

Introduction

1.1.1 The Highways Agency has requested an appropriate stage of Road Safety Audit for all schemes designed or implemented on the Area 12 trunk road network. WSP Development and Transportation has been appointed to act as independent Road Safety Auditors for the Stage 3 Road Safety Audit on the A63 Garrison Road by Steven Wright (Highways Agency Project Sponsor).

1.1.2 The Audit was carried out by experienced Road Safety Engineers who have not been involved with the design process.

1.1.3 The terms of reference of the Road Safety Audit are set out in Departmental Standard HD 19/03. The comments and suggestions for road safety improvements made in this report seek to address matters that might have an adverse effect on road safety in the context of the chosen design. No attempt has been made to comment on the justification of the scheme or the appropriateness of the design or to carry out a technical / design standards check. Consequently, the Auditors accept no responsibility for the design or construction of the scheme.

1.1.4 It is confirmed that this is a Stage 3 Road Safety Audit i.e. one carried out following the completion of the construction of the works. The previous Stage 1 / 2 Road Safety Audit was carried out by WSP Development and Transportation in December 2007.

1.1.5 The Audit Team membership approved by the Highways Agency for Area 12 audits was as follows:

IEng, MIHT, MSoRSA (Audit Team Leader)
Principal Engineer, WSP Development and Transportation
IEng, MIHT (Audit Team Member)
Senior Engineer, WSP Development and Transportation

1.1.6 The Audit comprised an examination of documents forming the Audit Brief and site visits during daylight and darkness hours. The documents were made available to the Audit Team by the Design Team on behalf of the Highways Agency Project Sponsor. The total documents forming the Audit Brief are listed below:

Drawing No. Revision Title

0036/500/01 - Proposed Drainage
0036/SIG/01 - Proposed Ducting and Chambers
0036/400/01 - Proposed Road Restraint Systems
0036/1100/01 - Proposed Kerbs, Channels and Footways
0036/700/01 - Proposed Pavements (1 of 2)
0036/700/02 - Proposed Pavements (2 of 2)
0036/SIG/02 - Proposed Signal Poles and Loops
0036/1200/02 - Proposed Traffic Sign Details
0036/1200/01 - Proposed Traffic Signs and Road Markings

1.1.7 The Audit Team visited the site together on Monday 19 January 2009 between 15:10 and 16:30. The weather was overcast and the road surface was damp during the site visit. The Police and CarillionWSP were unable to attend the audit.

1.1.8 The Audit Team Members also carried out a night visit of the scheme on the same date between 17:15 and 17:30. The weather was overcast and the road surface damp at the time of the site visit.

SCHEME DESCRIPTION

1.1.9 The Audit reviews, from the road safety aspect, the implementation of traffic signals with pedestrian phasing. This scheme includes realignment of traffic islands and the roundabout to accommodate traffic movements, resurfacing of the carriageway, new road markings and revised pedestrian crossing points with guard rail to guide pedestrians.

COLLISION DATA

1.1.10 No collision information was submitted to the Audit Team.

DEPARTURES FROM STANDARD

1.1.11 The Audit Team have not been informed of any Departures from Standard applicable to these improvements.

AUDIT MANAGEMENT

1.1.12 The draft report will be submitted to the Project Sponsor for checking, consideration and approval. The Project Sponsor is responsible for agreeing with the Audit Team Leader the content of the final version of the report.

1.1.13 Road safety matters which the Terms of Reference exclude from this report but which the Audit Team wishes to draw to the attention of the Project Sponsor, will be in a covering letter.

1.1.14 It is the Project Sponsor's responsibility to advise the Audit Team Leader if any Problem / Recommendation is not accepted. The Project Sponsor should then supply a copy of each signed Exception Report to the Audit Team Leader, for information.

2 Items Raised At the Stage 1/2 Road Safety Audit

2.1.1 The road safety implications of the A63 Garrison Road Roundabout were the subject of a Stage 1/2 Road Safety Audit by WSP (site visit on 11 December 2007). A Designers response was made available to the Audit Team. A summary of the items raised at Stage 1/2 follows below:

- _ Item 2.1.1 about inadequate drainage appears to have been addressed and is no longer considered a problem;
- _ Item 2.1.2 about forward visibility of the maintenance lay-by has been addressed by the Designers Response;
- _ Item 2.1.3 about the loss of control on an inspection chamber is no longer considered a problem;
- _ Item 2.2.1 about the possible signs overhanging the footway or too close to the carriageway has been addressed;
- _ Item 2.2.2 about buses in the lay-by reducing the forward visibility of the signs is no longer considered a problem;
- _ Item 2.2.3 about a sign and vegetation masking the proposed sign is no longer considered a problem;
- _ Item 2.2.4 about a sign masking the proposed sign is addressed and no longer considered a problem;
- _ Item 2.2.5 about double-headed arrows confusing motorists has been addressed and is no longer considered a problem;
- _ Item 2.2.6 about no provision of 'traffic signal' warning signs is no longer a problem; and
- _ Item 2.2.7 about edge of carriageway lines directing vehicles into the kerb line has partially been addressed by the Designers Response but is repeated as item 3.3.4 in this Stage 3 report.

3 Items Raised at this Stage 3 Audit

3.1 JUNCTIONS

3.1.1 Problem

LOCATION Great Union Street and Plimsoll Way entry arms.

SUMMARY ‘See through’ from the give-way line towards the internal stop line and controlled pedestrian crossing on the A63 eastbound exit.

There may be a ‘see through’ problem for vehicles at the give-way line towards the internal stop line and controlled pedestrian crossing. This may result in vehicles failing to give way when traffic signals are green or heavy braking collisions when red. This situation is exacerbated on the Great Union Street A63 eastbound entry lane. The alignment encourages drivers to approach at speed and requires them to look over their shoulders to check for vehicles on the circulatory carriageway.

RECOMMENDATION

Provide louvers and/or extend the existing louvers on the internal stop line and pedestrian crossing traffic signals. Provide traffic signs and road marking improvements to encourage drivers to give-way on the Great Union Street entry arm.

3.1.2 Problem

LOCATION Great Union Street entry arm.

SUMMARY: No high friction surfacing provided within the hatching may lead to differential skidding.

Hatched road markings have been provided to separate the nearside and middle lane on the approach to the give-way road markings. High friction surfacing has been provided in both lanes but does not extend into the hatched area. Traffic may enter the hatched area whilst braking resulting in differential skidding and collisions.

RECOMMENDATION

Provide high friction surfacing within the hatched area, preferably dark grey in colour to ensure the hatched road markings are conspicuous.

3.2 NON MOTORISED USER PROVISION

3.2.1 Problem

LOCATION Dropped crossing on west side of Plimsoll Way.

SUMMARYThe dropped crossing provided has a high kerb up-stand._

The dropped crossing provided on the west side of Plimsoll Way has a high kerb upstand. There is a risk of pedestrians tripping causing injury, particularly the visually impaired. The upstand may also cause difficulties for wheelchair users.

RECOMMENDATION

Lower the dropped kerb to introduce a minimal up-stand.

3.2.2 Problem

LOCATION Dropped crossing on west side of Plimsoll Way.

SUMMARY Visibility of pedestrians may be obscured by trees and signs._

Pedestrians waiting to cross from the west side of Plimsoll Way may be obscured by trees and signs. This may lead to non-motorised user collisions.

RECOMMENDATION

Remove obstructions to improve visibility.

3.3 ROAD SIGNS CARRIAGEWAY MARKINGS AND LIGHTING

3.3.1 Problem

LOCATION Plimsoll Way

SUMMARY ‘Traffic Signals Ahead’ warning sign is located too close to the junction and visibility is obscured by signs and trees._

The ‘Traffic Signals Ahead’ warning sign is located too close to the junction and forward visibility of the sign is masked by signs and trees. This may lead to heavy braking type collisions.

RECOMENDATION

Relocate warning sign, ensure sign does not obscure visibility of existing signs.

3.3.2 Problem

LOCATION Plimsoll Way.

SUMMARY 40mph speed limit sign is obscured by signs and trees.

There is only one terminal 40mph speed limit sign on the junction approach. The sign is located in the nearside and obscured by trees and signs. Drivers entering the A63 may not be aware of the 40mph limit; this may lead to inappropriate speeds and collisions. It should also be noted that there is a requirement to have a 40mph sign on both sides of the carriageway, this may lead to enforcement issues.

RECOMMENDATION

Ensure 40mph sign is not obscured and provide a 40mph sign on the opposite side of the carriageway.

3.3.3 Problem

LOCATION A63 westbound approach.

SUMMARY 'The Deep' tourist ADS sign is located in front of the map-type ADS obscuring the 'City Centre' legend. Vegetation also partially obscures the sign face. A stand alone tourist ADS sign ('The Deep') is located in front of the map-type ADS and obscures part of the sign. 'The Deep' is already incorporated on the previous map-type ADS and is subsequently not required. Vegetation also partially masks the ADS. Reduced forward visibility of the sign may lead to heavy braking and side-swipe collisions.

RECOMMENDATION

Remove tourist sign and overhanging vegetation.

3.3.4 Problem

LOCATION Throughout junction.

SUMMARY Late lane changing and heavy braking collisions throughout junction.

There are a number of safety issues relating to the road markings and the operation of the junction. These issues are detailed below:

Traffic from the A63 west intending to turn right into Plimsoll Way are encouraged to use the inner lane of the roundabout. This leads to two conflict points:

_ Traffic using the outer lane of the roundabout from Great Union Street intending to enter the A63 westbound exit may collide with Plimsoll Way traffic; and

_ Traffic using the outer lane of the roundabout from Great Union Street intending to enter Plimsoll Way may collide with traffic from the A63 west entering Plimsoll way.

Traffic from the A63 west intending to perform a 'U' turn are encouraged to use the inner lane of the roundabout. Motorists will follow the right turn arrow and may find themselves missing the appropriate exit lane.

The lane developed from the central island using hatched road markings opposite the Great Union Street arm creates a pull in which is too severe.

The use of arrow road markings on the circulatory carriageway exacerbates the above situations as they do not provide clear guidance to motorists.

These issues may lead to late lane changing and heavy braking type collisions.

RECOMMENDATION

_ Provide road markings and signs to direct traffic from the A63 west to Plimsoll Way into the outer lane of the roundabout after the A63 east exit;

_ Provide road markings (diag no 1010) from the traffic island to the warning line separating the inside lane and middle lane opposite Plimsoll Way;

_ Remove the hatched road markings opposite Great Union Street and replace the warning lines that bound the hatching with a '1010' line;

_ Replace the arrow road markings with worded destination markings on the circulatory carriageway; and

_ Provide advance lane destination signs on the approaches to the junction, particularly for 'U' turn traffic.

3.3.5 Problem

LOCATION A63 eastbound exit and Plimsoll Way exit.

SUMMARY Warning lines provided at the nosing which separates the circulatory carriageway and the exit arm direct vehicles into the kerbs._

The warning lines that bound the chevron markings at the nosing which separates the circulatory carriageway and exit arm may direct vehicles into the kerb increasing the risk of loss of control collisions. This issue is exacerbated at the Plimsoll Way exit where no chevron markings have been provided between the warning lines.

RECOMMENDATION

Ensure that the warning lines are offset from the kerbs and guide vehicles away from the traffic islands. Also provide chevron markings between the warning lines at the Plimsoll Way exit.

3.3.6 Problem

LOCATION A63 eastbound approach to the junction.

SUMMARY The intermittent line (diag no 1010) has been removed which delineated the entry into the dedicated left turn lane. The bifurcation arrow has remained leaving a wide nearside lane with no guidance._

The intermittent line (diag no 1010) has been removed with the bifurcation arrow remaining. This results in a wide lane and no guidance between the arrow and the commencement of the delineated left-turn lane and the bifurcation arrow indicating the commencement of two lanes. This may lead to poor lane discipline and side-swipe collisions. The situation is exacerbated by the location of the longitudinal carriageway joint which is situated along the removed 1010 line. This joint appears to be deteriorating; the new lane width will alter the running line of powered two wheelers on this section. Longitudinal cracking of the carriageway joints in this area may result in loss of rider control.

RECOMMENDATION

Extend the intermittent line closer to the bifurcation arrow to delineate the two lanes. If the lane width does not allow this, extend the marking as far as possible to accommodate two lanes of traffic and replace the bifurcation arrow with appropriate markings to inform drivers.

Address longitudinal defects of carriageway joints.

4 Audit Team Statement

I certify that this audit has been carried out in accordance with HD 19/03.

—
Principal Engineer
WSP Development and Transportation
Weymouth House
Hampshire Court
Newcastle Business Park
Newcastle upon Tyne
NE4 7YG

—
Senior Engineer
WSP Development and Transportation
Weymouth House
Hampshire Court
Newcastle Business Park
Newcastle upon Tyne
NE4 7YG

ENQUIRIES REGARDING THIS AUDIT SHOULD BE MADE TO
WSP Development and Transportation
Weymouth House
Hampshire Court
Newcastle Business Park
Newcastle upon Tyne, NE4 7YG
Tel: (0191) 273 3123
Fax: (0191) 226 1791

Appendices, Figures & Tables

Highways Agency **A63 Garrison Road Roundabout**
Stage 3 Road Safety Audit

11

Appendix A - Key Plans