

M25 Junction 9B – Partial Part Time Traffic Signal Trial Trial Report Summary

Introduction

The M25 Junction 9b off-slip is a site that experiences considerable queuing, between 6:30am and 9:30am, during the morning 'rush hour' period. Traffic frequently queues from the give way line on the M25 off-slip, back onto the M25 mainline.

Although consideration had been given to undertaking extensive traffic modelling of the scheme, it was decided that a practical trial was simpler and more effective at providing conclusive results, with the intention of easing congestion and improving journey reliability and safety for M25 users

After consultation with Surrey County Council (SCC), agreement was reached for the Highways Agency to proceed with a trial for the Part Time Traffic Signal Controlled off-slip leg of the roundabout at junction 9b, to determine its effectiveness on reducing the queues.

The objective of the trial was to directly address the queuing problem on the M25 off slip without incurring a significant disbenefit to the local network.

The results of the trial (Reference 1) were issued to SCC and discussed at a meeting on the 12th of August 2008 (Reference 2).

Trial Coverage Area

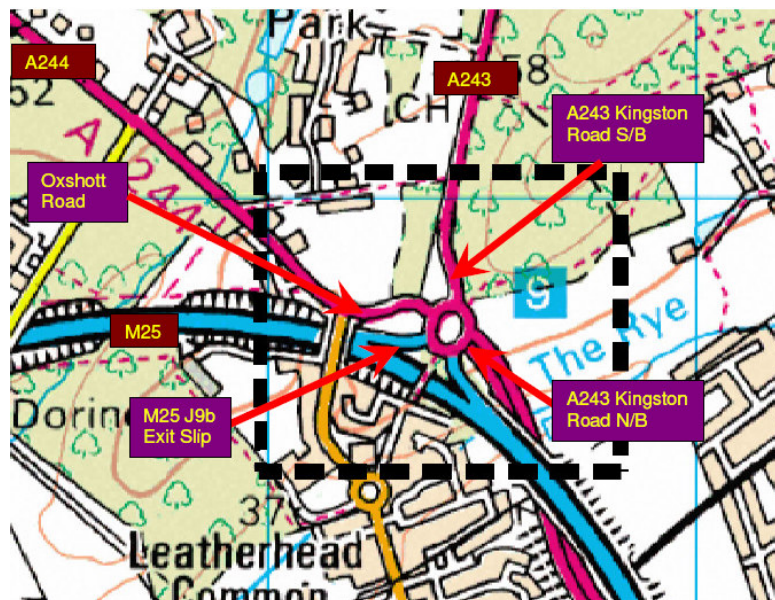


Figure A: Coverage Area of the Trial

Implementation of Trial

Temporary CCTV and advanced signing were deployed on site, in advance of the trial, on the 12th of May 2008 and were used to monitor traffic movements during the week before the trial started.

The part time signal trial commenced on Monday 19 of May 2008 and ran for 4 full weeks, the signals being active Monday to Friday, during the morning 'rush hour' period, from 0630 to 0930. The Highways Agency (HA) and Mouchel met SCC officers on 28 May 2008, during the trial, to ensure that SCC had no undue concerns with the running of the trial and that significant delays were not being caused due to the trial.

Following removal of the traffic signals on the 13th of June 2008, the CCTV cameras were left running for a further full week, to provide traffic movements after the trial was completed to ensure that a robust case could be presented with regards to the effects of the trial on both HA and SCC roads.

Trial Data Review

Stills from the CCTV footage, in Appendix A, provide a brief snapshot of traffic behaviour on M25 off slip and the remaining approaches to the roundabout, before, during and after the trial.

Examination of the CCTV footage highlighted that:-

- The trial had a positive effect in reducing the M25 off-slip queuing and associated risks of queue tail incidents.
- Before and after the signal trial, queuing and slow moving traffic on the M25 off slip extended beyond the motorway overhead gantry sign ('Gantry B' in Appendix C); however during the trial, the queuing was contained within the slip road and did not extend beyond the Oxshott Road over bridge (see Appendix C).
- During the trial, the lane discipline on the M25 off slip improved as a result of the traffic signals having the effect of balancing traffic in lanes 1 and 2 of the off slip, thereby reducing the number of weaving manoeuvres.
- The trial had a positive impact on the A244 (Oxshott Road); a neutral impact on the A243 (Kingston Road) southbound but a small negative impact on the A243 (Kingston Road) northbound approach (see Appendix A). Appendix B contains a table summarising the observed journey times on the A243 northbound before and during the trial. The table shows that during the signal trial period the journey time during busy periods increased from 61s to 69s for the length of A243 visible from the camera.

The 'Trial data Analysis & Review' report recommended that a permanent installation of a part time signal scheme be implemented and put forward a number of options for the permanent design.

Options for Permanent Design

- Option 1 – Three lanes on the gyratory approach to the M25 off slip, with the A243 northbound signed and lined as it is currently.
- Option 2 - Three lanes on the gyratory approach to the M25 off slip, with the A243 northbound signed and lined as a full two lane approach.
- Option 3 - Two lanes on the gyratory approach to the M25 off slip, with the A243 northbound signed and lined as it is currently.
- Option 4 - Two lanes on the gyratory approach to the M25 off slip, with the A243 northbound signed and lined as a full two lane approach.

The recommendation of the report was to implement Option 3, as this was the layout used during the trial and had achieved its objective.

However during a meeting between the HA and SCC to discuss the trial results on the 12th of August 2008 (Reference 2), SCC expressed concerns that the volumes of traffic during the trial were lower than that previously observed (these concerns were also raised at a previous meeting held on the 28th of May 2008 - Reference 3). The meeting concluded that:

- Detailed design should proceed on Option 4, as this would mitigate the only road to have shown any disbenefit during the trial.
- A safety evaluation of Option 2 was required, as this had potentially the greatest traffic capacity.

Option 4

Currently the A243 northbound is signed and lined such that the left hand lane (lane 1) is only for vehicles wishing to turn left onto the M25 and the right hand lane (lane 2) is for all other vehicles wishing to either travel on the A244 or the A243 towards Malden Rushett. The results of the trial show that there was a negative impact on A243 northbound primarily due to there being only one lane (lane 2) dedicated for vehicles wishing to proceed towards the A244 or Malden Rushett.

Option 4 will alter the signing and lining such that there will no longer be a dedicated lane for the M25 on slip, allowing vehicles wishing to proceed towards the A244 or the A243 towards Malden Rushett to make full use of both lanes, having the effect of balancing traffic in lanes 1 and 2 of the A243 northbound, reducing overall queue lengths, and reducing the number of weaving manoeuvres.

The part time signals will be configured to always operate Monday to Friday, during the morning period, from 0630 to 0930. However the system can be configured such that the signals will be activated whenever the traffic conditions on the motorway off slip warrant it.

Safety evaluation of Option 2

A number of concerns have been raised with regard to Option 2 during the safety evaluation; further details can be found in Reference 4. However, whilst it is possible to design out the concerns raised and implement Option 2 this would alter the dynamics of the current scheme resulting in a change to the delivery timescales which will extend the programme to beyond committed funding for this financial year 2008/09.

Funding has been secured for 2009/10 to undertake an investigation into the measures required to implement Option 2 (See section titled "HA Strategy for J9").

Safety evaluation of Option 4

The implementation of Option 4 may result in:

- Notwithstanding the potential for accidents in the first year as a result of the new traffic signal installations, a possible reduction in low speed accidents on all links due to the traffic flowing better on the roundabout, the Council has a record of existing incidents at this site that may also diminish.
- A reduction in the likelihood of a high speed accident occurring on the M25 when lane 1 is static due to stationary traffic.
- A reduction in congestion on the M25 as, statistically, 25% percentage of all congestion on the HA network is incident related therefore any reduction in accidents will result in a reduction in congestion.

The Non-motorised User Audit conducted by Mouchel for the HA has shown that there are no national or regional cycle routes alongside or at close proximity to the junction.

System Maintenance

On successful implementation of Option 4, there will be an ongoing need to tune the signals, and this will be undertaken, by the HA, over a period of several weeks after the system has been activated.

In addition to this, once the system has been established, a series of meetings between the HA and SCC will be planned to evaluate the system performance and resolve any issues that may develop. If at any point the system is agreed to be unsuitable then it will be deactivated. These meetings will also be used as a platform to establish a set of operating procedures (protocols) between the HA and SCC.

The long term maintenance of the traffic signal control system and associated street furniture, as detailed in a Section 4 Agreement of Highways Act 1980, will be the responsibility of the HA. Negotiations on the exact wording of the Section 4 Agreement will start once the Council is mindful to proceed with approving the scheme.

The maintenance of the signing and lining of the roundabout will be the responsibility of the Council. However, the HA will provide a one off lump sum payment to SCC, to assist with maintaining the roundabout over the next 2 to 3 years.

Feedback from the Trial

The HA received 12 Highways Agency Information Line (HAIL) inquiries all of which were in support of the traffic signal trial. A selection of these can be seen in Appendix D.

In addition the HA have received an email from Surrey Police, supporting the implementation of signals on the roundabout at J9b. The extract below summarises the received email.

Surrey Police raised concerns about the delays on the roundabout at Junction 9B having a severe impact on the traffic flows on the M25, with queues reaching back for a significant distance during the morning peak periods and during the summer / school holidays when visitors are travelling to Chessington World of Adventures. The queues result in dangerous manoeuvres such as frustrated drivers attempting to emerge from the queue and continue through the junction towards Reigate or remain in a live lane, with flowing traffic, and cut into the slip road at the last moment.

The email provided an example of a recent experience where queuing was experienced in the vicinity of Stoke D'abernon and as a result, a delay of approximately 50 minutes was incurred. There were no incidents on the motorway, or the adjacent county roads that would have contributed to the delay.

The email stated that the current situation represents a significant risk to road users and the temporary traffic signals experiment mitigated that risk enormously by facilitating free-flowing traffic. Surrey Police remain extremely concerned and, unless some mitigating control factor is put in place lives are at risk when there is stationary traffic on the motorway network.

HA Strategy for J9

The HA are committed to making long term improvements at both J9b and J9a, in recognition of this, the Area 5 Local Network Management Schemes (LNMS) forward programme for 2009/10 already contains:

- Funding to investigate the measures required to implement Option 2.
- Funding to investigate of J9a, jointly with SCC, the nature of the problems.

Depending on the outcome of the Option 2 investigation, and subject to funding and review of HA funding priorities, Option 2 will be implemented during 2010.

Congestion problems on the A243 northbound towards Malden Rushett often results in traffic tailing back to the roundabout at J9b, causing the roundabout to become gridlocked. The HA have initiated an investigation, in conjunction with Transport for London and SCC, into identifying the nature of the problems and the measures required to remedy the issues.

Conclusions

Option 4 reduces the potential for vehicles queuing on the M25 off-slip and mainline, eases congestion and improves journey reliability and safety for M25 users with minimal or neutral impact on the Council's network. With the agreement and support of the Council, the HA will

progress the completion of the Section 4 Agreement and implement Option 4 this financial year.

The HA will undertake an investigation into the measures required to implement Option 2 during 2009/10 with the implementation of Option 2 during 2010, subject to funding and review of HA funding priorities.

References

Reference	Document Title	Document Number	Revision
1	M25 Junction 9b – Partial Part Time Traffic Signal Trial, Trial Analysis & Data Review”	1130_10036519	Issue A
2	M25 J9b Temporary Traffic Lights Trial Meeting to Discuss Trial Report and agree a way forward (12th August 2008)		
3	M25 Junction 9b, Partial Part Time Signal Trial (Update), Meeting Notes (28th May 2008)		
4	A302 LNMS Economy, M25 J9B Signalisation Improvements, Safety Evaluation of Option 2	1130_10040244	Issue B

Appendix A - Screen shots captured from CCTV

M25 Exit slip road



Before



During



After

A244 Oxshott Road



Before



During



After

A243 Kingston Road Southbound



Before



During



After

A243 Kingston Road Northbound



Before



During



After

Appendix B - A243 Kingston Road Northbound Comparative Journey times

Data taken from video evidence collected from camera 2 on lamppost B by Count on Us

Before Trial Journey Times

During Trial Journey Times

Date	Start	End	Duration	Date	Start	End	Duration
08/05/08	0838.35	0839.50	75s	20/05/08	0840.27	0841.37	70s
	0840.50	0841.55	65s		0844.27	0845.27	60s
	0843.15	0844.14	59s		0920.20	0921.36	76s
13/05/08	0831.25	0832.48	83s	5/06/08	0809.37	0810.59	86s
	0833.00	0833.57	57s		0811.30	0812.39	69s
	0834.00	0834.57	57s		0834.05	0835.00	55s
	0842.51	0843.40	49s	10/06/08	0817.27	0819.46	80s
	0846.10	0847.05	55s		0820.14	0821.18	64s
	0851.40	0852.43	63s		0822.23	0823.18	55s
15/05/08	0813.39	0814.27	47s		0858.00	0859.10	70s
Average			61s				69s

Appendix C – M25 J9b off slip



Appendix D - Trial Feedback from the Highways Agency Information Line (HAIL)

The HA received 12 HAIL inquiries all of which were in support of the traffic signal trial. A small selection is included below:

Can we have these lights back please? In the 4 weeks of operation I did not encounter the enormous tailback that builds up when the clockwise carriageway stuffs up and pushes up the volume of traffic leaving to join A243/A3 – Customer 17 June

I'm certain there's are many processes that have to be followed before a final decision is made as to what's going to happen at this junction but please let common sense reign and do the glaringly obvious - install traffic lights sooner rather than later! – Customer 24 June

Thank you so much for the traffic lights at this junction (anticlockwise). My journey to work has been quicker and safer. I have been concerned at the static traffic queuing to leave the junction and the dangerous drivers stopping on the inside lane, queue-jumping for ages. Please can these lights be a permanent feature? – Customer 13 June

Feedback re temporary part time signals at M25 J9 (anticlockwise):Fantastic to have traffic lights at the roundabout at the junction. Cut down waiting time tremendously – Customer 17 June

Caller would like to enquire whether the lights at J9 exit slip are going to be put back in. He reports that he found, along with 23 other guys that he works with that use the M25 daily, that the traffic was less congested with these lights. – Customer 19 June

During the trial, site personnel also reported that motorists were vocal with their positive comments with regards to the success of the signal trial.

Appendix E – Proposed Scheme Layout