

POPE of Major Schemes Summary Report

Scheme Title	M25 Junction 16-23 Widening
Opening Date	May 2012
POPE Stage	1 Year After

Scheme Description

The M25 junctions 16 to 23 widening scheme is a Highway's Agency major project which was completed in May 2012. The scheme widened the M25 from three to four lanes in both directions on the sections of the motorway between junction 16 at Iver Heath near Uxbridge and junction 23 near South Mimms.

This section of the M25 suffered from increasing congestion levels and unpredictability of journey times. This widening scheme is part of an overall strategy for the M25 comprising a series of widening and smart motorway schemes.

In addition to widening, gantries were erected along the M25 between junctions 16 and 23. This part of the M25 now has the capacity to operate as a controlled motorway. At the time of this study, signage on the gantries is only advisory and gantry messages are manually inputted as the system does not currently respond automatically to changes in flow. Operation of the controlled motorway commenced in March 2014.

Scheme Objectives

Objective	Objective Achieved?
Improve Reliability	✓
Improve Safety	Too early to draw conclusions
Reduce Congestion	✓
To minimise adverse environmental impacts of the upgraded section	Too early to draw conclusions
Improve Driver Information	Too early to draw conclusions

Key Findings

- Average weekday traffic has increased along the scheme section post-opening compared to pre-scheme with reduced flows observed on alternative routes in the vicinity of the scheme.
- The scheme appraisal overestimated traffic volumes using the corridor in the opening year. This is largely due to the forecast growth being higher than has been realised, possibly as a result of the economic recession.
- Average journey times along the M25 scheme section have reduced post scheme opening along with improved journey time reliability and reduced congestion. Observed journey time savings in the opening year are higher than forecast, this is probably in part due to traffic volumes being lower than forecast.
- It is too early to conclude about the scheme's impact on safety at this One Year After (OYA) stage.
- Economic benefits are higher than expected, with the Benefit to Cost Ratio (BCR) from this OYA evaluation being 5.7 compared to a forecast BCR of 3.4. This is primarily due to higher than expected journey time savings, a major contributor to scheme benefits.
- The long term scheme impacts are likely to be affected by the completion of the ongoing schemes in the vicinity and the controlled motorway being implemented along the scheme section.

- Design development changes including reduction in length of retaining features (such as sheet pile walls) and the inclusion of additional ponds and landscape (screening) bunds have resulted in an improvement of habitat and planting in some areas whilst having a slight negative impact (such as loss of existing vegetation and habitat) in others. In balance, the design changes are seen as positive.

Summary of Scheme Impacts

Traffic

- Traffic flows on the M25 along the length of the scheme have increased since scheme opening. In the clockwise direction, an increase of 4% to 6% is observed and in the anti-clockwise direction, on both ends of the scheme the change has been 0% to 2% with the middle section carrying 12% more traffic than pre-scheme. In comparison, traffic volumes on minor roads in the vicinity of scheme have seen a reduction in traffic flows. This is indicative of the reduction in rat-running on the local network around the scheme.
- Traffic flows on sections of the M25 beyond the scheme's extent have seen an increase in traffic, but less than the increase observed along the scheme section at OYA compared to before the scheme.
- From the analysis of hourly distribution of traffic, traffic growth on the scheme section post opening is concentrated in the morning and evening peak periods. The flow has remained nearly the same for offpeak period.
- The forecasts overestimated the traffic using the corridor in the opening year. The average increase along the scheme section was forecast to be approximately 14% in the AM peak and 18% in the PM peak, whereas the observed increase is 9% and 14% respectively.
- Following the scheme's completion, there has been a decrease in journey times despite an increase in traffic flow along the scheme. Observed proportionate decreases are between 7% and 22% in the clockwise direction for different time periods and between 17% and 24% in the anti-clockwise direction. This indicates that the extra capacity created by the scheme has catered for the increased traffic and meets the scheme's objective to reduce congestion. Observed journey time savings are higher than forecast.
- The scheme has resulted in improved journey time reliability. The variation in journey times has been reduced, with the greatest improvements seen in the peak periods.

Safety

- Analysis of data on collisions which resulted in injury before and after the scheme was built has shown that the annual average number of collisions on the scheme key links, i.e. M25 between junction 16 and junction 23, has seen a small increase at the OYA stage when accounting for the background trend in collision reduction. However this is based on only seven months of post opening data and a clearer picture will be available at FYA.
- Analysis of collision data for the wider study area shows a similar trend to that seen on the key links and there is a marginal increase in the number of collisions at OYA.
- Since the scheme completion, there has been a large reduction in the number of slight collisions compared to the before scenario (from an annual average of 242 slight collisions per year in the pre-scheme to 163 in the post-opening).
- Collision rates taking into account changes in traffic flows along the M25 have increased slightly post opening, suggesting that the scheme has had a beneficial impact for safety along its key links. It should be noted that this does not reflect changes in the wider study area for which results were inconclusive at this stage.

Environment

- The increase in traffic flow observed is lower than that predicted in the Environmental Statement (ES), however, there is an observed increase in traffic speeds during the inter peak and evening peak times. Speeds in the morning peak vary, with slower speeds seen along some sections. Roadside noise levels are based on flow, speed and percentage of heavy goods vehicles (HGV) for each case. Purely on the basis of changes in traffic, the noise on the motorway is lower than predicted although not sufficient to affect an 'as expected' assessment for noise.

- The scheme has had a better than expected impact on greenhouse gases, as the outturn emission with the scheme is less than forecast. This is primarily due to traffic flows being lower than expected.
- Land purchase areas outside the original scheme boundary have required additional clearing of existing vegetation in some instances and presented opportunities to plant shrubbery in new areas. This additional clearance has allowed for an increase in soft landscaping within the highway boundary, replacing retaining features which would have been a permanent artificial feature in the landscape.
- Soil preparation issues noted during construction, including compaction and insufficient depths of topsoil may impact on growth targets for mitigation measures.
- Overall loss of habitat to the widening was reduced compared to the ES forecast. However, there had been some loss of habitat (arable land or species-poor pasture) outside the highway boundary for new attenuation ponds and environmental (screening) bund sites. Mitigation for these impacts includes new habitat creation of woodland or species-rich grassland. New habitats are considered to be of higher quality than those lost, and to provide improved habitat connectivity.

Accessibility and Integration

- The scheme's impact on the Option Values, Severance and Access to the Transport System sub-objectives of neutral is consistent in the forecast and the outturn evaluation.
- This scheme is compatible with regional and national transport policies and most local policies.

Summary of Scheme Economic Performance

All monetary figures in 2002 Prices and values	Forecast	Outturn Re-forecast
Journey Time Benefits	£1,415.7m	£2,208.5m
Vehicle Operating Costs ¹	-£115.2m	-£55.7m
TEE impacts during construction	£15.9m	
TEE impacts during maintenance	-£22.2m	
Safety Benefits	£0.3m	£0m
Journey Time Reliability	£71.6m	£94.3m
Noise	-£0.7m	
Carbon	-£29.9m	-£15.0m
Total Present Value Benefits (PVB)	£1,335.5m	£2,225.1m
Investment costs (Construction)	£476.1m	£421.8m
Maintenance costs	£-15.4m	
Indirect Tax Revenue	-£229.5m	-£110.9m
Total Present Value Costs (PVC)	£231.3m	£295.4m
Benefit Cost Ratio (BCR)-Indirect Tax as Cost	5.8	7.5
Benefit Cost Ratio (BCR)-Indirect Tax as Benefit	3.4	5.7

¹ Costs to users when driving their cars on the network, mainly derived from fuel cost changes

- The outturn investment cost is 11% lower than forecast.
- The difference between outturn and forecast PVB is 67%. The reason for higher benefits in the outturn is due to greater than expected journey time and reliability benefits and a lower than expected carbon disbenefit.
- The outturn Benefit to Cost Ratio (BCR) is higher than expected owing to the outturn benefits exceeding forecasts and costs remaining relatively in line with the forecast. This is based on a 60 year appraisal period.
- The scheme is likely to facilitate wider economic benefits through increased capacity, improved journey times and reliability, although it is too early to quantify at this stage.

This document summarises the findings of the post opening evaluation study completed in October 2014.