

Appendix E

ROAD SAFETY AUDIT AND DESIGNERS RESPONSE





8.3 ROAD SAFETY AUDIT



West Sussex County Council

A29 REALIGNMENT (PHASE 1)

Stage 1 Road Safety Audit

West Sussex County Council

A29 REALIGNMENT (PHASE 1)

Stage 1 Road Safety Audit

CONFIDENTIAL

PROJECT NO. 70060779

OUR REF. NO. 70060779-RSA1-002

DATE: JULY 2020

**WSP
2 London Square
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Guildford, Surrey
GU1 1UN**

Quality control

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Final Issue			
Date	08/07/2020			
Prepared by	Edward Hanks			
Signature				
Checked by	Jon Noble			
Signature				
Authorised by	Jon Noble			
Signature				
Project number	70060779			
Report number	70060779-RSA1-002			
File reference	As above			



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APPENDICES

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APPENDIX B

1. PROJECT DETAILS

Report title:	A29 Realignment (Phase 1) Stage 1 Road Safety Audit
Date:	July 2020
Document reference and revision:	70060779-RSA1-002
Prepared by:	WSP
On Behalf of:	West Sussex County Council

2. INTRODUCTION

2.1.1. This report results from a Stage 1 Road Safety Audit carried out on Phase 1 of the A29 Realignment scheme requested by Jo North of WSP, on behalf of Elaine Martin, Audit Project Sponsor, West Sussex County Council. The Road Safety Audit was carried out during July 2020.

2.1.2. The Road Safety Audit Team was as follows:

Audit Team Leader Jon Noble MEng CEng MCIHT MSoRSA

Audit Team Member Edward Hanks, BSc (Hons), MSc, MCIHT, MSoRSA

2.1.7. Edward Hanks holds a Road Safety Certificate of Competence meeting the requirements of the European Directive 2008/96/EC and GG119 paragraph 3.9 and appendix G.

2.1.1. The audit took place in home offices in July 2020. The Road Safety Audit was undertaken in accordance with the Road Safety Audit brief provided by Jo North and accepted by the Audit Team.

2.1.2. This site visit was undertaken on 6th July 2020 between 1130 and 1300. The weather was overcast but dry, the road surface was dry. There was a high flow of vehicles on the A29, the flow on Barnham Road was low due to the closure of Barnham Road from the junction with Downview Road.

2.1.3. This audit was also undertaken during July 2020, when traffic flows were reduced due to the Covid-19 pandemic.

2.1.4. The Road Safety Audit also comprised of an examination of the documents and drawings supplied to the Road Safety Audit Team, referenced in Appendix A of this report.

2.1.5. All comments and recommendations are referenced to the design drawings and the locations have been indicated on the plan located in Appendix B.

2.1.6. The terms of reference of the Road Safety Audit are as described in the Design Manual for Roads and Bridges (DMRB) Standard GG 119 Road Safety Audit, with the following exceptions as set out in the Road Safety Audit Accepted Practice WSCC 1/4/2019:

- No audit team approval required (as audit team requirements specified)
- No Full Audit Brief required (unless for major project schemes)
- No GG104 process required for exception reports (unless for major project schemes)
- No digital copy required to be sent to Highways England

2.1.7. The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

2.1.8. No Departures from Standards relating to the scheme were provided to the Audit Team.

2.2. AUDIT ADMINISTRATION

2.2.1. This Audit Report has been submitted to the design organisation for consideration and an RSA response report should be produced in collaboration between the Overseeing Organisation. This

should be completed within 1 month of the issue of the RSA report and the Overseeing Organisation should then provide a copy to the RSA team for information.

- 2.2.2. The Overseeing Organisation is responsible for identifying any misinterpretations of the highway scheme proposals or if any problem or recommendation is not accepted.
- 2.2.3. Safety issues identified during the audit and site inspection which the Terms of Reference exclude from this report, but which the audit team wishes to draw to the attention of the Overseeing Organisation, will be set out in a separate letter. Maintenance issues should be reported directly to the maintaining agent.

2.3. PURPOSE OF THE SCHEME

- 2.3.1. The purpose of the scheme is to provide additional capacity to support forecast increased demand on the existing A29 and B2233 roads through the realignment of the A29. Demand on the existing network is expected to increase due to the strategic development of 2,760 new homes in the Barnham, Eastergate and Westergate site allocated in the Arun Local Plan.
- 2.3.2. This Stage 1 audit relates to Phase 1 of the scheme, consisting of:
 - Delivery of a new single carriageway road to the east of the Eastergate, between the A29 Fontwell Avenue Barnham Road;
 - New roundabouts at the A29 Fontwell Avenue, Barnham Road and to access the proposed development; and
 - Cycle, and pedestrian facilities along the new route.

3. PROBLEMS IDENTIFIED IN PREVIOUS ROAD SAFETY AUDITS

- 3.1.1. The audit team were provided with the previous Stage 1 road safety audit, undertaken in January 2019. A designers response was not provided. A total of 14 problems were raised in this audit, three are deemed to be resolved and eight relate to Phase 2 of the scheme and are out of the scope of this audit.
- 3.1.2. Three problems remain, these are discussed next, with a response and recommendation following this Stage 1 road safety audit.

January 2018 Stage 1 Problem B	
Location	Proposed uncontrolled crossings at roundabouts throughout the scheme
Summary / Problem	<p>Summary: Uncontrolled drop kerb crossings across roundabout arms insufficient in size leading to potential cyclists or pedestrian collisions</p> <p>At proposed roundabouts along the route there are generally uncontrolled drop kerb crossings provided across the approaches utilising the splitter island. It is not clear from the drawings whether the crossings will be wide enough for use by cyclists and pedestrians and if not, this could lead to potential conflicts at the splitter islands in the centre of crossings. It is also not clear that the splitter islands are deep enough and cycles may protrude into the live carriageway. Insufficient space could lead to a cyclist or pedestrian being forced into the carriageway where they may be struck by a vehicle entering or exiting a roundabout.</p>
Recommendation	It is recommended that throughout the scheme the uncontrolled drop kerb crossings are made wide and deep enough for cyclists and pedestrians to safely cross.
Designer's Response	
	None received
Client's Response	
	None received

Comments at this Stage 1 Road Safety Audit	
	<p>It is not clear whether the size and depth of the dropped kerb crossings and splitter islands are suitable for use as shared use crossings, particularly on the splitter islands.</p> <p>Insufficient space on the crossings and splitter islands could lead to a cyclist or pedestrian being forced into the carriageway where they may be struck by a vehicle entering or exiting a roundabout.</p> <p>It is recommended that all uncontrolled drop kerb crossings and splitter islands are wide and deep enough for cyclists and pedestrians to safely cross.</p>

January 2018 Stage 1 Problem I	
Location	Southern arm of proposed roundabout with the A29 Fontwell Avenue
Summary / Problem	<p>Summary: No provision for cyclists to join carriageway south of roundabout leading to potential conflicts with drivers or pedestrians</p> <p>South of the proposed roundabout between the aligned A29 and existing A29 Fontwell Avenue, the footway/cycleway ties in with the existing footway along the eastern side of the A29 Fontwell Avenue, which is very narrow (1.5m). Cyclists may continue along this footway creating a risk of conflict with pedestrians or join the carriageway where it narrows leading to potential collisions with vehicles whose drivers will not be expecting a cyclist to join the carriageway.</p>
Recommendation	It is recommended that provision be made in this location for cyclists wishing to travel south, in the form of a dropped kerb and suitable markings if a widened facility cannot be incorporated into the scheme.
Designer's Response	
	None received
Client's Response	
	None received
Comments at this Stage 1 Road Safety Audit	
	<p>It is not clear how cyclists can join or leave the shared route on both of the existing A29 arms at the proposed A29 / Fontwell Avenue roundabout.</p> <p>It is recommended that dropped kerbs and suitable markings are provided to allow cyclists to join and leave the proposed shared scheme on all approaches to the proposed roundabout.</p>

January 2018 Stage 1 Problem L	
Location	West of proposed roundabout with Barnham Road
Summary / Problem	<p>Summary: Lack of tie in at western end of proposed footway/cycleway with on southern side of Barnham Road, west of proposed roundabout</p> <p>There is a proposed footway/cycleway leading west from the planned roundabout between the A29 and the B2233 Barnham Road on the southern side of Barnham Road. There is no existing provision south of the carriageway so the proposed footway will lead to nowhere, which could result in cyclists having no safe way of joining the carriageway or pedestrians and cyclists having to cross in an unsafe location. Either could result in collisions with vehicles or cyclist loss of controls or pedestrian slips, trips and falls.</p>
Recommendation	It is recommended that a crossing is provided to give pedestrians and cyclists a safe place to cross to the facility on the northern side. Provision should also be made for cyclists to join the carriageway in this location if they wish to continue travelling west.
Designer's Response	
	None received
Client's Response	
	None received
Comments at this Stage 1 Road Safety Audit	
	<p>Following the January 2018 Stage 1 RSA, a shared use crossing is proposed across Barnham Road to the west of the proposed roundabout.</p> <p>The existing footway on the northern side of Barnham Road is not currently designated as for shared use. It is recommended that the northern footway is widened to provide a shared use footway or that dropped kerbs, signs and markings are provided to enable cyclists to join/leave the shared footway.</p> <p>It is also recommended that transition points for cyclists are provided on the western side of the proposed A29 / Barnham Road roundabout.</p>

4. PROBLEMS IDENTIFIED AT THIS STAGE 1 ROAD SAFETY AUDIT

PROBLEM 1

Location: Proposed service road to the west of the proposed A29 / Fontwell Avenue roundabout

Summary: Large or long vehicles turning to/from the service road resulting in shunts

On the western side of the A29, there are four existing accesses to residential, commercial and farm properties. It is proposed to provide a new roundabout to the east of these accesses to connect Fontwell Avenue with the realigned A29. A service road is proposed to serve the existing accesses, joining Fontwell Avenue to the north and south of the proposed roundabout.

Large or long vehicles may have difficulty turning into or out of the service road, particularly when coming to or from the new A29 route. This could result in vehicles approaching the service road accesses having to brake suddenly, resulting in shunts. It may also result in large vehicles making very slow and multipoint turns, putting them at risk from being hit by vehicles traveling in the opposite direction.

Large or long vehicles may continue southwards down Fontwell Avenue to perform a U-turn using the roundabout at the B2233 junction. The size of this roundabout may make it difficult to complete a U-turn safely, resulting on collisions at this junction.

RECOMMENDATION:

It is recommended that access to the service road is provided from the roundabout, with arrangements made for large vehicles to turn in the SPR Centre.

PROBLEM 2

Location: Proposed service road to the west of the proposed A29 / Fontwell Avenue roundabout

Summary: Confusion over service lane adjacent to roundabout

On the western side of the A29, there are four existing accesses to residential, commercial and farm properties. It is proposed to provide a new roundabout to the east of these accesses to connect Fontwell Avenue with the realigned A29. A service road is proposed to serve the existing accesses, joining Fontwell Avenue to the north and south of the proposed roundabout.

Drivers approaching from the south may be confused by the service road and move into it believing it is part of the roundabout. They may collide with the kerbs or other vehicles in the service lane.

Vehicles will be exiting the service road immediately before and after the roundabout. Additional turning movements so close to the roundabout may lead to confusion on or approaching the roundabout, resulting in rear end shunts.

RECOMMENDATION:

It is recommended that access to the service road is provided from the roundabout, with arrangements made for large vehicles to turn in the SPR Centre.

PROBLEM 3

Location: Proposed service road to the west of the proposed A29 / Fontwell Avenue roundabout

Summary: Service road too narrow for two-way movements and collision may result

On the western side of the A29, there are four existing accesses to residential, commercial and farm properties. It is proposed to provide a new roundabout to the east of these accesses to connect Fontwell Avenue with the realigned A29. A service road is proposed to serve the existing accesses, joining Fontwell Avenue to the north and south of the proposed roundabout.

It is not clear whether the service road will be one-way, but it is unlikely that this would be adhered to anyway. The road appears to be too narrow for safe two-way access, especially given the tightness of the entrances, and vehicles are likely to collide within this area.

RECOMMENDATION:

It is recommended that access to the service road is provided from the roundabout, with arrangements made for large vehicles to turn in the SPR Centre.

PROBLEM 4

Location: Proposed traffic islands and ghost islands on the proposed A29 between Fontwell Avenue and Barnham Road

Summary: Vehicles overrunning the kerbs and central islands resulting in loss of control collisions, pedestrian trips and falls or collisions between vehicles and pedestrians/cyclists.

On the proposed A29 route between Fontwell Avenue and Barnham Road, three physical traffic calming islands and one ghost island are proposed, reducing the available carriageway width to between 2.5m and 2.8m. Localised widening of the carriageway is proposed at each of the island locations to accommodate the island. One of the proposed islands also includes crossing facilities to connect with a local public right of way.

The localised carriageway alignment occurs over a short length and results in vehicles having to make fairly sharp changes in direction. Vehicles may clip the kerbs and lose control.

During the site visit, traffic flows on the existing A29 route were steady, including a relatively high number of HGVs and large farm vehicles. Large or long vehicles are unlikely to be able to safely navigate through the carriageway realignment without braking or clipping the nearside kerb or traffic island. Pedestrians waiting within the island are at risk.

Continued clipping of the traffic island or nearside kerbs could result in the kerbs, footway and crossing becoming damaged, resulting in loss of control collisions, pedestrian trips and falls or collisions between vehicles and pedestrians/cyclists on the shared footway.

RECOMMENDATION:

It is recommended that the carriageway realignment is significantly extended upstream and downstream of the proposed features and the width of the lanes widened to allow vehicles to safely navigate.

Vertical traffic calming on a key local route is unusual in the UK, especially away from heavily built up areas. The design team should consider carefully the risks of placing such features on this type of road and whether other alternatives would provide the effect desired, with less risk of road injury.

PROBLEM 5

Location: No construction zone to the east of Fontwell Avenue roundabout.

Summary: Quick alignment change on the footway/cycleway may result in pedestrian/cycle conflict, or cyclists being hit by passing large vehicles.

There is a tree with a protected 'no construction' area to the east of the Fontwell Avenue roundabout. The proposed footway/cycleway moves sharply around the tree protection area. Pedestrians will take the direct route along the path, which makes it likely that they will move laterally across the path. Cyclists wishing to overtake will be happier to follow the new alignment. This may result in collisions between pedestrians and cyclists at this point.

During the site visit, traffic flows on the existing A29 route were steady, including a relatively high number of HGVs and large farm vehicles. The changed alignment moves the footway/cycleway to approximately 1m from the live carriageway. The wing mirrors of large vehicles may overhang into this area, while cyclists may travel along the track, but have their handlebars closer. This may result in cyclists being hit by passing vehicles.

RECOMMENDATION:

It is recommended that the footway/cycleway alignment is extended both upstream and downstream of the tree.

It is also recommended that the carriageway is moved north to provide a larger buffer zone between the live carriageway and the footway/ cycleway.

PROBLEM 6

Location: Throughout scheme

Summary: Planters obstructing visibility leading to collisions

Planters are shown on the drawings throughout the scheme within the verge. It is not clear what kind of plants will be provided, and whether they will be allowed to grow to obstruct driver visibility. However, there are several that if allowed to grow up will block visibility to accesses, junctions or pedestrian crossings. This risks pedestrians at the crossings and may lead to rear-end shunts at the junctions or side swipes at the accesses.

RECOMMENDATION:

It is recommended that the planters are relocated to areas where they cannot obstruct visibility to accesses, junctions or crossings.

PROBLEM 7

Location: Uncontrolled crossing in the middle of the scheme

Summary: Uncontrolled crossing may be unsafe to cross

The proposals show an uncontrolled crossing to the east of the roundabout in the middle of the scheme, which is located 100m from the roundabout. Vehicles exiting the junction will probably have enough time to reach their cruising speed. Vehicles heading towards the roundabout may not have begun to brake yet. Speeds at this location are likely to be relatively high.

With high traffic columns and relatively high speeds, pedestrians (especially elderly or children) may not be able to cross the road safely.

RECOMMENDATION:

It is recommended that pedestrian desire line at this crossing is reviewed (both current and future) and if there is enough demand, the crossing should be altered to provide a safer route. This might be relocating the crossing to become part of the roundabout (although clearly people may refuse to make this division and cross in the current location in unsafe ways) or providing a controlled crossing.

PROBLEM 8

Location: Uncontrolled crossing in the middle of the scheme

Summary: Fencing associated with corrals could cause serious injuries to errant drivers or be an obstruction to cyclists.

The drawings show corrals on either side of the pedestrian crossing. It is not clear why there are fenced areas of pedestrians at this location.

Speeding vehicles traveling northwest towards Fontwell Avenue may lose control as they come around the bend. They risk striking the fencing and suffering very serious injuries.

The corral on the inside of the bend is located in the middle of the shared footway/cycleway and would result in cyclists either hitting the fencing or travelling in the verge to avoid it, risking falling from their machines.

RECOMMENDATION:

It is recommended that corrals are not provided at this location.

PROBLEM 9

Location: Barnham Road roundabout

Summary: Lack of crossing facilities in the desire line resulting in pedestrian and cycle collisions

Uncontrolled pedestrian crossings are provided at all arms of the Barnham Road roundabout apart from the eastern approach. There is an alternative location suggested on the plans (although it is not clear what this is an alternative to).

Pedestrians and cyclists are unlikely to travel to the alternative crossing and instead attempt to cross at the traffic island. Because there are no facilities here and widths may be insufficient, both pedestrians (especially those with wheelchairs, pushchairs or visual impairments) and cyclists are at risk as they cross to the island.

RECOMMENDATION:

It is recommended that pedestrian and cycle facilities are provided at this approach to the roundabout.

PROBLEM 10

Location: Barnham Road roundabout

Summary: Drivers approaching the roundabout may be confused and travel the wrong side of the splitter island

The eastbound approach to the Barnham Road roundabout turns sharply to the right before the roundabout. The view of the driver will in fact be pointing past the splitter island and down the wrong way around the circulating carriageway of the roundabout.

Drivers unfamiliar with the roundabout, and especially at night, might be confused and travel to the right of the splitter island and have a head on conflict.

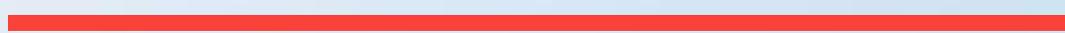
RECOMMENDATION:

It is recommended that the amount of deflection is relaxed so that the drivers view remains looking at the approaching roundabout.

5. AUDIT TEAM STATEMENT

We certify that this audit has been carried out in accordance with GG 119, with the exception of local departures identified in paragraph 2.1.6.	
ROAD SAFETY AUDIT TEAM LEADER	
Name:	Jon Noble
Signed:	
Position:	Safety Audit Team Leader
Organisation:	WSP
Date:	08/07/2020
ROAD SAFETY AUDIT TEAM MEMBER(s)	
Name:	Edward Hanks
Signed:	
Position:	Safety Audit Team Member
Organisation:	WSP
Date:	08/07/2020

Appendix A



DOCUMENT LIST

DRAWINGS

A29-CAP-HGN-00-DR-C-0113 S3-P04 – General arrangement

A29-CAP-HGN-00-SK-C-0107 S3-P03 – Fontwell Avenue junction

A29-CAP-HGN-00-SK-C-0108 S3-P03 – Barnham Road junction

A29-CAP-HML-00-DR-C-0007 S3-P02 – General arrangement

A29-CAP-HML-00-DR-C-0008 S3-P02 – General arrangement

A29-CAP-HML-00-DR-C-0009 S3-P02 – General arrangement

A29-CAP-HML-00-DR-C-0010 S3-P02 – General arrangement

A29-CAP-HML-00-DR-C-0011 S3-P02 – General arrangement

WEST SUSSEX COUNTY COUNCIL DEPARTURES FROM GG119

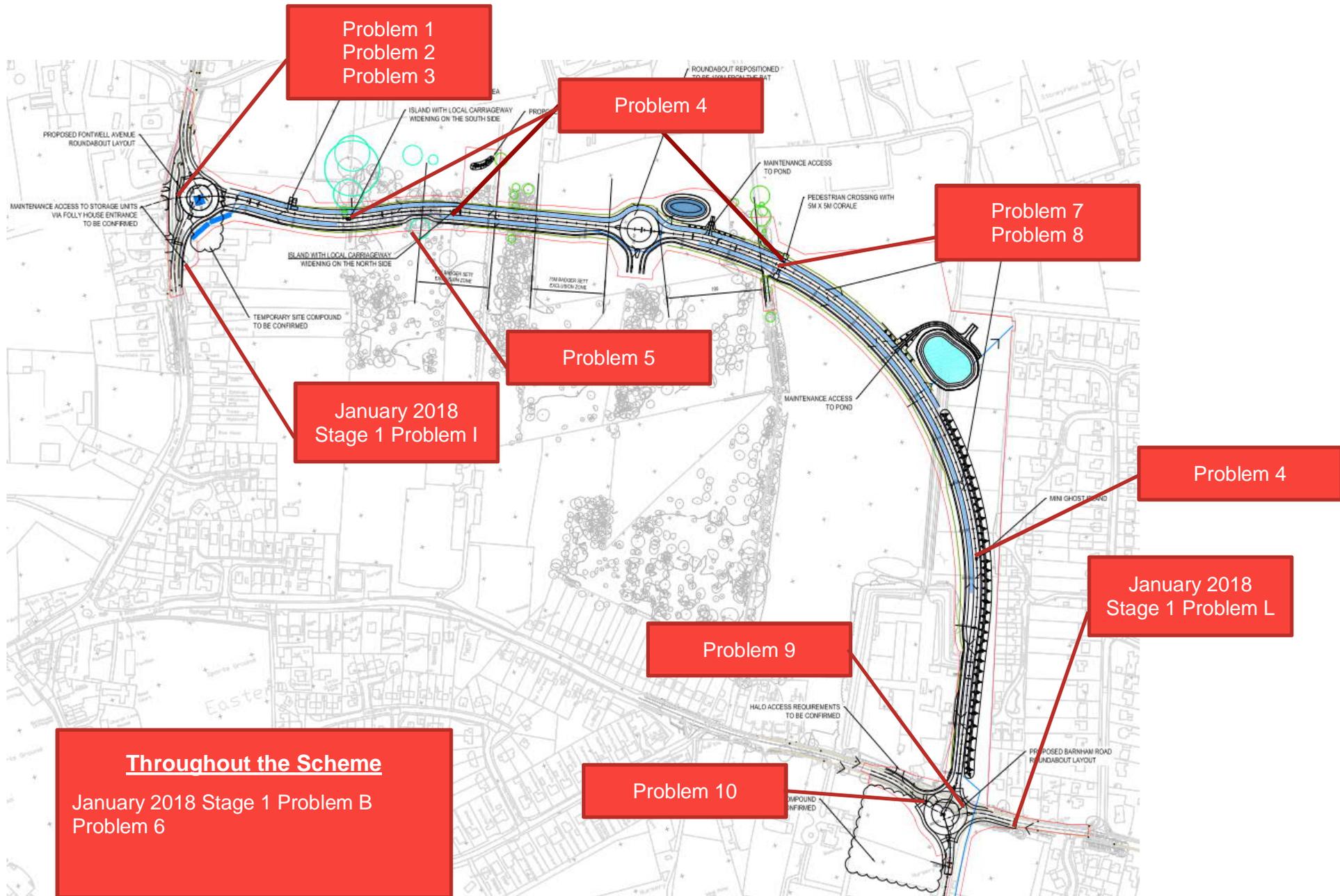
WSCC Highways & Transport have adopted GG119 with the following local departures:

- No audit team approval required (as audit team requirements specified)
- No Full Audit Brief required (unless for major project schemes)
- No GG104 process required for exception reports (unless for major project schemes)
- No digital copy required to be sent to Highways England.

Appendix B



PROBLEM LOCATION PLAN



Problem 1
Problem 2
Problem 3

Problem 4

Problem 7
Problem 8

Problem 5

January 2018
Stage 1 Problem I

Problem 4

January 2018
Stage 1 Problem L

Problem 9

Throughout the Scheme
January 2018 Stage 1 Problem B
Problem 6

Problem 10



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A29 Realignment Scheme Phase 1

Road Safety Audit Stage 1
Designer's Response
July 2020

Quality Management

Job No	CS/099505		
Project	A29 Realignment Scheme (Phase 1)		
Date	July 2020		
Report Title	Road Safety Audit Stage 1 Designer's Response		
Document Ref	A29-CAP-HGN-00-SA-C-041	Issue / Revision	S3-P01
Prepared by:	Capita		
On behalf of:	WSCC		

Authorisation

Prepared by	David Hubbard	14/07/20	
Checked by	Kim Still	15/07/20	
Authorised by	Andrew Burrows	16/07/20	

Revision Status / History

Rev	Date	Issue / Purpose/ Comment	Prepared	Checked	Authorised (Jackson)
S3-P01	16/07/20	First issue	DH	KS	DV

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Appendices

Appendix A

1. Introduction

1.1 Document Purpose

This report forms the designer's response to the Stage 1 Road Safety Audit carried out by WSP in July 2020 on Phase 1 of the A29 Realignment Scheme. The Stage 1 audit is documented in report reference 70060779-RSA1-002. Relevant road safety problems previously raised by WSP in the January 2018 Stage 1 Road Safety Audit for the whole scheme have been carried over and responded to.

1.2 Scheme Details

The Phase 1 of the A29 Realignment Scheme requires the design and construction of a new single carriageway road with cyclist and pedestrian facilities. The road is approximately 1300m in length and is situated to the north-east of Eastergate, between the A29 Fontwell Avenue and B2233 Barnham Road. New roundabouts will be positioned at the A29 Fontwell Avenue, B2233 Barnham Road and to access the proposed development.

1.3 Design Organisation

This designer's response to the WSP's July 2020 road safety audit, doc no. 70060779-RSA1-002, is prepared by Capita in accordance with GG119.

The Audit has a maximum shelf life of 5 years. Should the scheme not progress to the next stage in its development within this period it should be re-audited.

1.4 Key Personnel

Representative		Details
Overseeing Organisation	WSCC	Elaine Martin Project Manager Major Projects CEng MCIHT BEng (Hons)
WSP RSA Team	Audit Team Leader	Jon Noble MEng CEng MCIHT MSoRSA WSP
	Audit Team Member	Edward Hanks BSc (Hons), MSc, MCIHT, MSoRSA WSP
Design Organisation	Design Team Leader	Kim Still Principal Engineer Capita

2. Road Safety Audit Decision Log

2.1 WSP January 2018 Stage 1 RSA

2.1.1 Problem B

Location: Proposed uncontrolled crossings at roundabouts throughout the scheme

Summary: Uncontrolled drop kerb crossings across roundabout arms insufficient in size leading to potential cyclists or pedestrian collisions

At proposed roundabouts along the route there are generally uncontrolled drop kerb crossings provided across the approaches utilising the splitter island. It is not clear from the drawings whether the crossings will be wide enough for use by cyclists and pedestrians and if not, this could lead to potential conflicts at the splitter islands in the centre of crossings. It is also not clear that the splitter islands are deep enough and cycles may protrude into the live carriageway. Insufficient space could lead to a cyclist or pedestrian being forced into the carriageway where they may be struck by a vehicle entering or exiting a roundabout.

Recommendation:

It is recommended that throughout the scheme the uncontrolled drop kerb crossings are made wide and deep enough for cyclists and pedestrians to safely cross

WSP July 2020 Auditor Response:

It is not clear whether the size and depth of the dropped kerb crossings and splitter islands are suitable for use as shared use crossings, particularly on the splitter islands.

Insufficient space on the crossings and splitter islands could lead to a cyclist or pedestrian being forced into the carriageway where they may be struck by a vehicle entering or exiting a roundabout.

It is recommended that all uncontrolled drop kerb crossings and splitter islands are wide and deep enough for cyclists and pedestrians to safely cross.

Designer's Response:

At crossings connecting parts of the cycling facilities the width of the crossings will be 3.0m; at the splitter islands, the minimum depth between kerbs will be 2.4m.

Overseeing Organisation's Response:

We agree with the designer's response however departures may be required.

Agreed RSA Action:

Designers to review design requirements for cyclists.

2.1.2 Problem I

Location: Southern arm of proposed roundabout with the A29 Fontwell Avenue

Summary: No provision for cyclists to join carriageway south of roundabout leading to potential conflicts with drivers or pedestrians

South of the proposed roundabout between the aligned A29 and existing A29 Fontwell Avenue, the footway/cycleway ties in with the existing footway along the eastern side of the A29 Fontwell Avenue, which is very narrow (1.5m). Cyclists may continue along this footway creating a risk of conflict with pedestrians or join the carriageway where it narrows leading to potential collisions with vehicles whose drivers will not be expecting a cyclist to join the carriageway.

Recommendation:

It is recommended that provision be made in this location for cyclists wishing to travel south, in the form of a dropped kerb and suitable markings if a widened facility cannot be incorporated into the scheme.

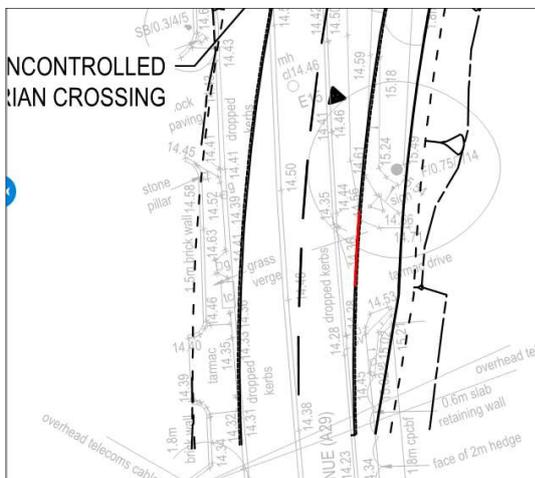
WSP July 2020 Audit Response:

It is not clear how cyclists can join or leave the shared route on both of the existing A29 arms at the proposed A29 / Fontwell Avenue roundabout.

It is recommended that dropped kerbs and suitable markings are provided to allow cyclists to join and leave the proposed shared scheme on all approaches to the proposed roundabout.

Designer's Response:

The eastern footway on Fontwell Avenue will be widened for the length of the southern arm, a dropped kerb will be added during the detailed design:



Overseeing Organisation's Response:

Agree with designer's response.

Agreed RSA Action:

Modify design as per designer's response.

2.1.3 Problem L

Location: West of proposed roundabout with Barnham Road

Summary: Lack of tie in at western end of proposed footway/cycleway with on southern side of Barnham Road, west of proposed roundabout

There is a proposed footway/cycleway leading west from the planned roundabout between the A29 and the B2233 Barnham Road on the southern side of Barnham Road. There is no existing provision south of the carriageway so the proposed footway will lead to nowhere, which could result in cyclists having no safe way of joining the carriageway or pedestrians and cyclists having to cross in an unsafe location. Either could result in collisions with vehicles or cyclist loss of controls or pedestrian slips, trips and falls.

Recommendation:

It is recommended that a crossing is provided to give pedestrians and cyclists a safe place to cross to the facility on the northern side. Provision should also be made for cyclists to join the carriageway in this location if they wish to continue travelling west.

WSP July 2020 Audit Response:

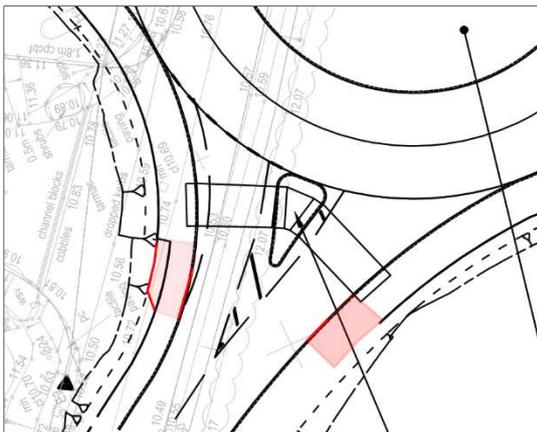
Following the January 2018 Stage 1 RSA, a shared use crossing is proposed across Barnham Road to the west of the proposed roundabout.

The existing footway on the northern side of Barnham Road is not currently designated as for shared use. It is recommended that the northern footway is widened to provide a shared use footway or that dropped kerbs, signs and markings are provided to enable cyclists to join/leave the shared footway.

It is also recommended that transition points for cyclists are provided on the western side of the proposed A29 / Barnham Road roundabout.

Designer's Response:

Agreed, the northern footway widening and southern footway will be extended westwards and dropped kerbs will be added during the detailed design. The transition length for the northern footway will be reviewed at detail design:



Overseeing Organisation's Response:

Agree with auditor and designer.

Agreed RSA Action:

Modify design as per designer's response.

2.2 WSP July 2020 Stage 1 RSA

2.2.1 Problem 1

Location: Proposed service road to the west of the proposed A29 / Fontwell Avenue roundabout

Summary: Large or long vehicles turning to/from the service road resulting in shunts

On the western side of the A29, there are four existing accesses to residential, commercial and farm properties. It is proposed to provide a new roundabout to the east of these accesses to connect Fontwell Avenue with the realigned A29. A service road is proposed to serve the existing accesses, joining Fontwell Avenue to the north and south of the proposed roundabout.

Large or long vehicles may have difficulty turning into or out of the service road, particularly when coming to or from the new A29 route. This could result in vehicles approaching the service road accesses having to brake suddenly, resulting in shunts. It may also result in large vehicles making very slow and multipoint turns, putting them at risk from being hit by vehicles traveling in the opposite direction.

Large or long vehicles may continue southwards down Fontwell Avenue to perform a U-turn using the roundabout at the B2233 junction. The size of this roundabout may make it difficult to complete a U-turn safely, resulting on collisions at this junction.

Recommendation:

It is recommended that access to the service road is provided from the roundabout, with arrangements made for large vehicles to turn in the SPR Centre.

Designer's Response:

Disagree, all HGVs will be able to turn into and out of the access road, via the southern access, in a single uninterrupted manoeuvre. The critical manoeuvres have been checked and are shown on dwg A29-CAP-HGN-00-SK-C-0109.

Overseeing Organisation's Response:

We agree with designer's response, if the design of this access is appropriate and the control is clear to the users.

Agreed RSA Action:

Designers to review signing, lining and swept paths.

2.2.2 Problem 2

Location: Proposed service road to the west of the proposed A29 / Fontwell Avenue roundabout

Summary: Confusion over service lane adjacent to roundabout

On the western side of the A29, there are four existing accesses to residential, commercial and farm properties. It is proposed to provide a new roundabout to the east of these accesses to connect Fontwell Avenue with the realigned A29. A service road is proposed to serve the existing accesses, joining Fontwell Avenue to the north and south of the proposed roundabout.

Drivers approaching from the south may be confused by the service road and move into it believing it is part of the roundabout. They may collide with the kerbs or other vehicles in the service lane.

Vehicles will be exiting the service road immediately before and after the roundabout. Additional turning movements so close to the roundabout may lead to confusion on or approaching the roundabout, resulting in rear end shunts.

Recommendation:

It is recommended that access to the service road is provided from the roundabout, with arrangements made for large vehicles to turn in the SPR Centre.

Designer's Response:

Disagree, the service road access will be delineated by a dropped kerb, further guidance will be provided by road markings. It is proposed to close the northern access, consequently, turning movements will be concentrated at the quieter southern access.

Overseeing Organisation's Response:

We agree with the designer's response.

Agreed RSA Action:

No further action.

2.2.3 Problem 3

Location: Proposed service road to the west of the proposed A29 / Fontwell Avenue roundabout

Summary: Service road too narrow for two-way movements and collision may result.

On the western side of the A29, there are four existing accesses to residential, commercial and farm properties. It is proposed to provide a new roundabout to the east of these accesses to connect Fontwell Avenue with the realigned A29. A service road is proposed to serve the existing accesses, joining Fontwell Avenue to the north and south of the proposed roundabout.

It is not clear whether the service road will be one-way, but it is unlikely that this would be adhered to anyway. The road appears to be too narrow for safe two-way access, especially given the tightness of the entrances, and vehicles are likely to collide within this area.

Recommendation:

It is recommended that access to the service road is provided from the roundabout, with arrangements made for large vehicles to turn in the SPR Centre.

Designer's Response:

Disagree, the service road will occupy the full width of the existing A29.

Overseeing Organisation's Response:

We agree with designer's response.

Agreed RSA Action:

No further action.

2.2.4 Problem 4

Location: Proposed traffic islands and ghost islands on the proposed A29 between Fontwell Avenue and Barnham Road

Summary: Vehicles overrunning the kerbs and central islands resulting in loss of control collisions, pedestrian trips and falls or collisions between vehicles and pedestrians/cyclists.

On the proposed A29 route between Fontwell Avenue and Barnham Road, three physical traffic calming islands and one ghost island are proposed, reducing the available carriageway width to between 2.5m and 2.8m. Localised widening of the carriageway is proposed at each of the island locations to accommodate the island. One of the proposed islands also includes crossing facilities to connect with a local public right of way.

The localised carriageway alignment occurs over a short length and results in vehicles having to make fairly sharp changes in direction. Vehicles may clip the kerbs and lose control.

During the site visit, traffic flows on the existing A29 route were steady, including a relatively high number of HGVs and large farm vehicles. Large or long vehicles are unlikely to be able to safely navigate through the carriageway realignment without braking or clipping the nearside kerb or traffic island. Pedestrians waiting within the island are at risk.

Continued clipping of the traffic island or nearside kerbs could result in the kerbs, footway and crossing becoming damaged, resulting in loss of control collisions, pedestrian trips and falls or collisions between vehicles and pedestrians/cyclists on the shared footway.

Recommendation:

It is recommended that the carriageway realignment is significantly extended upstream and downstream of the proposed features and the width of the lanes widened to allow vehicles to safely navigate.

Vertical traffic calming on a key local route is unusual in the UK, especially away from heavily built up areas. The design team should consider carefully the risks of placing such features on this type of road and whether other alternatives would provide the effect desired, with less risk of road injury.

Designer's Response:

Disagree, 20% kerb tapers and transition kerbs are proposed and the minimum kerb to kerb width is 3.5m.

Overseeing Organisation's Response:

Designers to confirm that the swept paths remain within carriageway.

Agreed RSA Action:

Information required of swept paths.

2.2.5 Problem 5

Location: No construction zone to the east of Fontwell Avenue roundabout.

Summary: Quick alignment change on the footway/cycleway may result in pedestrian/cycle conflict, or cyclists being hit by passing large vehicles.

There is a tree with a protected 'no construction' area to the east of the Fontwell Avenue roundabout. The proposed footway/cycleway moves sharply around the tree protection area. Pedestrians will take the direct route along the path, which makes it likely that they will move laterally across the path. Cyclists wishing to overtake will be happier to follow the new alignment. This may result in collisions between pedestrians and cyclists at this point.

During the site visit, traffic flows on the existing A29 route were steady, including a relatively high number of HGVs and large farm vehicles. The changed alignment moves the footway/cycleway to approximately 1m from the live carriageway. The wing mirrors of large vehicles may overhang into this area, while cyclists may travel along the track, but have their handlebars closer. This may result in cyclists being hit by passing vehicles.

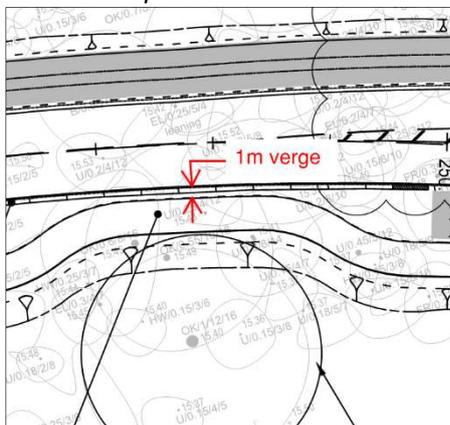
Recommendation:

It is recommended that the footway/cycleway alignment is extended both upstream and downstream of the tree.

It is also recommended that the carriageway is moved north to provide a larger buffer zone between the live carriageway and the footway/ cycleway.

Designer's Response:

Disagree, there will be a 1m verge between the cycle path and the carriageway which provides adequate vehicular separation:



Overseeing Organisation's Response:

Agree with designer's response.

Agreed RSA Action:

No further action.

2.2.6 Problem 6

Location: Throughout scheme

Summary: Planters obstructing visibility leading to collisions

Planters are shown on the drawings throughout the scheme within the verge. It is not clear what kind of plants will be provided, and whether they will be allowed to grow to obstruct driver visibility. However, there are several that if allowed to grow up will block visibility to accesses, junctions or pedestrian crossings. This risks pedestrian at the crossings and may lead to rear-end shunts at the junctions or side swipes at the accesses.

Recommendation:

It is recommended that the planters are relocated to areas where they cannot obstruct visibility to accesses, junctions or crossings.

Designer's Response:

Agreed.

Overseeing Organisation's Response:

We agree with designer's response.

Agreed RSA Action:

No further action.

2.2.7 Problem 7

Location: Uncontrolled crossing in the middle of the scheme

Summary: Uncontrolled crossing may be unsafe to cross

The proposals show an uncontrolled crossing to the east of the roundabout in the middle of the scheme, which is located 100m from the roundabout. Vehicles exiting the junction will probably have enough time to reach their cruising speed. Vehicles heading towards the roundabout may not have begun to brake yet. Speeds at this location are likely to be relatively high.

With high traffic columns and relatively high speeds, pedestrians (especially elderly or children) may not be able to cross the road safely.

Recommendation:

It is recommended that pedestrian desire line at this crossing is reviewed (both current and future) and if there is enough demand, the crossing should be altered to provide a safer route. This might be relocating the crossing to become part of the roundabout (although clearly people may refuse to make this division and cross in the current location in unsafe ways) or providing a controlled crossing.

Designer's Response:

Agreed. The proposed crossing serves a PRow which is suitable for all NMU modes but the level of demand is currently unknown. The crossing type will be decided when demand is known but the PRow is unlikely to be diverted by 100m. The central island is an integral part of the proposed traffic calming, intended to maintain a 30mph speed limit, and halves the amount of headway required for pedestrians to cross.

Overseeing Organisation's Response:

We agree with designer's response.

Agreed RSA Action:

No further action.

2.2.8 Problem 8

Location: Uncontrolled crossing in the middle of the scheme

Summary: Fencing associated with corrals could cause serious injuries to errant drivers or be an obstruction to cyclists.

The drawings show corrals on either side of the pedestrian crossing. It is not clear why there are fenced areas of pedestrians at this location.

Speeding vehicles traveling northwest towards Fontwell Avenue may lose control as they come around the bend. They risk striking the fencing and suffering very serious injuries.

The corral on the inside of the bend is located in the middle of the shared footway/cycleway and would result in cyclists either hitting the fencing or travelling in the verge to avoid it, risking falling from their machines.

Recommendation:

It is recommended that corrals are not provided at this location.

Designer's Response:

Disagree, this is a low speed setting. If retained, the corals will be detailed so as not to impede passage of NMUs.

Overseeing Organisation's Response:

We agree with designer's response.

Agreed RSA Action:

No further action.

2.2.9 Problem 9

Location: Barnham Road roundabout

Summary: Lack of crossing facilities in the desire line resulting in pedestrian and cycle collisions. Uncontrolled pedestrian crossings are provided at all arms of the Barnham Road roundabout apart from the eastern approach. There is an alternative location suggested on the plans (although it is not clear what this is an alternative to).

Pedestrians and cyclists are unlikely to travel to the alternative crossing and instead attempt to cross at the traffic island. Because there are no facilities here and widths may be insufficient, both pedestrians (especially those with wheelchairs, pushchairs or visual impairments) and cyclists are at risk as they cross to the island.

Recommendation:

It is recommended that pedestrian and cycle facilities are provided at this approach to the roundabout.

Designer's Response:

Disagree, there will be no NMU facilities on the eastern side of the realignment at the Barnham Road junction, consequently pedestrians would go out of their way to cross there. The alternative crossing point shown is intended to serve pedestrians approaching from the east as an alternative to the crossing on the western roundabout arm.

Overseeing Organisation's Response:

Revised comment 19.8.20; Simon Strevens Lead Professional Safety Audit

As discussed, it is unusual not to provide pedestrian crossing facilities on each arm of a roundabout.

Initially, southbound pedestrians approaching the roundabout may cross towards the east at the first crossing point they come across. If their destination is to the south and east of this junction they are unlikely to walk 40m further east, cross to the south and then back.

Agreed RSA Action:

Additional pedestrian destination signs are required to mitigate this problem.

2.2.10 Problem 10

Location: Barnham Road roundabout

Summary: Drivers approaching the roundabout may be confused and travel the wrong side of the splitter island

The eastbound approach to the Barnham Road roundabout turns sharply to the right before the roundabout. The view of the driver will in fact be pointing past the splitter island and down the wrong way around the circulating carriageway of the roundabout.

Drivers unfamiliar with the roundabout, and especially at night, might be confused and travel to the right of the splitter island and have a head on conflict.

Recommendation:

It is recommended that the amount of deflection is relaxed so that the drivers view remains looking at the approaching roundabout.

Designer's Response:

Disagree, the recommended solution is disproportionate to the problem, this is a low-speed setting, visibility standards are met.

Overseeing Organisation's Response:

We agree with the designer's response.

Agreed RSA Action:

No further action.

3. Design Organisation and Overseeing Organisation Statement

Design Organisation statement

On Behalf of the design organisation, I certified that:	
1) The RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the Overseeing Organisation	
Name:	Kim Still
Signed:	
Position:	Principal Engineer
Organisation:	Capita
Date:	26.08.2020

Overseeing Organisation statement

On Behalf of the Overseeing Organisation, I certified that:	
1) The RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the design organisation; and	
2) The agreed RSA actions will be progressed.	
Name:	Elaine Martin
Signed:	
Position:	Project Manager
Organisation:	West Sussex County Council
Date:	3.9.20

Appendix A

July 2020 Stage 1 RSA Drawing Schedule

LIST OF DRAWINGS AND DOCUMENTS EXAMINED

A29-CAP-HGN-00-DR-C-0113 S3-P04 – General arrangement
A29-CAP-HGN-00-SK-C-0107 S3-P03 – Fontwell Avenue junction
A29-CAP-HGN-00-SK-C-0108 S3-P03 – Barnham Road junction
A29-CAP-HML-00-DR-C-0007 S3-P02 – General arrangement
A29-CAP-HML-00-DR-C-0008 S3-P02 – General arrangement
A29-CAP-HML-00-DR-C-0009 S3-P02 – General arrangement
A29-CAP-HML-00-DR-C-0010 S3-P02 – General arrangement
A29-CAP-HML-00-DR-C-0011 S3-P02 – General arrangement

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