CASE STUDY

Automated Queue Warning System (AQW) - National Highways NEAR South Scheme

Enhanced safety and scheme efficiency.

The background

Mobile VMS Limited (MVMS) is a strong advocate of encouraging integrated technology and work practices that protect road users, whilst enhancing scheme safety and efficiency.

A solution to queuing traffic on the M25 J5-7 and M4 J12 Balfour NEAR South Scheme was part of an ongoing consultation with the onsite Senior Traffic Managers. Significant queuing traffic had been identified, with associated disruption, complaints and serious safety concerns. MVMS proposed the use of its innovative Automated Queue Warning System (AQW). A Queue Detection trial was planned for July 2024 to reduce the risk of rear end collisions, and improve customer experience.

▲ VMS triggered to warn drivers of queuing traffic

Scope & Solution

MVMS was tasked with implementing the digital integration of its AQW System, to enhance the provision of road critical information, around congestion and queues, to the motoring public and projects teams. A trial was implemented on 1 July 2024. The system comprised of roadside AQW sensors, our JamLogic™ software, and automated advance warning messages displayed in real-time upstream on Variable Message Signs (VMS). This system provides real-time detection and highly accurate reporting of queues, with no lag time.

We installed two advance queue detection sensors, approximately 1 mile apart, within the works, which sensed queuing traffic and then communicated in real-time to an advance warning VMS positioned upstream.

The system informed drivers of delays and slow / stopped traffic; enhancing scheme efficiency, reducing fuel consumption and emissions, and increasing safety at a point where high-speed traffic approaches slow or stopped vehicles ahead. The system is fully solar with no manual interaction required from a control room.

▲ JamLogic software for seamless control and management

AWARD WINNING
National Highways/Alliance
Outcome Award for
'Customer Home Safe and Well'

SHORTLISTED
Highways Awards 2025
'Best Use of New Technology'

Outcome

The AQW system and real-time advance warning enabled more reactive driving behaviour and appropriate slowdowns at critical points, promoting positive action from the motoring public, whilst also demonstrating commitment to enhancing customer experience.

Results showed our system provided highly accurate, real-time reporting compared with Google or UKNTIS data, which both showed lag time and false or missed activations

In a comparative study run in parallel, our AQW sensor-based system was significantly more reactive, accurate and therefore offered a safer solution than an equivalent system using 3rd party travel time routes or indeed National Highways' roadside data (UKNTIS).

Safety, carbon saving and scheme efficiency are enhanced through the use of our system. The project team are also able to access full project reporting on both journey times and queueing behaviour and make informed decisions on Traffic Management requirements.

> "The NEAR project plays a crucial role in enhancing the operations of National Highways SRN by the creation of additional emergency areas between M25 J5 to J6, an area notorious for traffic delays, bottlenecks & incidents. The introduction of the Mobile VMS queue detection system has proven to be exceptionally beneficial in mitigating rear-end collisions by providing timely and accurate real-time information to drivers at key decision points. This system helps manage traffic flow, improve safety, and reduce the risk of accidents, offering a more efficient and safer travel experience for road users in one of the busiest sections of the UK's highway network."
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> Jon Pettman *EngTECH FIHE RegTTME(IHE)*
> Regional Traffic Manager - North | Balfour Beatty | Highways

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