assimilate a list of common and uncommon objectives that could then be appraised in phase 5, and
- A facilitated workshop to discuss strategy with the project management group.

This would be undertaken to confirm the strategy that the management group is following and to assist in solving any problems and resolving any conflicting issues at this stage.

5.2.11 The key outputs of this phase will be a report which:-

- Describes current progress on achieving objectives.
- Recommends any changes to the objectives,
- Demonstrates the measures which could satisfy the objectives.

5.2.12 The anticipated costs and benefits must be discussed using the general principles of the Appraisal Summary Table (AST). However, it is recognised that the analysis may be relatively coarse at this stage.

5.3 Option Development

5.3.1 A range of specific interventions and actions that address the most urgent problems of the study area and build upon the sustainable transport measures already being promoted will be identified. The identified problems may be mode specific, however solutions may be across a range of modes, and not necessarily relating to the same mode as the problem.

5.3.2 Clearly different options/solutions would be phased in over the study period as a programme of costed actions will be identified. The defined options will be:-

- Targeted to deal with existing and predicted problems,
- Measures consistent with the objectives of the longer term strategy; and
- Prioritised using an agreed set of criteria.

This process may identify several different options each containing a range of measures and which can go forward for further consultation and subsequent appraisal.

5.3.3 Once current and future problems have been examined the next step is to start developing ideas for innovative solutions. These ideas for action and intervention will be developed under the broader headings set out earlier under strategy development, but with a particular focus on resolution of local issues and problems within the strategy context.

5.3.4 These options will not just be derived from within the team but also from the Wider Reference Group and the public at large where contributions have been made previously through bodies such as the Local Highway Authorities, both officers and members.

5.3.5 Ideas considered previously may be reviewed to check whether any of the proposals discarded in the past may now be worth reconsidering and existing and emerging policy instruments will be considered where they may have relevance to the study.

5.3.6 The options will have both an inter-urban and urban emphasis in order to address the complexity of issues emerging from consultations. As an example of interactive trip purpose, one of the major causes of congestion is the use made of strategic roads by local traffic, for example the journey to school. If some of these very local car journeys could be transferred to other modes, this could provide some relief from the congestion on major arterial routes. There are however corollaries to this philosophy. Strategic traffic would remain within the corridor with an impact on the local environment and safety. A local strategy would be required to ensure safe routes to school along with a school travel education programme. Conversely consideration could be given to reduction or diversion of strategic traffic. In addition, where inter-urban routes bypass or provide access into urban areas, then urban instruments may be used to complement inter-urban techniques.

5.3.7 'Brainstorming' sessions or 'workshops' can be used as a means of developing options for testing. These approaches can generate ideas by cross-fertilisation between the participants' different perspectives.

5.3.8 In refining the intervention options prior to the consultation process at phase 5, the need to integrate with land use planning at national, regional and local levels will be central to ensuring that, as far as possible, the intervention measures work together with planning policies to provide effective sustainable transport options and thereby reduce the need to travel.

5.3.9 As part of the approach outlined, the key planning policies would be drawn out and consultation links established with local and regional planning bodies. These would have been further refined in the proposed strategy and these policies will be addressed directly to the identified intervention options. As set out in the consultation draft of PPG 11 'Regional Planning', it is important that the multi-modal strategies reflect and influence future land use development in the study area, and show how the transportation strategy options would support these.

5.3.10 This level of refinement would allow for the intervention options to be prioritised before being taken forward for assessment in further detail, including the production of NATA appraisal summary tables (AST's) identified by the DETR. The analysis of the key land use planning policies, plans and future proposals under the structured approach provided by NATA is crucial in the development of a set of strategy intervention measures. The refinement of the options would be expected to reflect the systematic approach to appraisal provided by NATA, without entering into the detailed level of analysis that would be carried out subsequently under Phase 6.

5.3.11 Central Government identifies that a principal objective of transport schemes should be to protect and enhance the natural and built environment. Intervention options would be evaluated in order to ascertain their likely environmental effects. This assessment would proceed in a structured and systematic manner, to ensure that a comparative appraisal of options is possible, based on objective information.

5.3.12 In order to undertake this systematic process, it will be vital to identify a range of evaluation categories, and for each category identify a range of significance thresholds, against which options could be evaluated. Whilst this assessment process would remain at a broad level, it would nevertheless, be an essential pre-requisite for the options to be based on specific plan proposals. The environmental assessment of the options would closely follow the methodology of assessment set out by the NATA framework, and the modifications to that approach set out by DETR in their guidance on the methodology for multi-modal studies.

5.3.13 The specific output of this overview of environmental assessment would be a comparative environmental appraisal and the ranking of strategy options based on their likely environmental impact. Options with least adverse effect would then be developed further subject to the specific findings of the parallel assessment of likely planning, economic and engineering effects.

5.3.14 A facilitated workshop within the management group could be used to discuss the various options identified and assist in prioritisation. The issues for discussion would be the various stakeholder requirements, as identified during the previous consultations. This process would result in a complete understanding of the disparate requirements and objections to the options and therefore enhance the basis for an evaluation of the options.

5.3.15 A facilitated strategy workshop with wider groups could be undertaken once the Management Group agrees on the requirements and any objections that may arise from the various options, a further workshop could be undertaken in the format of a Public Consultation Exhibition and Study Workshop, as described in Phase 2. This process would analyse and finalise and confirm the option requirements and objections, as developed by the Management Group. Independent facilitation would ensure that all parties are represented and accommodated within the process, ensuring that the strategy developed meets the disparate requirements and manages the objectives.

5.3.16 The key output of this phase will be a report which:-

- Reviews previous options.
- Identifies existing and future problems.
- Examines the various policy instruments.
- Identifies environmental constraints and items for protection.
- Identifies the various options to be carried forward to appraisal
- Highlights any options discarded at this stage with the basis for such decisions
- Provides information on likely funding sources

There would also be a report produced on the outcome of the facilitated workshop

5.4 Engineering Feasibility and Costs

5.4.1 The engineering feasibility of elements of the strategies and options will be investigated and indicative proposals developed to sufficient level of detail for the order of magnitude costs to be included in the assessment process.

6.0 STRATEGY AND OPTION ASSESSMENT

6.1 The Appraisal Summary Table (AST)

6.1.1 The appraisal of options will be undertaken in accordance with the New Approach to Appraisal (NATA). This was developed by the DETR for two purposes namely choosing between different options for solving the same problem, and prioritising between proposals.

6.1.2 The Approach includes the identification and assessment of problems, the identification of options, and the assessment of those options. The approach works within the framework provided by the five objectives of environment, safety, economy, accessibility and integration set out in Government Policy.

6.1.3 An important element of the New Approach to Appraisal is the Appraisal Summary Table (AST) which assists the decision making process by providing a clear basis on which judgements can be made. The GOMMS documentation sets out the approach to be adopted for the multi-modal studies which has four appraisal 'strands':-

- A multi-modal version of the AST.
- A regional dimension through an assessment of the degrees to which local objectives would be addressed.
- A further regional dimension in relation to which local problems would be mitigated by the various options considered.
- Supporting analyses relating to local issues such as equity, practicality and public acceptability.

6.1.4 The application of the NATA approach to the appraisal of the strategy and the intervention options developed under Phases 3 and 4 of the study will ensure a robust and comparative methodology. The presentation of information in the tabular format proposed by the AST's provides the most appropriate method of assessment. This approach allows for the comparison of alternative intervention strategies within the study, and for comparison with other strategies throughout the UK on a standardised basis.

6.1.5 The application of the NATA criteria to the evaluation of, for example environmental impacts related to noise, air quality, landscape, biodiversity, heritage and water will necessarily include both quantitative and qualitative assessments of impacts. Impacts of the proposed strategy and options in terms of noise, air quality can be measured quantitatively. However, the assessment of alternatives relative to their likely effect on landscape, biodiversity, heritage and water will inevitably involve the application of professional judgement.

6.1.6 Programming constraints and the extensive nature of the issues involved in the study area will result in the AST's having to be applied in a strategic manner. This will involve the identification of those key indicators of particular relevance to the study area. Key indicators would be developed in conjunction with the Study Steering Group, commencing at the inception stage of the study, and would then be further refined as the study develops through the assessment phases. This approach will necessarily involve the progressive development of AST methodology and it would not be sensible to be prescriptive in defining the content of the appraisal process at the outset.

6.1.7 Once the management group has identified the various options, stakeholder requirements and objectives, the options will be appraised through the use of a further workshop. This would be undertaken in the format of a Public Consultation Exhibition and Study Workshop.

6.1.8 This section will produce the key reports which bring together the option identification and the model evaluations. It will include the Appraisal Summary Tables with the background support information. Costs and benefits will be reported along with likely funding sources for the various options recommended to be included in the strategies for adoption.

7.0 CONSULTATION AND MEDIA

7.1 Introduction

A continuous programme of consultation and information is proposed focussing on key stages of the study in order to build confidence in the transparency of the process, promote a feeling of community involvement and maximise public acceptability of the preferred strategy and option(s) as these emerge from the assessment process.

The following sections of this chapter outline the various elements of the continuous consultation which is summarised in Figure 7.1

In addition to the processes outlined, consideration is being given to possible use of a website and to a pro-active approach to the involvement of the media to take advantage of the comprehensive and regular coverage potentially available.

7.2 Multi Stakeholder Consultation

"Stakeholder consultation is a systematic process which provides an opportunity for the key stakeholders of a project to share their experience, knowledge and goals and combine their energy to create a plan which is technically sound, economically attractive, generally understood and accepted by most of those affected by it, and is thus politically viable"

The process of consultation fulfils the following requirements:

- The recognition of the need for dialogue to develop breakthrough thinking and collaborative innovation
- The creation of a common language, symbols and metaphors to build mutual commitment and contribution
- The engagement of the full diversity of members talents and contributions to the community's sustenance
- The discover of 'best practices' and the development of shared leadership
- The engagement of all stakeholders to weave a web of personal relationships and the resulting building of collaboration through shared information, honesty, trust and support
- The development of a "positive conscience"

Objectives of Consultation on A453 Multi Modal Study (MMS)

- Provide key advice on appropriate external communications at key stages
- Keep the Steering and Project Management Groups informed of media interest and reaction, and advise accordingly
- Advise on co-ordination with other national and local events, which may attract media interest
- Keep the public and the wider reference group informed of the intention to proceed with the study, of progress and of the final recommendations
- Assist informed decision making through meaningful participation to obtaining views on issues, problems and needs and options
- Build consensus and encourage realistic expectations

7.3 A453 Consultation Strategy

Phase One – Inception

- Establish public and stakeholders profiles
- Facilitated Management Group seminar to commence engagement process and start to identify the issues
- Attend regular meetings with Project Management Group (PMG)/Steering Group (SG) to appraise progress

Phase Two – Traffic Surveys/Traffic Modelling

- Consultation Ongoing: as stated in Phase Three

Phase Three: Strategy

- Maintain stakeholder profiles including additions to Wider Reference Group (WRG) list
- Open Day sessions with local communities
- Facilitated workshop to develop A453 strategy with the project management and steering groups
- Undertake a public consultation/wider reference group seminar including a facilitated strategy workshops to obtain views on strategy and level of acceptability
- Dealing with feedback from the wider reference group following the consultation seminar
- Attend ad-hoc meetings with specific interest groups to inform them of the process and progress and to solicit their views e.g. Chamber of Commerce, Local Council meetings.
- Publication of newsletter/leaflet for stakeholders
- Attend regular meetings with PMG/SG to appraise progress

Phase Four: Identification of Options

- Brainstorming workshops with team & wider reference group
- Facilitated workshop to identify & develop options with the project management and steering groups
- Facilitated strategy workshop with wider reference group and other key stakeholders
- Attend ad-hoc meetings with specific interest groups to inform them of the process and progress and to solicit their views e.g. Chamber of Commerce, Local Council meetings.
- Publication of newsletter/leaflet for stakeholders
- Attend regular meetings with PMG/SG to appraise progress

Phase Five: Consultation

- Consultation will be continuous throughout the study as detailed in this section.

Phase Six: Option Appraisal

- Option appraisal workshop sessions with local communities
- Facilitated seminar and workshops to appraise the options identified with the wider reference group

- Attend ad-hoc meetings with specific interest groups to inform them of the process and progress and to solicit their views e.g. Chamber of Commerce, Local Council meetings.
- Publication of newsletter/leaflet for stakeholders
- Attend regular meetings with PMG/SG to appraise progress

Phase Seven: Implementation Programme and Recommendations

- Public Consultation and study workshops to inform and conclude the outcome of study
- Workshop with project management and steering group to finalise issues and agree way forward
- Attend ad-hoc meetings with specific interest groups to inform them of the process and progress and to solicit their views e.g. Chamber of Commerce, Local Council meetings.
- Publication of newsletter/leaflet for stakeholders
- Attend regular meetings with PMG/SG to appraise progress

7.4 A453 Consultation Methodology

The process, as outlined below includes ongoing consultation with interested parties and stakeholders from the commencement of the scoping and strategy development. This encourages the provision of all parties' requirements, concerns and objections prior to the final decision on the option to be introduced thereby increasing the acceptability of the final option by all parties.

7.4.1 Phase One: Inception

Establish public and stakeholder profiles

In order for the consultation to be effective it is essential that an inventory is kept for each of the stakeholders and public groups involved. The WRG database provided by GOEM is an excellent first source, but will be updated and reviewed for completeness on a regular basis

Facilitated WRG Seminar to commence engagement process and start to identify the issues.

Multi-stakeholder consultation workshops are proposed during the study where a variety of disparate organisation, bodies or individuals including local communities, interested parties and steering groups are taken through a series of structured facilitated sessions. The aims of these sessions are to achieve a mutual understanding of the problems and issues. From this point, an acceptance of alternative points of view and hence solutions can be brokered and a consensus decision reached on how groups can work effectively together in order to resolve a particular problem. These workshops will be facilitated by CVRL.

The objectives of this seminar would be to:

- Allow the Wider Reference Group to get to know the Study Team
- Provide the Wider Reference Group with an understanding of the overall approach and interface between the A453 and M1 Studies
- Describe the programme for the A453 study
- Outline the purpose of the continuous involvement of the Wider Reference Group in the A453 study
- Identify initial issues which the Wider Reference Group would like to be considered within the A453 study

This seminar was successfully undertaken on 11th February 2000. Reference to Supplementary Report 2.

7.4.2 Phase 2 :Survey and Transportation Model

There would not be any specific consultation in association with Phase 2. However undertaking of the travel survey would inevitably bring great interest from the wider public and the media. A mechanism to receive and deal with queries and suggestions will be maintained especially during this period.

7.4.3 Phase Three: Strategy Development

Undertake Open Day sessions with local communities.

Following the Facilitated Seminar with the wider reference group a demand has arisen for Open Days to be held at communities on the A453 route, namely Clifton, Kegworth and Thrumpton/Barton.

The process which would be employed would be that of an informal open day where the study process and objectives are displayed and members of the study team would be available. Open Days are positive opportunities for the public and the stakeholders to converse with those involved directly with the study.

There would also be the opportunity for all attendees to speak to the facilitator and provide their views, issues, problems or requirements regarding the multi-modal study. These would be registered for future use by the study team.

Facilitated Workshop to review the problems and develop the A453 strategy objectives with the Project Management and Steering Groups.

A facilitated workshop would be undertaken following the public consultation sessions. The workshop itself will be designed to address the particular issues highlighted but will typically follow the process outlined below:

- To review the initial results and data so all parties understand the nature and functions of the A453 corridor and how it operates.
- To review the problem/issues which require to be tackled.
- To jointly identify, develop and reach broad agreement to the high level objectives of the A453 multi-modal strategy.
- To review and commence an understanding of the range of potential transport strategies that could support achievements of the said objectives.
- To jointly identify and agree the next steps in the process that will be required in order to identify packages of options and the involvement of PMG/SG in their development.

The strength of the process lies in the structured and independent approach taken. This addresses the issues and not the personalities within the management group and the consultant.

Undertake a Public Consultation and Wider Reference Group Seminar including a facilitated strategy workshops to obtain view on strategy and level of acceptability:

As in Phase One, this would be undertaken in form of a seminar. However the forum would be much larger since all stakeholders would be invited to attend and air their views, concerns and opinions.

Dealing with feedback from the Wider Reference Group following the consultation seminar:

The Open Day sessions, facilitated workshop and public consultation would provide forums for the stakeholders of the study to air their views, on issues problems, requirements and opinions. However they would be given the opportunity to provide any further feedback to the study team following these sessions, or in place of the sessions as required. This will be in one of several formats including:

- Written Information
- Website and Email
- Telephone conversations

The study team would log all feedback in order to keep a record of the issues identified by the stakeholders. The issues would then be noted in order that they would be taken into account during the study process.

Publication of newsletter/leaflet for stakeholders

A publication such as a newsletter or leaflet would be issued to all the stakeholders to the study further to the Open Day sessions, workshop and consultation session. This would provide short, simple, direct and clear information which recognises both the positive and negative aspects of the possible strategies available to the study team.

In addition this publication would include an easy means of response, such as a reply slip to ease the process of feedback.

7.4.4 Phase Four: Identification of Options

Brainstorming workshop with Wider Reference Group

In order to identify the options for assessment a number of brainstorming workshops would be held to identify alternative solutions to meet the functional requirement. These would be independently facilitated to ensure that all stakeholders were equally treated and ideas equally noted.

It will be crucial to identify the correct stakeholders and workshop attendees. Normally a study workshop would consist of twelve to eighteen key stakeholders and workshop attendees, producing a good-sized forum for achieving positive results.

The workshop attendees can be categorised, either formally or informally, to fill the following roles:

- Participant
  Involved directly in the project of having the technical, operational or business experience of similar project.

- Challenger
  Need not be technically involved in this or similar projects. Should be external to the project and, maybe, external to the company.

- Decision-Maker
  Providing general guidance to ensure the boundaries to the project and corporate objectives are maintained. Additionally, provides project and corporate decisions to drive the project forward. This role must not stifle thought and innovation.

In addition to representation from all stakeholders, it is important to achieve a balanced mix of characters in order to assist in building 'the Project Team' as opposed to a group of individual disciplines.

The following workshop plan describes the general format of a option identification workshop:

- Information
  The workshop team will be presented with information on the issue or matter to be discussed. A review of the objectives of the strategy will be required in order to focus participants on functional need.

- Creativity: Brainstorming
  Brainstorming or similar techniques to identify alternative solutions to meet the functional requirement. The system adopted ensures that the participants are unconstrained by experience, teaching, rules, standards or procedures. It is this freedom which professionals take advantage of to bounce 'new ideas' off others and expose ideas which have been harboured in the subconscious thought process for some time.

- Evaluation
  A filter to sift the ideas into various categories. For example, ideas to be further developed during the workshop, ideas to be developed outside the workshop as more information is required, ideas which are non-starters or 'wacky'.

- Initial Development
  CARD analysis to identify the Advantages, Disadvantages, Costs and Risks, of each of the filtered ideas. This work can be carried out in syndicates. The purpose being to bottom out the integrity of the idea or establish a set of parameters around which the idea should be developed outside the workshop.

  Decisions as to which option or package of options is preferred is avoided at this stage until assessment using NATA has been undertaken.

- Action Plan
  A plan to define the way forward. The specific actions are allocated to individuals for implementation within specific time frames.

Facilitated Workshop with the Project Management and Steering Groups to discuss the various options identified.

This would be undertaken in a similar fashion as in Phase Three, with the project management and steering groups undertaking a facilitated workshop session.

The issues for discussion would be the various options identified and the identification of others. An initial appraisal will be undertaken in order that a better understanding of the options identified is achieved and direction given to the study team ahead of further appraisal and wider consultation.

Facilitated options identification Seminar with Wider Reference Group

Once the management group agrees on the requirements and any objections that may arise from the various options, a further workshop would be undertaken in the format of a WRG Seminar and Workshop similar to that held in Phase 1.

This process would allow the study team to present their initial range of options and for the WRG to understand the potential range of solutions to meet the MMS strategy, add to the list if they wish, and to commence the process of appraisal. Independent facilitation would ensure that all parties are represented and accommodated in the process.

Publication of Newsletter/Leaflet for Stakeholders

As detailed in Phase Three, a publication such as a newsletter or leaflet would be issued to all the stakeholders to the study. This would again provide short, simple direct and clear information which would recognise both the positive and negative aspects of the options generated since last publication.

Again this publication would include an easy means of response such as a reply slip to ease the process of feedback detailed previously.

7.4.5 Phase Six: Option Appraisal

Option appraisal Workshop with Local Communities

Following the WRG seminar on broad options it may be advantageous to undertake an open day with local communities in order to introduce some of the potential options that are available and test understanding and level of acceptability.

Similarly to the Open Days this process would employ a Public Exhibition format followed by a facilitated consultation sessions. The exhibit would consist of a stakeholder review of graphic panels describing the process undertaken to date and the options generated by the study team, in liaison with the WRG and PM/Steering groups, for appraisal.

Again the attendees would have the opportunity to attend a facilitated consultation session in which they could provide their views on the range of options and their comments noted.

Facilitated Seminar and Workshop to appraise the options identified with the Wider Reference Group

Once the Project Management and Steering Groups have identified the various options and the stake holder requirements reviewed, the options will be appraised through the use of a further workshop. This would be undertaken in the format of a Wider Reference Group Seminar, as described previously in Phase One.

Publication of Newsletter/leaflet for stakeholders

As detailed in Phases Three and Five, a publication such as a newsletter or leaflet would be issued to all the stakeholders to the study. This would again provide short, simple, direct and clear information regarding the method of appraisal or the options. Again this publication would include an easy means of response such as a reply slip to ease the process of feedback detailed previously.

7.4.6 Phase Seven: Implementation Programme and Recommendations

Public Consultation and Study Workshop on outcome of study

Following the option appraisal a Public Consultation and study workshop would be undertaken. The process that would be employed would be that of Public Exhibition(s). Exhibitions are positive opportunities for the public and the stakeholders to converse with those involved directly with the study. The exhibition would consist of stakeholder review of graphic panels describing the proposals followed by a facilitated consultation session to provide further clarification and to register stakeholders view and concerns.

At this stage the exhibition would be open to all interested parties and would provide the assessment summery for selected options for discussion and comment prior to preferred option selection.

Facilitated workshop with the Project Management and Steering Groups to discuss the outcome of the Study

As previously detailed, this would be undertaken to disseminate the outcome of the study and the feedback received on the same from the public and the Wider Reference Group. This workshop would finalise the option(s) for recommendation along with a full appreciation of the ease with which various options can be implemented.

Publication of Newsletter/Leaflet for Stakeholders

As previously detailed, this would be issued to all stakeholders of the study. This final issue would provide details of the selected options and request their comments prior to final option recommendation and development of the implementation plan.

7.5 Media Proposals

Previous sections of this chapter have outlined the formal consultation process which will continue through the study period. This process will inevitably excite the media at key stages through the study, and this may be encouraged by local interest groups seeking to ensure representation of their views in the public arena.

The Study Team strongly recommends that a proactive approach is taken to media involvement. Media, especially those with a local base and focus, could be particularly helpful in informing the public at large of the progress of the study, key findings and most especially identifying the opportunities in the consultation process for input of their views. Most importantly involvement of the media could help demonstrate the transparency of the study process, the clean sheet start and the comprehensive assessment procedures, and therefore build credibility and potentially public acceptance of findings.

These objectives will be best met by a proactive approach in which a framework of publicity activities would be developed in consultation with representatives of local media.

The GOEM paper on media handling presented to the Project Management Group on 16 February has yet to be circulated, but the meeting minutes identify the following:

- importance of media to the project
- links between Consultation and Media were required e.g. newsletter
- study team representation at local meetings of representative groups
- COI(DETR) press cutting service would be activated
- a GOEM website would be established with possible linkage to a Study Team Website potentially including a 'bulletin board'
- involvement of local elected members to be considered

These, and other proposals will be worked up in consultation with GOEM and the PMG.

A453 Nottingham – Multi Modal Study

Figure 7.1
Ongoing Consultation Programme

Phase	Activity	From	To	CVRL Consultation Activity Programme (inc Tender Ref)
One	**Inception**	**Dec 99**	**Feb 00**	Establish public and stakeholder profiles Facilitated Management Group Workshop: To commence engagement process & start to identify the issues
Two	**Model**	**Feb 00**	**Nov 00**	Consultation Ongoing – inc below
Three	**Strategy**	**Feb 00**	**May 00**	Issue identification workshop sessions with local communities, Clifton Kegworth Thrumpton/Barton Facilitated workshop to discuss strategy with PM & Steering groups Public Consultation/WRG Seminar and Study Workshop Dealing with feedback from stakeholders/attend meeting Publication of news letter/leaflet
Four	**Option**	**May 00**	**Nov 00**	Brain storming workshops with team & reference group Facilitated workshop to discuss options with PM & Steering groups Facilitated strategy workshop with WRG and other key stakeholders Meetings and reviews of deliverables Publication of newsletter/leaflet
Six	**Option Evaluation**	**Nov 00**	**May 01**	Option Appraisal workshop sessions with local communities Facilitated seminar and workshops to appraise options with WRG Meetings and reviews of deliverables Publication of newsletter/leaflet
Seven	**Findings**	**May 01**	**Sept 01**	Public Consultation Seminar and Study Workshop PM & Steering Group Workshop Publication of newsletter/leaflet

8. RECOMMENDATIONS AND PROGRAMME FOR IMPLEMENTATION

8.1 Introduction

8.1.1 The Implementation Programme and Recommendations will take account of all implementation constraints and funding implications. The programme is likely to involve a large number of concerted actions and interventions spread over a number of years. The elements of the programme will be scheduled to take account of issues such as planning/implementation lead times; the interaction between elements of the programme and the practical constraints of transport providers in delivering solutions.

8.2 Methodology

8.2.1 The various options and strategies will be examined within a timeframe analysis to identify illogical peaks in expenditure and/or possible major conflicts for travel caused by construction disruption over long periods from adjacent interventions. Expenditure profiles would be established and the potential for smoothing of peaks and troughs identified with implications for implementation of the package of measures identified.

8.2.2 The major stakeholders would have already given their views on the priorities of the options and these would be taken into account as far as possible in preparing the implementation programme.

8.2.3 A sensible conclusion to the study, before adoption of recommendations in a Regional Transport Strategy, would be a public consultation exercise to achieve a consensus of acceptability to the proposals. This could include:-

- Public exhibition/roadshow and
- Responsive publication

This process will provide the details of the selected options to all interested parties for their discussion and comments prior to final option recommendation and development of the implementation plan.

8.2.4 The study outputs will ultimately include recommendations to:

- The East Midlands Regional Local Government Association (The Regional Planning Body), for consideration in drawing up a Regional Planning Guidance;
- The Highways Agency, for consideration in defining future route management strategies;
- Local Authorities, to provide inputs and an overall framework for Local Transport Plan; and information on development issues.
- Public Transport infrastructure providers, to help inform the direction of future investment programme; and
- Public Transport operators, to help inform planning of future network and operations.

9. STUDY PROGRAMME RESOURCES AND COSTS

9.1 Study Programme

A preliminary work programme has been produced using Microsoft Project, and this will be developed on a staged basis to expand on the tasks and responsibilities so as to provide a working tool for the control, monitoring and reporting of progress on the study. The active programme will be 'hung' on the intranet forum and will be available to all parties to assess their own progress against given target dates.

The programme will form the basic agenda for progress meetings and groups within the Study Team will be asked to account for the progress of its tasks.

Where it can be seen that tasks are slipping behind programme or where external influences are affecting the likely completion dates for activities then the Project Manager will seek to change resource inputs from relevant groups to enable the overall programme for the study to be maintained. This will be a pro-active exercise looking for the solution to critical path issues before they impact negatively on the study and its deliverables.

The gantt chart is included at the end of this section as Figure 9.1. Many of the determinants of programme lie directly within the control of the Study Team, but there are key points in the programme where input will be required from third parties. Key points include:

- DETR approval of Roadside Interview Survey proposals and relationship to the Easter school holidays.
- Input of local planning data at the study zone level.
- A series of inputs from the M1 (North-South) study including:
    - Strategic movements at the base year for modal validation
    - Forecast strategic movements at future years for local model forecasting
    - M1 (North-South) strategy concept
    - M1 (North-South) preferred option on forecast strategic movements/changes

Liaison has been established with the M1 (North-South) Study team and preliminary discussions have indicated that the main activity phases on the two studies will be concurrent. However the precise mode and timing of interface is still under discussion.

9.2 Study Costs

Table 9.1 overleaf shows the updated estimates of manpower resources anticipated as required to carry out the various phases of the study.

APPENDIX A

STRATEGY AND OPTION ASSESSMENT – ENVIRONMENTAL CAPITAL

APPENDIX A

STRATEGY AND OPTION ASSESSMENT – ENVIRONMENTAL CAPTIAL

Environmental Capital

The DETR guidance on the approach to multi-modal studies emphasises the importance of considering the physical features of the study area in terms of the constraints that these may pose for the development of an integrated transportation strategy. It is therefore, proposed to carry out an environmental audit of the study area in parallel with the modelling process to draw out those items of sensitive ecological, landscape or heritage importance, important townscape elements, topography and important water features. This audit will identify and map the Environmental Capital of the study area. Although the principal of 'environmental capital' in land use planning is relatively long-standing, and most practitioners adopt its principles in an intuitive manner, the concept of 'environmental capital' as a more measurable and quantifiable approach to the sustainable land management is relatively new. It is an approach that in recent years has been gaining in recognition in order to produce a more systematic and accepted approach to the identification of environmental attributes and what importance society places on those attributes. This audit of environmental capital will form an important part of the methodology for the strategy and option assessment.

The proposed methodology will provide a basis for the Strategic Environmental Assessment (SEA) of the strategies and options as they emerge through the course of the study.

The appraisal of environmental capital will provide a tool for assessment of the 'baseline' condition of the environment, and will help to ensure that the assessment process considers the full range of options and their effect on the environment in a consistent way.

Overall, the proposed methodology will:

- provide a common language for identifying environmental context, stock or capital which is the starting point for the environmental assessment and appraisal of the study area;
- provide a transparent framework for assessing the relative importance of different aspects of the environmental stock or capital;
- help fully understand the likely effects of alternative development options on the environmental resource; and,
- make explicit the needs for replacement or compensation in response to an option, action or development.

The application of the approach to this multi-modal study could be as follows:

1. First, at the most detailed level, every proposed creation or alteration of a piece of transport infrastructure – for example a road, car park, rail line, runway, terminal or cycle route – is a development which affects land use. The methodology proposed would show which environmental attributes will be affected by any such proposals.
2. At the slightly more strategic level, the approach will help compare the effects of different project options, for example different road alignments or enhancing rail instead of road capacity.

Environmental Mapping

The principal output of the environmental audit and appraisal of environmental capital will be maps. A number of themed maps will be prepared that cover the entire study area and relate to information gathered from site survey, review of planning documents such as Local Plans and Structure Plans and, consultations with other agencies. The mapped information will form constraint plans against which the transportation strategies and options can be systematically considered.

It is likely that the themed maps would be based on 1:50,000 OS maps and would cover the following topics and information:

Provisional coverage of the mapping is described below.

Existing Land Use: This map would illustrate the basic existing land use features through the study area and would be based directly from site survey and OS data.

Study Area Boundary
Woodland
Parks, Public Open Space, Recreation Areas and School Grounds
Golf Courses
Standing Water, Rivers and Canals
Country Parks
Settlement/Property
Active Mineral Workings
Derelict and Contaminated Land
Land Reclaimed for 'soft' after use
Land Reclaimed for Industry
Former/Existing Landfill Sites
Power Lines
Public Open Space/Schools (with greenspace)
Residential Areas
Commercial Areas
Industrial Areas

Ecology and Heritage: This map would indicate the main statutory and non-statutory sites of nature conservation and cultural importance. Information would be obtained from local and county planning documents and statutory bodies would be consulted for more detailed advice.

Study Area Boundary
Conservation Areas
Listed Buildings (Grade 1 and II*)
Historic Parks & Gardens
Scheduled Ancient Monuments
Land Classification for Agriculture Grade 2 and above
Sites of Special Scientific Interest
Ancient Woodland
Sites of Biological Importance
National Nature Reserves
Sites of Local and Regional Nature Conservation Importance

Transportation Infrastructure: This plan would map the existing transport infrastructure both existing, approved and planned.

Study Area Boundary
Existing Major Highway Network
Proposed Highway Scheme
Existing Rail Network
Rail Stations
Disused/Dismantled Railways
Bus Enhancement Schemes
Existing and Proposed Cycleways and Footpaths
Bus Routes
Public Rights of Way (footpaths and bridleways)
Navigable River Corridors
Canals
Airports

Transport Environmental Issues: This map would indicate areas within the study area which are affected to a greater or lesser extent by the following environmental impacts:-

Air pollution
Traffic noise
Vibration
Visual intrusion
Severance of communities and habitats

Development Proposals: This plan would map known planned developments through the study area. It would set a forward planning context to the study area and ensure that the team is familiar with the developmental context of the site.

Study Area Boundary
Proposed and Recently Developed Housing
Proposed and Recently Developed Industry/Commercial Use
Proposed Parks/Green Space/Playing Fields/Recreation Areas
Proposed Golf Course
Proposed Mineral Extraction
Areas Not Covered by Green Belt
Urban Land to Remain Undeveloped
Safeguarded Areas
Special Policy Areas
Proposed Infrastructure

Regeneration: This plan would map existing, approved, planning and economic and regeneration initiatives, and area based grant applications throughout the study area. It would base its information from discussions with local and regional planning and development agencies, using GOEM as a primary consultee. These plans would be prepared in order to set a regeneration framework to the study and to ensure that proposals emerge that are aware of the wider developmental plans across the study area.

Study Area Boundary

Rechar Target Areas
Objective I Target Areas
Objective II Target Areas
SRB Target Areas
Enterprise Zone Sites
Resider Target Sites
Groundwork Areas

Designated Areas: Designated areas would be mapped from local and regional planning documents and would identify a planning and policy context against which to consider emerging proposals.

Adopted Greenspace
Green Belt
Flood Plain
Mineral's Local Plan
Landscape Value (i.e. Areas of Special County Value)
Landscape Character Area (i.e. Countryside Agency)
Brownfield Sites
Proposed Playing Fields
Proposed Golf Course

Identification of Key Indicators

The identification of key indicators is integral to the methodology for the appraisal of environmental capital (see above). It is a crucial step as it provides the link between the mapping and identification of a given environmental constraint, such as Green Belt as a specific area based on planning constraint, and the importance placed on that constraint. We cannot (and would not want to) preserve everything to the extent that change (and development) was not allowed. Neither do we want to see the steady erosion of our environmental capital. What is required, is a prioritisation of environmental assets and an understanding of how, given options could affect these assets. In short, a mechanism to enable a robust environmental appraisal of development options in a transparent and systematic manner is required. In order to ascribe values to identified environmental assets, and to establish key indicators, it is likely that a methodology for appraisal would be based on the following issues:

- At what scale does the environmental asset matter;
- How important is the environmental asset at that scale; and,
- Is the asset replaceable.

SCHEDULE OF FIGURES