

Appendix A: Impact Assessment

Summary: Intervention & Options

Department / Agency: Highways Agency	Title: Impact Assessment of M1 Junctions 25 to 28 Controlled Motorway Scheme	
Stage: Final Proposal	Version: FINAL	Date: 12 January 2010
Related Publications: Consultation document		

Available to view or download at:

[<http://www.highways.gov.uk>]

Contact for enquiries: Andrew Hitch / Steve Wrenn

Telephone: 0121 6788039

What is the problem under consideration? Why is government intervention necessary?

The M1 between junctions 25 and 28 experiences high traffic volumes and significant congestion resulting in increased business costs and reduced mobility. In order to improve traffic flows the Highways Agency proposes to introduce Variable Mandatory Speed Limits on this section of the motorway network. Secondary legislation is required to implement this measure.

What are the policy objectives and the intended effects?

The objectives of the scheme are to reduce congestion; achieve best use of the existing road space; provide quicker, more reliable journey times; reduce the frequency and impact of accidents; and allow faster response times to incidents and reduce clear-up times.

What policy options have been considered? Please justify any preferred option.

Option 1: (Baseline) Do nothing. Dual 4 lane motorway with gantry mounted VMS.

Option 2: (Preferred) Introduction of Controlled Motorway Scheme with Variable Mandatory Speed Limits.

This policy aims to:

- Reduce congestion
- Provide more reliable journey times
- Reduce the frequency of accidents
- Reduce carbon emissions
- Reduce driver stress

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects? A period of monitoring and assessment will commence prior to commissioning and will continue for 12 months thereafter. The assessment will optimise the system to ensure that full benefits are achieved.

Ministerial Sign-off For SELECT STAGE Impact Assessments:

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister:

..... Date:

Summary: Analysis & Evidence

Policy Option:	Description: Impact Assessment of M1 Junctions 25 to 28 Controlled Motorway Scheme
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COSTS	ANNUAL COSTS	Description and scale of key monetised costs by 'main affected groups'		
	One-off (Transition) Yrs			
	£ 9.476 M	4	Installation =	£ 9.476 M
	Average Annual Cost (excluding one-off)		Maintenance =	£ 14.536 M
	£ 0.487 M	30	Indirect Tax Revenues =	£ 0.086 M
			Total Cost (PV)	£ 24.098 M
Other key non-monetised costs by 'main affected groups'				

BENEFITS	ANNUAL BENEFITS	Description and scale of key monetised benefits by 'main affected groups'		
	One-off Yrs			
	£ NA		Accident Saving =	£ 32.996 M
	Average Annual Benefit (excluding one-off)		Journey Time Reliability and Travel Time =	£ 17.582 M
	£ 1.693 M	30	Emissions =	£ 0.009 M
			Vehicle Operating Cost =	£ 0.213 M
			Total Benefit (PV)	£ 50.800 M
Other key non-monetised benefits by 'main affected groups'				
Increased driver information, reduced driver stress, reduced fuel usage, reduced noise pollution. Increased mobility for people and goods, leading to wider economic benefits.				

Key Assumptions/Sensitivities/Risks
 The impact assessment has compared controlled motorway using variable mandatory speed limits with the baseline widening scheme

Price Base Year 2002	Time Period Years 30	Net Benefit Range (NPV) £ NA	NET BENEFIT (NPV Best estimate) £ 26.702 M
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What is the geographic coverage of the policy/option?	M1 J25 to J28			
On what date will the policy be implemented?	2010			
Which organisation(s) will enforce the policy?	Police			
What is the total annual cost of enforcement for these organisations?	£ NA			
Does enforcement comply with Hampton principles?	Yes			
Will implementation go beyond minimum EU requirements?	N/A			
What is the value of the proposed offsetting measure per year?	£ NA			
What is the value of changes in greenhouse gas emissions?	£ NA			
Will the proposal have a significant impact on competition?	No			
Annual cost (£-£) per organisation (excluding one-off)	Micro	Small	Medium	Large
Are any of these organisations exempt?	No	No	NA	NA

Impact on Admin Burdens Baseline (2005 Prices)		(Increase - Decrease)	
Increase of	£ NA	Decrease of	£ NA
		Net Impact	£ NA

Key: Annual costs and benefits: Constant Prices (Net) Present Value

Evidence Base (for summary sheets)

Note: This proposal has been assessed against the guidance that DfT uses to assess proposals and is based on the same principles as other Impact Assessments but some presentational aspects may differ.

Background

The Highways Agency is proposing to implement regulations to introduce a Controlled Motorway Scheme involving variable mandatory speed limits on the M1 between Junctions 25 and 28. The Controlled Motorway Scheme will aim to deliver a number of positive benefits in the form of safer roads and more reliable journey times. These are:

- Making best use of the existing infrastructure
- Reduced congestion, increased throughput of traffic and improved journey time reliability
- Reduced traffic flow breakdown
- Reduced accidents
- Reduced carbon dioxide emissions

A Controlled Motorway Scheme has been operating successfully on the M25 between junctions 10 and 15 since 1995. Controlled Motorway Scheme has the following key features:

Gantries at regular spacing with lane specific Advanced Motorway Indicator signals;

Variable Message Signs to provide the latest driver travel information and provide advance warning of incidents;

Digital speed enforcement equipment to facilitate enforcement and manage compliance. The Highways Agency Digital Enforcement Camera System 2 (HADECS 2) will be used to enforce variable mandatory speed limits automatically;

A system where in-road vehicle detector loops will detect queuing traffic and set warning signals, plus a network of CCTV cameras to monitor traffic conditions;

Partnership with the Police;

Provision of Highways Agency Traffic Officers to ensure effective incident management; and

Incident response teams to remove obstructions, assist with traffic management and repair roadside infrastructure.

Business Need

The M1 motorway is a heavily used strategic route linking London with the East Midlands and the North. The section between J25 and J28 is particularly busy. The recorded 2006 Annual Average Daily Traffic (AADT) flows obtained from TRADS are summarised below.

M1 Section	Northbound	Southbound	2-way AADT
J25-J26	60,046	60,168	120,214
J26-J27	57,256	57,683	114,939
J27-J28	56,242	55,812	112,054

The addition of the Controlled Motorway to the current widening scheme will primarily benefit the economy as a result of reduced congestion and improved accessibility to the region. In particular, the scheme will assist in supporting policies and proposals for the regeneration and economic development of those areas through which the route passes, or which have good access to this section of motorway.

The benefits will be spread furthest where accessibility to a motorway junction is best. Nottingham and Derby should both benefit from this improved accessibility, which should assist in underpinning their roles as regional and sub regional centres.

An exceptional feature of the traffic flows on this section of the M1 motorway is the proportion of Heavy Goods Vehicles (HGV) that are carried, with 26% being recorded for the annual average daily traffic 2007 between junctions 25 and 26. The high proportion of heavy vehicle flow reduces the flow capacity of the motorway during the day.

Over the period 2000 to 2005 the local accident rates were 0.106 PIA/mvkm for this section of the network. The severity index for this section was calculated as 0.06.

Traffic flows are predicted to increase up to 164,000 vehicles per day in 2032, approximately a 33% increase on the 2006 baseline values.

	Controlled Motorway	
M1 Section	AADT	%HGV
J25-J26	164,242	13.0
J26-J27	155,252	13.8
J27-J28	144,866	14.4

2032 AADT Forecast M1 Controlled Motorway

Scheme Development

Following the successful trial of Controlled Motorway Scheme on the M42 and the publication on 4th March 2008 of the Department for Transport's "Advanced Motorway Signalling and Traffic Management Feasibility Study", the Secretary of State has requested that the Highways Agency assess the feasibility of a CM solution on the M1. The feasibility study indicated that the CM scheme could be delivered.

On August 2007, the Government decided to proceed with the widening of the M1 between junctions 25 and 28. The contract was awarded to MVM in January 2007 through the Highways Agency's Early Contractor Involvement (ECI) procurement process. Work started in October 2007 and is due to be completed by autumn 2010.

The Effect of Introducing the Controlled Motorway Scheme

The appraisal evaluates the costs and benefits of the proposed controlled motorway scheme. The proposed scheme will be compared with a base case of the widened motorway with gantry mounted VMS.

Summary of Impacts

The results of the assessments were reported in a technical Appraisal Report, and are summarised in the Appraisal Summary Tables (AST). The AST for the scheme now being proposed indicates:

Impact Area	Summary of AST commentary	Overall Effect
Noise	For the Scheme design year 2023, the adoption of VMSL results in no change in the number of people annoyed by traffic noise in the study area.	No change
Emissions	The mandatory speed limits will improve the traffic flow and therefore reduce vehicle emissions.	Benefit
Landscape and Townscape	The combination of VMSL to the MIDAS scheme would have no significant impact.	No change
Heritage	The combination of VMSL to the MIDAS scheme would have no significant impact.	No change
Biodiversity	The combination of VMSL to the MIDAS scheme would have no significant impact.	No change
Journey Ambience	Due to the presence of enforcement cameras there might be an increase in driver stress.	No change
Safety	There would be an additional 15% reduction in accidents with MIDAS already installed.	Benefit
Economy	Scheme would deliver major increase in journey time reliability and travel time contributing £ 17.5 M in economic benefits.	Benefit
Accessibility	No effects on severance or access to transport options.	No change
Integration	Scheme would improve accessibility to various development areas without requiring landtake.	No change

Benefits

The analysis of the monetised costs and benefits (AMCB) table, showing the Present Value Benefit (PVB), Present Value Cost (PVC), Net Present Value (NPV) and Benefit to Cost Ratio (BCR) for the 30-year analysis of the CM option in the appraisal is shown below.

The appraisal compared the CM scheme against that of the D4M with MIDAS.

The transport economics and efficiency table below indicates that the CM scheme return is a Benefit to Cost Ratio of 2.11

Analysis of Monetised Cost / Benefits	M1 J25-28 CM £millions
Noise	Not appraised
Local Air Quality	Not appraised
Greenhouse Gases	0.009
Journey Ambience	Not appraised
Accidents	32.996
Consumer Users and Business Users and Providers	0.213
Reliability	17.582
Option Values	Not appraised
Present Value of Benefits (PVB) (see notes)	50.800
Public Accounts	24.098
Present Value of Costs (PVC) (see notes)	24.098
OVERALL IMPACTS	
Net Present Value (NPV) (NPV=PVB-PVC)	26.702
Benefit to Costs Ratio (BCR) ³ (BCR=PVB/PVC)	2.11
Notes:	
1. All entries are discounted to a 2002 present value year, and are in 2002 market prices.	
2. This table includes costs and benefits which are regularly or occasionally present in monetised from in transport appraisals, together with some where monetisation is in prospect. There may also other significant costs and benefits, some of which cannot be present in monetised from. Where this is the case, the analysis does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.	
3. The NATA BCR for this scheme is 1.38.	

Costs

The appraisal describes the components of the cost of the scheme and are summarised in the table below.

The table indicates that the investment costs of the CM option to the Public Accounts would be £9.5M greater than that of the D4M with MIDAS and taxation would add another £0.1M to this value.

PUBLIC ACCOUNTS	M1 J25-28 CM £millions
Local Government Funding	
Revenue	
Operating costs	
Investment costs	
Developer Contributions	
Grant / Subsidy Payments	
NET IMPACT	
Central Government Funding	
Revenue	
Operating / Maintenance of CM Costs	14.536
Investment costs	9.476
<i>Broader Transport Budget</i>	24.012
Indirect Tax Revenues	0.086
NET IMPACT	24.098
TOTAL	
Present Value of Costs (PVC)	24.098

Enforcement and Sanctions

Obtaining an acceptable level of compliance with the speed limits displayed on the overhead gantries is key to the successful and safe operation of the Controlled Motorway Scheme. Enforcement of the variable mandatory speed limits is planned to be carried out using a combination of gantry-mounted speed enforcement cameras and traditional enforcement by the Police.

HADECS 2 will be used to automatically monitor variable mandatory speed limits.

Post Implementation Review

A summary will be provided of the monitoring and evaluation process following implementation of the Controlled Motorway Scheme.

Consultation

A consultation will take place with affected stakeholder groups and interested parties. Consultation packs will be issued. Following completion of the consultation stakeholder feedback will be assessed and results from the consultation will be published.

Summary and Recommendations

The Highways Agency recommends Option 2, outlined at the beginning of this document. The Controlled Motorway Scheme has the potential to produce considerable benefits by aiming to reduce congestion, improve journey time reliability and reduce accidents, driver stress and pollution levels.

Specific Impact Tests

Competition Assessment

The Office of Fair Trading guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon market competition.

It has been concluded that there will not be any adverse effects upon competition in the marketplace. The introduction of the Controlled Motorway Scheme will reduce travel times and improve journey reliability which will contribute positively to competition in the marketplace. There will be agglomeration and competition benefits resulting from employment density change, due to improved journey times and productivity working.

Small Firms Impact Test

The Department for Business Enterprise and Regulatory Reform guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon small firms. The Controlled Motorway Scheme will not have an adverse effect upon small firms. The proposals do not impose any new or increased burden. Small businesses have not been consulted separately. However, the Highways Agency will be sending targeted information on the Controlled Motorway Scheme to numerous organisations within the area.

Legal Aid

The Department for Constitutional Affairs guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon Legal Aid.

There are no new criminal sanctions or civil penalties that will be introduced as part of the Controlled Motorway Scheme. Therefore, a full Legal Aid impact test is not required.

Sustainable Development

The Government's Sustainable Development Strategy guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon sustainable development.

The Controlled Motorway Scheme will not have an adverse effect upon sustainable development.

Carbon Assessment

The Government's carbon assessment guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon carbon emissions.

The Controlled Motorway Scheme will provide a reduction in the emission of harmful gases and noise pollutants. Mandatory variable speed limits lead to more uniform speeds and a reduction in flow breakdown and associated queuing. This will lead to reduced carbon emissions, though it is not possible to quantify this effect.

The Controlled Motorway Scheme will not have an adverse effect upon carbon emissions.

Other Environmental

Full environmental assessments have been carried out in accordance with the Highways Agency national and local environmental strategies and policies including:

- Towards a Balance with Nature: The Highways Agency Environment Strategic Plan; and
- Living with Roads: An Environmental Strategy for England's Main Roads.

Health Impact Assessment

The Department of Health guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon public health.

A full health impact assessment will not be necessary as the Controlled Motorway Scheme will not have a significant impact upon public health.

Race Equality

The Commission for Race Equality guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon race equality.

The Controlled Motorway Scheme aims to establish a sustainable balance between wider economic growth, social inclusion and environmental objectives. It is therefore not expected that the Controlled Motorway Scheme will impact upon race equality.

Disability Equality

The Disability Rights Commission guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon the disabled.

A full disability impact assessment will not be necessary as the Controlled Motorway Scheme will not have an adverse impact upon the disabled.

Gender Equality

The Government Equalities Office guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon gender equality.

A full gender equality assessment will not be necessary as the Controlled Motorway Scheme does not discriminate between genders.

Human Rights

The Ministry of Justice guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon human rights.

The Controlled Motorway Scheme will not have an adverse affect upon human rights.

Rural Proofing

The Commission for Rural Communities guidelines have been followed in order to assess the impact of the Controlled Motorway Scheme upon rural circumstances and needs.

The Controlled Motorway Scheme will not have an adverse affect upon rural circumstances and needs.

Specific Impact Tests: Checklist

Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.

Type of testing undertaken	<i>Results in Evidence Base?</i>	<i>Results annexed?</i>
Competition Assessment	Yes	No
Small Firms Impact Test	Yes	No
Legal Aid	Yes	No
Sustainable Development	Yes	No
Carbon Assessment	Yes	No
Other Environment	Yes	No
Health Impact Assessment	Yes	No
Race Equality	Yes	No
Disability Equality	Yes	No
Gender Equality	Yes	No
Human Rights	Yes	No
Rural Proofing	Yes	No

References

1. M1 J25-28 Widening – Controlled Motorway: Economic Appraisal Report. Report No. D117997/TP/02