

Surface Asset Portfolio Board – Strategy/Business Assurance

Date: 15 December 2017

Item: A40 Vehicle Restraint System

1 Purpose

- 1.1 To provide background information on the current condition of the Vehicle Restraint System on the A40 between Greenford Flyover and Target Roundabout and seek approval to implement interim safety measures.

2 Recommendation

- 2.1 **The Surface Asset Portfolio Board is asked to APPROVE interim safety measures on the A40 between Greenford Flyover and Target Roundabout to mitigate the risk posed by the deteriorated VRS**

3 Background

- 3.1 The A40 from Greenford Flyover to Target Roundabout (circa 2km - see map in Appendix A) has a central Vehicle Restraint System (VRS) – more commonly referred to as Safety Barriers – to separate on-coming traffic on the three-lane dual carriageway. The speed limit on this section is currently 50mph.
- 3.2 The section has been assessed in accordance with the Road Restraint Risk Assessment Process (RRRAP). Based on the assessment, the key factors that required this section to have a VRS are the speed limit, the Annual Average Daily Traffic (AADT), and the narrow central reservation.

Replacement Plans

- 3.3 The VRS was inspected on 19 December 2014 and, based on the condition at that time, a high priority scheme was added to the Asset Renewals programme.
- 3.4 The project has been slow to progress to delivery stage due to the extensive closures/lane restrictions required and a number of commercial issues. The scheme was scheduled for delivery in late 2017/18; however it has been deferred because some commercial issues have not been resolved.
- 3.5 Given this latest delay, and safety concerns raised by Asset Operations, the Asset Sponsor requested a new inspection and assessment by Engineering. This took place on Tuesday 13 December 2017.

Current Condition

- 3.6 The engineering assessment has concluded that the current condition of the VRS means that in the event of a high energy impact, the system is unable to adequately absorb and restrain a vehicle. This may result in asset failure and a crossover of an errant vehicle onto the opposite carriageway.



- 3.7 The horizontal metal beams are severely corroded and delaminating, reducing the thickness in some places from 5mm to 2mm.
- 3.8 Furthermore, the posts, which are designed to slow a vehicle once caught by the horizontal beam and limit the flex, would not be effective owing to extensive corrosion, with a number completely rusted through at ground level.
- 3.9 There are ten locations that have been damaged by previous accidents and have not been repaired. In these locations, the VRS beam is no longer attached to the posts and the connecting plates and bolts are already crushed and sheared.
- 3.10 The Engineering report from the visual inspection is attached as Appendix B. Videos of the current corrosion and damage assessed during the site visit are also available.

4 Risks

- 4.1 In its current condition the VRS is unable to perform its required function (e.g. restrain vehicles and prevent cross-over) and represents an unacceptable risk to road users. TfL, in light of the latest inspection knowledge, should implement interim measures to mitigate the risk prior to a permanent solution.
- 4.2 **Note:** a permanent renewal would take between 9 to 12 months to deliver, conditional on resolution of commercial issues. Feasibility would take 3 to 6 months due to the quantity of ground investigations required and installation would take between 3 and 6 months depending on closures.

5 Interim Options

- 5.1 Interim options for the next 9 to 12 months include:
 - (a) **Option 1: 30mph speed limit (recommended)** - impose a speed limit of 30mph by changing road signage and enforcement through existing measures, e.g. existing average speed cameras
 - (i) **Pros:** significantly reduces the impact speed and energy of any errant vehicle reliant on the VRS to stop a crossover from occurring; easy, low cost and quick to implement through signage changes;
 - (ii) **Cons:** slows traffic on a busy corridor both into and out of London during the AM and PM peaks; may be challenging to change driver behaviours.
 - (b) **Option 2: Reduction from three traffic lanes to two traffic lanes**
 - (i) **Pros:** taking out lane three in both directions provides additional space to restrain an errant vehicle reducing the likelihood of a crossover, also allows speed limit to remain at 50mph.
 - (ii) **Cons:** reduces the traffic capacity on an already busy road during the AM and PM peaks which will likely cause serious or severe congestion during these times. Lane Rental Charges would also be applicable in this instance, which would cost £780,000 over 12 months.
 - (c) **Option 3: install a temporary concrete barrier in one lane three**
 - (i) **Pros:** provides additional containment and space to restrain an errant vehicle reducing the likelihood of a crossover; also allows the speed limit to remain at 50mph

- (ii) **Cons:** This will restrict one carriageway to two lanes and will be subject to Lane Rental Charges as per option 2.
- (d) **Option 4: Accept the risk** - accept the increased level of risk on this section of the network until a permanent solution is implemented
 - (i) **Pros:** no network changes required
 - (ii) **Cons:** TfL accepts a level of risk and liability that we may be unable to defend.

6 Permanent Solution Options

6.1 Options include:

- (a) Option 1: Maintain the selected interim measure, e.g. speed restriction
- (b) Option 2: Renew VRS – estimated to take 9 to 12 months at a cost of circa £1.2m.

7 Next Steps

- 7.1 Agree which interim measure to implement – Option 1 is the recommended option.
- 7.2 Conditional on approval to use the reduced 2018/19 asset renewals budget (circa £10m) for the permanent solution, progress a permanent solution.

List of Appendices to This Report:

Appendix A: Map of A40 section
Append B: Engineering Report

List of Background Papers:

None

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Appendix A – Maps of Location

