

Road Safety Audit Report

Incorporating
Stage 2 Completion of Detailed Design;
Design Organisation Response to items raised.



Proposed A350 Yarnbrook Road and West Ashton Relief Road, Trowbridge

Client:
PFA Consulting

Client reference:
P876

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Report Status 3

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Prepared by	JJF	Verified by	FB	Approved by	JJF
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1.0 PROJECT DETAILS

Report Title:	Stage 2 Road Safety Audit
Date:	August 2020
Document reference and revision:	RSA-20-043-3
Prepared by:	Fenley Road Safety Limited
On behalf of the Overseeing Organisation:	Wiltshire County Council
Design Organisation:	PFA Consulting
Project Sponsor:	CEREP III and Persimmon Homes Wessex

REV	ISSUE PURPOSE	AUTHOR	CHECKED	APPROVED	DATE
0	Stage 2 Road Safety Audit drafted for Audit Team discussions	JJF			9 th July 2020
1	Stage 2 Road Safety Audit finalised and issued to the Design Organisation	JJF	FB	JJF	22 nd July 2020
2	Stage 2 Road Safety Audit Report format amended to incorporate a row for inclusion of a Design Organisation Response in order to maintain a concise record of items raised	JJF			22 nd July 2020
3	Design Organisation Response incorporated	Chris Isherwood on behalf of PFA Consulting			14 th August 2020

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	B2	Item Location Plan
	B3	Drawings associated with the Design Organisation Response

2.0 INTRODUCTION

- 2.1 This report has been prepared by Fenley Road Safety Limited and results from a Stage 1 Road Safety Audit of proposal to provide the A350 Relief Road to bypass Yarnbrook and West Ashton. The works include the provision of 2-way single lane carriageway passing over a number of structures and accommodating three roundabouts. The scheme is to be undertaken in order to release a number of parcels of land for a development known as Ashton Park; that is proposed to consist of 2,500 dwellings, 13.6 hectares of employment, two local centres, two primary schools and one secondary school.
- 2.2 The Audit Brief identifies that the proposals include a number of Relaxations and Departures from Standard which are summarised in the bullet points below.

Design Parameters	Clause No.	Des. Min.	Abs. Min.	Design	Relaxation / Departure	Comments
A1A						
Entry Width CL6	CD 116 Rev 0 - 3.14.2	3m -3.5m lane widths	N/A	Lane width = 3.53m, 2.83m	Relaxation	Not possible to achieve standard at CL6 due to Site constraints.
Entry Angle CL 6	CD 116 Rev 0 - 3.18.1	20-60 deg	N/A	14 deg	Relaxation	Not possible to achieve standard at CL6 due to Site constraints.
Exit Width CL15	CD 116 Rev 0 - 3.28.2	7m - 7.5m, Taper down to 6m	N/A	CL15 = 5.78m taper to 5.35m	Relaxation	Not possible to achieve standard due to Site constraints.
Exit Width CL6	CD 116 Rev 0 - 3.28.2	7m - 7.5m, Taper down to 6m	N/A	CL6 = 6.23m taper to 4.96m	Relaxation	Not possible to achieve standard due to Site constraints.
Exit Kerb Radius CL15	CD 116 Rev 0 - 3.29.3	20-100m	N/A	CL15 = Straight	Relaxation	Not possible to achieve standard at CL15 due to Site constraints.
Exit Kerb Radius CL1	CD 116 Rev 0 - 3.29.3	20-100m	N/A	CL1 = Straight,	Relaxation	Not possible to achieve standard at CL15 due to Site constraints.
Gradient CL1	CD 116 Rev 0 - 3.30.9	1:50 longfall max	N/A	CL1 = 1:40.4	Relaxation	Not possible to achieve standard at CL1 due to cover to structure at Bridge 1 and Bat underpasses 1 and 2 .
Stopping Sight Distance CL15	CD 116 Rev 0 - 3.39	120	90	42m	Departure	Not possible to achieve standard due to width of public highway restricted by railway bridge abutment and land constraints.
A1B						
Exit Kerb Radius CL1	CD 116 Rev 0 - 3.29.3	20-100m	N/A	CL1 = Straight	Relaxation	Geometry of exit arms constrained by CL2 alignment.
Exit Kerb Radius CL 2	CD 116 Rev 0 - 3.29.3	20-100m	N/A	CL2 = Straight	Relaxation	Geometry of exit arms constrained by CL2 alignment.
Horizontal Curvature CL2	CD 109 Rev 0 - Table 2.10	40mph =360m with 5% SE	180 with SE of 7%	180m with SE of 7% 360m with SE of 3.5%	Departure	Land Control restrictions dictate geometry at A350 tie in.
Circulatory Carriageway	CD 116 Rev 0 - 3.6	1.0-1.2 times max.	Entry widths = 7m	9.0m	Departure	Circulatory carriageway width based on vehicle swept paths

		entry width Max 15m	Therefore must be between 7m & 8.4m			
A2						
Exit Kerb Radius CL12	CD 116 Rev 0 - 3.29.3	20-100m	N/A	Straight	Relaxation	N/A
Gradient CL4	CD 116 Rev 0 - 3.30.9	1:50 longfall	N/A	1:40	Relaxation	N/A
Gradient CL13	CD 116 Rev 0 - 3.30.9	1:50 longfall	N/A	1:40	Relaxation	Geometry restricted by proximity of tie in location at community farm access and required cover to Bat underpass 11
Gradient CL14	CD 116 Rev 0 - 3.30.9	1:50 longfall	N/A	1:40	Relaxation	Geometry restricted by proximity of tie in location and roundabout
Horizontal Curvature CL13	CD 109 Rev 0 - Table 2.10	1140m	with super elevation of 7% 225m,	360m, 200m	Departure	Geometry restricted by proximity of tie in location at community farm access
Horizontal Curvature CL14	CD 109 Rev 0 - Table 2.10	720m	with super elevation of 7% 127m	220m	Departure	Geometry restricted by proximity of tie in location to West Ashton Road and proximity of R3 roundabout
Vertical curvature CL13	CD 109 Rev 0 - Table 2.10	Crest = 55K Sag = 20K	Crest = 30K	Crest = 13K Sag = 10K	Departure	Geometry restricted by proximity of tie in location at community farm access and proximity of R3 Roundabout
Vertical curvature C14	CD 109 Rev 0 - Table 2.10	Crest = 17K Sag = 13K	Crest = 10K	Sag = 8K	Departure	Geometry restricted by proximity of tie in location to West Ashton Road and proximity of R3 roundabout
Gradients CL14	CD 109 Rev 0 - Table 5.1	6% max	8% max	9.0%	Departure	Existing Road gradient
Carriageway Widths CL13	CD 109 Rev 0 - Table 2.3	7.3m	6m	5.9m (Exist)	Departure	Existing Road Width
Carriageway Widths CL14	CD 109 Rev 0 - Table 2.3	7.3m	6m	5.7m (Exist)	Departure	Existing Road Width
Circulatory Carriageway	CD 116 Rev 0 - 3.6	1.0-1.2 times max. entry width Max 15m	Entry widths = 7m Therefore must be between 7m & 8.4m	9m	Departure	Circulatory carriageway width based on vehicle swept paths

2.3 The Road Safety Audit was undertaken during July 2020 in accordance with the Road Safety Audit Brief provided, on the 26th June 2020 by the Design Organisation, PFA Consulting, on behalf of the Project Sponsor, CEREP III and Persimmon Homes Wessex. The Road Safety Audit comprised of a site visit as well as an examination of the documents provided which are identified in **Appendix B1**. The Audit Team were satisfied that the Audit Brief was sufficient for the purpose of the Audit instructed.

- 2.4 The Road Safety Audit has been undertaken by an Audit Team whose qualifications and experience accord with the requirements of GG119. The Audit Team consists of the following members:

Audit Team Leader

Jamie Fenning BSc(Hons), MIHE, MCIHT, MSoRSA, Highways England RSA Certificate of Competency

Road Safety / Highway Engineer

Audit Team Member

Farouk Bhatti MCIHT

Road Safety Auditor

- 2.5 The site visit associated with this Road Safety Audit was undertaken by the Audit Team Leader and Audit Team Member, during the early afternoon of Friday 3rd July 2020 between 2:15pm and 4:15pm. The site visit involved walking and driving around the local highway network for a 120-minute period whilst observing local infrastructure and current off-peak traffic conditions. The weather during the site visit was overcast, the road surface was dry and visibility was good. A number of pedestrians and cyclists were observed during the site visit. Vehicular traffic to include motorcycles, cars, passenger service vehicles, agricultural vehicles, light and heavy goods vehicles were also observed.
- 2.6 The terms of reference of this Road Safety Audit are as described in GG119. The scheme has been examined and this report compiled, only with regard to the safety implications for road users of the scheme as presented. It has not been examined or verified for compliance with any other standards or criteria. However, in order to clearly explain a safety problem or the recommendation to resolve a problem, the Audit Team may on occasion have referred to a design standard for information only. All comments and recommendations are referenced to the design drawings supplied with the Audit Brief and the location of road safety concerns raised have been illustrated beneath the items along with relevant photographs for clarity, where appropriate, as well as on the Location Plan attached at **Appendix A2**.

Design Organisation Response

- 2.7 In accordance with national standards, this Road Safety Audit was finalised and issued to the Design Organisation as per the Road Safety Audit Report Template within Appendix D of GG119, which can be provided upon request from either the Audit Team or Design Organisation. The format of the Audit Report was subsequently revised to incorporate these paragraphs under the sub-heading as well as sufficient space beneath the items and recommendation, within Section 4, for the inclusion of a Design Organisation Response. This is generally contained within a separate Design Organisation Response Report but is included within this document in order to maintain a single record of all problems,

recommendations and responses for the benefit of a concise Road Safety Audit trail to be held on file for Quality Assurance purposes.

2.8 The Design Organisation Response has been prepared by:

Name: Chris Isherwood

Position / Organisation: Managing Director, PFA Consulting

2.9 Any drawings or documents associated with the Design Organisation Response are listed at **Appendix A3**, if applicable.

3.0 ITEMS RAISED IN ANY PREVIOUS ROAD SAFETY AUDITS

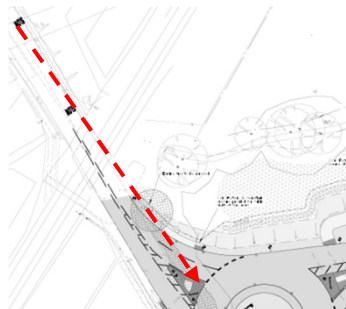
- 3.1 The scheme associated with this Stage 2 Road Safety Audit was subject to a Stage 1 Road Safety Audit which was carried out by TMS Consultancy in March 2014. The following tables list the items raised in the Stage 1 Road Safety Audit.

2.0	GENERAL
2.1	PROBLEM
Location:	Roundabout 1 – Westbury Road (SE bound approach)
Summary:	Potential loss of control type vehicle collisions
Roundabout 1 will be offset to the left for southeast bound drivers, the stopping sight distance (SSD) may be further restricted due to the abutments of the railway bridge. Restricted forward visibility to the roundabout may result in late braking, failure to give way and loss of control type vehicle collisions.	
RECOMMENDATION:	
It should be ensured that appropriate SSD is provided to the roundabout. Suitable advanced warning signage should also be provided.	
2.2	PROBLEM
Location:	Roundabout 1 – Westbury Road (SE bound approach)
Summary:	Potential loss of control type vehicle collisions
Entry path curvature (EPC) is one of the most important determinants of safety at roundabouts. Severe EPC (<70m) can lead to loss of control type accidents on entries, especially involving high sided vehicles. There is particular concern on the south eastbound approach due to the offset nature of the roundabout which may lead to load shift issues for high sided vehicles.	
RECOMMENDATION:	
The entry path curvature on the southeast bound approach should be checked to ensure that it falls within the range 70m to 100m.	
2.3	PROBLEM
Location:	Roundabout 1 - lighting
Summary:	Potential darkness related collisions between all road users
The existing lighting in the vicinity of proposed roundabout 1 is old and may not sufficiently illuminate the roundabout and approaches. Insufficient illumination may result in darkness related collisions between all road users.	
RECOMMENDATION:	
At detailed design stage lighting at and on the approaches to roundabout 1 should be improved if necessary.	
2.4	PROBLEM
Location:	Old A350 eastern tie in to new relief road

Summary:	Potential loss of control type vehicle collisions
Although acknowledged that landscaping is to be provided where the existing A350 is to be diverted onto the new relief road, the type of landscaping at the eastern tie in is not known. Drivers may still 'see through' to the old alignment due to the positioning of existing lighting columns, telegraph poles and trees. This may result in loss of control, late braking and shunt type vehicle collisions.	
RECOMMENDATION:	
It should be ensured at detailed design stage that the landscaping at the break out of the old road is sufficient to mitigate against 'see through'.	
2.5	PROBLEM
Location:	West Ashton Road (between Roundabout 3 and 30/40mph
Summary:	Potential speed related vehicle collisions
On 'Overview' drawing (No. P480/106), Roundabout 3 is shown to be subject to a 50mph speed limit. Northwards along West Ashton Road, the speed limit is shown to change from 40mph to 30mph heading towards the development, which leaves a discrepancy in the speed limit along this section. In appropriate vehicle speed may result in vehicle collisions.	
RECOMMENDATION:	
The speed limit on West Ashton Road should be clarified at detailed design stage.	
2.6	PROBLEM
Location:	Relief Road – Detention Basins 2 & 3
Summary:	Potential hazard to occupants of errant vehicles
The proposed relief road between Roundabouts 2 and 3 will be subject to a 50mph speed limit. The embankment slopes and anticipated depth of water in Detention Basins 2 & 3 is unknown at this point. Occupants of errant vehicles may be at risk of injury and possibly drowning if vehicles descend the embankment and enter the detention basins.	
RECOMMENDATION:	
At detailed design stage, an assessment should be carried out to determine where vehicle restraint systems are required.	
2.7	PROBLEM
Location:	Old A350 approach to Roundabout 2
Summary:	Potential loss of control type vehicle collisions
Entry path curvature (EPC) is one of the most important determinants of safety at roundabouts. Severe EPC (<70m) can lead to loss of control type accidents on entries, especially involving high sided vehicles. There is particular concern on the northbound approach to Roundabout 2 from the Old A350 due to the offset nature of the roundabout which may lead to load shift issues for high sided vehicles.	

RECOMMENDATION:	
The entry path curvature on the southeast bound approach should be checked to ensure that it falls within the range 70m to 100m.	
2.8	PROBLEM
Location:	West Ashton Road – northbound approach to Roundabout 3
Summary:	Potential failure to give type vehicle collisions
The West Ashton Road northbound approach to Roundabout 3 is likely to be on a steep downhill gradient. The steep gradient may cause braking problems for vehicles on approach to the give way, which may result in failure to give way type vehicle collisions within the circulatory carriageway.	
RECOMMENDATION:	
At detailed design stage, a high PSV surface should be provided on the West Ashton Road northbound approach to the roundabout.	

4.0 ITEMS RAISED AT THIS STAGE 2 ROAD SAFETY AUDIT

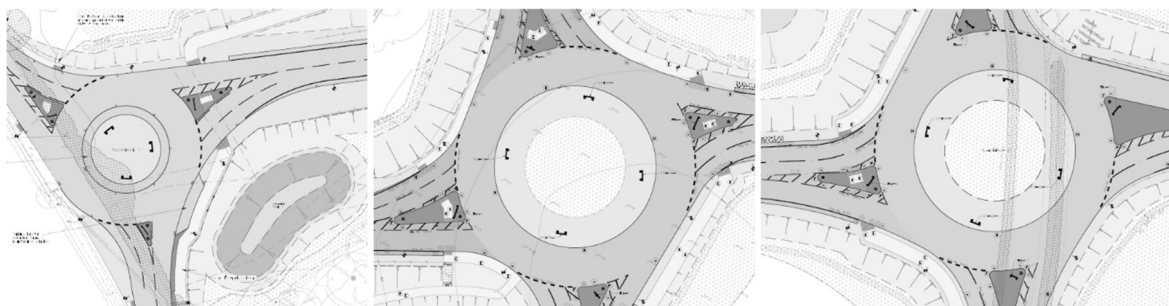
B.1	LOCAL ALIGNMENT
B.1.1	PROBLEM
Location:	Roundabout 1
Summary:	Drivers approaching the roundabout may not become aware of the junction at a safe distance
Acc Type:	Vehicle loss of control
The A363, Westbury Road is subject to a 40mph, and passes under a rail bridge. The scheme subject to this Stage 2 Road Safety Audit, includes the provision of the Yarnbrook and West Ashton Relief Road which commences from the west at a 3-arm roundabout just to the east of the rail bridge. A road safety concern raised within the previous Stage 1 Road Safety Audit (item 2.1) undertaken by others, identified a concern regarding the restricted level of forward visibility to the roundabout for eastbound drivers due to the bridge abutments and recommended the appropriate stopping sight distance and suitable advance warning signage is provided. The scheme drawings provided with the Audit Brief, illustrate that Advanced Directional Signage (ADS-1), as well as, an advanced 'SLOW' carriageway marking are to be provided to highlight the presence of the feature to encourage reduced speeds. However, insufficient forward visibility to the give-way line of the entry to the roundabout, could give rise to heavy braking, loss of control type incidents and junction overshoots.	
RECOMMENDATION:	
It is recommended that an illuminated give-way road sign is provided either side of the southbound entry to enhance the conspicuity of the give-way	
Location Plan:   	
DESIGN ORGANISATION RESPONSE provided by PFA Consulting on the 14 th August 2020 following formal issue of this Stage 2 Road Safety Audit on the 23 rd July 2020	
Agreed. Give Way signs to be used. Proposed raised Keep Left sign on splitter island to be removed to avoid excess signage.	
B.2	GENERAL
B.2.1	PROBLEM
Location:	Scheme
Summary:	Insufficient space may be available for the expected vehicles
Acc Type:	Sideswipe type collisions

The scheme associated with this Stage 2 Road Safety Audit includes the provision of a relief road that incorporates 3 roundabouts that are subject to a speed limit above 40mph and each entry accommodates two lanes. Roundabout 1 provides access to the relief road from the west, via the A363 and is formed with a 34.6 metre ICD with a 12.8 metre circulatory carriageway to include 3.65 metre overrun area, Roundabout 2 and 3 are formed with a 55 metres ICD. Whilst, the proposed roundabouts should be sufficient to accommodate the majority of vehicles with departures based on swept paths according as stated within the documents provided, the Audit Team observed a significant proportion of heavy goods vehicles and no proof was provided to the Audit Team to identify that the vehicles can travel side by side. Insufficient space for the expected vehicles to manoeuvre, could give rise to sideswipe type collisions.

RECOMMENDATION:

It is recommended that the proposed roundabouts are adequate for the expected vehicles

Location Plan:



DESIGN ORGANISATION RESPONSE provided by PFA Consulting on the 14th August 2020 following formal issue of this Stage 2 Road Safety Audit on the 23rd July 2020

Agreed. Refer to swept path plans

B.3 **JUNCTIONS**

B.3.1 **PROBLEM**

Location: Proposed A350 / Southern arm of Roundabout 2

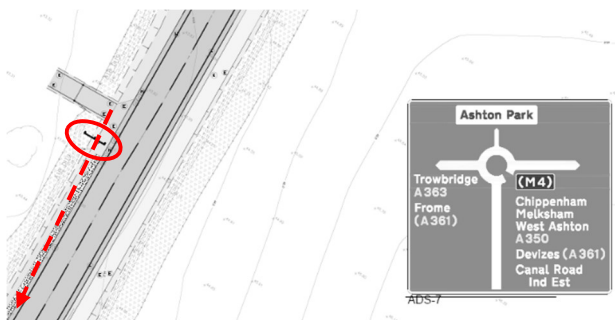
Summary: Proposed sign within the verge restricts visibility

Acc Type: Side impact and rear end collision

The proposals associated with this Road Safety Audit realign the A350 to the east of Yarnbrook to meet the Yarnbrook West Ashton Relief Road at Roundabout 2. The realigned A350 accommodates a field access off the western side of the carriageway. No road safety concerns regarding the field access are raised at this stage, however, an Advanced Directional Signage (ADS-7) situated in the verge to the south of the access and mounted at 1500mm above the surrounding ground level, will restrict visibility to and from the field access. Restricted visibility to and from an access, could result in a vehicle attempting to exit when it is not safe to do so and increase the likelihood of a side or rear impact collision.

RECOMMENDATION:

It is recommended that the appropriate visibility splays are maintained clear and free of obstructions.

Location Plan:

DESIGN ORGANISATION RESPONSE provided by PFA Consulting on the 14th August 2020 following formal issue of this Stage 2 Road Safety Audit on the 23rd July 2020

Agreed. Sign either to be raised to 2.0m clearance and or repositioned on north side of junction.

B.3.2**PROBLEM**

Location: Roundabout 2 and Roundabout 3

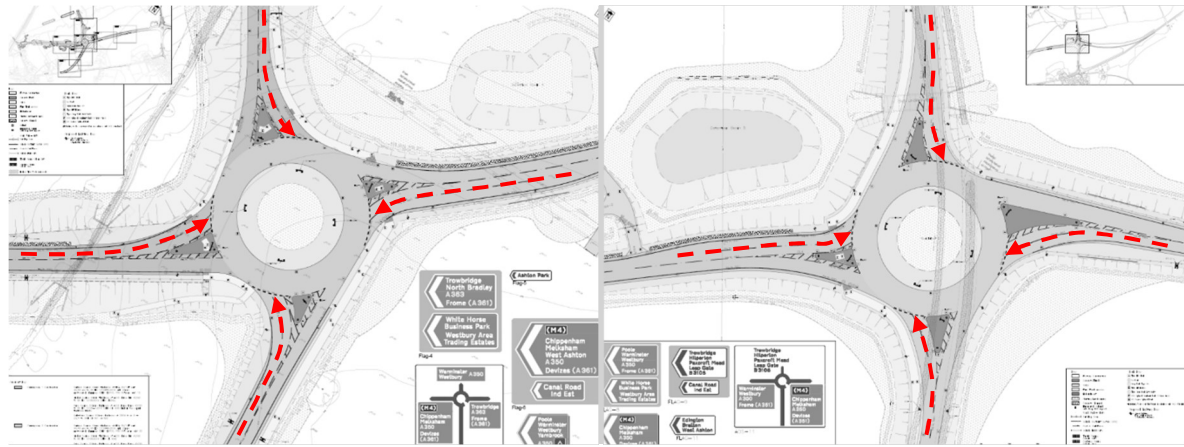
Summary: Frictional properties on approach to the roundabout may be insufficient

Acc Type: Loss of control and junction overshoots

The proposals subject to this Stage 2 Road Safety Audit include the provision of the Yarnbrook and West Ashton Relief Road that includes a total of three roundabouts of which two accommodate 40mph/50mph approaches and the other 50mph/60mph approaches; two are on a steep down gradients, albeit at 1 in 40 on immediate approach. The scheme drawings identify that the proposed highway is to be surfaced with hot rolled asphalt (HRA) that benefits from a polished stone value (PSV) of 65. The information provided within the Audit Brief, identifies that the Relief Road is likely to observe a traffic flow in excess of 3000 vehicles during the peak hours which can be assumed to equate to a daily traffic flow of approximately 25,000. No details have been provided to identify the expected number of commercial vehicles, however, the more commercial vehicles that are observed, the more the surface deteriorates and experiences polishing, reducing the frictional properties. As such, a PSV of 65 on each approach to the proposed roundabouts may not be sufficient to assist heavy braking during the whole lifecycle of the surface, which could give rise to skidding and loss of control type incidents as well as overshoot type collisions.

RECOMMENDATION:

It is recommended that the frictional properties of each approach are adequate and accord with Table 3.3 of CD236.

Location Plan:

DESIGN ORGANISATION RESPONSE provided by PFA Consulting on the 14th August 2020 following formal issue of this Stage 2 Road Safety Audit on the 23rd July 2020

Agreed. The use of PSV 68+ is referenced in the pavement report. Therefore, note to be added to the drawings and Specification.

B.3.3 PROBLEM

Location: Scheme

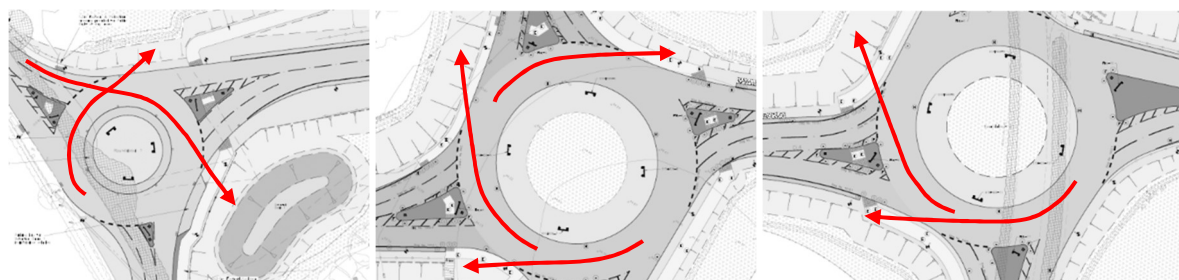
Summary: Errant vehicles could leave the carriageway down the adjacent embankments

Acc Type: Vehicle loss of control

The scheme associated with this Stage 2 Road Safety Audit includes the provision of a relief road that incorporates 3 roundabouts that lie at a level above the surrounding land and are subject to a speed limit above 40mph, as well as a number of detention basins for the sustainable drainage system. A post and rail fence is to be provided along the edge of the proposed verges and a vehicle restraint system is provided at certain locations, however, errant vehicles may be observed in proximity of the proposed roundabouts junctions where a VRS is not provided. The severity of an incident involving an errant vehicle leaving the carriageway is likely to be exacerbated by the presence of an embankment or detention basin, particularly following heavy rainfall.

RECOMMENDATION:

It is recommended that a vehicle restraint system is provided in proximity to where errant vehicles could be observed

Location Plan:

DESIGN ORGANISATION RESPONSE provided by PFA Consulting on the 14th August 2020 following formal issue of this Stage 2 Road Safety Audit on the 23rd July 2020

Agreed, subject to assessment including impact on other modes.

B.4 WALKING CYCLING AND HORSE RIDING

B.4.1 PROBLEM

Location: Development access off Roundabout 2

Summary: Users of wheeled devices could continue onto the carriageway suddenly

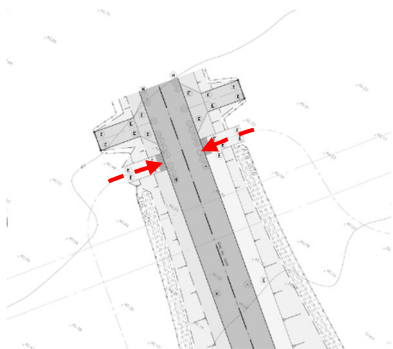
Acc Type: Vehicle-non-motorised user and rear end collisions

The scheme subject to this Stage 2 Road Safety Audit includes a development access road off the northern side of Roundabout 2 that is to be subject to a 30mph speed limit, as well as a network of pedestrian and cycle routes to include a 3 metre shared facility to the east of the development access. The shared facility terminates at a crossing facility that benefits from dropped kerbs and tactile paving where a link is provided into the land either side. The scheme drawings provided with the Audit Brief include a centreline identifying that the proposed links are to bend by 90° which would force users to slow, however, this is not confirmed. A user of a wheeled device such as a child on a scooter or cyclist approaching the crossing point may continue across the carriageway without slowing for approaching traffic raising the risk of vehicle user collisions or rear end impact collisions where an approaching driver brakes suddenly.

RECOMMENDATION:

It is recommended that staggered barriers are provided to ensure users slow.

Location Plan:



DESIGN ORGANISATION RESPONSE provided by PFA Consulting on the 14th August 2020 following formal issue of this Stage 2 Road Safety Audit on the 23rd July 2020

Agreed.

B.4.2 PROBLEM

Location: Scheme

Summary: Signposts located within a footway cycleway will be an obstruction

Acc Type: Pedestrian / cyclist collision with post

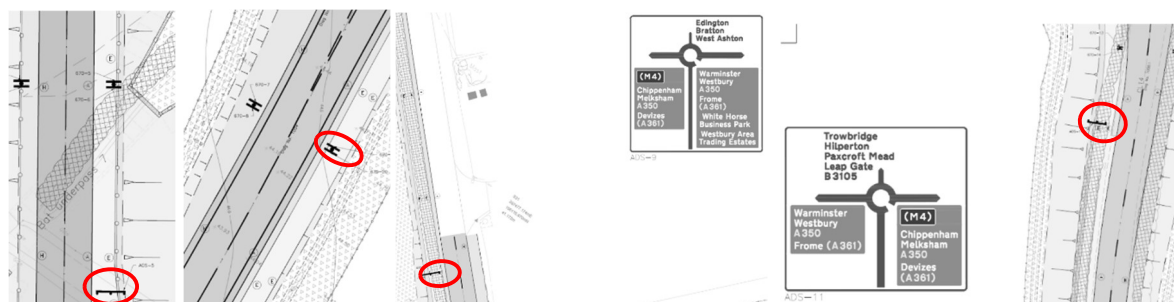
The drawings provided with the Audit Brief, identify the location / design of signs and illustrates that the posts associated with a number of roundabout direction sign as well as back to back

speed limit signs that are to be situated within the centre of a proposed 3.0 metre shared footway / cycleway, albeit mounted at a height of 2.4-metres. A post within a footway / cycleway will be an obstruction particularly for the visually impaired and could result in a pedestrian or cyclist striking the item of street furniture.

RECOMMENDATION:

It is recommended that signposts are located outside of non-motorised user facilities if possible or sufficient width is available between signposts and that measures are provided to highlight their presence.

Location Plan:



DESIGN ORGANISATION RESPONSE provided by PFA Consulting on the 14th August 2020 following formal issue of this Stage 2 Road Safety Audit on the 23rd July 2020

Agreed. The aim will be to reduce number of posts in any footway to one which will have the additional of a white triangle on the ground each side of post.

B.5 ROAD SIGNS, CARRIAGEWAY MARKINGS AND LIGHTING

B.5.1 PROBLEM

Location: West Ashton Road

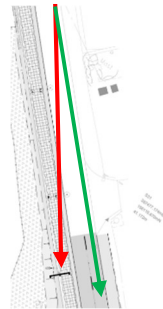
Summary: Signposts located within a footway could become an obstruction / Post associated with a proposed sign is located within the footway / cycleway

Acc Type: Pedestrian / cyclist collision with post

The proposals include the provision of roundabout 3 that is to be situated along West Ashton Road. An advance roundabout direction sign is to be provide on each approach to the junction, however, the sign for southbound drivers is to be situated on the western side of the carriageway alongside the northbound lane. A sign situated alongside the opposing lane of traffic is unlikely to be within the line of sight of an approaching driver or visibility to the sign could be restricted by an approaching high sided vehicle which could give rise to late lane choices and sideswipe type incidents.

RECOMMENDATION:

It is recommended that the roundabout direction sign is relocated to the eastern verge, south of the access to Farm 5.

Location Plan:

DESIGN ORGANISATION RESPONSE provided by PFA Consulting on the 14th August 2020 following formal issue of this Stage 2 Road Safety Audit on the 23rd July 2020

Agree, but the land control does not permit the sign and its visibility splay being on the nearside. Proposed position of this sign on the offside has been discussed and agreed with WC.

B.5.2 PROBLEM

Location: Scheme

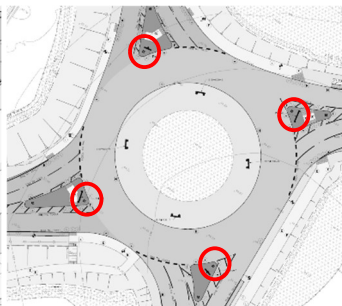
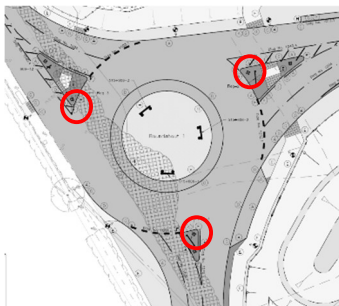
Summary: All proposed bollards accommodated on the splitter islands are 'Keep Left'

Acc Type: Loss of control and sideswipe type collisions

The proposals subject to this Stage 2 Road Safety Audit include the provision of the Yarnbrook and West Ashton Relief Road which accommodates a total of three roundabouts. The scheme drawings provided with the Audit Brief, identify that illuminated bollards are to be provided within the splitter islands to highlight the features, however, it appears that all bollards are to be provided with "Keep Left" arrows. The driver of a vehicle continuing around the circulatory of one of the roundabouts, may become confused and undertake a late manoeuvre to exit the roundabout and comply with the "Keep Left" requirement which could give rise to loss of control and sideswipe type collisions.

RECOMMENDATION:

It is recommended that plain faced bollards are provided where applicable.

Location Plan:

DESIGN ORGANISATION RESPONSE provided by PFA Consulting on the 14th August 2020 following formal issue of this Stage 2 Road Safety Audit on the 23rd July 2020

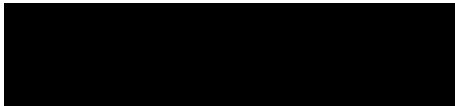
Agreed. Design to be amended.

5.0 STAGE 2 ROAD SAFETY AUDIT TEAM STATEMENT

5.1 We certify that this Road Safety Audit has been carried out in accordance with GG119.

Audit Team Leader

Name: **Jamie Fenning** *BSc (Hons), MIHE, MCIHT, MSoRSA, HE RSA Certificate of Competency*

Signed: 

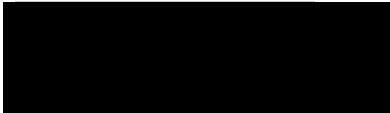
Position: Road Safety / Highway Engineer

Organisation: Fenley Road Safety Limited

Date: 23rd July 2020

Audit Team Member

Name: **Farouk Bhatti** *MCIHT*

Signed: 

Position: Road Safety Engineer

Organisation: Fenley Road Safety Limited

Date: 23rd July 2020

Appendix B1

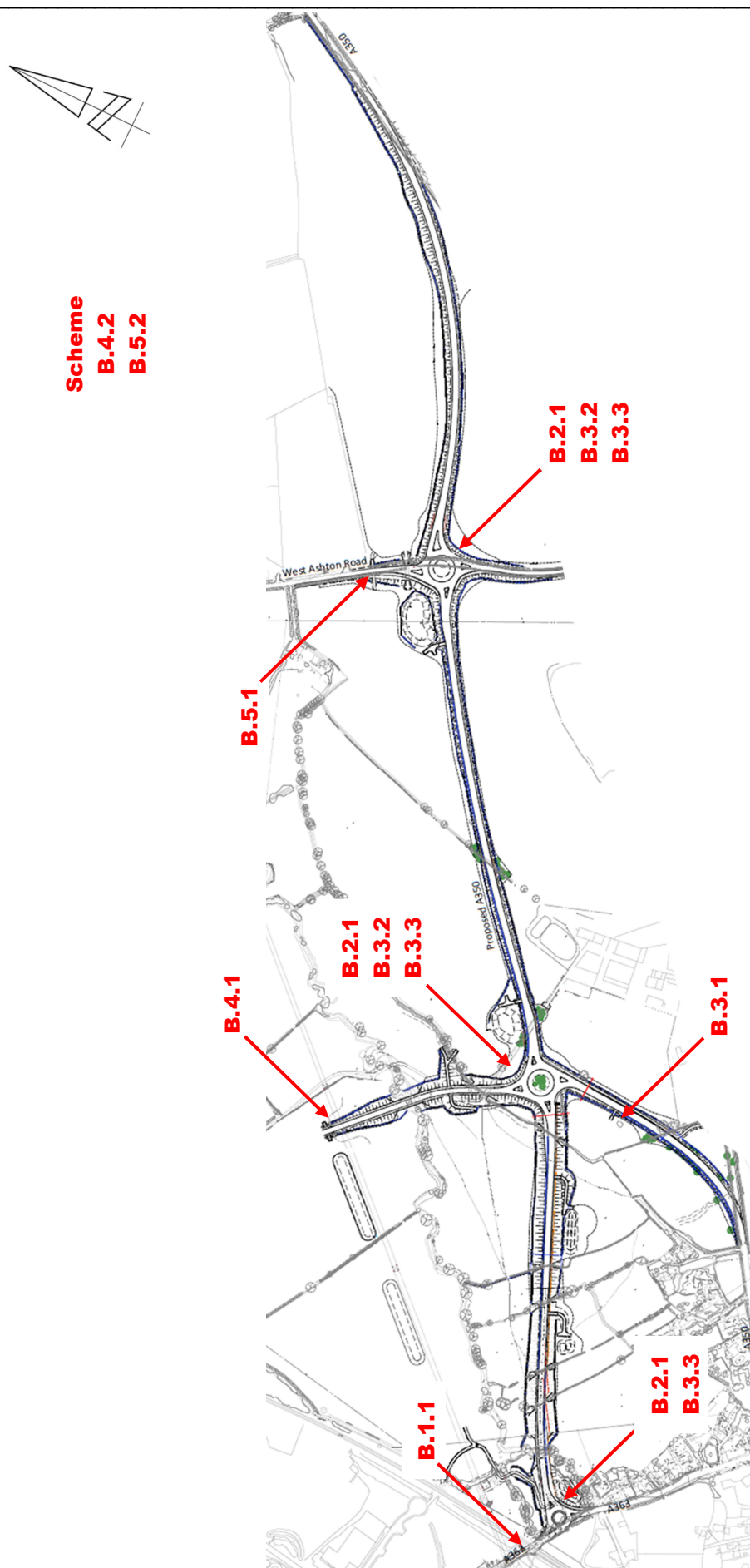
Documents and Drawings provided for this Stage 2 Road Safety Audit

<u>Audit Stage</u>	<u>Doc. No.</u>	<u>Rev</u>	<u>Title</u>
Stage 2	P876-DOC09	-	Road Safety Audit Brief
	P876	-	YWARR Compliance Non-compliance Report
	P876-FN14	-	Supporting Statement to Engineering Design Compliance Report
	11403	-	TMS RSA Stage 1
	<u>Dwg No.</u>	<u>Rev</u>	<u>Title</u>
	P876/100	-	Whole Scheme Overview
	P19372-06-03	B	Existing Yarnbrook Road Crossroads Downgrade, Lighting Engineering
	P19372-RB1-04	A	Roundabout 1, Junction with A363 Westbury Rd S278 Lighting
	P19372-RB2-04	A	Roundabout 2 S278 Lighting Engineering
	P19372-RB3-04	A	Roundabout 3 S278 Lighting Engineering
	P876-A1A/100	A	Area 1A Location Plan
	P876-A1A/101	A	Area 1A General Arrangement Sheet 1 of 2
	P876-A1A/102	A	Area 1A General Arrangement Sheet 2 of 2
	P876-A1A/103	A	Area 1A Horizontal Geometry Sheet 1 of 2
	P876-A1A/104	A	Area 1A Horizontal Geometry Sheet 2 of 2
	P876-A1A/105	B	Area 1A Drainage and Contours Sheet 1 of 2
	P876-A1A/106	B	Area 1A Drainage and Contours Sheet 2 of 2
	P876-A1A/107	C	Area 1A Surface Finishes, Traffic Signs and Lighting Sheet 1 of 2
	P876-A1A/108	C	Area 1A Surface Finishes, Traffic Signs and Lighting Sheet 2 of 2
	P876-A1A/111	A	Area A1A Longitudinal Sections Sheet 1 of 3
	P876-A1A/112	B	Area A1A Longitudinal Sections Sheet 2 of 3
	P876-A1A/113	B	Area A1A Longitudinal Sections Sheet 3 of 3
	P876-A1A/123	--	Area A1A Cross Sections Sheet 1 of 2
	P876-A1A/124	--	Area A1A Cross Sections Sheet 2 of 2
	P876-A1B/140	--	Area 1B Location Plan
	P876-A1B/149	C	Area 1B Horizontal Geometry Sheet 1 of 8
	P876-A1B/150	C	Area 1B Horizontal Geometry Sheet 2 of 8
	P876-A1B/151	A	Area 1B Horizontal Geometry Sheet 3 of 8
	P876-A1B/152	A	Area 1B Horizontal Geometry Sheet 4 of 8
	P876-A1B/153	C	Area 1B Horizontal Geometry Sheet 5 of 8
	P876-A1B/154	A	Area 1B Horizontal Geometry Sheet 6 of 8
	P876-A1B/155	A	Area 1B Horizontal Geometry Sheet 7 of 8
	P876-A1B/156	A	Area 1B Horizontal Geometry Sheet 8 of 8
	P876-A1B/157	B	Area 1B Drainage and Contours Sheet 1 of 8
	P876-A1B/158	B	Area 1B Drainage and Contours Sheet 2 of 8
	P876-A1B/159	B	Area 1B Drainage and Contours Sheet 3 of 8
	P876-A1B/160	B	Area 1B Drainage and Contours Sheet 4 of 8
	P876-A1B/161	B	Area 1B Drainage and Contours Sheet 5 of 8
	P876-A1B/162	B	Area 1B Drainage and Contours Sheet 6 of 8
	P876-A1B/163	B	Area 1B Drainage and Contours Sheet 7 of 8

P876-A1B/164	B	Area 1B Drainage and Contours Sheet 8 of 8
P876-A1B/180	C	Area 1B Surface Finishes, Traffic Signs and Lighting Sheet 1 of 8
P876-A1B/181	C	Area 1B Surface Finishes, Traffic Signs and Lighting Sheet 2 of 8
P876-A1B/182	C	Area 1B Surface Finishes, Traffic Signs and Lighting Sheet 3 of 8
P876-A1B/183	B	Area 1B Surface Finishes, Traffic Signs and Lighting Sheet 4 of 8
P876-A1B/184	B	Area 1B Surface Finishes, Traffic Signs and Lighting Sheet 5 of 8
P876-A1B/185	B	Area 1B Surface Finishes, Traffic Signs and Lighting Sheet 6 of 8
P876-A1B/186	B	Area 1B Surface Finishes, Traffic Signs and Lighting Sheet 7 of 8
P876-A1B/187	B	Area 1B Surface Finishes, Traffic Signs and Lighting Sheet 8 of 8
P876-A1B/194	-	Area 1B Cross Sections Sheet 1 of 4
P876-A1B/195	-	Area 1B Cross Sections Sheet 2 of 4
P876-A1B/196	-	Area 1B Cross Sections Sheet 3 of 4
P876-A1B/197	-	Area 1B Cross Sections Sheet 4 of 4
P876-A1B/202	D	Area A1B Longitudinal Sections Sheet 1 of 3
P876-A1B/203	D	Area A1B Longitudinal Sections Sheet 2 of 3
P876-A1B/204	A	Area A1B Longitudinal Sections Sheet 3 of 3
P876-A2/100	-	Area 2 Location Plan
P876-A2/109	A	Area A2 Horizontal Geometry Sheet 1 of 8
P876-A2/110	A	Area A2 Horizontal Geometry Sheet 2 of 8
P876-A2/111	A	Area A2 Horizontal Geometry Sheet 3 of 8
P876-A2/112	A	Area A2 Horizontal Geometry Sheet 4 of 8
P876-A2/113	A	Area A2 Horizontal Geometry Sheet 5 of 8
P876-A2/114	A	Area A2 Horizontal Geometry Sheet 6 of 8
P876-A2/115	A	Area A2 Horizontal Geometry Sheet 7 of 8
P876-A2/116	A	Area A2 Horizontal Geometry Sheet 8 of 8
P876-A2/117	B	Area A2 Drainage and Contours Sheet 1 of 8
P876-A2/118	B	Area A2 Drainage and Contours Sheet 2 of 8
P876-A2/119	B	Area A2 Drainage and Contours Sheet 3 of 8
P876-A2/120	C	Area A2 Drainage and Contours Sheet 4 of 8
P876-A2/121	C	Area A2 Drainage and Contours Sheet 5 of 8
P876-A2/122	C	Area A2 Drainage and Contours Sheet 6 of 8
P876-A2/123	B	Area A2 Drainage and Contours Sheet 7 of 8
P876-A2/124	B	Area A2 Drainage and Contours Sheet 8 of 8
P876-A2/134	E	Area A2 Surface Finishes, Traffic Signs and Lighting Sheet 1 of 8
P876-A2/135	E	Area A2 Surface Finishes, Traffic Signs and Lighting Sheet 2 of 8
P876-A2/136	D	Area A2 Surface Finishes, Traffic Signs and Lighting Sheet 3 of 8
P876-A2/137	D	Area A2 Surface Finishes, Traffic Signs and Lighting Sheet 4 of 8
P876-A2/138	B	Area A2 Surface Finishes, Traffic Signs and Lighting Sheet 5 of 8
P876-A2/139	B	Area A2 Surface Finishes, Traffic Signs and Lighting Sheet 6 of 8
P876-A2/140	B	Area A2 Surface Finishes, Traffic Signs and Lighting Sheet 7 of 8
P876-A2/141	B	Area A2 Surface Finishes, Traffic Signs and Lighting Sheet 8 of 8
P876-A2/149	-	Area A2 Cross Sections Sheet 1 of 4
P876-A2/150	-	Area A2 Cross Sections Sheet 2 of 4
P876-A2/151	-	Area A2 Cross Sections Sheet 3 of 4
P876-A2/152	-	Area A2 Cross Sections Sheet 4 of 4
P876-A2/160	A	Area A2 Longitudinal Sections Sheet 1 of 3
P876-A2/161	A	Area A2 Longitudinal Sections Sheet 2 of 3
P876-A2/162	-	Area A2 Longitudinal Sections Sheet 3 of 3

Appendix B2

Item Location Plan



Appendix B3

Drawings associated with the Design Organisation Response

<u>Audit Stage</u>	<u>Drawing No.</u>	<u>Rev</u>	<u>Title</u>
Stage 2			

fenley