

Stopped Vehicle Detection on M25 London Orbital

Case study - M25 (Junctions 5-6 and 23-27), London, United Kingdom

The M25 is one of the busiest roads in England, serving both Heathrow and Gatwick International Airports. ClearWay's Stopped Vehicle Detection monitors traffic and alerts the control centre immediately when a stationary vehicle is detected.



The Challenge

Improving Safety Through Detection

M25 London Orbital Motorway

The M25 encircling London is Europe's second-longest orbital road at 188km in length. It is also one of the busiest roads in the United Kingdom, serving both Heathrow and Gatwick International Airports, as well as local traffic and freight bound for the Port of Dover.

Highways England is the authority responsible for operating, maintaining and improving England's motorways and trunk roads, which includes the M25. With the large volumes of traffic and the high-profile transport links that the M25 connects to, it is crucial that the motorway is kept operational 24 hours a day. To cope with this demand, Highways England introduced All Lane Running (ALR) schemes to add additional traffic capacity. In ALR sections, the hard shoulder is converted to a permanent live traffic lane and emergency refuges are added in lieu of a hard shoulder.

A key area of concern for Highways England was the high probability of road users being killed or seriously injured (referred to as a KSI) when vehicles stopped in live lanes on high-speed roads, particularly when traffic flows were low. On ALR motorway sections,

stopped vehicles represented the fourth-highest risk of a KSI, either as the direct cause or by creating secondary incidents leading to KSIs.

Previously, stationary vehicles were detected either by identifying queues or when reports were received from the police or the public. On average, vehicles were stationary in a live traffic lane for 17 minutes before traffic control centre operators were notified and could initiate incident response measures. During this time, the vehicle – as well as other road users – were exposed to an increased risk of a KSI.

The aim of the project was to mitigate this risk on ALR schemes, particularly during off-peak periods, by reliably detecting stationary vehicles. Radar-based stationary vehicle detection (SVD) technology offered a cost-effective way to enhance safety by improving detection rates and times, as well as reducing response times.



'ClearWay demonstrates a well-engineered solution. The system offers powerful measure, with widespread application for alerting operators to stationary vehicles. It helps mitigate safety critical issues, improve incident response times and traffic flow...



...It is highly likely that the implementation of ClearWay will save lives and prevent injuries. The trials have proved the quality and the use-case for the equipment and the approach taken.'



Judges' comments, upon winning the UK Chartered Institute of Highways and Transportation (CIHT) and Department for Transport (DfT) Technology Award in 2018

The Solution

Rapid Detection And Response

Reducing the risk of secondary incidents

Highways England commissioned a trial of Navtech's ClearWay solution, located on the M25 between Junctions 5 and 6. Nearly 97% of the site was covered using 27 radars after a thorough site survey established the optimum locations. Once installed, the system was rigorously tested and fine-tuned during commissioning, including on-site testing under traffic management and using live data.

The result verified that the ClearWay system monitors all traffic and alerts the control centre immediately when a rule or behaviour is broken. The radar detected a stationary vehicle and alerted the operator within 12 seconds.

The operator could investigate and verify the alert in approximately one minute, which was a significant decrease from the original 17-minute average using existing processes. Incident response could then be deployed much quicker, reducing road users' exposure time to increased safety risks.

After demonstrating the value of the system, a pilot scheme was introduced on the M25 between Junctions 23 to 27 in early 2018. Commenting on the value that ClearWay SVD provided on the pilot scheme, the South Mimms Regional Control Centre (RCC) Operation Manager said:

'SVD made a real positive difference during our incident on the 2nd April. We had a vehicle cross onto the opposite carriageway on the M25 between J24 and J25 causing full closure of the M25. We may not have known anything about this incident until the police interface came through, so the 14 minutes between the initial alert and the police interface being received gave us a much quicker response, and possibly saved a lot of trapped traffic. This is, in my opinion, such a positive outcome from SVD, and a huge success for this project and the team involved.'

According to the Highways England annual report, since the deployment of the SVD system on junctions 5-7, there has been a 42% improvement in fatal weighted injury (FWI) rate.



-94%

Reduction in time
There is a 94% reduction in the time it takes for an operator to be notified and to verify the presence of stationary vehicles. Based on 1 minute against 17 minutes.



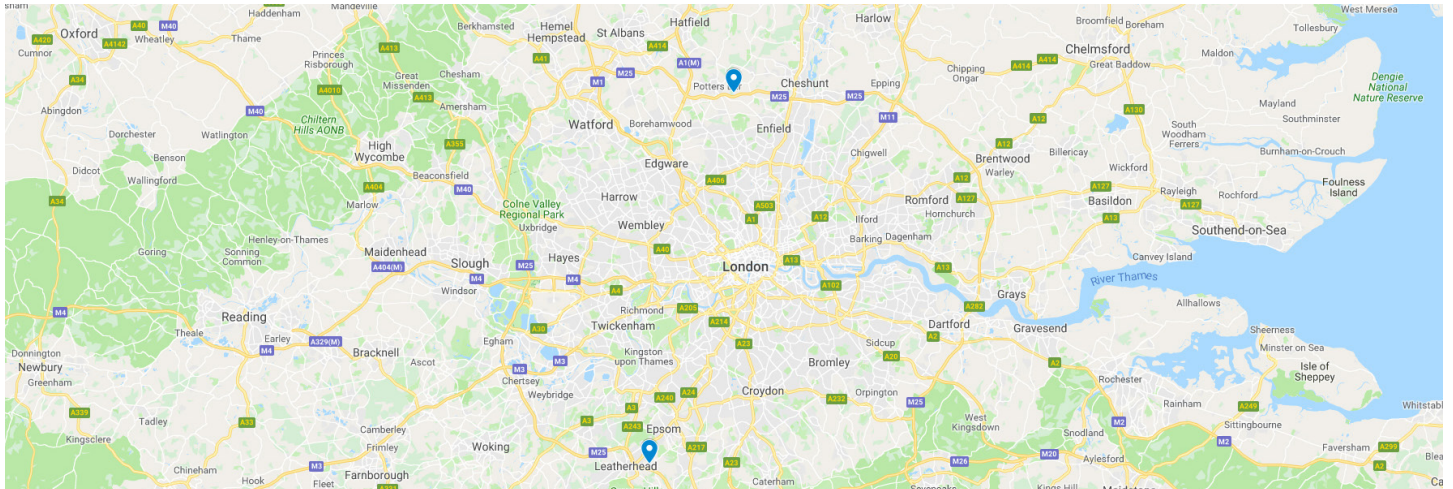
0.2

Low false alarm
False alarms per day, per mile of road monitored.



< 2min

Response time
ClearWay enables the control room to instantly respond to an incident following raising an alert.



Summary

ClearWay is an integral component of a smart highway solution, providing accurate and reliable vehicle tracking and incident detection for roads, bridges and tunnels. Improved traffic flow, reduced congestion, and enhanced safety result from implementing this award-winning solution on existing highways.

Our patented radar technology provides superior detection with high accuracy and low false alarm rates. The high-frequency 77GHz signal can penetrate extreme

conditions such as fog, rain, spray, snow, darkness or smoke without any loss of performance, so incident response can be deployed in any situation. A fast response time increases motorist safety not only by responding to the initial incident, but also by reducing the likelihood of a secondary incident occurring.

The intuitive, rule-based software enables incidents to be defined using a wide variety of parameters, allowing traffic control staff to focus on key areas of concern.

Detection can also be suppressed for maintenance activities or during peak times to avoid wasting staff time on false alarms.

In addition to stationary vehicle detection, ClearWay can also be used for collecting traffic data such as average speeds and vehicle counts for an integrated solution to highways monitoring. And as autonomous vehicles become the norm, ClearWay can also be used as a connected corridor, future-proofing the highways network.

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