Transport Economy and Skills Overview and Scrutiny Committee
Thursday 14 December 2017

Average Speed Enforcement (ASE) Camera Project Progress Update and Initial Evaluation
Supplementary Briefing Note

1. History of Speed Enforcement

West Midlands Police (WMP), working with local authorities, carried out speed enforcement using fixed site wet film cameras and mobile cameras for several years until March 2013 through the West Midlands Casualty Reduction Partnership. Around 300 fixed camera sites were in use across the West Midlands until March 2013. Working camera equipment (approximately 50 units) was rotated across camera housing sites, with active enforcement prioritised according to traffic flows and road traffic collisions.

Since 2010, direct funding to local authorities for road safety schemes has been cut and in 2011 the West Midlands Casualty Reduction Partnership was disbanded, though officer level coordination of Road Safety activity continued via the West Midlands Road Safety Group, and other local forums including the Birmingham Road Safety Partnership.

In April 2013 all the fixed traffic violation cameras within the West Midlands were switched off (a joint decision by WMP and all the local authorities). This was primarily due to the age and obsolescence of the equipment. However, the camera housings were left in situ, and continue to as a deterrent. Since then, WMP have continued to carry out speed enforcement through mobile enforcement vans and vehicle patrols.

2. ASE Pilot and Anticipated Benefits

In October 2012 Birmingham City Council commissioned a review to explore options for taking forward speed enforcement camera operation. This concluded that ASE cameras presented the best option going forward and that a trial be undertaken.

BCC, Solihull Metropolitan Borough Council (SoMBC) and WMP agreed to go undertake a pilot ASE project on behalf of the West Midlands local authorities.

Based on the review, the pilot ASE was expected to deliver the following benefits:

- Improved speed limit compliance / speed reduction;
- Improved road safety (consequent reduction in the number and severity of Road Traffic Collisions – RTC); and
- Improve drivers' behaviour/speed limit compliance over a larger area.

The pilot project also allowed an opportunity to upgrade ageing infrastructure with the potential to expand to other sites with minimum costs. Finally, it presented WMP with an opportunity to improve back office operational efficiencies in terms of processing infringements.

BCC, SoMBC and WMP agreed to undertake a pilot ASE project on behalf of the West Midlands local authorities.

Following a procurement exercise for the system and camera equipment, ASE cameras were installed at eight sites (five in Birmingham and three in Solihull) and went 'live' in August 2016. The

capital cost of the scheme for the Birmingham sites was approximately £300,000 funded from Integrated Transport Block funding within the Transportation Capital Programme (2015/16).

The camera site locations are shown below in Table 1.

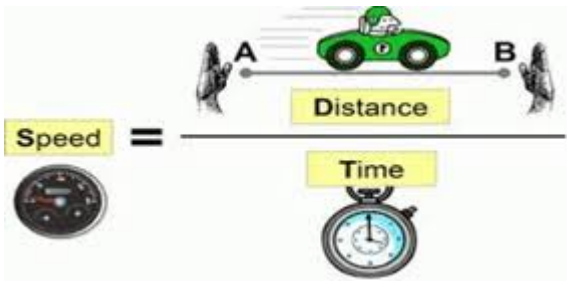
Table 1: ASE Camera Sites

Road	Authority	Length (miles)	Speed Limit (mph)
A38 Bristol Road	Birmingham	0.30	30
A456 Hagley Road	Birmingham	1.74	30
A45 Coventry Road	Birmingham	0.87	40
A4540 New John Street	Birmingham	0.12	30
A34 Newtown Row	Birmingham	0.37	30
B4114 Bradford Road	Solihull	0.25	30
B425 Lode Lane	Solihull	0.37	30
A3400 Stratford Road	Solihull	0.56	30

3. How does ASE work?

A vehicle's average speed is measured by a pair of Automatic Number Plate Recognition (ANPR) cameras between two points (one at entry and one at exit). Number plates of vehicles are read by the ANPR cameras, and the system measures the time for each vehicle to travel between these two points over a defined distance and converts it to speed using a simple equation (speed equals distance divided by time taken) as shown in figure 1 below.

Figure 1. – Speed Calculation Formula



Once an 'activation' is generated by the ASE cameras, the images of offending vehicles are automatically sent to the back office system where WMP staff check and process an evidence pack for each offence.

Not all ASE cameras are live at any one time. Live sites are rotated on a monthly basis – this is done from the back office and does not require any work at camera sites (BCC/SoMBC do not know which sites are live). The ASE cameras themselves require annual maintenance and as per Home Office Type Approval (HOTA) requirements are also recalibrated on a yearly basis.

4. Evaluation Criteria

The evaluation criteria for the 1 year period (August 2016 – September 2017) of the ASE are primarily based on speed reduction.

Collision data has been considered but has not been evaluated, as the project period is relatively short (one year) and a before and after comparison would not be robust (standard practice for road safety analysis usually takes into account a minimum of three years' RTC). A later evaluation will be undertaken to assess the impact of ASE on RTCs, however the sites chosen for the ASE pilot previously had GATSO cameras which will have already had an impact on RTCs in those locations – therefore the overall reduction in collisions would be expected to be lower than if ASE were installed in locations that previously had no speed enforcement.

5. Pilot Results – Speed Reduction

The before and after 85th percentile speed was compared at the sites that ASE was implemented as shown in Table 2 below. The 85th percentile speed is the speed at or below which 85% of vehicles are observed to travel. This data was provided by WMP and was captured by pneumatic counting devices. (NB the ASE system itself also provides speed data, but since the 'before' data could not be collected in this way, in order for the comparison to be exact the 'after' data was collected in the same way).

Before ASE data was collected over a one week period in April 2016. After ASE data was collected over a number of one week periods during April, May and August 2017.

Table 2. Before and After ASE Speed (85th %ile) Comparison

Site	Speed Limit (mph)	85th%ile Speed before ASE (mph)	85th%ile Speed after ASE (mph)	Speed Reduction (%)
A38 Bristol Road Site 928	30	39.8	32.2	-19.10
A456 Hagley Road Site 924 (WB)	30	38.5	32.2	-16.36
A456 Hagley Road Site 925 (EB)	30	39.4	31.5	-20.05
A45 Coventry Road Site 926 (WB)	40	47.9	40.5	-15.45
A45 Coventry Road Site 927 (EB)	40	N/A	41.2	N/A
A4540 New John Street Site 178 (EB)	30	40.5	32.9	-18.77
A4540 New John Street Site 179 (WB)	30	38.9	32.4	-16.71
A34 Newtown Row	30	39.8	33.6	-15.58
B4114 Bradford Road Site 334 (EB)	30	38	32	-15.79
B4114 Bradford Road Site 336 (WB)	30	N/A	31.3	N/A
B425 Lode Lane Site 326 (NB)	30	33.6*	32.7	-2.68
B425 Lode Lane Site 327 (SB)	30	34.2*	33.1	-3.22
A3400 Stratford Road Site 2313 (NB)	30	38	32.9	-13.42
A3400 Stratford Road Site 2314 (SB)	30	38.5	31.8	-17.40

*Dec 2014

As shown within this table, the 85th percentile speed was reduced at all sites after the implementation of ASE. Before ASE data was not available for A45 Coventry Road Site 927 and B4114 Bradford Road Site 336, therefore the speed reduction could not be calculated.

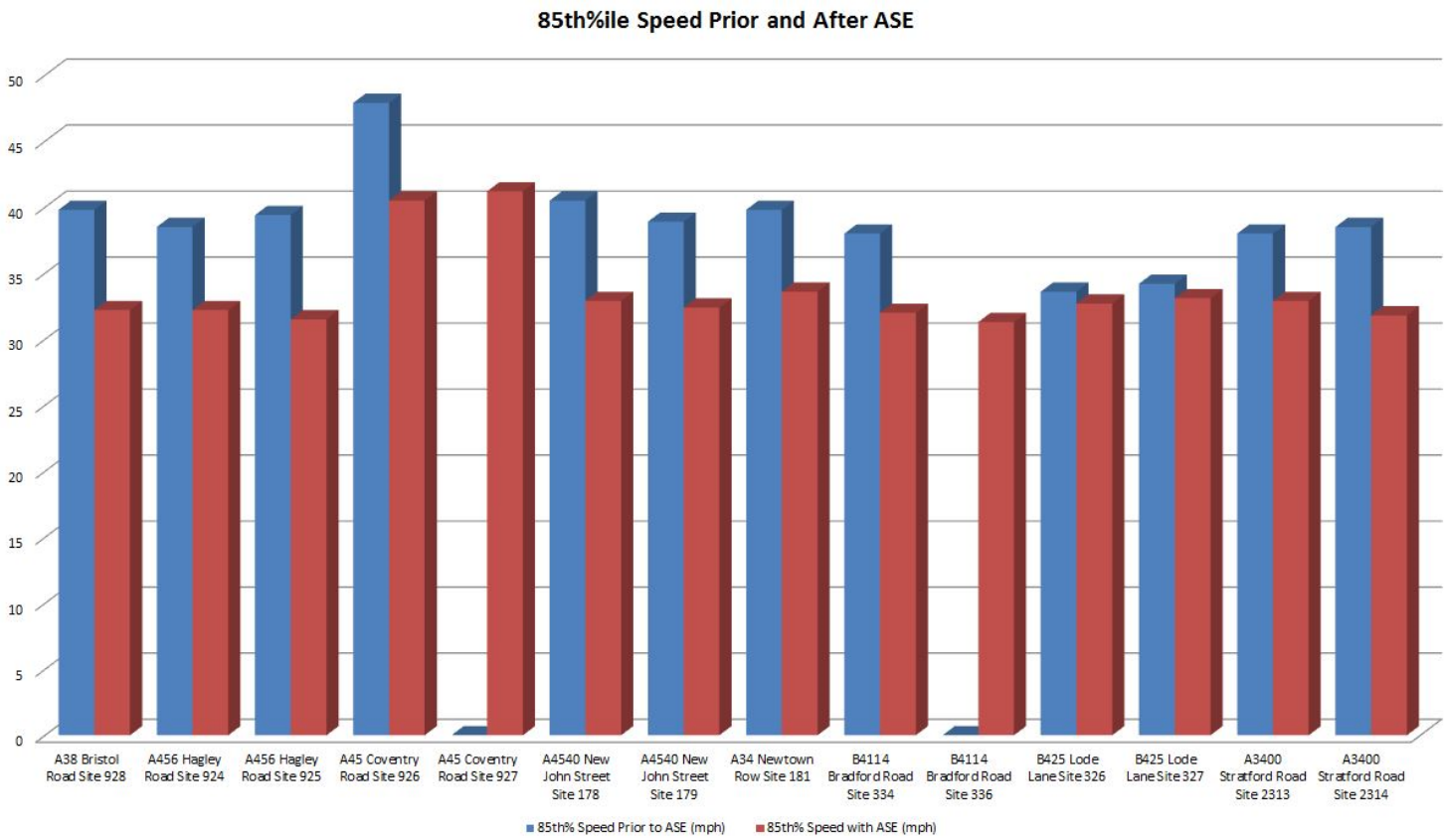
With the exception of B425 Lode Lane (Solihull), significant speed reductions (above 13%) were also observed at all sites.

The biggest reductions are shown at Site 925 A456 Hagley Road (-20.05%), followed by A38 Bristol Road (-19.10%) and A4540 New John Street Site 178 (-18.77%). The main reason for this big reduction is that those were the sites with the poorest speed limit compliance and since the implementation of ASE, a significant difference in driver behaviour has been observed.

B425 Lode Lane shows the lowest level of speed reduction due to the relatively good speed limit compliance at this location before ASE was implemented.

The results are also presented in a graphical form in Figure 2. below.

Figure 2. - Before and After ASE Speed (85th %ile) Comparison



6. Pilot Results – Speed Profile Data

Monthly Speed Profile data was provided by the equipment provider for each site. The speed data was captured by ANPR cameras. Speed profile data for two sample sites is shown in Figures 3 and 4 below.

Figure 3. – Speed Profile Data for A4540 New John Street (March 2017)

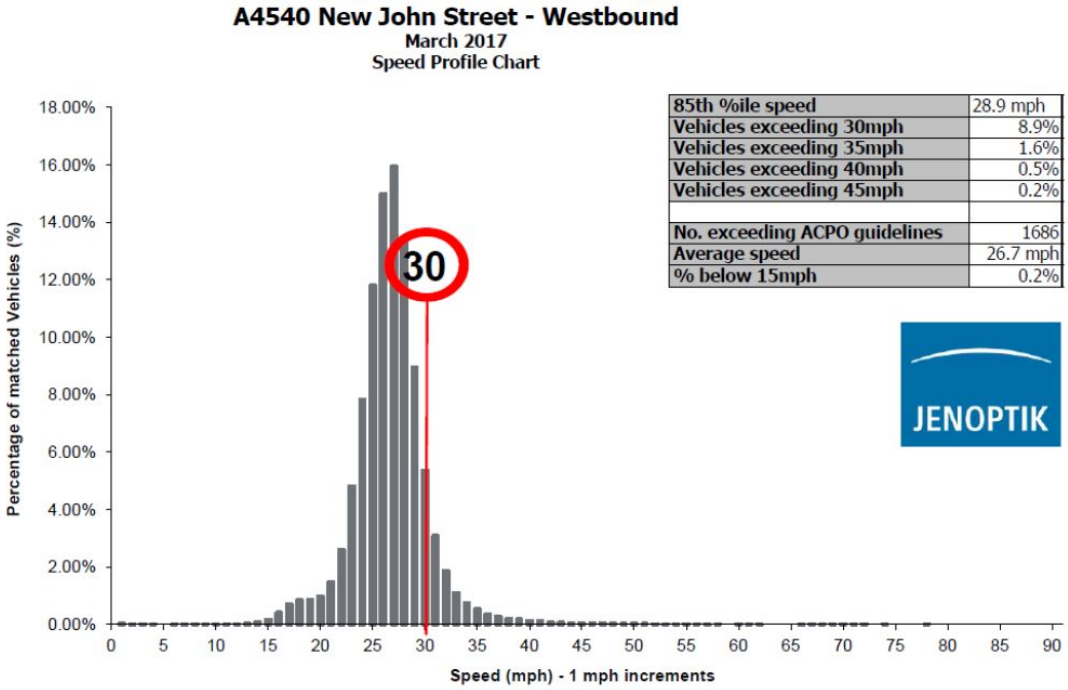
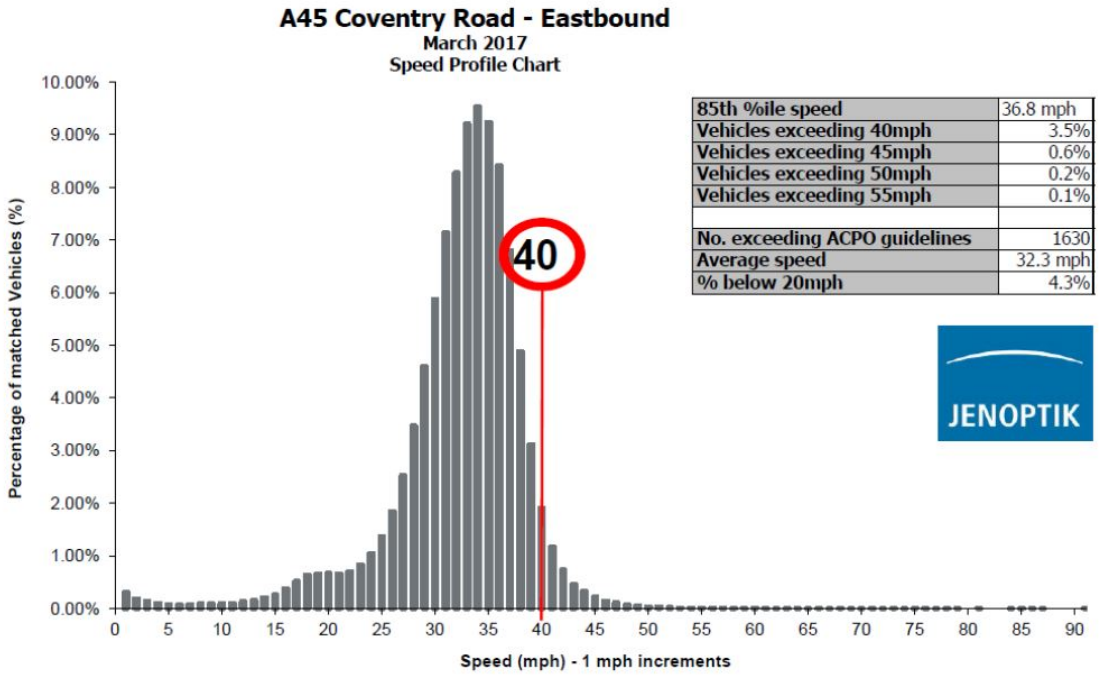


Figure 4. – Speed Profile Data for A45 Coventry Road (March 2017)



In both cases it can be seen from the graphs that the majority of vehicles travel below rather than at the speed limit. For New John Street, most vehicles are travelling between 25 and 29mph. For Coventry Road vehicles tend to travel at between 32 and 37 mph. These results indicate lower speeds than for results presented in table 1 and figure 2 – this is because these speeds are from the ASE system (average speed) whereas the other data was measured using pneumatic counting devices (spot speed).

7. Initial Conclusions from the Pilot

The pilot scheme has successfully demonstrated that ASE has a positive impact on speed limit compliance and speed reduction, with consequent benefits in reducing the number and severity of RTCs.

Drivers tend to comply for larger areas with ASE cameras than with spot speed enforcement (as provided by the previous GATSO cameras), where drivers tend to brake a few metres before the camera and accelerate once they pass the secondary check marks. Due to the method of capture by the ASE cameras and larger area of enforcement between two points, ASE system has a much larger "halo" effect compared to fixed spot speed cameras because the driver is uncertain where the enforcement begins or ends.

In terms of RTCs, these have been considered but have not been evaluated, as an assessment of RTC data after just 12 months of operation would not be considered robust and there is also the ongoing deterrent impact of historic GATSO infrastructure to take into account.

No vandalism has been experienced on these ASE cameras to date. This is because the cameras are installed at 6m height.

The cost of installation of the ASE cameras is lower compared to spot speed cameras, as they can be installed on existing street furniture (e.g. lamp columns). They are easier to install and require less civil works.

With wet film cameras regular site visits were required to retrieve the film or rotate the camera heads. The replacement with cameras of digital technology improved operational procedures. Camera rotation happens from the back office and no regular site visits are required.

Other benefits identified by WMP from the use of the ASE cameras were the identification of clone vehicles and repeat offenders.

Whilst a number of Freedom of Information Act requests have been dealt with concerning the number of offences resulting from ASE, public perceptions have been positive, with no complaints received by BCC concerning the system – moreover a number of requests have been received to date requesting ASE at new locations (these are kept on file to inform future development alongside appropriate traffic/road safety data).

Finally, when not in use for enforcement purposes, ASE can collect data for uses such as journey time monitoring or collecting speed and traffic data for statistical/planning purposes. The installation of ASE cameras has improved road safety at all sites where ASE was implemented, by reducing vehicles' speed. A large reduction, over 13%, of vehicles' 85th%ile speed was noticed at all sites, apart from B425 Lode Lane at Solihull, which was already a compliant site.

8. Way Forward & Next Steps

A full evaluation is to be undertaken once a 21 month period has passed, with subsequent road safety analysis to follow. However, in the meantime there are sufficient positive results to proceed from pilot to start working towards further roll-out. This will commence with an initial review of existing arrangements/contract to assess practicality of further expansion to new routes, and high level discussions with WMP in this regard have already commenced.

Once the number of new sites that can be accommodated has been determined, the next step will be a site by site assessment of the existing GATSO sites and any other new sites for consideration. The approach will be data-led and will look to integrate into scheme delivery where applicable (i.e. if other transport schemes are being developed and delivered, could ASE form a component of this). Exact timescales are to be determined but it is anticipated that a desktop exercise will commence in early 2018 with partner discussions ongoing.

Discussions are also taking place with other West Midlands authorities who are looking to implement ASE in their areas. This will be coordinated by Transport for West Midlands (TfWM), in particular where the focus is on the Key Route Network due to concurrent powers between TfWM and local highway authorities. The necessary legal and partnership arrangements will take some time to develop at the West Midlands level and so in the meantime BCC will continue to progress ASE under existing arrangements.