

ROAD SAFETY AUDIT STAGE 1: SPRINT SCHEME

The following document is the technical note which forms the first stage of the Road Safety Audit.

A Road Safety Audit is carried out when significant changes to the local highway network are proposed. The audit provides an independent assessment of the key design and operating arrangement of the highway works.

The Road Safety Audit identifies potential road safety issues or problems, recommends measures to eliminate or mitigate these problems and enables the 'client' in this case TfWM to provide a response to the audit. In some instances, the issues highlighted may not require further action as they have been considered as part of a wider discussion with supporting partners e.g. rationale for not including vegetation in central reservations.

A road safety audit is not a check to see if a scheme meets design standards.

Road Safety Audits are conducted at four stages throughout a highway improvement scheme:

- Stage 1 – Completion of preliminary design
- Stage 2 – Completion of detailed design
- Stage 3 – Completion of construction
- Stage 4 – Monitoring (12 months and 36 months)

A Road Safety Audit is conducted by an Audit Team, which is independent to the Design Team. The Audit Team will be a minimum of two people with appropriate levels of training, skills and experience in Road Safety Engineering and/or Accident Investigation.

Source: https://www.highwayengineer.co.uk/road_safety_audit.htm

Project:	A34 Sprint - Walsall to Birmingham	Job No:	60599248
Subject:	A34 Perry Barr to Scott Arms - Stage 1 Road Safety Audit Designer's Response		
Prepared by:		Date:	03/10/2019
Checked by:		Date:	18/11/2019
Approved by:		Date:	19/11/2019

Introduction

The following technical note is produced to document the Designer's Response to each issue raised within the Stage 1 Road Safety Audit (RSA) of the proposed A34 Sprint highway improvements works between Perry Barr, Scott Arms and Pages Lane.

The Stage 1 RSA was carried out by AECOM in September 2019. The Designer's Response should be read in conjunction with this report.

The technical note indicates each of the concerns identified by the safety auditors together with the recommendation made to address the problem. The Designer's Response to the recommendations has been shown in *italics*.

1.0 MATTERS ARISING FROM THIS STAGE 1 ROAD SAFETY AUDIT

1.1 Problem: 1

Drawing: 60599248-ACM-0000-P&C-DR-TR-000014 - 21

Location: Scheme extents

Summary: **Services, trees and street lighting located in the grass verges will become an obstruction for parking vehicles which may lead to collisions causing injury.**

The proposals cut into the grass verges to ensure on street parking bays can be maintained whilst a bus lane is introduced; existing running lanes are to be maintained. It was noted on the site visit that along the corridor, services, trees and street lighting are located along the grass verges. Trees and street lighting will become an obstruction for parking vehicles resulting in vehicle damage and possible injury if vehicles collide with them. Services will become difficult to access by Engineers, putting them at risk of parking vehicles which may resulting serious injury if a vehicle fails to see them working.

Recommendation:

It is recommended that all services are relocated to where they can be easily accessed without causing obstruction and safely away from the live carriageway. Additionally, ensure that trees are removed and street lighting and gullies are relocated to the back of the footway.

Design Organisation Response

<input checked="" type="checkbox"/> Accepted	<input type="checkbox"/> Part Accepted	<input type="checkbox"/> Rejected
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Discussions with each utility company are ongoing, however services will be relocated into the remaining verge / footway as appropriate. The removal or trimming of existing trees has been considered as part of detailed design and will be finalised following completion of the tree survey.

Street lighting and drainage will be relocated as necessary to suit the new kerblines.

Client Organisation Comments

Relocation of street furniture and drainage will take place during the detailed design stage. Maintenance and access to third party assets will be discussed with the owning party to ensure items can be safely maintained.

1.2 Problem: 2

Drawing: 60599248-ACM-0000-P&C-DR-TR-000014 - 21

Location: Scheme extents

Summary: Existing location of gullies could result in surface water drainage being ineffective leading to ponding.

The proposals cut into the grass verges to ensure on street parking bays can be maintained whilst a bus lane is introduced; existing running lanes are to be maintained. It was noted on the site visit that along the corridor, gullies are located along the carriageway edge and will be in the middle of two lanes when the proposals are implemented. The surface water drainage system may be ineffective due to the existing gully location. Ponding could result and create a hazard to stopping buses particularly during the colder months if the water freezes. This could lead to lack of friction on the road and the bus being unable to stop resulting in collisions involving skidding or loss of control collisions.

Recommendation:

It is recommended that gullies are relocated to edge of the carriageway and can effectively drain surface water.

Design Organisation Response

Accepted **Part Accepted** **Rejected**

A full drainage design review has been carried out as part of the detailed design and gullies / linear drainage will either be provided along the kerblines at the rear of the parking bays or between the parking bay and the nearside lane of the carriageway.

Client Organisation Comments

Drainage designs are under discussion with the local authorities so that designs are cognisant their maintenance regime and will adequately drain the highway. Existing problem areas are also being discussed with input from the local highway engineers/local knowledge.

1.3 Problem: 3

Drawing: 60599248-ACM-0000-P&C-DR-TR-000014 - 21

Location: Scheme extents

Summary: No vegetation has been proposed along the central reserve which may encourage

pedestrians to cross in unsafe locations, increasing their risk of exposure to oncoming vehicles which may result in collisions between vehicles and pedestrians.

The proposals include landscaping, but it hasn't been defined what landscaping will be undertaken. The existing landscaping is a grass central reserve which does not prevent pedestrians from crossing the dual carriageway at unsafe locations (this was observed on site). This will continue, and pedestrians will now have three lanes of live traffic to cross either side of the reserve increasing their exposure and likelihood of colliding with a vehicle, resulting in injury.

Recommendation:

Plant vegetation along central reserve to dissuade pedestrians from crossing at undesignated locations.

Design Organisation Response	<input type="checkbox"/> Accepted	<input type="checkbox"/> Part Accepted	<input checked="" type="checkbox"/> Rejected
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Apart from discrete trees, which do not act as a crossing deterrent, there is currently no vegetation planted in the central reservation to deter pedestrians from crossing away from designated crossing points. Indeed, Birmingham recently removed all the low-level vegetation that used to grow in the central reserve between Cliveden Avenue and Perry Avenue. Consequently, no new provision for pedestrian deterrent vegetation has been made.

Client Organisation Comments

Vegetation in central reservations creates additional maintenance liability for the local authority and with the maintenance, safety considerations. Given there also is very limited vegetation barrier currently, this is not proposed to be incorporated into the design.

1.4 Problem: 4

Drawing: 60599248-ACM-1200-0000-DR-TR-000012 - 14

Location: Scheme extents

Summary: Narrow lane widths throughout may result in graze type collisions.

Throughout the scheme, kerb lines have been amended to allow for a new bus lane. However, the drawings do not show the width of these lanes and they appear to be narrow (particularly near Sundial Lane and Jayshaw Avenue). This may result in possible graze type collisions if a larger vehicle and bus pass side by side causing damage or injury to passengers on board.

Recommendation:

It is recommended that lane widths are increased to ensure larger vehicles and buses can safely drive side by side.

Design Organisation Response	<input type="checkbox"/> Accepted	<input type="checkbox"/> Part Accepted	<input checked="" type="checkbox"/> Rejected
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The minimum lane width for general traffic is 3.0m, which is deemed sufficient to avoid collisions on a largely straight road.

Client Organisation Comments

Minimum lane widths have been agreed with the highway authorities. As long as the lane widths are above the minimum standard and agreed width, no action is proposed. Where there are tight radii bends, lane widths will be increased.

1.5 Problem: 5

Drawing: 60599248-ACM-0000-P&C-DR-TR-000020

Location: Walsall Road

Summary: Informal crossing point may encourage pedestrians to cross the carriageway unsafely increasing their risk of being struck by a vehicle resulting in injury.

During the site inspection, an informal crossing point was located, and it was observed that pedestrians use this to cross the carriageway. The proposals increase the number of lanes on the carriageway to three lanes on either side which puts pedestrians more at risk of being struck by a vehicle resulting in serious injury. (Reference Problem 3)

Recommendation:

It is recommended that the informal crossing is closed and landscaped with consistency as the rest of the corridor.

Design Organisation Response **Accepted** **Part Accepted** **Rejected**

There are many informal crossing points in the central reserve. We agree that where the carriageway is further widened, then these should be removed and landscaped. This will be shown on the next revision of the detailed design drawings.

Client Organisation Comments

Where known safety issues exist with the proposed improvement areas and these can be solved practicably with the Sprint proposals, these will be considered.

1.6 Problem: 6

Drawing: 60599248-ACM-0000-P&C-DR-TR-000014 - 21

Location: Scheme extents

Summary: Uncontrolled crossing points at signalised junctions throughout the scheme put pedestrians at risk of being struck by a vehicle which could result in serious injury.

There are several large signalised junctions along the A34 with uncontrolled crossing points. The Audit Team found crossing the road difficult at some points with gaps being very limited between vehicles. This will continue to be difficult for pedestrians, especially those with wheelchairs or pushchairs and puts them at risk of being struck by an oncoming vehicle. One particular concern is that pedestrians cross behind the traffic signals so may be unaware of the traffic signal stage when they cross.

Recommendation:

Incorporate pedestrian phases to the traffic signal staging at all uncontrolled crossing locations at junctions along the A34.

Design Organisation Response	<input type="checkbox"/> Accepted	<input type="checkbox"/> Part Accepted	<input checked="" type="checkbox"/> Rejected
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Existing uncontrolled crossing facilities at junctions, or arms of junctions, where kerblines changes are not proposed, are not being upgraded as part of this scheme.

Client Organisation Comments

Where known safety issues exist along the proposed improvement areas and these can be solved practicably with the Sprint proposals, these will be considered. Discussions with local highway authorities will be held.

1.7 Problem: 7

Drawing: 60599248-ACM-0000-P&C-DR-TR-000017

Location: Shops adjacent to Tower Hill

Summary: Unclear guidance for pedestrians may result in collisions with parking vehicles.

There is a row of shops located within the western verge of Tower Hill with a dedicated parking area for vehicles. The pedestrian route terminates either side of the shops with no guidance for pedestrians to travel through the parking area safely. If pedestrians cannot efficiently travel through this section of the route, the risk of conflicts and collisions occurring with vehicles manoeuvring within the parking area will be increased. This issue will be particularly prevalent to visually impaired users.

Recommendation:

It is recommended that a formalised pedestrian route is installed.

Design Organisation Response	<input type="checkbox"/> Accepted	<input type="checkbox"/> Part Accepted	<input checked="" type="checkbox"/> Rejected
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There are no kerblines changes proposed alongside the shops south of the Badshah Palace and therefore this existing issue is not addressed as part of this scheme.

Client Organisation Comments

A pedestrian area is provided at the frontage of the shops and either side of the row of shops. It is accepted that there is a lack of continuity between the pedestrian areas but this is also outside the proposed works boundary and not within the scope of the project.

1.8 Problem: 8

Drawing: 60599248-ACM-0000-P&C-DR-TR-000015

Location: Carriageway opposite Stanford Avenue

Summary: Unclear whether cyclists will be able to use the bus lane which may cause side swipe collisions between vehicles and cyclists.

From the site inspection, the Audit Team observed an existing cycle lane that hasn't been included within the proposed design. This could confuse cyclists and leave them exposed between a bus lane and a live carriageway, increasing the risk of being struck by a vehicle.

Recommendation:

It is recommended that the bus lane allows for cyclists to use the lane.

Design Organisation Response **Accepted** **Part Accepted** **Rejected**

Where replaced by bus lanes, the existing advisory cycle lanes in the nearside lane of each carriageway of the A34 are to be removed as part of this scheme. Cyclists will be permitted to use all the proposed bus lanes between Perry Barr and Scott Arms.

Client Organisation Comments

Cyclists will be able to use the bus land and signage to shown this will be included in the detailed design stage.

1.9 Problem: 9

Drawing: 60599248-ACM-0000-P&C-DR-TR-000014 - 21

Location: On Street parking bays

Summary: Poorly parked vehicles may obstruct bus lane which may result in sudden braking or collisions, injuring passengers on board.

The Audit Team observed poor parking activities along the A34. Although this currently doesn't impact the existing bus lanes, if it continues after the proposals are in place then they will become an obstruction as the design cuts in to the grass verges. This obstruction could result in sudden braking or collisions with parked vehicles, injuring the passengers on board the bus. The parked vehicles may also obstruct pedestrian routes on the footway causing pedestrians to reroute; potentially via unsafe locations such as the carriageway increasing the likelihood of being struck by approaching vehicles.

Recommendation:

It is recommended that the parking is enforced for a period of time to ensure vehicles do not obstruct the carriageway.

Design Organisation Response **Accepted** **Part Accepted** **Rejected**

Cameras will enforce misuse of the bus lanes themselves, however enforcement of parking on the red route in areas not designated for parking will be a matter for the local authority's enforcement team.

Client Organisation Comments

Parking enforcement will be raised with the local authorities. It maybe necessary to increase enforcement shortly after the implementation of the scheme.

1.10 Problem: 10

Drawing: 60599248-ACM-0000-P&C-DR-TR-000020

Location: Bus stop outside house no. 204

Summary: Parked vehicles may prevent buses from manoeuvring in and out of bus stops resulting in side swipe collisions.

A proposed bus stop outside house no. 204 heading northbound is located close to a section of parking bays on the north side and a build-out Sprint bus stop behind. There is little room for a bus to manoeuvre in and out of the bus stop which may result in buses not being able to safely and efficiently negotiate around a parked vehicle and potentially striking it, resulting in injuries to passengers or the driver having to make sudden and sharp turn manoeuvres resulting in loss of control collisions.

Recommendation:

It is recommended that the bus stop is located such that a bus can safely and efficiently re-join the running lane.

Design Organisation Response

Accepted Part Accepted Rejected

This stop (Tucker Fasteners northbound) for non-Sprint services is to be removed and combined the preceding Sprint stop. This single stop will avoid the need for non-Sprint services to manoeuvre into an offline stop.

Client Organisation Comments

Stop to be removed from designs.

1.11 Problem: 11

Drawing: 60599248-ACM-1200-0000-DR-TR-000012

Location: Pages Lane

Summary: Tight kerb radius in to Pages Lane may result in over run on the kerb or side swipes collisions with vehicles waiting to pull out from Pages Lane.

The proposals realign the kerb to allow for a bus lane to run alongside the existing dual carriageway heading northbound from the Scott Arms Junction. However, the left turn in to Pages Lane has a tight radius which may result in vehicles over running on to the footway potentially striking a pedestrian. There is a left turn on to Pages Lane before the pedestrian crossing which is more suitable for left turning vehicles. If a larger vehicle was to make the turn after the pedestrian crossing, this may result in side swipe collisions with vehicles waiting to egress from Pages Lane or oncoming vehicles should they overrun the oncoming traffic lane.

Recommendation:

It is recommended that hatching is provided to guide vehicles away from the build out and an illuminated bollard is placed on the build out.

Design Organisation Response	<input checked="" type="checkbox"/> Accepted <input type="checkbox"/> Part Accepted <input type="checkbox"/> Rejected
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The bus lane on the northbound approach to Pages Lane and its associated bus gate are to be removed from the scheme. Consequently, there are no proposed changes to the kerblines at Pages Lane junction and vehicle movements will therefore remain as existing.

Client Organisation Comments

This has been removed from scope and the item is no longer relevant.

1.12 Problem: 12

Drawing: 60599248-ACM-1200-0000-DR-TR-000012

Location: Central reserve opposite Sundial Lane

Summary: Shortening of the central reserve may result in vehicles over hanging on to the carriageway waiting to turn right leading to vehicles striking the back of the waiting vehicle.

The proposals shorten the central reserve to accommodate the proposed bus lane. However, this also shortens the waiting space for vehicles wanting to turn right and head northbound on the Birmingham Road towards M6 Junction 7. If the central reserve is not long enough to accommodate vehicles, they will over hang on to the carriageway which may result in oncoming vehicles colliding with them.

Recommendation:

It is recommended to demonstrate the central reserve can adequately accommodate waiting vehicles, including delivery vehicles, fire engines and refuse vehicles.

Design Organisation Response	<input type="checkbox"/> Accepted <input checked="" type="checkbox"/> Part Accepted <input type="checkbox"/> Rejected
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Vehicles over 7.5 tonnes are only permitted on Sundial Lane "for access", so large heavy goods vehicles are not anticipated to be making a right turn out of this side road. The majority of vehicles will be cars and light goods vehicles.

The proposal limits the length of vehicles waiting to turn right in the central reserve to approximately 6.5 metres and so should be suitable for the majority of vehicles making this manoeuvre.

While the existing layout caters for vehicles of a slightly greater length, up to approximately 8.0 metres, this is still an unsuitable length for 10 metre fire engines and refuse trucks. In both the proposal and existing layout, the rear ends of these vehicles would partially obstruct Lane 2 of the southbound carriageway.

Client Organisation Comments

Designs to be reviewed with designer to understand whether there are any alternative arrangements. However, the proposal may reduce a second vehicle trying to squeeze into the central reservation and overhanging.

1.13 Problem: 13

Drawing: 60599248-ACM-1200-0000-DR-TR-0000123

Location: Walsall Road approach to Scott Arms Junction

Summary: Buses wanting to travel straight over the junction may struggle to move in to the correct lane before the traffic signals resulting in side swipe collisions which may injure passengers on board.

The existing bus stop location on the northbound approach to the Scott Arms Junction is going to be upgraded to a Sprint bus stop. A Sprint bus is larger than the current buses used on the route and therefore may struggle to move in to the ahead lane, as the current lane it will sit in is left only, before the traffic signals. This may result in sudden braking or side swipe collisions if the bus pulls out into the path of coming traffic, injuring passengers on board and individuals within the vehicles.

Recommendation:

It is recommended that sufficient merging space is provided before the stop line to ensure Sprint buses can move over safely and suitable signing is displayed.

Design Organisation Response	<input type="checkbox"/> Accepted	<input type="checkbox"/> Part Accepted	<input checked="" type="checkbox"/> Rejected
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As for the existing stop, there is almost 45m of merging space between the end of the Sprint stop and the junction stop line. This is sufficient room for an articulated Sprint bus to move across into the adjacent traffic lane.

Client Organisation Comments

The merge distance is thought to be suitable.

1.14 Problem: 14

Drawing: 60599248-ACM-1200-0000-DR-TR-000013

Location: Flare lane heading northbound at Scott Arms Junction

Summary: Lack of white lining may result in side swipe collision if vehicles fail to notice the third lane.

The proposals extend the third arm flare at the Scott Arm Junction travelling northbound. However, no lining has been added to accompany the flare which may result in some vehicles being unaware that there is a third lane flare leading to side swipe collisions.

Recommendation:

It is recommended that a bifurcation arrow is added.

Design Organisation Response	<input checked="" type="checkbox"/> Accepted	<input type="checkbox"/> Part Accepted	<input type="checkbox"/> Rejected
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A bifurcation arrow has been added as part of the detailed design.

Client Organisation Comments

Designs will be amended in line with the recommendation.

2.0 CLIENT ORGANISATION STATEMENT:

I accept these proposals by the Design Organisation

Name:

Position: Scheme Delivery Manager

Organisation: Transport for West Midlands

Signed:

Dated: 28/01/2020