
CROOKESMOOR RD / BARBER RD CONTROLLED NMU FACILITIES

ROAD SAFETY AUDIT STAGE 1-2 [COMBINED PRELIMINARY & DETAILED DESIGN]

REPORT

**DEVELOPMENT SERVICES
TRANSPORT, TRAFFIC & PARKING SERVICES – ROAD SAFETY**
Safety Audit Ref: TE/16-563/1796-LTP/ST1-2
Date: 13th February 2017

Nalin Seneviratne
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CROOKESMOOR ROAD / BARBER ROAD CONTROLLED NMU CROSSING FACILITIES

ROAD SAFETY AUDIT STAGE 1-2 [COMBINED PRELIMINARY & DETAILED DESIGN] REPORT

1.0 Introduction

1.1 This report results from a Stage 1-2 Road Safety Audit (RSA) carried out on the detailed design of proposed controlled NMU crossing facilities associated with the refurbishment of traffic signals apparatus at the Crookesmoor Road / Crookes Valley Road / Barber road crossroads, in Crookesmoor, Sheffield. The RSA was carried out at the request of Gay Horsfield of TTAPS – Transport Planning, and was received via email on 10 January 2017. This is the first formal RSA of these proposals.

1.2 The Audit Team Membership for this RSA was:

Ashley Carnall (Team Leader for this RSA)
Road Safety Audit Coordinator,
TTAPS – Road Safety,
Development Services,
Sheffield City Council

Dean Barker (Team Member for this RSA)
Consultant Road Safety Auditor,
TTAPS – Road Safety,
Development Services,
Sheffield City Council

1.3 The RSA was undertaken in accordance with the Sheffield City Council Road Safety Audit Standard 2005 and comprised an examination of the drawings detailed at Appendix A, and visits to the site. The site visit took place on the morning of Friday 10 February 2017. At the time of the visit the road surface was damp and the weather was overcast with occasional sleet & snow flurries. Traffic flows were busy, and NMU movements were frequent.

1.4 The Auditors have examined and reported on the road safety implications for the scheme as presented and have not examined or verified the compliance of the designs to any other criteria.

1.5 All comments and recommendations are referenced to Problem Location Plan numbered TE/16/1796-LTP/ST1-2/01 at Appendix B.

1.6 This Stage 1-2 RSA was completed on 13th February 2017.

2.0 Scheme Description

- 2.1 The existing crossroads junction between Crookesmoor Road, Crookes Valley Road and Barber Road in Hillsborough is subject to traffic signal control. However, there are currently no pedestrian stages included at the junction. There is very high footfall through this area, including many students. It is proposed to introduce an all-red pedestrian stage with full NMU apparatus during the upcoming refurbishment of the signals apparatus.
- 2.2 A small footway build-out is proposed on the southern side of the junction, and a new cycle lane and ASL on the northbound Crookes Valley Road approach. Full details of the proposals are included at Appendix A.

3.0 Notes for the Design Team - Unresolved Issues

- 3.1 In accordance with the Arbitration Procedure [outlined in the Sheffield City Council Road Safety Audit Standard 2005], after the Design Team has given due consideration to the problems raised by the Audit Team [and meetings have taken place between the Design Team and the Audit Team] any changes made to the design shall be submitted to the Audit Team for that part of the scheme to be re-audited.
- 3.2 Items in the Audit report that are not acted upon, either because they are felt to be outside the terms of reference of the project or deemed not appropriate by the Design Team should be included in an Exception Report. The Exception Report should be prepared by the Design Team, on behalf of the Project Sponsor, giving the reasons for rejection together with any alternative solutions and sent to the Arbiter with a copy to the Audit Team.
- 3.3 The Arbiter is to be the Head of Transport, Traffic and Parking Services or his nominees.

4.0 Supporting Information – Historical Collision Data

- 4.1 The Audit Team carried out an analysis of reported personal injury collision data in the immediate vicinity of the site. This is supplied by South Yorkshire Safer Roads Partnership and accessed via the ACCSMAP system.
- 4.2 In the 5 year period between 1st January 2011 and 31st December 2015 (provisional data) there were no reported personal injury collisions within the limits of the proposed layout changes.

5.0 Problems Raised in this Stage 1-2 Road Safety Audit

*Problems relate to detailed design drawings Series **-208130 014-** as listed at Appendix A*

5.1 PROBLEM

Location: Reference 5.1 on plan TE/16/1796-LTP/ST1-2/01 at Appendix B – Proposed Crookes Valley Road cycle lane feed-in to new ASL

Summary: Narrow widths of cycle lane and adjacent traffic lane combined with alignment likely to result in cyclists being struck by motor vehicles along junction approach

The proposed layout includes a new cycle lane running along Crookes Valley Road from Harcourt Road up to Crookesmoor Road / Barber Road crossroads, feeding into a new cycle ASL holding area at the junction stop-line. Whilst there are no dimensions indicated for the cycle lane, the adjacent traffic lane is as narrow as 2.4m in places. The cycle lane appears to be approximately 1.2m wide at best.

Crookes Valley Road is on a twisting horizontal alignment, comprising an ‘S’ bend along the section between the two junctions. Site observation of traffic movements suggests that motor vehicles would be unlikely to be able to negotiate the proposed layout without either repeatedly encroaching into the cycle lane, or encroaching into the opposing traffic lane. This would be particularly the case for buses, a number of which pass through the junction.

Cyclists would be at high risk of collisions from passing motor vehicles, or motor vehicles would be at risk of collisions with oncoming traffic when encroaching into the opposing lane to avoid cyclists.

For these reasons, the RSA Team do not consider that there is adequate width here to encourage cyclists to travel adjacent to motor traffic without compromising their safety. Cyclists should travel with traffic.

RECOMMENDATION

Remove the cycle lane from the proposals, but retain the ASL / holding area.

Designers Response [1]

I can confirm that the cycle lane width is 1.2m (the minimum recommended) and that the adjacent lane width is a minimum of 2.4m.

The DMRB Lane Widths at Signalised Junctions Part 3, section 2.23 states:

“Where an existing signal-controlled junction or an uncontrolled junction is being improved or modified and available road space is restricted, then the permitted lane widths for straight ahead entry lanes may be reduced to 2.5m providing that the 85th percentile approach speed does not exceed 56kph

(35mph), and the reduced width enables a necessary extra lane to be provided on multilane entries. In exceptional circumstances lane widths may be reduced to 2.25m where it is not necessary to make particular provision for large goods vehicles.”

Large vehicles would be expected to encroach into the cycle lane when a cyclist is not present, just as they would have to do in the DMRD situation outlined above and at many other locations in Sheffield and elsewhere (e.g. the Western Bank approach to Brookhill Roundabout, where traffic flows and numbers of HGVs and buses are much higher). Should a cyclist be present and a following vehicle cannot safely overtake the cyclist clear of the cycle lane, then the following vehicle should stay behind the cycle until it is safe to overtake without encroaching into the cycle lane. It should be noted that cyclists will be present with or without the cycle lane and the situations outlined in the RSA are likely to occur anyway.

The cycle lane will help to ensure that the cyclist is given sufficient space to help to prevent being overtaken at an inappropriate and a potentially dangerous distance. The purpose of the cycle lane is to provide the minimum width necessary for a cyclist to maintain momentum, rather than continually stopping and starting on approach to the traffic lights as will happen when cycling with traffic as is suggested. Indeed cycling with traffic, very slowly and uphill, may well lead to more instances of other vehicles overtaking cyclists at an inappropriate distance and/ or crossing the centreline. Additionally, cycles are very unstable when starting and stopping particularly in an uphill direction. It should also be noted that the vast majority of cyclists, if not all, will be cycling at the kerbside at this location. It would be very dangerous for a cyclists, some travelling at 3/4mph, to cycle in the middle of the lane out of sight of approaching motor vehicles travelling at 20 to 30mph and perhaps more.

Cyclists will be at the kerbside and it is far better for them to keep moving (more stable), be given appropriate space as far as practicable and for it to be clearly indicated to larger vehicles when they should stay behind the cyclist rather than attempt to overtake at wholly inappropriate and dangerous distances.

Therefore it is felt that the cycle lane should remain.

ROAD SAFETY AUDIT TEAM RESPONSE

The minimum width of 1.2 metres applies only to the immediate approach to ASLs. The absolute minimum width for all other cycle lanes is 1.5 metres (LTN 2/08 paragraph 7.4.2).

Provided that a 1.5 metre minimum width can be achieved along the length of the route the Audit Team would be prepared to accept most of the cycle lane.

However, the section around the bend just to the north-west of Harcourt Road continues to raise significant concern due to the narrow available width available for uphill motor traffic (only 2.4 metres) and the poor forward visibility before the bend. Due to the narrow width traffic, especially larger vehicles, would be likely to transgress either the cycle lane or the centreline, resulting in a risk of collisions with cyclists in the first case and a risk of head-on collisions in the second (especially when the lack of intervisibility around the bend is taken into account). The risks will be highest during times of heavy traffic when both motor vehicle lanes are being well used – which is exactly when the number of cyclists is also likely to be greatest.

The risks to cyclists on this section will be higher as the presence of the cycle lane will force cyclists to cycle closer to the kerb and thereby actively encourage overtaking manoeuvres by motorised traffic. It is considered that it would be safer for cyclists to remain nearer the centre of the carriageway at this point (it should be noted that there is not a history of any injury collisions involving cyclists here) and for motor traffic to wait behind them. Not only will this prevent cyclists from being “squeezed” by following traffic at the location where the road is at its narrowest but it would also remove the need to follow the kerbline around what is a sharp bend.

By taking the bend at a wider radius cyclists will find it much easier to better maintain speed before tackling the steep hill leading up to the traffic lights. Also, as cyclists will move over and enter the cycle lane straight after the bend, allowing any following traffic to easily overtake where the road is wider and forward visibility much improved, drivers are very likely to willingly wait behind a cyclist for a few seconds rather than attempt dangerous overtaking manoeuvres involving blindly moving over into the opposing carriageway.

The Audit Team therefore considers that the cycle lane should commence just beyond the bend rather than just before it. Provided that the 1.5 metre width can be achieved this will maintain the benefits for cyclists whilst removing the dangers to them at the bend identified above.

Designers Response [2]

Accepted - the cycle lane will be 1.5m and will start just beyond the bend.

5.2 PROBLEM

Location: Reference 5.2 on plan TE/16/1796-LTP/ST1-2/01 at Appendix B – Footway around eastern junction radius

Summary: Excessive fall across footway towards carriageway likely to result in pedestrian slips and falls towards adjacent live traffic lane

The vertical profile of the footway and adjacent carriageway around the junction radius in the above location is potentially dangerous. The carriageway is sunken where it abuts the kerb line, and in-turn the kerb line around the radius is very low (i.e. at the existing crossing point), resulting in an unacceptably steep gradient falling across the footway towards the carriageway edge. See photograph below;



Although the proposals include for relocation of this crossing, the provision of the full-height replacement kerb face would still leave an excessive footway gradient falling towards the carriageway.

This section of footway would still present a serious risk of slips of falls for pedestrians walking around the corner of the junction, particularly during or following inclement weather conditions (i.e. surface water and/or ice). The footway falls would be unlikely to meet Inclusive Mobility requirements even with a full height kerb face in-situ, and could be particularly hazardous for the elderly / mobility impaired.

The high footfall through here, the primary NMU safety intentions of the improvement, and the fact that the improvement proposes to remove and replace footway construction and kerbs around this radius, all suggest that SCC should address this obvious problem, albeit pre-existing. Necessary TTM and surfacing equipment / crew mobilisation required for the rest of the proposals should result in relatively low additional costs.

The proposed changes might actually increase the likelihood of slips here, despite a slightly reduced gradient. The existing blister paving will be removed, leaving a smooth tarmac surface with reduced grip.

RECOMMENDATION

Reconstruct the strip of carriageway abutting the junction radius over the limits of the existing depression, in order to lift the kerb line / gulleys at the front of the footway and so reduce footway falls.

Designers Response [1]

The carriageway will not be constructed however the proposed kerb line at this location will have a 165mm upstand, the levels to the rear of the footway will also be also reduced (where practical), these two factors will reduce the severity of the cross fall.

ROAD SAFETY AUDIT TEAM RESPONSE

Accepted.

5.3 PROBLEM

Location: Reference 5.3 on plan TE/16/1796-LTP/ST1-2/01 at Appendix B
– Proposed crossing of Crookesmoor Road western arm

Summary: Existing worn and polished ironwork cover in line of proposed NMU crossing results in risk of pedestrian slips and falls

The existing pedestrian crossing of the Crookesmoor Road western arm is to be relocated a short distance southwest of its current location. When this is done, an existing manhole would fall within the limits of the new controlled pedestrian crossing area. See photograph;



The ironwork cover is worn and polished, and there would be a likelihood of pedestrians slipping, falling and sustaining injury if stepping on the cover, particularly during or after inclement weather conditions.

RECOMMENDATION

Provide a non-slip cover to the manhole.

Designers Response [1]

As this is a Yorkshire Water manhole cover it is not possible to replace it. No injury accidents have been recorded as a result of this in a ten year period.

ROAD SAFETY AUDIT TEAM RESPONSE

Whilst less than ideal this is accepted, although given that pedestrians do not currently cross at this position the reference to a lack of injury accidents to date as a result of the manhole is considered irrelevant.

End of Problems Raised and Recommendations Offered in this Stage 1-2 Road Safety Audit

6.0 Audit Team Statement

I certify that this RSA has been carried out in accordance with the Sheffield City Council Road Safety Audit Standard 2005.

AUDIT TEAM LEADER

Ashley Carnall
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TTAPS – Road Safety
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Signed: *A Carnall*
Dated: 13th February 2017

AUDIT TEAM MEMBER

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APPENDIX A

Road Safety Audit Brief (list of drawings and documents considered)

Document Reference: Stage 1-2 RSA brief received by email dated 10 January 2017 from Gay Horsfield, included on following pages.

List of Information considered in this Stage 1-2 RSA;

Drawings (Amey / SCC): -

- HW-208130-14-01 Construction Site Clearance
- HW-208130-14-02 Proposed Construction Layout
- TR-208130-014-001 Proposed Traffic Signs & Road Markings
- TR-208130-014-002 Traffic Signs & Road Markings Site Clearance
- TS-208130-1200-1 Traffic Signals Apparatus

Other Documents: -

- None

**1796 LTP CROOKESMOOR ROAD AND BARBER ROAD
PEDESTRIAN CROSSING PHASE**

ROAD SAFETY AUDIT STAGE 1-2 BRIEF

Documents:

All documents and drawings are in folder:

G:\DEL\Transport Capital Programme\Projects_Live\1796 Crookesmoor & Barber Rd

Description of the Project: A large number of requests have been received from local residents and councillors to provide a pedestrian facility at these traffic lights. There is a very high footfall in this area, particularly students.

Proposals:

- All stop phase with pedestrian crossing facilities on all junction arms – this is to be done at the same time as the signal replacement programme;
- Associated tactiles and dropped kerbs etc.;
- Small build out on south side on SW side of Crookesmoor Road;
- Advance stop line for cyclists on the uphill Crookes Valley Road.

Timescales: The signals are due to be replaced in April/May 2017. An audit is required by 8 February 2017 to assist the schemes development.

Departures from Standard:

Some of the pedestrian request buttons and hence the green walk symbol will be sited at the back of the footway.

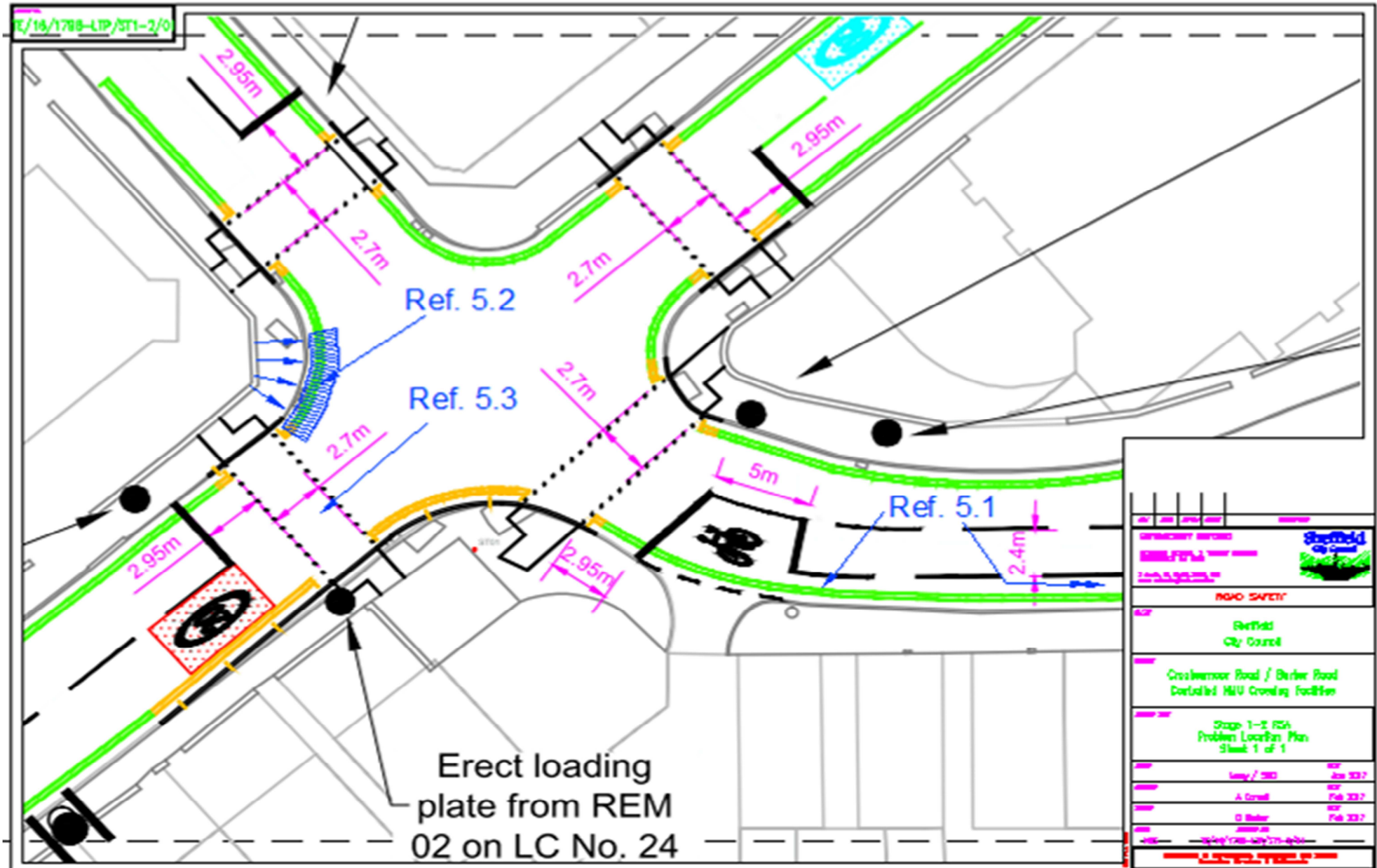
Previous RSA Reports: Previous informal RSA 1 concluded that the addition of the pedestrian phase would be beneficial despite the constraints due to the narrow width of the pavement.

Gay Horsfield
Transport Planner
10 January 2017

APPENDIX B
Problem Location Drawings

List of Drawings:

TE/16/1796-LTP/ST1-2/01



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