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RAF Upper Rissington
S278 Works
Road Safety Audit Stage 1
Gladedale

November 2010

QM

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
Remarks	Draft			
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Project number				
File reference	E:\Bob Turner\Road Safety\RAF Upper Rissington S278 271010\RAF Upper Rissington S278 Works RSA S1 Draft.docx			

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1 Introduction

1.1.1 WSP Development and Transportation has been commissioned by Gladedale for the redevelopment of the RAF airbase at Upper Rissington. As part of this commission, an appropriate stage of Road Safety Audit is required. WSP Development and Transportation has been appointed as independent Road Safety Auditors for the highway improvements.

1.1.2 The Audit was carried out by experienced Road Safety Engineers employed by WSP Development and Transportation 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 1' Road Safety Audit i.e. one carried out at completion of preliminary design, prior to detail design. The Audit Team is not aware of any previous Road Safety Audits undertaken on this or a similar scheme.

1.1.5 The Audit Team consisted of:

A Khan, BSc (Eng) (Hons) CMILT MCIHT MTPS MSoRSA (Audit Team Leader)

Associate, WSP Development and Transportation

R Turner, MSc BSc (Hons) PGCE CMILT MCIHT MSoRSA (Audit Team Member)

Principle Engineer, WSP Development and Transportation

1.1.6 The Audit was undertaken after detailed examination of the submitted documents and a visit to the site on Wednesday, 27th October 2010 between 09:15 and 10:40. At the time of the site visit, the weather was bright but cloudy, and the road surfaces were damp.

1.1.7 The Audit reviews, from the road safety aspect, the redevelopment of the RAF site at Upper Rissington in Gloucestershire. The proposals are located on the unnamed north-south road, which runs between Great Barrington to the south and the A424 to the north, passing west of the RAF base. For the purposes of this report, this road will be forthwith referred to as 'main road'. The scheme comprises:

- Proposed roundabout and ghost island junctions;
- Proposed re-alignment of existing side road junction, by the roundabout;
- The stopping-up of Wellington Road and A. P. Ellis Road, where they meet the main road;
- Proposed widening of the existing carriageway;
- Proposed widening and provision of new footways, cycleways and verges; and
- Relocation of the current 40mph speed limit and associated signage.

1.1.8 The Road Safety Audit was undertaken on the scheme detailed in the following documentation:

Drawing No.	Rev.	Title
Figure 1	-	Site Location Plan, RAF Upper Rissington
2214/SK/03	A	Preliminary Layout, Sheet 1 of 2 (Roundabout Access)
2214/SK/04	A	Preliminary Layout, Sheet 2 of 2 (Junction Access)

1.1.9 No Audit Brief was submitted to the Audit Team; although, a short 'Briefing Note' (not in the standard Audit Brief format) was.

1.1.10 Personal Injury Accident (PIA) data was made available to the Audit Team; although, the data was not recent. For the five year period between 2000 and 2005 (exact dates not known), there were no reported accidents within the vicinity of the scheme.

1.1.11 No traffic flow or speed information was supplied to the Audit Team.

1.1.12 No pedestrian or cycle flow information was provided to the Audit Team.

1.1.13 The Audit Team was made aware of the following Departure from Standards. At the proposed ghost island junction, the existing bend adjacent to the new junction only has a 100m radius.

1.1.14 No other information was issued to the Audit Team.

1.2 SITE DESCRIPTION

1.2.1 The main road is a single carriageway, which serves the RAF base, as well as the surrounding villages of Upper Rissington, Little Rissington and Great Rissington. There is an existing footway on the west side and a grass verge on the east side of the carriageway.

1.2.2 There is a new housing estate to the north and east of the airbase, and a business park is located within the south part of the airbase. There are open fields to the south and west, beyond the airbase perimeter.

1.2.3 There is a system of street lighting on the main road. The main road in the vicinity of the airbase is subject to a speed limit of 40mph, increasing to national speed limit beyond the built area of the airbase, to the south and the village of Upper Rissington to the north. There are several minor side roads and private accesses onto the main road, including Wellington Road and A. P. Ellis Road, which are subject to a 30mph speed limit.

1.2.4 Two bus stops are located on the main road by the airbase, with a two-hourly bus service during the day, serving the neighbouring towns and villages.

2 Items Raised at this Stage 1 Road Safety Audit

2.1 LOCAL ALIGNMENT

2.1.1 Problem



LOCATION: South of the new priority junction

SUMMARY: Inadequate road width could lead to side-swipe incidents.

The proposed carriageway half-width at some locations is 2.5m. This is considered inadequate for the main road with significant HGVs. This could lead to passing HGVs coming into conflict, as they pass each other.

RECOMMENDATION

Ensure that a minimum width of 3m is used for each lane throughout the scheme.

2.2 JUNCTIONS

2.2.1 Problem

LOCATION: At the new roundabout and adjacent side road junction

SUMMARY: Inappropriate visibility splays may lead to conflicts.

The visibility splays shown on the drawings do not appear to be in accordance with the DMRB standards. This could lead to vehicles failing to stop or other visibility-related incidents. This may result in injuries accidents.

RECOMMENDATION

Ensure that the proposed roundabout and the adjacent side road junction have appropriate visibility splays (forward and give way) in accordance with the DMRB standards.

2.2.2 Problem



LOCATION: The re-aligned side road junction

SUMMARY: Close proximity of the side road junction to the roundabout may lead to shunt type incidents

The close proximity of the re-aligned side road junction to the roundabout could cause drivers confusion. The southbound vehicles egressing the roundabout may fail to realise in sufficient time that a vehicle in front is turning right into the side road. This could result in shunt type accidents.

RECOMMENDATION

Ensure that there is adequate forward visibility at the approach to the side road junction. The distance between the roundabout and adjacent junction should be increased.

2.2.3 Problem

LOCATION: At the proposed roundabout

SUMMARY: Short entry flare length may lead to insufficient deflection.

The proposed flare lengths at the roundabout may be inadequate to provide sufficient deflection for approaching vehicles. This could result in vehicles entering the roundabout circulatory carriageway at an inappropriate angle and speeds. They may collide with the central island and/or other road users.

RECOMMENDATION

Ensure that the length of the entry flares is provided in accordance with DMRB Vol 6 Section 2 Part 3 TD16/07.

2.2.4 Problem

LOCATION: At the proposed roundabout

SUMMARY: Proposed central island radii may lead to insufficient deflection.

The proposed radii of the central island and overrun areas may not be adequate. This could lead to insufficient deflection for approaching vehicles. This may result in vehicles entering the roundabout circulatory carriageway inappropriately and colliding with other road users.

RECOMMENDATION

Ensure that the radii of the central island and overrun area are provided in accordance with DMRB Vol 6 Section 2 Part 3 TD16/07.

2.3 NON MOTORISED USER PROVISION

2.3.1 Problem

LOCATION: At the north side of the proposed roundabout

SUMMARY: Acute angle between two shared-use paths may lead to conflicts involving NMUs.

The proposed shared-use path from the new development meets the proposed path (parallel to the carriageway) at the north side of the roundabout 'perpendicularly'. However, there are no flared corners at the intersection. This could result in cyclists having to make wide sweeps to make the turns. This may bring them into conflict with other NMUs.

RECOMMENDATION

Provide flared corners on both sides at the intersection of the two shared-use paths.

2.3.2 Problem

LOCATION: South side of the roundabout

SUMMARY: Lack of crossing may lead to conflicts.

There is no crossing facility proposed for NMUs at the south arm of the roundabout. The proposed NMU route between the east arm and the re-aligned side road junction involves a detour across the north arm of the roundabout (away from the desire line). This could lead to NMUs entering the carriageway inappropriately, with subsequent conflicts. In addition, some cyclists may use the footway opposite the side road junction, and could come into conflict with pedestrians.

RECOMMENDATION

Provide an NMU crossing facility at the south arm of the roundabout and extend the shared-use path on the east arm to join up with this crossing facility. Provide signing and markings in accordance with the standards, to encourage NMUs to use this facility.

2.4 ROAD SIGNS, CARRIAGEWAY MARKINGS AND LIGHTING

2.4.1 Problem

LOCATION: At the new roundabout and adjacent side road junction

SUMMARY: Lack of High Friction Surfacing (HFS) may lead to conflicts.

No HFS is proposed on the approach arms to the roundabout. Vehicles may fail to stop at the give way lines and enter the roundabout circulatory carriageway inappropriately. This could bring them into conflict with other road users.

RECOMMENDATION

Ensure that HFS is provided in accordance with the current standards.

3 Audit Team Statement

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

AUDIT TEAM LEADER

A Khan

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.....Signed

05 November 2010

.....Date

AUDIT TEAM MEMBER

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ENQUIRIES REGARDING THIS AUDIT SHOULD BE MADE TO

A Khan

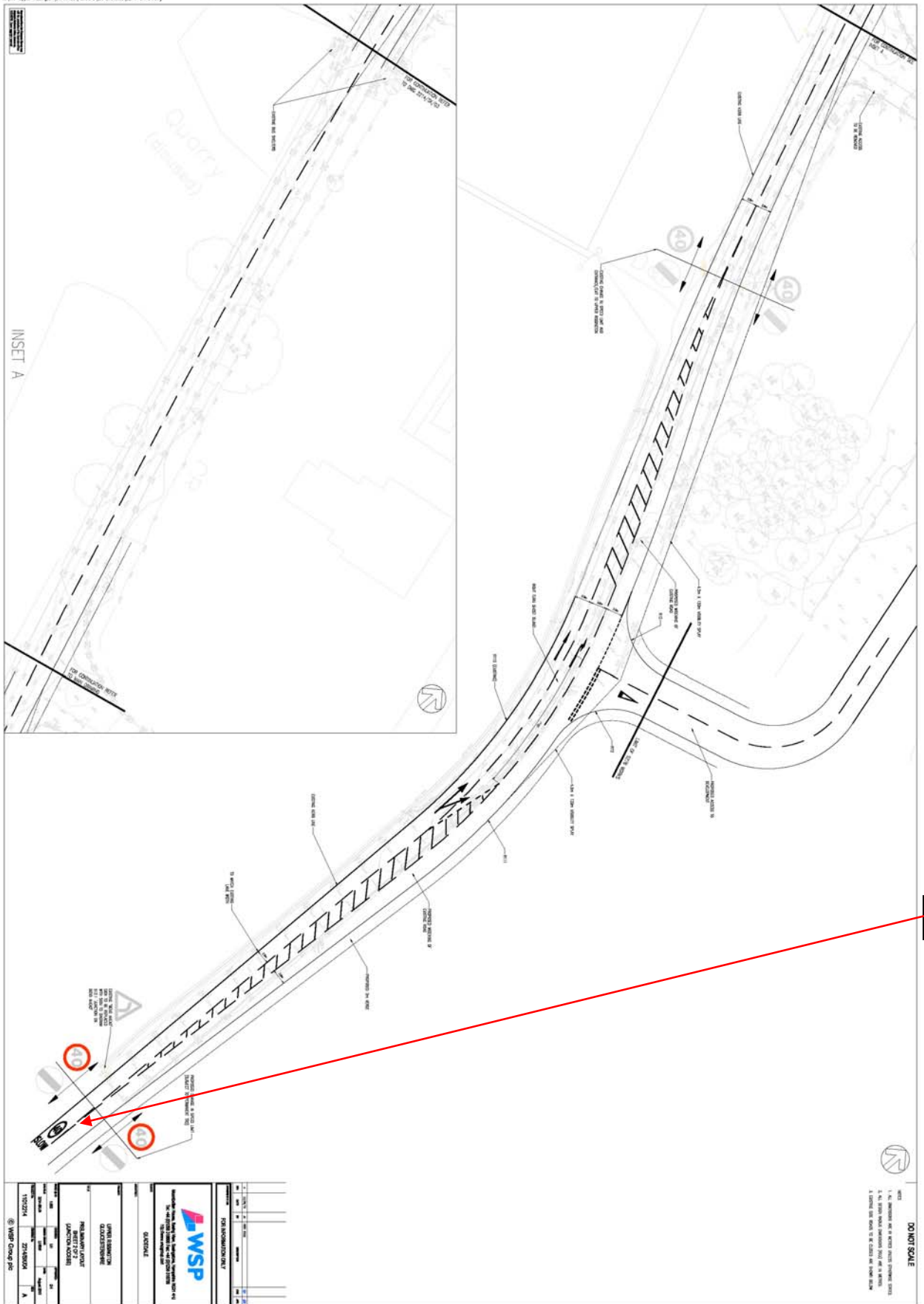
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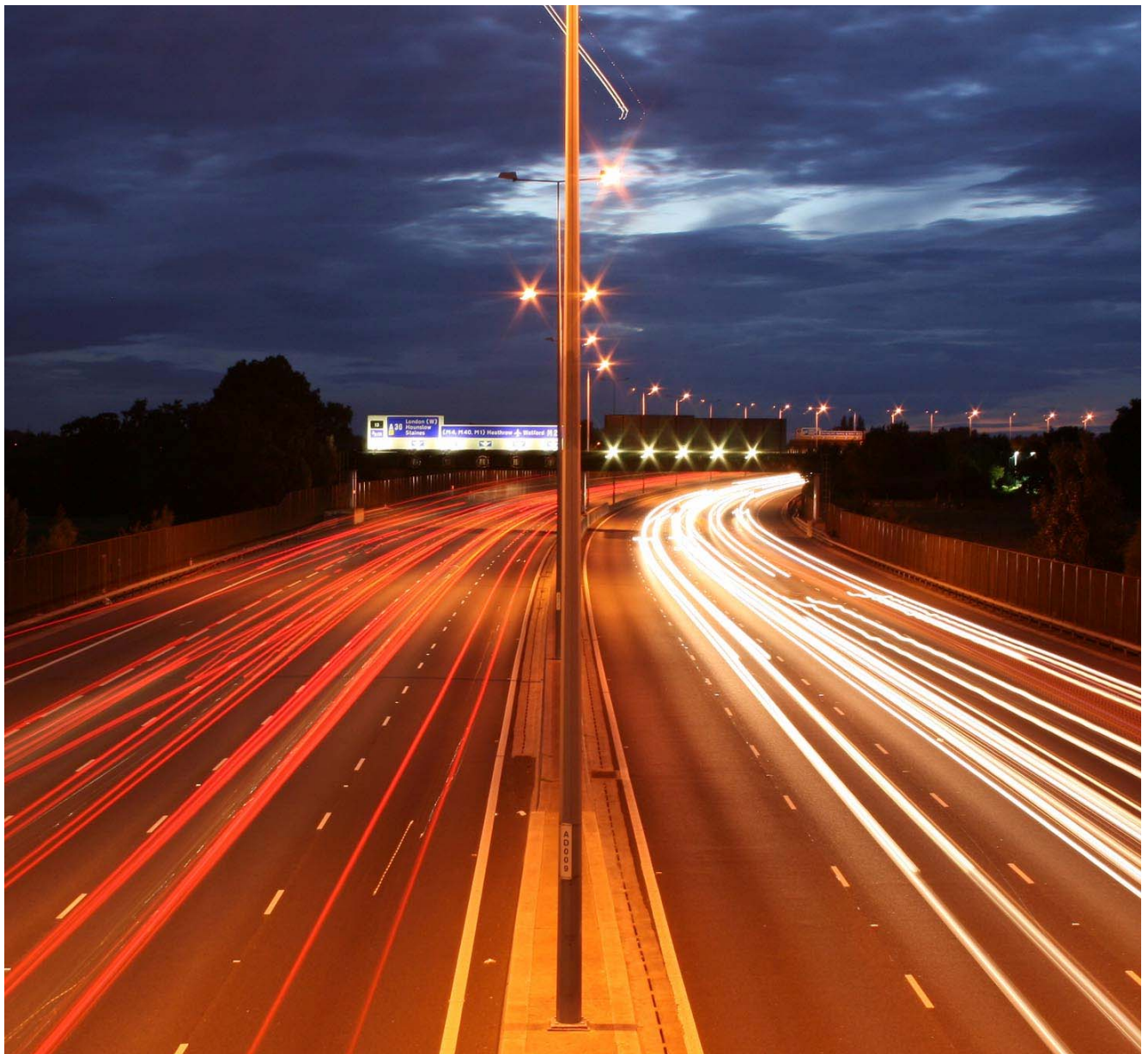
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Appendices, Figures & Tables



2.1.1

Appendix B Designers Response



UNITED
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RAF Upper Rissington
S278 Works
Designers Response to RSA1
Gladedale Homes

08/11/10

QM

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
Remarks				
Date				
Prepared by				
Signature				
Checked by				
Signature				
Authorised by				
Signature				
Project number				
File reference				

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1 Introduction

1.1 DESIGNERS STATEMENT

This report has been undertaken following a Stage 1 safety audit of the new access junctions for the development at RAF Upper Rissington. The independent audit was undertaken by WSP's Safety Audit Team during early November 2010.

2 Designers Response

2.1 LOCAL ALIGNMENT

2.1.1 Problem

Location: South of the new priority junction

Summary: Inadequate road width could lead to side-swipe incidents.

The proposed carriageway half-width at some locations is 2.5m. This is considered inadequate for the main road with significant HGVs. This could lead to passing HGVs coming into conflict, as they pass each other.

Recommendation: Ensure that a minimum width of 3m is used for each lane throughout the scheme.

Designers Response: The carriageway widths provided throughout the junctions are a minimum of 3.0m as TD 452/95 and TD 16/07. Beyond the extents of the works the existing carriageway widths will be maintained due to minimal land availability and the need to retain a residential character to the roads through the village.

2.1.2 Problem

Location: At the new roundabout and adjacent side road junction

Summary: Inappropriate visibility splays may lead to conflicts. The visibility splays shown on the drawings do not appear to be in accordance with the DMRB standards. This could lead to vehicles failing to stop or other visibility related incidents. This may result in injuries accidents

Recommendation: Ensure that the proposed roundabout and the adjacent side road junction have appropriate visibility splays (forward and give way) in accordance with the DMRB standards

Designers Response: With the exception of forward visibility around the bend adjacent to the ghost island junction all splays are provided in accordance with DMRB. It should be noted that the bend in question is an existing feature and if MFS2 was applied when the new speed limit is enforced the 50m envelope available will satisfy these guidelines.

2.1.3 Problem

Location: The realigned side road junction

Summary: Close proximity of the side road junction to the roundabout may lead to shunt type incidents. The close proximity of the realigned side road junction to the roundabout could cause drivers confusion. The southbound vehicles egressing the roundabout may fail to realise in sufficient time that a vehicle in front is turning right into the side road. This could result in shunt type accidents.

Recommendation: Ensure that there is adequate forward visibility at the approach to the side road junction. The distance between the roundabout and the adjacent junction should be increased.

Designers Response: Visibility provision throughout the junction is to standards contained within DMRB. There is also no guidance on the proximity of junctions to a roundabout however if the approach to the junction location is assessed in the same way as a pedestrian crossing then a location within 20m of the roundabout or more than 60m should be used. In this instance we feel that due to the limited number of vehicles using the junction and also the low speeds of mainline traffic at the roundabout that the location proposed

2.1.4 Problem

Location: At the proposed roundabout

Summary: Short entry flare length may lead to insufficient deflection. The proposed flare lengths at the roundabout may be inadequate to provide sufficient deflection for approaching vehicles. This could result in vehicles entering the circulatory carriageway at an inappropriate angle and speed. They may collide with the central island and/or other road users.

Recommendation: Ensure that the length of the entry flares is provided in accordance with DMRB Vol 6 Section 2 Part 3 TD 16/07

Designers Response: Following traffic assessment of the roundabout there is no requirement for excessive flaring on any arm to assist capacity. The flares provided on this compact roundabout are to facilitate the movements of larger vehicles. It should also

be noted that deflection on the approach from all arms is to the standard recommended in TD 16/07

2.1.5 Problem

Location: At the proposed roundabout

Summary: Proposed central island radii may lead to insufficient deflection. The proposed radii of the central island and overrun areas may not be adequate. This could lead to insufficient deflection for approaching vehicles. This may result in vehicles entering the roundabout circulatory carriageway inappropriately and colliding with other road users.

Recommendation: Ensure that the radii of the central island and overrun area are provided in accordance with DMRB Vol 6 Section 2 Part 3 TD 16/07

Designers Response: Deflection on all arms is provided in accordance with TD 16/07.

2.1.6 Problem

Location: At the north side of the roundabout

Summary: Acute angle between two shared use paths may lead to conflicts involving NMU's. The proposed shared use path from the new development meets the proposed path (parallel to the carriageway) at the north side of the roundabout 'perpendicularly' However, there are no flared corners at the intersection. This could result in cyclists having to make wide sweeps to make the turns. This may bring them into conflict with other NMU's

Recommendation: Provide flared corners on both sides at the intersection of the two shared use paths

Designers Response: Agreed. Flared corners or radii to be provided.

2.1.7 Problem

Location: South side of the roundabout

Summary: Lack of crossing may lead to conflicts. There is no crossing facility proposed for NMU's at the south arm of the roundabout. The proposed NMU route between the eastern arm and the realigned side road junction involves a detour across the northern arm of the roundabout (away from the desire line). This could lead to NMU's entering the carriageway inappropriately, with subsequent conflicts. In addition, some cyclists may use the footway opposite the side road junction, and could come into conflict with pedestrians.

Recommendation: Provide an NMU crossing facility at the south arm of the roundabout and extend the shared use path on the east arm to join up with the crossing facility. Provide signing and markings in accordance with the standards, to encourage NMU's to use this facility.

Designers Response: Agreed. The southern arm will have a crossing provided with amendments to the adjacent geometry where required.

2.1.8 Problem

Location: At the new roundabout and adjacent side road junction.

Summary: Lack of High Friction Surfacing (HFS) may lead to conflicts. No HFS is proposed on the approach arms to the roundabout. Vehicles may fail to stop at the give way lines and enter the roundabout circulatory carriageway inappropriately. This could bring them into conflict with other road users.

Recommendation: Ensure that HFS is provided in accordance with the current standards.

Designers Response: HD 28 and 36 only recommend HFS on approaches with high speeds or restricted geometry. The approaches to the proposed roundabout will have a surface material with the required PSV as stated in DMRB guidance.

