

POPE of Major Schemes Summary Report

Scheme Title	M4 J18 Eastbound diverge
Opening Date	November 2005
POPE Stage	One Year After

Scheme Description

The scheme comprised the extension of the eastbound carriageway of the M4 over 1.8 miles in South Gloucestershire. Specific elements of the scheme included:

- A new 1.6 miles climbing lane on the incline
- An extended exit slip road with improved parallel-type diverge
- Three new gantries over the motorway to provide improved direction signs for drivers

Objectives

Objective Achieved?

- | | |
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| • Relieve the congestion problems which were caused by the long uphill gradient on the eastbound approach to Junction 18 | Yes |
| • Improve safety by reducing conflict problems between mainline and exiting traffic | Too early to conclude |
| • Construct the scheme within land owned by the Highways Agency | Yes |
| • Minimise the impact of the scheme on the Cotswold AONB and biodiversity | Too early to conclude |

Key Findings

- The objective of the M4 Junction 18 eastbound diverge scheme to relieve congestion on the uphill approach to the junction has been achieved.
- There has been a slight reduction in accidents at the one year after stage in line with predictions, but it is too soon to be able to draw any firm conclusions on the safety impact based on such small numbers.
- It is also too early to assess the impacts of the scheme on the Cotswold Area of Outstanding Natural Beauty (AONB).
- Post opening traffic flows through the scheme are much lower than forecast, as a result of over-forecasting development and traffic growth in the area.
- Traffic flows on roads most likely to be impacted by the scheme show very low growth indicating that the scheme has not attracted new traffic to the area.
- Compared to before opening, traffic speeds and journey times are more consistent across the day. Speeds on the main carriageway have increased during the day and early evening.
- The re-forecast journey time benefits are half the forecast due to the traffic volumes on the M4 being lower than forecast. There is however some uncertainty over the value of the journey time benefits due to the uncertainty over the reliability of journey time data.

- The economic benefit from safety improvements has not been re-forecast as it is too soon to have adequate data;
- Outturn construction costs are lower than forecast, but when an adjustment for the loss of taxation revenue is included the cost of the scheme to public accounts is close to the forecast figure.
- The estimated outturn BCR is lower than that forecast due to the much lower journey time benefits.
- Environmental Impacts are largely as predicted although it is not possible to fully evaluate biodiversity without further studies into the impacts on species and habitats.
- The scheme is entirely motorway-based and within the existing highway boundary, therefore has no impacts on accessibility.
- The scheme was recommended by the 2002 Multi-Modal Study for the area (SWARMMS) and is consistent with national and regional policy.

Summary of Scheme Impacts

Traffic

- On the section of the M4 which includes the scheme (eastbound J19-J18), there has been negligible change in the traffic volumes compared to before the scheme was implemented. This shows in absolute terms, that the scheme has not resulted in any new traffic being attracted to this part of the M4.
- The forecast for the opening year was higher than the observed figure by 14%. SWARMMS overestimated traffic growth in the north Bristol area in the period assessed, as expected developments have not been completed.
- Speeds are consistent throughout the day on the main carriageway and off slip whereas previously there was congestion during the interpeak period on the M4 and in the PM peak on the off slip.
- Speeds on the main carriageway have increased by between 3 and 8 mph during the day and early evening.
- The combination of increased lanes and improved speeds indicates reduced congestion at the Junction 18 diverge as a result of the scheme.

Safety

- There has been a slight reduction in the number of accidents from almost 7 per year on average before opening down to just over 5. However, the reduction is not statistically significant.
- The slight reduction in accidents is in line with the predictions.
- After opening there have been fewer accidents at the eastbound carriageway with the uphill incline and around the diverge for the J18 off slip.
- The small numbers of accidents highlight the fact that the safety impact of this scheme cannot be measured such a short time after opening. It is recognised that accident trends will be better evaluated in the Five Year After study.

Environment

- Based on the traffic forecast, which are lower than predicted, it is likely that the impacts on noise and air quality are better than expected.
- There has been a small impact on carbon emissions in the first year after opening. The 3% increase in emissions is exactly the same as the forecast.
- For biodiversity and landscape planting, it would appear that the environmental impacts for these sub-objectives are also likely to be as expected. To reach their full

potential it will be essential for them to continue to establish satisfactorily and for the recommended work identified in the monitoring reports to be carried out.

- Other environmental matters were given due regard and mitigation measures fully implemented.
- The use of land within the highway boundary utilising the hard shoulder for the climbing lane, minimised land take. However, this meant less land was available for environmental mitigation measures.

Accessibility

- Being entirely motorway-based and within the existing highway boundary, the scheme has had no impacts on accessibility.
- The scheme has had no impact on non-motorised users or public transport. The only public right of way near the scheme is a pedestrian underpass near the western end of that is unchanged by the scheme. There are no scheduled bus services using the A46 junction although long distance coach services on the M4 main carriageway may potentially benefit from the climbing lane.

Integration

- This scheme was one of a number of measures recommended by the London to the South West and South Wales Multi-Modal Study (SWARMMS) in 2002 to relieve congestion on the M4/M5 around Bristol.

Summary of Economic Performance

	Costs in £m 2002 Prices discounted to 2002 at 3.5%	
	Pre-opening Forecast	Post-scheme re-forecast
Journey Time Benefit	£82.5m	£34.6m
Safety Benefits	-	-
Total 30 Year Benefits (PVB)	£82.5m	£34.6m
Costs (2002) prices	£11.0m	£8.2m
Indirect Tax and Operating Cost	£7.7m	£8.0m
Benefit Cost Ratio (BCR)	4.4	2.1

- Lower than expected traffic growth means that re-forecast journey time benefits at £34.6m are much lower than forecast. Safety benefits have not been calculated.
- The capital cost of the scheme was a quarter less than forecast prior to start of construction. This may be due to overestimating (in particular of the risk allowance) as when the scheme entered the programme in 2002, the original estimate was much lower.
- The scheme may have large indirect tax disbenefits which can be responsible for nearly half of the cost of the scheme to central government.
- The estimated outturn BCR is lower than forecast, but still represents value for money.