Smart Closure Trial A634 Blyth Road

Project Summary

Via East Midlands' road marking crew needed a unique traffic management system to ensure their safety as they worked on a busy section of the A634 between Blyth and Retford. The existing site features meant that a traditional traffic management approach would have been uneconomical, so the traffic management provider, TMS proposed the use of our digital services to provide the required safe working zones in a cost-efficient manner.

Challenges

Located near the A1, this local 60mph road carries a large number of cars and lorries to local destinations. The working area also had five side roads located within the 3.6km site extents, in addition to the two main accesses. The high traffic volumes combined with the large number of side roads made traditional traffic management operations an expensive option, requiring at least four manned traffic management gates and five operational personnel.

The road layout was a further challenge, as features such as cambered and raised sections, as well as blind corners, made visibility a particular concern on this site. If a driver breached the traffic management, the site layout would prevent operatives from being aware of the breach until it was potentially too late to reach a place of safety. In order to mitigate this risk, radio communication was proposed between the workers and the traffic management operatives for the duration of the works. However, an additional radio repeater would be required as the road layout and features would interfere with the radio signal, adding additional costs to the scheme.

Finally, Via East Midlands had raised concerns about not receiving adequate site reporting information from sub-contractors, and wanted to use a system that would provide the data they needed.

Solutions

Via East Midlands approached TMS to trial HRS's digital services as a more cost-effective way to provide traffic management. After discussing the site requirements with the client, we then proposed the use of the Smart Closure System. The system would minimise costs by reducing the number of traffic management operatives required to control the site. In addition, the system would improve safety by deterring motorists from entering the closure and provide an adequate warning to site staff should any breaches occur. Because of the number of side roads involved, we suggested the use of Customer Communication Terminals and QR signage at all the road closure points. The Customer Communication Terminals would allow members of the public a quick and convenient method of contacting the traffic management crew for help or to gain access to a property within the closure, for increased customer satisfaction.

To ensure the Smart Closure System worked as planned, a geo-zone was set up prior to the works commencing. The geo-zone creates a digital map of the road closure and surrounding side roads within the monitoring platform. The traffic management and digital services were then installed on site. Once within the geo-zone and turned on, the equipment knew how to function, making the physical setup quick and easy. The Intellicone smart lamps that are used with the Smart Closure System would emit a loud alarm to not only deter the intruder from entering the site, but also to provide a warning to any workers nearby of unauthorised vehicles on site. The lamps would notify the traffic management crew if any of the lamps were moved or tampered with so the crew could respond as soon as possible and prevent any further incursions into the site. With a traditional traffic management setup, a minimum of five gatemen would have been required to monitor and operate the six closure points. With the Intellicone Smart Closure System and the remote site monitoring that it enables, this could be reduced to just one. However, at the client's request, two gatemen were present on site so they could trial the system.

The QR signage and Customer Communication Terminals were placed at the side road closures to provide road users with the information they needed when they reached the traffic management. The QR signage incorporated a QR code that, when scanned by a smartphone, would open a navigation app such as Google Maps and display the current diversion route for the works. This gave road users the information they needed in a format that they could quickly and easily use. The communication terminals were also placed where road users may need additional assistance, such as escorting through site to reach their property. Via East Midlands' logo was also included on the signs for increased brand awareness.

The information generated by the digital services equipment – such as the alarms used for the closure system and the communication terminals – was also collected and displayed within the monitoring platform, along with location details. Information was also sent to traffic safety control officers (TSCOs) for the works by text message. Besides enabling the traffic management crew to respond to incidents, the automated site reporting gave the client all the information they needed about the start and end of works, as well as any incursion data and customer feedback.

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Outcomes

The works took place over the course of three nights. Thanks to the digital services included within the traffic management provision, two attempted breaches were stopped. A further incursion was detected before any of the road marking crew came to any harm while they were working on a particularly hazardous section of road. A large pickup truck was travelling at speed towards the works zone and – thanks to the Smart Closure System – the mobile traffic management team and road marking crew were instantly alerted to the breach. Although the errant vehicle was stopped by the mobile traffic management team before reaching the working area, the instant alert provided by the system had enabled the road marking crew to reach a place of safety. Without the digital services, there would have been an increased risk of the workers being injured due to the reduced visibility throughout the site, making it difficult for them to be alerted to the breach otherwise.

By removing the manned element of the traffic management from 65% of the closure points, there was less risk of any conflict between operatives and members of the public. As a result, both the road marking crew and the traffic management staff were able to carry out their works safely and without injury. The traffic management operatives who were removed from the closure points were instead redeployed as a mobile team within the closure, providing a second line of defence against any breaches.

With the use of digital solutions that allowed remote monitoring and management of the site, the cost-effectiveness was also significantly increased without compromising the safety of the workers. The reduction in staff provided a cost saving of 36% compared to a traditional traffic management setup, which would have required a larger number of operatives on site to man the side road closures. The client was also able to benefit from the automated site reporting, which gave them all the information they needed in order to better plan and inform future works in the area. In addition, the client's roadworks platforms (such as Oneroute) were automatically updated, so there was no time lost updating systems and fewer risks of manual errors in the data entry.

The QR signage and Customer Communication Terminals were a further contributor to the low number of attempted breaches experienced on this busy road. By providing the road users with the information or help they needed, frustration levels were reduced, and road users were able to continue on their journey without feeling that a site incursion was their only option.
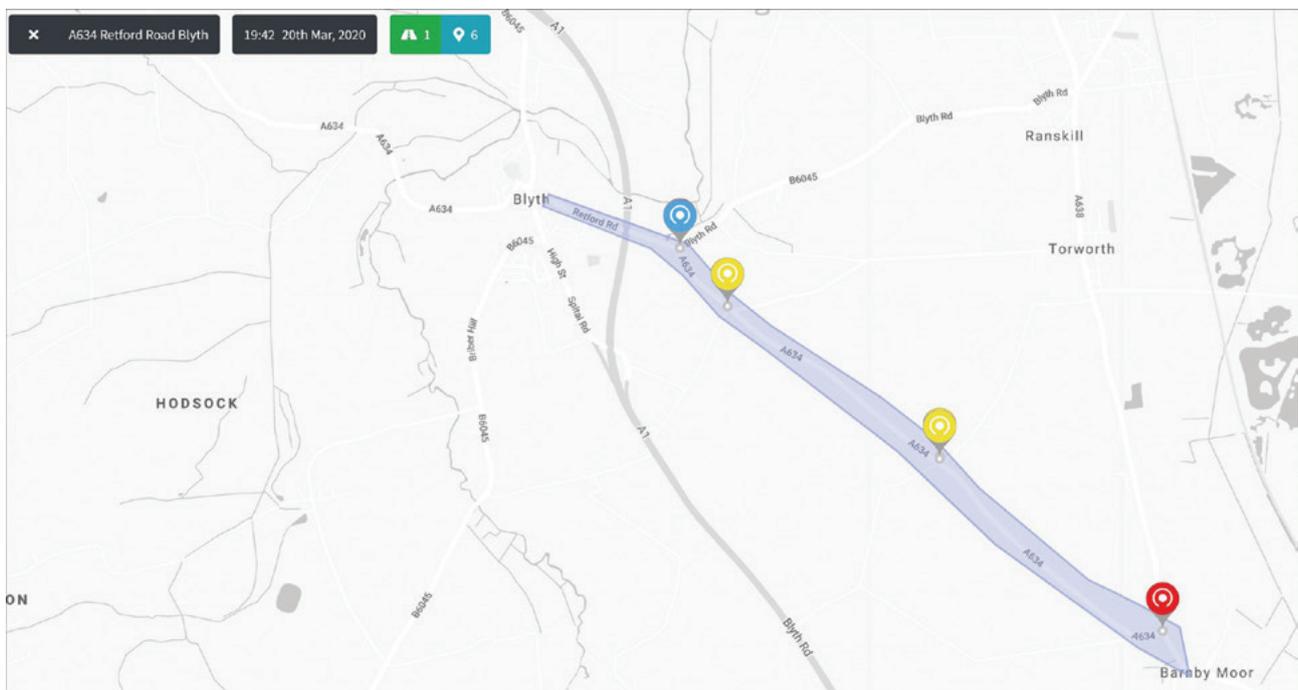
Benefits to Via East Midlands:

The Smart Closure system provided a wide range of benefits to Via East Midlands on this project:

> Improved site safety through reduced incursions

> Reduced the risk of injury to site staff by removing TM personnel from areas of potential confrontation and abuse

> Provided cost savings through using digital technologies as opposed to a site presence for site monitoring

> Improved communication with road users by using Customer Support Terminals and QR codes to provide information such as diversion routes

> Automated updating of roadworks platforms such as Oneroute (roadworks.org and Streetmanager), removing the need for manual input and increasing data quality

About the client

Via East Midlands provides sustainable highways services for Nottinghamshire and across the wider East Midlands region. They provide services in partnership with Nottinghamshire County Council, maintaining, designing and constructing throughout a range of disciplines. This includes the maintenance of roads, footways, signs, lines, lighting and signals, salting and snow clearance, the delivery of highway improvement services and the management of activities needed to support the county's highway network.

About HRS

HRS's mission is to provide technology-based safety solutions that will help to significantly reduce injuries and fatalities in temporary work zones, whilst providing the travelling public with accurate real-time information. Our digital solutions have been proven to safeguard workers on many occasions whilst also delivering net cost savings in temporary traffic management.

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