

Post Opening Project Evaluation

M62 Junction 6 Improvement

One Year After Study



October 2010

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Contents

Section	Page
Glossary	i
Executive Summary	v
1. Introduction	1
2. Traffic Impact	8
Background Traffic Growth	8
Traffic Volumes	10
Queue Lengths	18
Journey Times	18
3. Safety	22
Introduction	22
Data Sources	22
Accident Locations Before and After	26
Personal Security	29
4. Economy	31
Introduction	31
Evaluation of Monetary Benefits	32
Scheme Costs	33
5. Environmental Impacts	36
Introduction	36
Data Collection	36
Traffic Forecasts Evaluation	38
Noise	39
Air Quality	41
Greenhouse Gases	42
Biodiversity	47
Heritage	53
Water Quality and Drainage	57
Physical Fitness	59
Journey Ambience	61
6. Accessibility and Integration	65
Accessibility	65
Integration	66
7. Appraisal Summary Table	69
8. Conclusions	73

Appendices

Appendix A – Turning Counts at M62 J 6	75
Appendix B – Queue Lengths	80
Appendix C – Journey Times	87
Appendix D - Environment Information	89
Appendix E - Comparison of View towards Junction 6 from Residential Properties Located to the Southwest of the Scheme (2005 and 2010)	92
Appendix F - Summary of Predicted Biodiversity Effects, Proposed Mitigation and Evaluation of Impacts	93

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Glossary

The following table details the acronyms and specialist terms used within the context of this report

Term	Definition
AADT	Annual Average Daily Traffic. Average of 24 hour flows, seven days a week, for all days within the year.
Accessibility	Accessibility can be defined as 'ease of reaching'. The accessibility objective is concerned with increasing the ability with which people in different locations, and with differing availability of transport, can reach different types of facility.
AM	denoting the morning peak period
AQS	Air Quality Strategy for England, Scotland, Wales and Northern Ireland
AST	Appraisal Summary Table. This records the impacts of the scheme according to the Government's five key objects for transport, as defined in DfT guidance contained on its Transport Analysis Guidance web pages, WebTAG
AWT	Average Weekday Traffic. Average of Monday to Friday 24 hour flows.
BAP	Biodiversity Action Plan. An action plan for declining and endangered species and habitats and targets for recovery.
BCR	Benefit Cost Ratio. The ratio between the monetised benefits and costs of a scheme, used as a measure of value for money in economic terms
CEMP	Construction Environment Management Plan
COBA	COst Benefit Analysis – a computer program traditionally used to compare scheme costs with the monetary benefits of savings in time, vehicle operating costs and accidents. COBA may also be used to calculate safety benefits only, if time and operating cost benefits are assessed by other means.
DfT	Department for Transport. A Government department.
Discounting	Discounting is a technique used to compare costs and benefits that occur in different time periods and is the process of adjusting future cash flows to their present values to reflect the time value of money. A standard base year needs to be used, which is 2002 for POPE.
ECI	Early Contractor Involvement, in which the contractor leads a design team in the early stage of the design process.
EST	Evaluation Summary Table. In POPE studies, this is a summary of the evaluations of the TAG objectives using a similar format to the forecasts in the AST.

GCN	Great Crested Newt
HATRIS	Highways Agency Traffic Information System
Heavy Vehicle	In this study, those goods vehicles identified by survey enumerators as having four or more axles, or two axles with twin rear wheels, together with buses and coaches.
HEMP	Handover Environmental Management Plan
Highways Agency	An Executive Agency of the Department for Transport, responsible for operating, maintaining and improving the strategic road network in England.
IP	Inter Peak, the time between the AM and PM peaks
Light vehicle	In this report, all vehicles other than those defined as heavy.
LEAP	Landscape and Ecology Aftercare Plan
LEMP	Landscape and Ecology Management Plan
MAC	Managing Agent Contractor. A company appointed by the Highways Agency to maintain trunk roads in a defined area.
NATA	New Approach to Transport Appraisal. Used since 1998.
NMU	Non-Motorised User. Pedestrians, cyclists and equestrians.
NRTF	National Road Traffic Forecasts. NRTF97 refers to the forecasts made in 1997.
NTS	Non Technical Summary. A brief report summarising the principle sections of the Environmental Statement in non-technical language.
Objective 1 Area	An area designated for the receipt of maximum assistance from the European Regional Development Fund, from 1999 to 2006.
OPR	Order Publication Report
PAR	Project Appraisal Report. A PAR is prepared for schemes costing less than £ million.
PARAMICS	Transport modelling software based on microsimulation, that is the representation of individual vehicle movements through a network.
PEARS	Program for the Economic Assessment of Road Schemes. An economic assessment package that has been specifically designed for use with the output from traffic microsimulation models. Maintained by Transport Scotland.
PIA	Personal Injury Accident. A road traffic accident in which at least one person required medical treatment.
PIA/mvkm	PIA/mvkm is the number of PIAs per million vehicle kilometres where 'vehicle kilometres' are the number of vehicles using a section of the road multiplied by the length of the road.

PM	evening peak period
POPE	Post Opening Project Evaluation, before & after monitoring of all major highway schemes in England.
PROW	Public Right of Way
PBV	Present Value of Benefits. The value of future monetary benefits, typically over a 60-year period, discounted to a designated present-value year (e.g.2002).
PVC	Present Value of Costs. Costs discounted to a designated present-value year (e.g. 2002).
RTF08	The DfT Road Traffic Forecasts 2008, from the National Transport Model.
Rule of Half	A technique for calculating time benefit where a scheme results in extra traffic, in which benefits to additional trips are averaged, by assuming each receives half the benefit per trip for existing trips.
SBI	Sites of Biological Importance. Sites complying with local authority selection criteria, for inclusion as non-statutory sites for nature conservation.
Screenline	An imaginary line drawn across a transport corridor used to determine flows between areas on either side. Each road crossed by the screenline is monitored by a traffic count (ATC).
Severance	Community severance is the separation of adjacent areas by road or heavy traffic, causing negative impact on non-motorised users, particularly pedestrians.
SMR	Sites and Monuments Record. The SMR contains information on sites and finds of archaeological interest.
SSSI	Site of Special Scientific Interest. Designated for biological or geological importance.
STATS19	A database of injury accident statistics recorded by police officers attending accidents
TEMPRO	Trip End Model forecasts issued by the DfT.
TERN	Trans-European Road Network, designated by the European Union as being important for the movement of long-distance traffic.
TRADS	Traffic Information Database
Vehicle hours	Vehicle hours refers to the total time spent by all vehicles using a road and is expressed normally as a yearly value. For example, if 10,000 vehicles a day used a route with a 6 minute journey time, then the route's vehicle hours for the year would be 365,000.
VOC	Vehicle Operating Costs. These include fuel and other items such as oil, tyres, maintenance and depreciation.

vpd	Vehicles Per Day
VOT	Value Of Time
webTAG	Department for Transport's website for guidance on the conduct of transport studies at http://www.webtag.org.uk/

Executive Summary

Scheme Description

The M62 Junction 6 Improvement is a Highways Agency major scheme providing freeflow link roads in each direction between M62 east and M57 north, to enable traffic making these movements to avoid the M62 Junction 6 roundabout ('Tarbock Island'). New 'Link A' caters for the **North** to **East** movement, and new 'Link C' caters for the **East** to **North** movement.

Objectives (from OPR)

Objective Achieved?

- | | |
|---|-----|
| • Reduce peak congestion compatibly with transport policies | Yes |
| • Improve safety | Yes |
| • Improve facilities for non-motorised users | Yes |
| • Positively influence regeneration | Yes |
| • Ensure there is no worsening of environment | Yes |

Key Findings

- Most scheme objectives were met. Cost (PVC) and benefits (PVB) were accurately predicted.
- The traffic volume on Link C is about the same as predicted and the actual traffic on Link A is 17% higher than predicted.
- The total volume of turning traffic (including the new links) has risen by 3% probably due to reassignment from other roads. Traffic using the roundabout itself has fallen by 25%, as a result of diversion to the new link roads.
- The time savings and queue reductions are most pronounced for the movements directly relieved by the new links.
- The evaluated vehicle-time benefit is very similar to that predicted.
- The small reduction in accidents actually observed in the opening year is not statistically significant, but nevertheless it is much greater than the low number predicted.
- The predicted vehicle operating cost benefits were unusually large, particularly for goods vehicles. This surprising result appears to be related to how the traffic modelling program was used in scheme forecasting.
- Landscape planting is generally establishing satisfactorily, although some plants including standard size trees have failed and required replacement.
- Biodiversity mitigation has been implemented in line with proposals.
- Archaeological site investigation took place before construction and several important finds, including Stone Age settlements were found.
- NMU provision has been implemented as part of the scheme as expected but connection to the wider footpath network has yet to be implemented by others.
- Journey experience has improved with the provision of freeflow links and clear gantry-based signage.

Summary of Scheme Impacts

Traffic

- Link A (from M57N to M62E) carries about 12,400 vpd, or 17% more than predicted.
- Link C (from M62E to M57N) carries about 10,100 vpd, the same as predicted.
- With the diversion of traffic to the new links A and C, there has been a 25% reduction in traffic using the roundabout.
- There has been a 3% increase in total traffic turning at the junction, including the new link roads, probably due to reassignment from other roads.
- Queues have shortened on approaches relieved by the new links, and on other approaches where not signal-controlled.
- Journey time savings are experienced mainly in the peaks, with over 1 minute being saved by vehicles using Link A, and about 2 minutes for vehicles on Link C.

Safety

- There were 17 PIAs at the junction in the opening year after opening, compared with an average of 22.6 per year in the five years before the start of construction. The change is not statistically significant, and may have occurred by chance.
- The observed reduction of 5.6 accidents per year is greater than the predicted saving of 0.8 per year.
- There has been a lower proportion of shunts, and a higher proportion of single-vehicle accidents, since scheme opening.
- The one-year after results are provisional, and remain to be confirmed five years after opening.

Environment

- Landscape and Biodiversity mitigation has been implemented generally as expected. However the wetland within Link C appears to be establishing more slowly than expected at this stage and scheme planting, including standard size trees, have failed and required replacement. Impacts on GCN and bats could be worse than expected at this stage.
- The public consultation for Heritage is considered better than expected, as a result of an exhibition and interactive website for archaeology.
- The increase in greenhouse gases is very much less than predicted; this is due to an error in the calculation of the prediction.
- NMU provision has been implemented as expected but connection to the wider footpath network has yet to be implemented by others.
- Journey ambience has improved due to the provision of freeflow links for the most important movements at the junction, and the provision of gantries with clear signage.

Accessibility

- Severance has potentially been improved by the construction of an extension to Potters Pits Bridge across the M62. However the potential will only be realised if the bridge is opened to pedestrians and cyclists by the local authority.
- Conditions for pedestrians at the roundabout are unlikely to have improved because the timings of the signalised crossings remain the same.
- The scheme did not impact on access to public transport.

Integration

- Land Use Policy and Other Government Policies are supported by the scheme, with the exception of environmental policies, but the impacts are limited by mitigation measures.

Summary of Scheme Economic Performance

- The outturn cost was £31.2 million, almost exactly the same as the final estimate.
- The Present Value of Cost (PVC), expressed in market prices and taking into account indirect tax revenue, is £31.5 million.
- The monetary benefit from time saving is re-forecast to be £69.9 million, slightly lower than the predicted value.
- The monetary benefit from accident saving is re-forecast to be £9.9 million, higher than the predicted value.
- The Benefit Cost Ratio (BCR) arising from these two benefits is 2.5, a little better than predicted and showing good value for money.

Costs and Benefits (2002 present value year)	Pre-scheme forecast	Post-opening reforecast
Journey Time Benefits	£70.8m	£69.9m
Safety Benefits	£1.4m	£9.9m
Total Present Value Benefits (60 years)*	£72.2m	£79.8m
Present Value of Cost (PVC) **	£30.8m	£31.5m
Benefit Cost Ratio (BCR)	2.3	2.5

**Original forecasts included large benefits for the vehicle operating costs of goods vehicles which have been omitted here due to uncertainty over their derivation.*

*** PVC is reduced by £0.2m due increase in Indirect tax revenue raised by the Treasury for both forecast and outturn*

1. Introduction

Background

- 1.1 The M62 Junction 6 Improvement is a major Highways Agency (HA) scheme which opened in December 2008. The scheme provided two dedicated slip roads enabling certain turning movements between the M62 and the M57 to avoid the roundabout at the junction, thereby reducing congestion. The scheme is situated in Knowsley, to the east of Liverpool. This report is the One Year After (OYA) evaluation of the emerging impacts of the scheme.
- 1.2 The M62 is a part of the Trans European Road Network (TERN), and is an important east-west route linking Liverpool, Manchester, Leeds, and Hull. The scheme is located near the western end of the M62, at the junction with the M57, and its southern extension, the A5300. The M57 is a north-south route forming an outer bypass to the City of Liverpool, and it intersects a number of routes between Merseyside, the M6 motorway, and Greater Manchester. The M62 Junction 6 is used by traffic heading to Liverpool Docks in the west, to John Lennon Airport and Halewood motor works in the south, and other local industrial and regeneration sites. The location of the scheme and its context in the road network is shown in Figure 1.1.



Figure 1.1 – Location of M6 Junction 6 Improvement

- 1.3 The M62 Junction 6 corresponds with Junction 1 of the M57, a grade-separated, three-level interchange. The M62 itself runs in an east-west direction in an underpass. The M57/ A5300 crosses the junction in a north-south direction on an overpass. Linking these two routes at an

intermediate level is a roundabout, known locally as Tarbock Island. This has signals at five of the seven entries, the unsignalised two being Windy Arbor Road and Cronton Road northbound (see Figure 1.2). Before the scheme provided additional dedicated slip roads, all turning movements were required to use this roundabout. In addition, the A5080 Cronton Road crosses the junction in a NW – SE direction, and there is a further minor road, Windy Arbor Road, leading off to the northeast. The roundabout is thus an 11-arm junction, including the one-way motorway slip roads.

- 1.4 The scheme was intended to address were peak-time congestion and queuing on the slip roads at this junction.

Scheme Layout

- 1.5 The scheme has provided the following measures, which are illustrated in Figures 1.2 and 1.3:

- A new slip road known as 'Link A', leading from the M57 southbound to the M62 eastbound, avoiding the roundabout junction. This is two lanes in width, and passes beneath Windy Arbor Road;
- A new slip road known as 'Link C', leading from the M62 westbound to the M57 northbound, avoiding the roundabout. This is one lane in width. It passes under the re-aligned M62 westbound onslip, and over the existing A5300 northbound offslip;
- The existing on-slip from the roundabout to M62 westbound has been re-aligned, and passes over the new Link C;
- Seven new variable-message sign gantries have been installed on the M62 and M57, and three existing gantries on the M62 have been modified, as part of the scheme (Figure 1.3);
- The existing Potters Pits bridge has been extended over Link A, to enable the local authority to provide a footpath and cycleway on the line of a former colliery railway; and
- An underpass has been provided beneath Link C, for the non-motorised user (NMU) route known as Ox Lane.

- 1.6 The completed scheme appears on the latest OS 1:50,000 map, and this is used as a background for some of the graphics later in this report (i.e Figure 3.4 but not Figures 1.2 or 1.3). However it should be noted that the latest mapping contains the following errors:

- The extension to Potters Pits Bridge actually passes over new Link A, not under it as shown on the map; and
- Ox Lane has been diverted to join the roundabout east of the reconstructed M62 westbound onslip, and does not cross beneath that slip road in an underbridge as shown on the map.

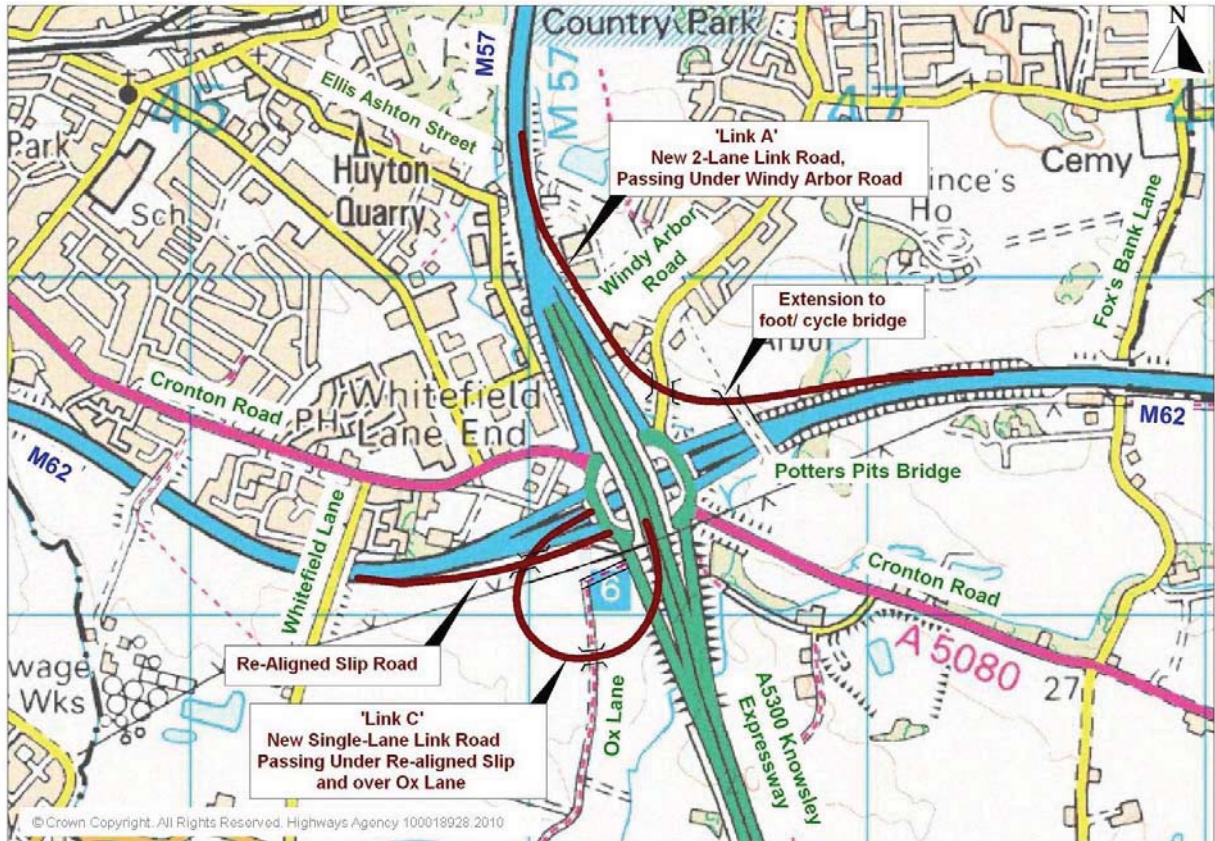


Figure 1.2 – Scheme Layout

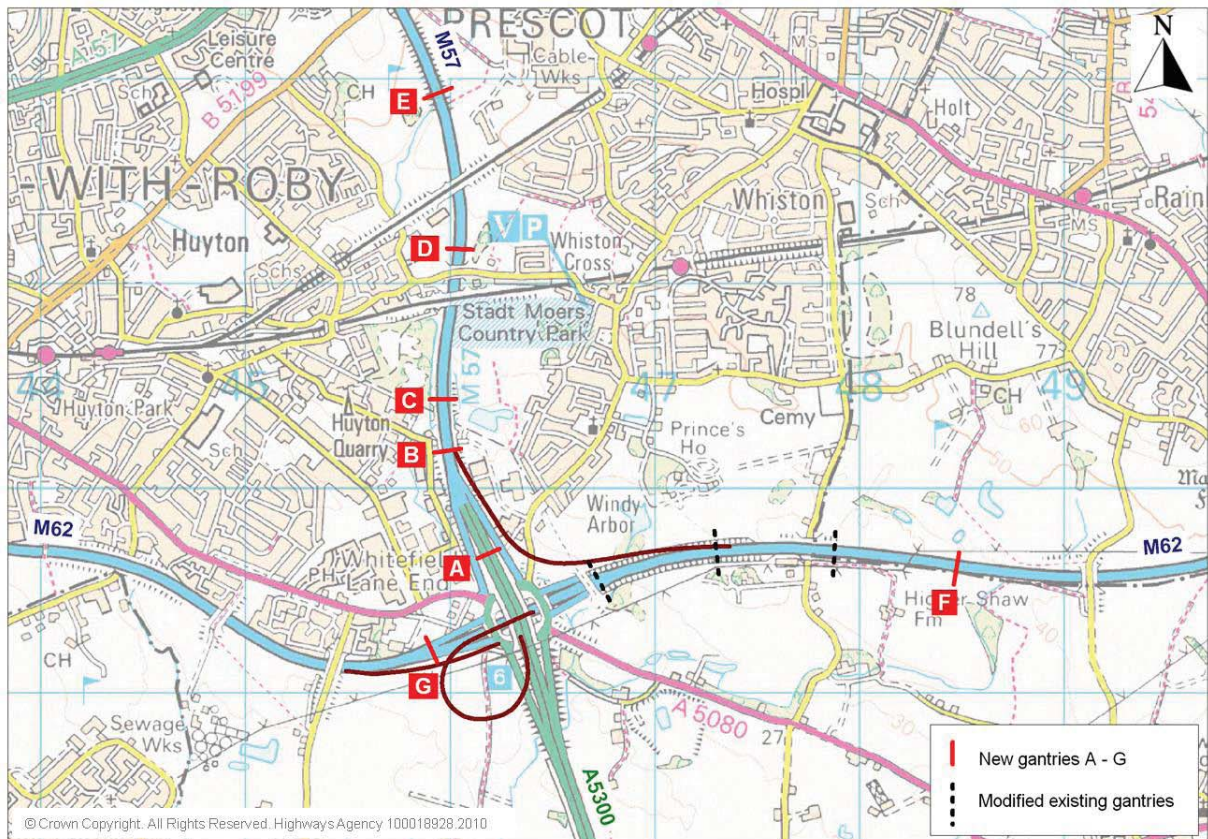


Figure 1.3 – Locations of Gantries

- 1.7 Following scheme opening, the point at which the M57 changes to being the A5300 has moved from the end of the north-facing slips (as shown on these maps), to the ends of the south-facing slips. Therefore about 1.25 km of road, including the overbridge and two slip roads, have been transferred from local authority to Highways Agency control, and would correctly be coloured blue (but remain green on latest OS mapping).
- 1.8 The following photographs illustrate selected elements of the junction.



Figure 1.4 – M62 & M57 Overbridge



Figure 1.5 – M62 & Potters Pits Bridge



Figure 1.6 – New Link A with New Windy Arbor Road Overbridge



Figure 1.7 – New Link A & Potters Pits Bridge with New Extension to Left



Figure 1.8 – New Link C Diverge from M62



Figure 1.8 – New Link C Bridge over M57 Northbound Offslip, & Diverted Ox Lane

History of the Scheme

1.9 The history of the scheme is as follows:

- The Highways Agency began an assessment of the junction in 1990;
- Public consultation took place in 1991;
- The Preferred Route for an improvement was announced in 1992, comprising widening of the M62 between junctions 6 and 7, together with dedicated slip roads at junction 6. The scheme was withdrawn in 1994;
- Improvements were nevertheless made to the roundabout in 1995, following the construction of the A5300 Knowsley Expressway as a southern continuation of the M57. Further improvement work took place in 2000;
- With the anticipated regeneration of Merseyside, increasing congestion was expected, and the present improvement scheme which is the subject of this report (junction improvements only) entered the Targeted Programme of Improvements in 2001. This is now known as the Major Schemes Programme;
- The Preferred Route was confirmed in 2003;
- The contract was awarded under Early Contractor Involvement (ECI) in January 2005. This allowed detailed planning to be carried out while the scheme was being taken through statutory procedures;
- A public inquiry was held in October 2006;
- The decision to proceed was announced in January 2007.
- Construction began in April 2007; and
- The scheme was opened in December 2008.

1.10 Maintenance of the junction is the responsibility of the Highways Agency, through the Managing Agent Contractor (MAC) for Area 10, which is the company called AOne+. The HA also maintains the M62 east of junction 6, and the M57 to the north. However, Knowsley Metropolitan Borough Council maintains all other roads, including the M62 west of the junction, and the A5300 Knowsley Expressway.

Scheme Objectives

1.11 The objective of the scheme, as stated in the Roads Review 1998, was to provide free-flow links between the M62 to the east of junction 6, and the M57 to the north.

1.12 Further detail regarding scheme objectives was given in the Environmental Statement (ES), as follows.

- *Environment:* ensure no significant worsening of sub-criteria assessment results contained in the scheme appraisal summary table (AST);
- *Safety:* improve safety by removing connecting traffic between the M62 westbound and the M57 northbound, and M57 southbound to M62 eastbound from the roundabout, and improve safety for NMUs;
- *Accessibility:* provide improved routes for NMUs at the roundabout;
- *Integration:* reduce peak time congestion on side road junctions and motorway slip roads at the all-purpose roundabout, in a way compatible with the transport proposals of both the Highways Agency and local authorities; and

- *Economy*: be a positive influence with respect to the regeneration policies of the Merseyside Strategic Investment Area, in particular Huyton Strategic Investment Area, while reducing congestion delay and driver stress and improving the reliability of journey times.

The POPE Report

- 1.13 The Highways Agency undertakes post-opening evaluations of its Major Schemes at one and five years after opening, to identify how far the predicted objectives and benefits have been achieved. This report represents the One Year After report for the M62 Junction 6 Improvement, and is prepared under the Post-Opening Project Evaluation (POPE) Commission.
- 1.14 This report evaluates the scheme impacts against a number of criteria dictated by the key objectives set out in WebTAG.
- 'Before' and 'After' traffic volumes at the junction and adjacent roads, and a comparison with predictions;
 - A comparison of 'Before' and 'After' journey times;
 - An analysis of changes in accidents;
 - The outturn economic benefits, based on the changes in traffic volumes, journey times, and accidents;
 - A comparison of the outturn cost with the predicted cost;
 - A comparison of the environmental impacts with those predicted; and
 - A review of the original Appraisal Summary Table (AST) in the form of a new Evaluation Summary Table (EST).

Structure of the Report

- 1.15 The remainder of this report is structured as follows:
- **Section 2** discusses the traffic flows, journey times, and comparisons with forecasts;
 - **Section 3** considers safety impacts and comparison with forecasts;
 - **Section 4** derives updated economic benefits based on vehicle-time and accident savings and compares these with forecasts;
 - **Section 5** gives a summary of the environmental evaluation;
 - **Section 6** considers accessibility and integration;
 - **Section 7** presents the original Appraisal Summary Table (AST), and then re-evaluates the outcomes at the OYA stage with an Evaluation Summary Table (EST); and
 - **Section 8** summarises the main conclusions of the report.

Sources

- 1.16 The following sources were used in compiling this report:
- Traffic data from the Highways Agency database (TRADS);
 - Traffic and accident data provided by Knowsley Metropolitan Council;

- Traffic survey data commissioned by Atkins specifically for this study;
- Appraisal Summary Table (March 2006);
- Traffic and Accident Data Report (July 2005);
- Journey Time Report (May 2005);
- Traffic Forecasting Report (October 2005)
- Traffic and Economic Assessment Report (January 2006);
- Environmental Statement volume 1 (December 2005);
- Environmental Statement, volume 2 (March 2006);
- Environmental Statement volume 3 (March 2006);
- Non Technical Summary of Environmental Statement (March 2006); and
- Other environmental documents as detailed in the relevant section.