



A453 MULTI MODAL STUDY

WORKING PAPER No 17

Initial options for Testing

July 2001

REVISION RECORD

<u>Revision</u>	<u>Date</u>	<u>Originator</u>	<u>Checked</u>	<u>Approved</u>
Issue	15/6/01	JHB	AJS	PBW
Revision 1	4/7/01	JHB	AJS	PBW

Prepared for:
Government Office for the East Midlands
The Belgrave Centre
Stanley Place
Talbot Street
Nottingham NG1 5GG

Pell Frischmann Joint Venture
Clarendon Chambers
Clarendon Street
Nottingham
NG1 5LN

CONTENTS		Page
1	Introduction	3
	Option development flow chart	5
2	The Option Identification Process	6
3	Initial Options for testing	7
4	The way forward	10
	Appendix 1 Worked example	11
	Appendix 2 Summary of the Initial Options	12
	Appendix 3 Tables each listing Schemes allocated to each Strategy	
	Appendix 4 Schemes included in and excluded from each Option	

Note: This Revision 1 of the Working Paper has been amended from the first version:

a) to check the allocations and listings in Appendices 3 and 4 and to improve their presentation.

b) To further explain the selection of Options for Initial Testing

1. Introduction

1.1 Purpose of Paper

This Working Paper has been prepared to outline the identification of an initial set of Options for testing using the transportation model. Prior to this paper it has been envisaged that the initial tests would comprise:

- At least one Option (package) for each of the Strategy Concepts I to IV
- Key Indicative Schemes for individual testing where it is considered crucial to identify the role/contribution of a particular intervention.

1.2 Approach

The overall approach to Option development and appraisal methodology has been outlined in the PMG Briefing Note No. 3 and has not been repeated here.

The process that identifies the first Options for testing is illustrated in Figure 1. This starts by reference to the Long List of Interventions circulated previously and its reduction by coarse sifting, identification of Indicative Schemes, and the production of the Scheme Position Statement (which was also recently circulated).

The four stages comprise:

- Input of Strategy definition and Scheme Position Statement
- Allocation of Schemes to Strategies and then to Option Packages
- Select initial Options for testing
- Finalise Test specifications.

1.3 Strategy concepts

The following Strategy concepts have evolved from earlier assessments:

- I Maximum utilisation of existing infrastructure
including removal of bottlenecks
- II Maximum use of public transport and walk/cycle modes
including management of demand and mode choice

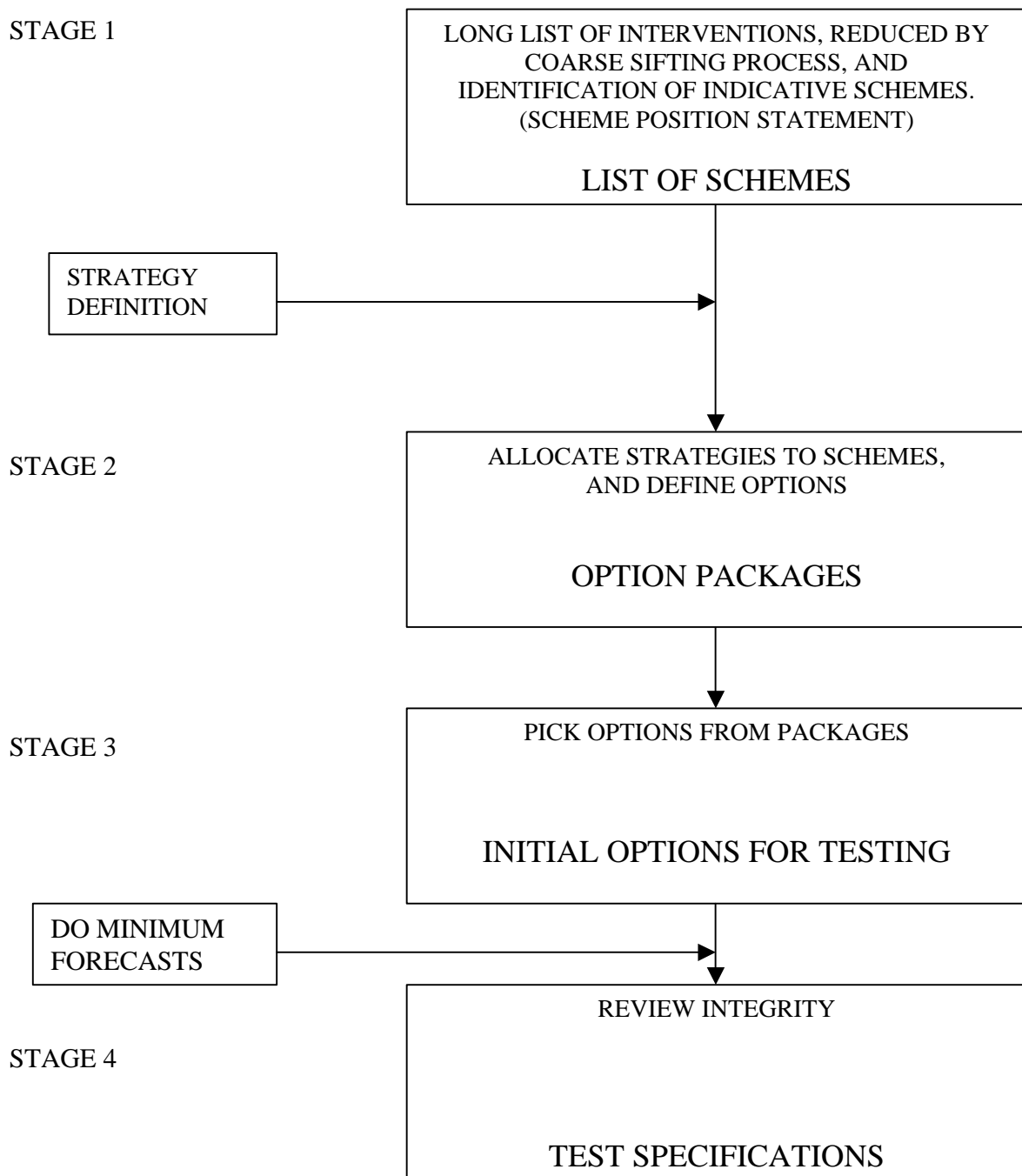
- III Encourage mode choice within corridor
including conventional demand management and mode choice
- IV Improve Highway Capacity
including major highway schemes.

These four concepts are intended to form a basis for grouping and testing the Options. The process will be partly iterative and could lead to refinement or modification of the strategies before completing the tests.

1.4 Further concepts

Further concepts, or modifications of the above, may be tried out during the successive testing, assessment, and refinement of Options.

Figure 1 Option Development Flowchart



2 The Option Identification Process

2.1 Having built up the long list of schemes and established strategies, there has to be a sorting process to arrange the information in an orderly way. Schemes from the long list must be grouped into a smaller number of Options in order to form a manageable task.

2.2 An example of a scheme going through this process is shown in **appendix 1**, and the first Options are summarised in the table at **appendix 2**. The approach taken to sorting has been done in two steps:

First: consider each scheme under each category and allocate it to a strategy if it has a contribution to make. This results in basic lists of schemes under strategies which may be found in **appendix 3**. To start with the different levels of intervention are noted, to be referred back to later when reviewing and further developing the Options.

Second: look, within the framework of each strategy, at:

- a) Compatibility. Some schemes are incompatible and would definitely not be implemented together.
- b) Synergy. Some schemes would offer greater benefits if implemented together.
- c) Prominence. Some schemes would alone have relatively large effects.
- d) Rationalisation. Grouping of schemes may reveal some that are no longer needed to achieve the overall objective, or that should be amalgamated with others.
- e) Suspension. A few schemes either cannot be pursued further or have to be considered separately from the main modelling based testing of the Study. Separate reports on scheme suspensions identify them and set out the reasons.

2.3 Tables showing the preliminary selection of schemes for inclusion in possible Options for a first round of testing are given in **appendix 4**.

2.4 Although the process aims to be as objective as possible a degree of judgement has to be applied in packaging schemes together into options. The number of Options that can be accommodated in the first round of tests is about 10. A nominal 2 Options under each strategy has therefore been sought.

More refined Options may involve groups of schemes from more than one strategy. Many schemes identified have aims that support several strategies.

2.5 The Options are all established relative to the Do-Minimum situation, which is set out in Working Paper No 14. The Do Minimum schemes are intended to form the baseline against which Options in the forecast years of 2011 and 2021 will be compared.

3 Initial Options for Testing

The Options and schemes comprising them are shown in **appendix 4**. Each Option is considered in the following paragraphs.

3.1 Options from Strategy 1 - Maximum utilisation of the existing infrastructure.

Option 1 Aims to maximise transport capacity by utilising existing infrastructure and improving bottlenecks. The strategy naturally leads to Options consisting of

- a) a collection of relatively small scale works at various locations where the infrastructure is at its limit
- b) improved services.

It looks for opportunities to increase capacity in all modes, and includes relatively small scale improvements to the heavy rail and highways infrastructures.

A single Option emerges fairly clearly: All the contributing schemes should be included at the initial stage as there is no reason to exclude any. Later review of integrity (ref. Option Flowchart, WP 17) in the Option development process should show up any illogicalities. The most significant limit to be considered is the size of schemes changing the infrastructure.

For heavy rail, the Trent PSB Area Upgrade: B3, and Local Stations at Sandiacre, Wollaton, Beechdale, and Faraday Road: B12, are included as fitting the strategy, whereas the Redevelopment of Nottingham Station: B15 is excluded as being major new infrastructure. For highways, schemes such as Improvements to bottlenecks such as Crusader roundabout: F8, and bus lanes: (various) are included, but all dual carriageway schemes are excluded.

3.2 Options from Strategy II - Maximum use of Public Transport and walk/cycle modes, with innovative demand management

There are two aspects to this strategy, one concerning mode change, and the other demand management, leading to two initial Options.

Creating Initial Options is straightforward as all the allocated schemes can be included except one very obvious duplication of LRT to the Airport (schemes C5:the NET version, defers to C8). The demand management measures are easily identified and grouped.

Option IIa Aims to manage travel behaviour and encourage mode change (away from private car and road freight) at a major intervention level. It uses all measures available to provide transport by other modes, including NET light rail schemes, heavy rail and bus schemes, pedestrian and cycle schemes.

Option IIb Aims to manage travel behaviour and encourage mode change at a major intervention level whilst restraining the demand for travel. It uses all measures available as Option IIa to provide transport by other modes, including NET light rail schemes, heavy rail and bus schemes, pedestrian and cycle schemes, but adds fiscal, regulatory and information measures to restrain travel.

3.3 Options from Strategy III - Encourage Mode Choice in the corridor by conventional demand management

This strategy implies compromise because conventionality suggests subjective external limits on measures come into play. There is less clarity in deriving Initial Options. However, the principle of excluding only with clear reasons helps to make the selections.

The main feature is to exclude NET extensions as being a radical measure for Strategy II. They could qualify for this strategy later in the process if the model tests support them. However, they are in Options IIa and IIb, and it is of greater value to also test mode changing Options without them.

Without NET schemes the main transport modes besides private cars and road freight are buses and heavy rail. Together with established management and restraint measures they form a rational basis for two Options.

Option IIIa Aims to achieve mode choice and mode change with improvements to infrastructure and levels of service for established public transport modes.

- It includes measures to assist buses, pedestrian and cycle schemes, and the lower level interventions improving heavy rail infrastructure.
- Option IIIb Adds more rail infrastructure to Option IIIa.

3.4 Options from Strategy IV - Improve Highway Capacity

As might be expected, a number of schemes under this strategy have large transport impacts either individually or in complementary pairs or groups. Some will have similar strategic transport impacts to others at least at the early part of the appraisal process e.g. the western and eastern versions of the A453 Clifton Bypass. Only one needs to be an initial Option.

- Option IVa As the main scheme extant from the Highways Agency's previous proposals for A453 the Study is required to assess the A453 dualling with on-line scheme in cutting through Clifton. This Option can be referred to as the A453 Clifton Red Route.
- Option IVb For initial tests there is more value in assessing improvement of the whole length of A453 from M1 J24 than just either the rural or the Clifton sections separately.
- Option IVc The scheme for a new road between M1 J24 and the A46 north of Widmerpool is a major new feature distinct from other highway schemes identified in earlier studies.

Further individual scheme for initial testing

- Option LRT to East Midlands Airport with Maximum park and ride. As NET schemes currently have a high status and were strongly featured in responses in the Consultations for the Study it would be useful to assess this group of schemes as a free standing proposal early in the appraisal process.

4 Short listing for Test

The following strategies are commended for the first round of tests:

Options Ia, I Ib, IIIb, IVb, IVc

Schemes: A453 Clifton Red Route, LRT to East Midlands Airport with Maximum Park and Ride

The logic behind the selection of these options for the initial tests is summarised below, recognising the principle of at least one test under each strategy. For strategy I, Option 1 is the only Option currently defined. Under strategy II Option IIb represents

a slightly more extreme specification than IIa, and is preferred for that reason within this strategy concept.

Three Options are available within the concept of strategy III. The addition of heavy rail stations schemes (Option IIIb), is a reasonable extension of the basic strategy, and is the preferred one at this stage. Option IIIb includes concepts which may be better associated with strategy II.

Highway proposals for the A453 corridor have been well defined during previous studies and which ones to adopt as the initial mainstream choice for testing is less clear. Clifton bypass alternatives group naturally into the north/west alignment represented basically by the Green route, and the south/east alignments by the Yellow route. The Red route represents on line improvements. Option IVc is a more radical alternative.

Without seeking to exclude others from later testing we recommend testing this one because of its radical nature, and a full model run for IVb, the Yellow route in combination with highway improvement to M1 J24, with a subsidiary highway reassignment test which will assess the Red route.

Previous public commitments have been given to testing an extension of NET to East Midlands Airport in combination with substantial P+R provision.

The groups' endorsement of these recommendations is requested.

5 The Way Forward

4.1 Further development

Prior to testing further, consideration will be given to the need for low level intervention schemes from other classifications to be added to the core option package to produce a workable option. This may be further refined when first assignments are obtained.

APPENDIX 1

Example of a scheme allocation to an Option

This is an example of how Appendix 3 works

Scheme E4 from the long list.

Contribution to strategies:

Ref no	Scheme title/description	Strategy and intervention level (H=high,L=low)				Do minimum				
		I		II			III		IV	
		H	L	H	L		H	L	H	L
E4	A453 M1 to Clifton single carriageway with at grade junctions	Yes	Yes	No	No	No	Yes	No	Yes	No

Strategy (I to IV)

Intervention level (High or Low).

E4 is not a Do minimum scheme

Yes, E4 can be a high or a low intervention scheme under this strategy

Reasoning:

SI - The A453 M1 to Clifton is part of the existing infrastructure.

At grade junction improvements can increase capacity and remove bottlenecks.

Larger expansion of the A453 would move it into Strategy IV: expansion of highway capacity.

Strategy I leads to only one distinct intervention level and one Option (ref.para 4.2.1)

SII - The scheme does not fit the maximum management/mode change strategy.

SIII - Strategy III assumes expansion in transport.

E4 represents a low intervention scheme in an overall management/mode change package.

It complements management schemes in the package by helping buses and other journeys not making the mode change away from private road traffic.

SIV - The scheme fits the strategy of highway capacity, but only at low intervention level. When compared with the other highway schemes this one represents a very low intervention. In reducing the number of Options it will be omitted.

Strategy	Option	
Utilisation	I	Maximising capacity utilising existing infrastructure and removing bottlenecks.
Management and mode change major	IIa	Managing travel behaviour and encouraging mode change at major intervention level whilst expanding transport capacity, including NET extensions.
	IIb	Managing travel behaviour and encouraging mode change at major intervention level whilst restraining the demand for travel.
Management and mode change minor	IIIa	Managing travel behaviour and encouraging mode change at minor intervention level.
	IIIb	As option 2 but with more investment in local rail network
Highway expansion	IVa	Using existing A453 corridor with dualling schemes.
	IVb	Using A453 corridor and a Clifton eastern bypass with dualling.
	IVc	A new single or dual carriageway route between M1 J24 and A46 north of Widmerpool.



APPENDIX 3

**A4 Tables each listing Schemes allocated
to each Strategy**

Revision 1 4/7/01



Strategy I Maximum utilisation of existing infrastructure

A453 MULTI MODAL

II Management and mode change major

III Management and mode change minor

IV Expansion of Highway Capacity

ALLOCATIONS OF SCHEMES BY LEVEL OF

INTERVENTION

Ref No	Scheme Title / Description	Strategy Intervention level				Confidence of allocation	Reasons (aims of scheme) for including in strategy
		I HL	II HL	III HL	IV HL		

B1	New station at East Midlands Parkway					!	Do minimum scheme
B2	Replacement rolling stock (additional seats) (a) MML (b) Central Trains						
B3	Trent PSB Area Upgrade (resignalling and track changes)						
B4	New station at Ilkeston	NN	YN	YY	NN		Significant new infrastructure,
B5	Car parking at Local Stations	YY	YY	YY	NN		Enhances existing facility
B6	New service from Parkway to Nottingham	YY	YY	YY	NN		Enhances existing facility
B7	Facilities for local P&R at Parkway Station	YY	YY	YY	NN		Enhances existing facility
B8	Increased frequency/train capacity between Nottingham and Derby						
B9	Upgrades of Local Stations to "Modern facilities at Stations" standards	YN	YN	YY	NN		Enhances existing facility
B10	Pedestrian link from Nottingham Station footbridge to NET terminus						
B11	Extension of real time passenger information at all stations	YY	YN	YY	NN		Enhances existing facility

II Management and mode change major

III Management and mode change minor

IV Expansion of Highway Capacity

ALLOCATIONS OF SCHEMES BY LEVEL OF

INTERVENTION

Ref No	Scheme Title / Description	Strategy Intervention level				Confidence of allocation	Reasons (aims of scheme) for including in strategy
		I H L	II H L	III H L	IV H L		
B12	Other local rail stations as per Notts LTP (except Long Eaton Central) (a) Sutton Bonnington (b) Sandiacre (c) Wollaton, Beechdale and Faraday Road	YN	YY	NN	NN		Uses existing rail line
B13	Additional platform at Nottingham station and station enhancements	YN	YY	YY	NN		Improves performance of existing station
B14	Introduction of multi-mode / smartcard ticketing ¹	YN	YY	YY	NN		Improves performance of all PT modes
B15	Redevelopment of Nottingham Station	NN	YY	YN	NN		Significant new infrastructure
B16	Upgrade to Castle Donington Line (to allow passenger services to Birmingham)	NN	YN	NN	NN		Significant new infrastructure
B17	Park and Ride service to Gedling	NN	YN	NN	NN		Significant new infrastructure
B18	New Nottingham to Melton Mowbray Service via Test Track	NN	YN	NN	NN		Significant new infrastructure
B19	New Rail Station at Long Eaton Central (including track modifications)	NN	NN	YY	NN		Significant new infrastructure
B20	New train service via Long Eaton Central to Nottingham	NN	YY	YN	NN		Dependent on B19
B21	Electrification of Midland Mainline						Recommended for suspension
B22	Four tracking of midland Mainline						Recommended for suspension
B23	Increase loading gauge on Midland routes 9 to W9 or W10)						Recommended for suspension
B24	Rail link between Parkway station (MML) and EMA						Recommended for suspension
C1	Completion of NET line 1					Y	

II Management and mode change major

III Management and mode change minor

IV Expansion of Highway Capacity

ALLOCATIONS OF SCHEMES BY LEVEL OF

INTERVENTION

Ref No	Scheme Title / Description	Strategy Intervention level				Confidence of allocation	Reasons (aims of scheme) for including in strategy
		I H L	II H L	III H L	IV H L		
C2	NET extension to Clifton a) Wilford Route b) Queens Drive Route	NN NN	YN YN	NN NN	NN NN		Significant new infrastructure and mode
C3	Creation of NET/Bus/Rail Interchanges	YN	YN	NN	NN		Enhances service if built
C4	NET extension to Beeston a) Via Queens Drive b) Via University c) Combined with Clifton Line	NN NN NN	YN YN YN	NN NN NN NN	NN NN NN		Significant new infrastructure and mode
C5	Stand-alone Light Rail Shuttle between Parkway Station and EMA	NN	YN	NN	NN		Significant new infrastructure and mode
C6	NET extension from Clifton to Parkway	NN	YN	NN	NN		Significant new infrastructure and mode
C7	P&R at Parkway for NET users	NN	YN	NN	NN		Dependent on C5,C6,C8
C8	NET extension from Parkway to EMA	NN	YN	NN	NN		Significant new infrastructure and mode
D1	Outbound bus lane on Farnborough Road	YY	YY	YY	NN		Improves bus performance
D2	Bus priorities at Clifton Lane/Farnborough Road junction	YY	YY	YY	NN		Improves bus performance
D3	Shuttle Bus from Parkway to EMA	YN	YN	YN	NN		Enhances user Appeal of Parkway Station
D4	Bus priority at Junction 24 (for EMA to East Midlands Parkway shuttle)	YN	YN	YN	NN		Improves performance of planned bus service
D5	Selected improvements in service frequency and timings	YY	YY	YY	NN		Improves performance of existing bus service
D6	Changes to bus fare structure / level	YY	YN	YN	NN		Improves performance of existing bus service
D7	NET/bus interchanges on Ring Road core route	YN	YN	YN	NN		Improves efficiency of existing/planned services

II Management and mode change major

III Management and mode change minor

IV Expansion of Highway Capacity

ALLOCATIONS OF SCHEMES BY LEVEL OF

INTERVENTION

Ref No	Scheme Title / Description	Strategy Intervention level				Confidence of allocation	Reasons (aims of scheme) for including in strategy
		I H L	II H L	III H L	IV H L		
D8	Extension of Real-time Passenger Information System	YY	YY	YY	NN		Improves appeal of PT services
D9	Introduction of guided bus technology (a) Clifton Lane eastbound approach to Crusader Roundabout Clifton Lane eastbound approach to Farnborough Road signals (b) Ring Road locations						Recommended for suspension
D10	Bus route modifications (a) more cross-city routes (b) city centre circuit for P&R buses (c) route serving Clifton Village	YY YY YY	YY YY YY	YY YY YY	NN NN NN		a) and b) recommended for suspension c) extends catchment
D11	Integration of NET and Bus services	YY	YY	YY	NN		Improves efficiency of NET/bus services
D12	Improved marketing Initiatives(multi-mode)	YY	YY	YY	NN		Improves attraction to existing services
D13	Bus-based P&R adjacent to M1	NN	YN	YN	NN		Major new build
D14	Renewal of bus fleet	NN	YN	YN	NN		Borderline case, but not directly utilisation
D15	Express bus service between Kegworth and Nottingham	NN	YN	YN	NN		More mode change than maximisation
D16	Improve bus links to East Midlands Airport	NN	YN	YN	NN		More mode change than maximisation
D17	Improve bus services along the whole east to west length of the A453	NN	YN	YN	NN		More mode change than maximisation
D18	Better integration of bus and rail services	YY	YY	YY	NN		Improves efficiency of rail/bus services for passengers
E1	M1 to Clifton Dual Carriageway with at grade junctions	NN	NN	NN	YY		Major new infrastructure
E2	M1 to Clifton Dual Carriageway with grade separated junctions	NN	NN	NN	YY		Major new infrastructure

II Management and mode change major

III Management and mode change minor

IV Expansion of Highway Capacity

ALLOCATIONS OF SCHEMES BY LEVEL OF

INTERVENTION

Ref No	Scheme Title / Description	Strategy Intervention level	I	II	III	IV	Confidence of allocation	Reasons (aims of scheme) for including in strategy
			H L	H L	H L	H L		
E3	M1 to Clifton Single Carriageway with grade separated junctions	NN	NN	NN	YY		Major new infrastructure	
E4	M1 to Clifton Single Carriageway with at grade junction improvements	YY	NY	NN	NY		Aims to increase capacity but involves relatively minor infrastructure change	
E5	A453 Clifton By-pass Dual Carriageway on existing alignment mostly in cutting (Red route)	NN	YN	NN	YY		Major new infrastructure	
E6	A453 Clifton By-pass Dual Carriageway on existing alignment in cut and cover/ tunnel						Recommended for suspension	
E5.5	A453 Clifton Dual carriageway on red route with longer bridges and less severance	NN	YN	NN	YY		Major new infrastructure	
E7	A453 Clifton Improvement single carriageway with minor junction improvements/restrictions	YY	YY	NN	NN		Maximises capacity of existing highway	
E8	A453 Clifton By-pass Green route	NN	YN	NN	NN		Major new infrastructure	
E9	A453 Clifton By-pass Yellow route	NN	YN	NN	NN		Major new infrastructure	
E10	A453 Clifton By-pass Purple route						Recommended for suspension	
E11	A453 Clifton By-pass Grey route						Recommended for suspension	
E12	A453 Clifton By-pass Blue route	NN	NN	NN	YN		Major new infrastructure	
E13	M1 Junction 24 Improvement, major changes to the road layout	NN	NN	NN	YY		Major new infrastructure	
E14	M1 Junction 24 Improvement, traffic management measures	YY	NN	NN	NY		Maximises capacity of existing highway	
E15	Dual A453 between M1 and Clifton but with a bus only lane between M1 and the new Ratcliffe on Soar Parkway station	NN	NN	*	*		Does not fully fit any strategy, but can be assessed separately	

II Management and mode change major

III Management and mode change minor

IV Expansion of Highway Capacity

ALLOCATIONS OF SCHEMES BY LEVEL OF

INTERVENTION

Ref No	Scheme Title / Description	Strategy Intervention level	I	II	III	IV	Confidence of allocation	Reasons (aims of scheme) for including in strategy
			H L	H L	H L	H L		
E16	Measures / schemes on corridors adjacent to A453		YN	NN	NN	NY		Various allocations possible depending on details and purpose of scheme. Maximising overall E-E capacity is one possible aim.
E17	Strategic route between A50 and A52 at Gamston (or maybe further east)		NN	NN	NN	YN		Major new infrastructure
E18	Construct a flyover at M1 J24 to relieve congestion problems							Recommended for suspension
E19	M1 Junction 24 to A46 Widmerpool		NN	NN	NN	YN		Major new infrastructure
E20	Provide access from M1 southbound to A46 at J21a							Recommended for suspension
E21	Provide access from A50 to M1 southbound at J24a							Recommended for suspension
E22	New link from A453 to M1 northbound at Donington Park J23a							Recommended for suspension
F1	Electronic Vehicle Guidance Systems							Recommended for suspension
F2	Reallocate capacity, car sharing (high occupancy lanes)		NN	NN	YY	NN		Aimed at mode change more than capacity
F3	Dedicated lanes							Recommended for suspension
F4	Variable speed limits		NN	YN	YN	NN		Borderline case but initially treated as Management tending to reduce/control road traffic
F5	Area Control (UTC system extended)		YY	YY	YY	NN		Improves capacity of existing highways
F6	Real time information (VMS, in vehicle guidance)		YN	NN	NN	NN		Avoids build up in bad conditions or crises
F7	Traffic Orders		YY	NN	NN	NN		Recommended for suspension (amalgamation with banned movements I6)

II Management and mode change major

III Management and mode change minor

IV Expansion of Highway Capacity

ALLOCATIONS OF SCHEMES BY LEVEL OF

INTERVENTION

Ref No	Scheme Title / Description	Strategy Intervention level	I	II	III	IV	Confidence of allocation	Reasons (aims of scheme) for including in strategy
			H L	H L	H L	H L		
F8	Improvements to bottlenecks such as Crusader roundabout	YN	NN	NN	NY			Improves highway capacity of existing highway
F9	Tidal flow scheme on section through Clifton with an extra lane built next to existing road to allow tidal flow to operate	NN	NN	NN	NY			Cannot be achieved without major construction and impact
F10	HGV bans (either forced to use A52 or A46, or banned during day time)	NN	YY	NN	NN			Traffic reduction measure (for A453)
F11	Minor works to improve the alternative A52,A46 and A606 routes	YN	NN	NN	NY			Provides extra capacity in existing highways for sharing
F12	Prioritise users of additional highway capacity with emergency services, public transport and freight operators highest and commuters, journeys to school/college by car lowest	NN	NN	YY	NN			More concerned with mode change than maximisation
F13	Impose a 50mph speed limit between M1 and City Boundary and 30mph between City boundary and the A52 ring road	YY	NY	NN	NN			Primarily concerned with reducing traffic impact but not flow
G1	Complete a separate network of facilities	NN	YN	YY	NN			G1 to G8 all primarily concerned with encouraging cycling
G2	Bike stops	NN	YN	NN	NN			
G3	Segregation of cycles from other road users (where problems experienced)	NN	YY	YY	NN			
G4	Safety improvements (e.g. special junction facilities)	NN	YY	NY	NN			
G5	Cycle loans	NN	YY	NN	NN			

II Management and mode change major

III Management and mode change minor

IV Expansion of Highway Capacity

ALLOCATIONS OF SCHEMES BY LEVEL OF

INTERVENTION

Ref No	Scheme Title / Description	Strategy Intervention level				Confidence of allocation	Reasons (aims of scheme) for including in strategy
		I H L	II H L	III H L	IV H L		
G6	Cycle Parks (in the City Centre, at rail station, bus stations and shopping centres)	NN	YY	YY	NN		
G7	Cycle Priority at junctions, and on approaches to junctions	NN	NN	YY	NN		Encourages cycling at some expense to overall highway capacity
G8	Signed cycle routes on existing roads	YY	NN	YY	NN		Improves attraction of cycling using existing roads
G9	Better surfaced paths	YY	YY	YY	NN		Improves attraction of cycling using existing paths
H1	Segregation of pedestrians from other road users	NN	NN	YY	NN		Not aligned with maximisation principle
H2	Improvements to safety and security, including better lighting and CCTV in remote locations such as Clifton Bridge and subways around Lenton Lane / Queens Drive area.	YY	YY	YY	NN		Encourages more use of paths
H3	Pedestrianisation	NN	YN	NN	NN		Not aligned with maximisation principle
H4	Pedestrian priority, including area wide traffic calming and more crossing facilities	NN	YN	YN	NN		Not aligned with maximisation principle
H5	School routes	NN	YY	YY	NN		Encourages safe walking and mode change
I1	Road user charges	NN	NN	YN	NN		Contradictory to maximisation
I2	Workplace parking levy	NN	YN	YY	NN		Contradictory to maximisation
I3	HGV restrictions (for example in Kegworth village)	NN	NY	YY	NN		Deterrent not aimed at maximisation
I4	Parking control	NN	YY	YY	NN		Deterrent not aimed at maximisation

II Management and mode change major

III Management and mode change minor

IV Expansion of Highway Capacity

ALLOCATIONS OF SCHEMES BY LEVEL OF

INTERVENTION

Ref No	Scheme Title / Description	Strategy Intervention level	I H L	II H L	III H L	IV H L	Confidence of allocation	Reasons (aims of scheme) for including in strategy
15	Parking charges (incl out of town business and retail parks)	NN	YY	NN	NN			Deterrent not aimed at maximisation
16	Ban certain movements	YY	NN	NN	NN			Improves main traffic flow
17	Legislative enforcement for people to leave their cars							Recommended for suspension
18	Extend the application of the Clear Zone concept, including time of day access restrictions and stretch emission standards	NN	YY	NN	NN			Contradictory to maximisation
19	Require links to be made between planning conditions and modal split targets/ traffic quotas	NN	YY	NN	NN			Contradictory to maximisation
J1	Re structure commodity supply							Recommended for suspension
J2	Transshipment depots	NN	YN	NN	NN			Overall aim is to reduce road traffic
J3	Expand subsidy	NN	NN	NN	YY			Measure to assist freight – independent of any capacity or utilisation issue
J4	Dedicated routes	NN	NN	NN	YY			Significant new infrastructure
J5	Railheads / sidings (both reopening of disused and opening of new facilities)	NN	YN	NN	NN			Aimed at removing road freight to rail
J6	Market forces							Recommended for suspension
J7	Designated routes	NN	NY	NY	NN			Concerned with reducing impact of HGVs
J8	Taxation							Recommended for suspension
J9	Possible shared use of bus lanes by HGV's	YN	YN	YN	NN			Improves freight journeys within existing highways



Strategy I Maximum utilisation of existing infrastructure

A453 MULTI MODAL

II Management and mode change major

III Management and mode change minor

IV Expansion of Highway Capacity

ALLOCATIONS OF SCHEMES BY LEVEL OF

INTERVENTION

Ref No	Scheme Title / Description	Strategy Intervention level				Confidence of allocation	Reasons (aims of scheme) for including in strategy
		I H L	II H L	III H L	IV H L		
K1	Legislation						Recommended for suspension
K2	Education	NY	NY	NY	NN		Promotes better journey planning and driving skills
K3	Integration						Recommended for suspension
K4	Green Commuter Plans	NN	YY	YY	NN		Traffic reduction measure
K5	Environmentalists						Recommended for suspension
K6	Information	NN	YY	YY	NN		Primary aim is awareness of travel impact and improving mode choice
K7	Public transport subsidies	NN	YY	YN	NN		Aims to reduce private car traffic
K8	Reduced cost of public transport and perhaps free buses	NN	YN	NN	NN		Aims to reduce private car traffic
K9	Fuel price, vehicle excise duty , tolling and taxation	NN	YN	YN	NN		Contradictory to maximisation



APPENDIX 4

Schemes included in and excluded from each Option

Revision 1 4/7/01

Scheme list A5.1.1 – Preliminary Strategy I (Maximum utilisation of existing infrastructure)

B: Heavy Rail schemes	
B2	Replacement rolling stock (additional seats) b) Central Trains
B3	Trent PSB Area Upgrade (resignalling and track changes)
B5	Car parking at Local Stations
B6	New service from Parkway to Nottingham
B7	Facilities for local P&R at Parkway Station
B8	Increased frequency /train capacity between Nottingham and Derby
B9	Upgrades of Local Stations to "Modern facilities at Stations" standards
B11	Extension of real time passenger information at all stations
B12	Other local rail stations as per Notts LTP (except Long Eaton Central) b) Sandiacre c) Wollaton, Beechdale and Faraday Road
B13	Additional platform at Nottingham station and station enhancements
B14	Introduction of multi-mode / smartcard ticketing
C: Light Rail schemes	
C3	Creation of NET/Bus/Rail Interchanges
D: Bus schemes	
D2	Bus priorities at Clifton Lane/Farnborough Road junction
D4	Bus priority at Junction 24 (for EMA to East Midlands Parkway shuttle)
D5	Selected improvements in service frequency and timings
D6	Changes to bus fare structure / level
D7	NET/bus interchanges on Ring Road core route
D8	Extension of Real-time Passenger Information System
D10	Bus route modifications (d) more cross-city routes (e) city centre circuit for P&R buses (f) route serving Clifton Village
D11	Integration of NET and Bus services
D12	Improved marketing Initiatives(multi-mode)
D18	Better integration of bus and rail services
E: Highway schemes	
E4	M1 to Clifton Single Carriageway with at grade junction improvements
E7	A453 Clifton Improvement single carriageway with minor junction improvements/restrictions
E14	M1 Junction 24 Improvement, traffic management measures
F: Traffic management schemes	
F5	Area Control (UTC system extended)
F6	Real time information (VMS, in vehicle guidance)
F8	Improvements to bottlenecks such as Crusader roundabout
F11	Minor works to improve the alternative A52,A46 and A606 routes
F13	Impose a 50mph speed limit between M1 and City Boundary and 30mph between City boundary and the A52 ring road
G: Cycle schemes	
G8	Signed cycle routes on existing roads
G9	Better surfaced paths
H: Pedestrian schemes	
H2	Improvements to safety and security, including better lighting and CCTV in remote locations such as Clifton Bridge and subways around Lenton Lane / Queens Drive area.
I: Demand management schemes	
I6	Ban certain movements
J: Freight schemes	
J9	Possible shared use of bus lanes by HGV's
K: Travel behaviour schemes	
K2	Education

**Scheme List A5.1.2 Preliminary Strategy II (Maximum Management and Mode Change)
Lists of all schemes making up these options**

Ref No	Scheme Title / Description
Option IIa Maximum mode change	
B2	Replacement rolling stock (additional seats) b) Central Trains
B3	Trent PSB Area Upgrade (resignalling and track changes)
B4	New station at Ilkeston
B5	Car parking at Local Stations
B6	New service from Parkway to Nottingham
B7	Facilities for local P&R at Parkway Station
B8	Increased frequency /train capacity between Nottingham and Derby
B9	Upgrades of Local Stations to "Modern facilities at Stations" standards
B11	Extension of real time passenger information at all stations
B12	Other local rail stations as per Notts LTP (except Long Eaton Central) (d) Sutton Bonnington (e) Sandiacre (f) Wollaton, Beechdale and Faraday Road
B13	Additional platform at Nottingham station and station enhancements
B14	Introduction of multi-mode / smartcard ticketing
B15	Redevelopment of Nottingham Station
B16	Upgrade to Castle Donington Line (to allow passenger services to Birmingham)
B17	Park and Ride service to Gedling
B18	New Nottingham to Melton Mowbray Service via Test Track
B19	New Rail Station at Long Eaton Central (including track modifications)
B20	New train service via Long Eaton Central to Nottingham
C: Light Rail Schemes	
C2	NET extension to Clifton c) Wilford Route OR d) Queens Drive Route
C3	Creation of NET/Bus/Rail Interchanges
C4	NET extension to Beeston d) Via Queens Drive OR e) Via University f) Combined with Clifton Line
C6	NET extension from Clifton to Parkway
C8	NET extension from Parkway to EMA
D: Bus schemes	
D2	Bus priorities at Clifton Lane/Farnborough Road junction
D4	Bus priority at Junction 24 (for EMA to East Midlands Parkway shuttle)
D5	Selected improvements in service frequency and timings
D6	Changes to bus fare structure / level
D7	NET/bus interchanges on Ring Road core route
D8	Extension of Real-time Passenger Information System
D10	Bus route modifications (g) more cross-city routes (h) city centre circuit for P&R buses (i) route serving Clifton Village
D11	Integration of NET and Bus services
D12	Improved marketing Initiatives(multi-mode)
D13	Bus-based P&R adjacent to M1
D14	Renewal of bus fleet
D15	Express bus service between Kegworth and Nottingham
D16	Improve bus links to East Midlands Airport
D17	Improve bus services along the whole east to west length of the A453
D18	Better integration of bus and rail services
F: Traffic management schemes	
F2	Reallocate capacity, car sharing (high occupancy lanes)
G: Cycle schemes	

G1	Complete a separate network of facilities
G2	Bike stops
G3	Segregation of cycles from other road users (where problems experienced)
G4	Safety improvements (e.g. special junction facilities)
G6	Cycle Parks (in the City Centre, at rail station, bus stations and shopping centres)
G7	Cycle Priority at junctions, and on approaches to junctions
G9	Better surfaced paths
H: Pedestrian schemes	
H1	Segregation of pedestrians from other road users
H2	Improvements to safety and security, including better lighting and CCTV in remote locations such as Clifton Bridge and subways around Lenton Lane/Queens Drive area.
H3	Pedestrianisation
H5	School routes
I: Demand management schemes	
I1	Road user charges
I2	Workplace parking levy
I3	HGV restrictions (for example in Kegworth village)
I4	Parking control
I8	Extend the application of the Clear Zone concept, including time of day access restrictions and stretch emission standards
J: Freight schemes	
J5	Railheads / sidings (both reopening of disused and opening of new facilities)
J7	Designated routes
K: Travel behaviour schemes	
K2	Education
K4	Green commuter plans
K6	Information
K7	Public transport subsidies
K8	Reduced cost of public transport and perhaps free buses
Option IIb Maximum mode change with Restraint As option IIa but add:	
F: Traffic management schemes	
F4	Variable speed limits
F10	HGV bans (either forced to use A52 or A46, or banned during day time)
F12	Prioritise users of additional highway capacity with emergency services, public transport and freight operators highest and commuters, journeys to school/college by car lowest
I: Demand management schemes	
I5	Parking charges (including out of town business and retail parks)
I9	Require links to be made between planning conditions and modal split targets/ traffic quotas
J2	Transshipment depots
K: Travel behaviour schemes	
K9	Fuel price, vehicle excise duty, tolling and taxation
Option IIIc More Control As option a but add:	
I: Demand management schemes	
I2	Workplace parking levy
I4	Parking control
K: Travel Behaviour schemes	
K2	Education
K4	Green Commuter Plans
K6	Information
K7	Public transport subsidies
K8	Reduced cost of public transport and perhaps free buses
K9	Fuel price, vehicle excise duty, Tolling and Taxation

**Scheme List A5.1.3 Preliminary Strategy III (moderate management and mode change)
Lists of all schemes making up these options**

Ref No	Scheme Title / Description Option IIIa
B: Heavy Rail schemes	
B5	Car parking at Local Stations
B6	New service from Parkway to Nottingham
B7	Facilities for local P&R at Parkway Station
B9	Upgrades of Local Stations to "Modern facilities at Stations" standards
B11	Extension of real time passenger information at all stations
B13	Additional platform at Nottingham station and station enhancements
B14	Introduction of multi-mode / smartcard ticketing ²
B15	Redevelopment of Nottingham Station
B16	Upgrade to Castle Donington Line (to allow passenger services to Birmingham)
C: Light Rail schemes	
C3	Creation of NET/Bus/Rail Interchanges
D: Bus schemes	
D2	Bus priorities at Clifton Lane/Farnborough Road junction
D4	Bus priority at Junction 24 (for EMA to East Midlands Parkway shuttle)
D5	Selected improvements in service frequency and timings
D6	Changes to bus fare structure / level
D7	NET/bus interchanges on Ring Road core route
D8	Extension of Real-time Passenger Information System
D10	Bus route modifications (j) route serving Clifton Village
D11	Integration of NET and Bus services
D12	Improved marketing Initiatives(multi-mode)
D13	Bus-based P&R adjacent to M1
D14	Renewal of bus fleet
D15	Express bus service between Kegworth and Nottingham
D16	Improve bus links to East Midlands Airport
D17	Improve bus services along the whole east to west length of the A453
D18	Better integration of bus and rail services
E: Highway schemes	
E4	M1 to Clifton Single Carriageway with at grade junction improvements
E7	A453 Clifton Improvement single carriageway with minor junction improvements/restrictions
F: Traffic management schemes	
F5	Area Control (UTC system extended)
F13	Impose a 50mph speed limit between M1 and City Boundary and 30mph between City boundary and the A52 ring road
G: Cycle schemes	
G1	Complete a separate network of facilities
G3	Segregation of cycles from other road users (where problems experienced)
G4	Safety improvements (e.g. special junction facilities)
G6	Cycle Parks (in the City Centre, at rail station, bus stations and shopping centres)
G7	Cycle priority at junctions and on approach to junctions
G8	Signed cycle routes on existing roads
G9	Better surfaced paths
H: Pedestrian schemes	
H1	Segregation of pedestrians from other road users
H2	Improvements to safety and security including better lighting and CCTV in remote locations such as Clifton Bridge and subways around Lenton Lane/Queens Drive area
H5	School routes

Ref No	Scheme Title / Description Option IIIa
B: Heavy Rail schemes	
B5	Car parking at Local Stations
B6	New service from Parkway to Nottingham
B7	Facilities for local P&R at Parkway Station
B9	Upgrades of Local Stations to "Modern facilities at Stations" standards
B11	Extension of real time passenger information at all stations
B13	Additional platform at Nottingham station and station enhancements
B14	Introduction of multi-mode / smartcard ticketing ²
B15	Redevelopment of Nottingham Station
B16	Upgrade to Castle Donington Line (to allow passenger services to Birmingham)
C: Light Rail schemes	
C3	Creation of NET/Bus/Rail Interchanges
D: Bus schemes	
D2	Bus priorities at Clifton Lane/Farnborough Road junction
D4	Bus priority at Junction 24 (for EMA to East Midlands Parkway shuttle)
D5	Selected improvements in service frequency and timings
D6	Changes to bus fare structure / level
D7	NET/bus interchanges on Ring Road core route
D8	Extension of Real-time Passenger Information System
D10	Bus route modifications (j) route serving Clifton Village
D11	Integration of NET and Bus services
D12	Improved marketing Initiatives(multi-mode)
D13	Bus-based P&R adjacent to M1
D14	Renewal of bus fleet
D15	Express bus service between Kegworth and Nottingham
D16	Improve bus links to East Midlands Airport
D17	Improve bus services along the whole east to west length of the A453
D18	Better integration of bus and rail services
E: Highway schemes	
E4	M1 to Clifton Single Carriageway with at grade junction improvements
E7	A453 Clifton Improvement single carriageway with minor junction improvements/restrictions
F: Traffic management schemes	
F5	Area Control (UTC system extended)
F13	Impose a 50mph speed limit between M1 and City Boundary and 30mph between City boundary and the A52 ring road
G: Cycle schemes	
G1	Complete a separate network of facilities
G3	Segregation of cycles from other road users (where problems experienced)
G4	Safety improvements (e.g. special junction facilities)
G6	Cycle Parks (in the City Centre, at rail station, bus stations and shopping centres)
G7	Cycle priority at junctions and on approach to junctions
G8	Signed cycle routes on existing roads
G9	Better surfaced paths
H: Pedestrian schemes	
I: Demand management	
I3	HGV restrictions (for example in Kegworth village)
J: Freight schemes	
J7	Designated routes

OptionIIIb More rail investment As option a but add:	
B: Heavy Rail	
B2	Replacement rolling stock (additional seats) a) MML b) Central Trains
B3	Trent PSB Area Upgrade (resignalling and track changes)
B4	New station at Ilkeston
B8	Increased frequency /train capacity between Nottingham and Derby
OptionIIIc More Control As option a but add:	
I: Demand management schemes	
I2	Workplace parking levy
I4	Parking control
K: Travel Behaviour schemes	
K2	Education
K4	Green Commuter Plans
K6	Information
K7	Public transport subsidies
K8	Reduced cost of public transport and perhaps free buses
K9	Fuel price, vehicle excise duty, Tolling and Taxation

Scheme list A5.1.4 Preliminary Strategy IV; highway expansion

Lists of all schemes making up these options (All are E: Highway schemes)

Ref No	Scheme Title / Description
Option IVa Using ex. A453 corridor with dualling schemes	
E2	M1 to Clifton Dual Carriageway with grade separated junctions
E5.5	A453 Clifton Dual carriageway on red route with longer bridges and less severance
E13	M1 Junction 24 Improvement, major changes to the road layout
Option IVb Using A453 corridor and a Clifton eastern bypass with dualling	
E2	M1 to Clifton Dual Carriageway with grade separated junctions
E9	A453 Clifton bypass yellow route
E13	M1 Junction major improvement
Option IVc A new single or dual carriageway route between M1 J24 and A46 north of Widmerpool	
E19	Strategic route between M1 J24 and A46 north of Widmerpool