Understanding the Causes of Bridge Strikes

TfL Lane Rental Industry Publication

TRANSPORT FOR LONDON

Introduction

Hundreds of thousands of rail passengers suffer hours of delays and cancellations due to 'bridge strikes' – when a lorry hits a low bridge. About ten such incidents - which cost an average of £13,000 in damage and delays - are expected every day. According to Network Rail data, there are almost 2,000 bridge strikes every year costing the taxpayer some £23m. The most smashed-into bridge in London is one on Thurlow Park Road in Tulse Hill, which was been struck a shocking 92 times since 2009, giving it the dubious title of third most-hit bridge in Britain.

Bridge strikes are caused when vehicles that are taller than the prescribed vehicle height on low bridges attempt to pass underneath becoming trapped, overturning or damaging the structure or the highway assets. These strikes occur despite prominent warning and diversion signage on the approaches to the bridge. The disruption caused to London's transport network is significant, both for rail and road users because lengthy network closures are required to facilitate the necessary safety checks to confirm the structure is still safe to use.

Currently, there are over height vehicle detectors (OVD) at various locations, however they do not capture the number of vehicles that trigger the sensors, nor do they record driver behaviour. There is good evidence from the Metropolitan Police Force to suggest 'near misses' are far greater than ever imagined. There is data to evidence over-height vehicles have triggered the OVD but turn off prior to the bridge, perform a three-point-turn or manage to sneak under the bridge. Although individually some of these can be benign with regards to impact on the rail network the sheer number can have a notable impact on the road network, be a danger in their own right and be a cause of angst to local residents.

Given the cost and scale of the disruption these strikes cause to peoples journeys it is worthwhile understanding the causality to inform recommendations to reduce bridge strikes to as low as reasonably practical.

According to Network Rail

• **43** per cent of lorry drivers admit to not knowing the size of their vehicle

• **52** per cent of drivers admit to not taking low bridges into account when planning their journeys

• **Five** bridge strikes happen across the country everyday – with a peak of 10 per day in October

• On average, each bridge strike costs £13,500 and **causes two hours of delays to train services**

The Project

The first part of the strategy to reduce bridge strikes was to collect data to understand the level of risk and help inform specific mitigation measures. To do this telemetry and CCTV was installed at 8 over height vehicle detectors protecting the 4 highest risk structures. The following was then captured;

- Gather OVD fault data immediately

- Capture the numbers of over height vehicles approaching the structure

- Understand driver behaviour on triggering OVD messages on VMS

- Gain an understanding of the issues involved in turning a large vehicle at each site

After installation the data was reviewed periodically to inform the future strategy for bridge strike prevention. This included a manual review of CCTV images to understand driver behaviour. The review process was considered with a view to automating it as part of the analysis.

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Outcome

The data gathered from the TfL assembled prototype cameras was successful in proving that more incidents were captured that would not had have ordinarily been known without deploying telemetry technology with CCTV. In addition, to a handful of actual collisions with the bridge, a further 90 near-misses were recorded. Noise emitted from vehicles contravening advance vehicle height warnings was also observed as an indirect consequence.

Although the prototype collected vital data it was not robust (suffering from temperature fluctuations and problems with 4G bandwidth connectivity) and consequently did not operate consistently over the desired monitoring period. Any future deployments would therefore need to ensure the technology was properly manufactured rather than temporarily tailored, as was the case here.

The DfT's National Bridge Working Group also raised issues with the monitoring/ enforcement approach, and as a result the project was abandoned.

The system did however;

- Detect more incidents than without having the technology.

- Approximately 90 near misses were detected in a year

- Video footage showing poor driver behaviour

- Enhanced Over height Vehicle Detection (OVD) is still in place and returning useful data.

- System has detected that noise is an issue resulting from over height vehicles as occurrences are usually early morning and the reverse warning can be rather loud, potentially disrupting local residents.

Conclusion/ Recommendation

The concept was successfully proven and delivered noticeable benefits, but governance issues around enforcement and GDPR remain. A new off-the-shelf system has since been identified should there be appetite to build on this trial to further validate capability.

TfL Lane Rental Scheme

Optimising customer journeys through the delivery of safer, innovative and sustainable roadworks

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Date Created: August 2018

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