



HIGH STREET, SANDY CENTRAL BEDFORDSHIRE

PROPOSED ZEBRA CROSSING

COMBINED STAGE 1&2 ROAD SAFETY AUDIT

Dated	19 th November 2021
Registration Code:	8704
RJ HUB:	12213101190300014
DM Ref:	N/A

1.0 **INTRODUCTION**

- 1.1 This report has been produced as a result of a Combined Stage 1&2 Road Safety Audit (RSA) on the proposed Zebra Crossing facility on High Street, Sandy, Central Bedfordshire. The audit has been carried out at the request of Vinny Vinovan of Ringway Jacobs' Central Bedfordshire Design Services Team (Contact: winny.vinovan@ringwayjacobs.com). The audit was undertaken in November 2021.
- 1.2 For the purpose of this audit, Vinny Vinovan is considered the "Designer" for the scheme. The Overseeing Organisation contact for the scheme is Lisa Wright (Central Bedfordshire Council).
- 1.3 The scheme involves installation of a Zebra crossing facility on High Street, Sandy, Central Bedfordshire. The scheme was proposed after an outline design was completed for a Zebra crossing at the location.
- 1.4 The existing speed limit on High Street is 20mph (at the proposed crossing location) and the area features a system of street lighting.
- 1.5 The proposed crossing is located on an existing raised table and it is adjacent to the fire station and a school (St Swithuns VC Primary School). Currently there is an existing uncontrolled crossing at the proposed Zebra crossing location.
- 1.6 The RSA Team was formed of members of the Essex County Council / Ringway Jacobs Partnership Road Safety Engineering Team (based at Seax House, Chelmsford, Essex, CM1 1QH). This report was prepared by those officers. The RSA Team membership was as follows:
 - Matthew Elliston (RSA Team Leader) Road Safety Engineer; and
 - Mark Hemingway (RSA Team Member) Road Safety Engineer
- 1.7 The terms of reference for the RSA are as described in Essex Highways Policy HPN 039. The Audit Team has examined and reported only on the road safety implications of the proposals and has not examined or verified the compliance of the design to any other criteria. This safety audit does not perform a 'technical check' function on these proposals.
- 1.8 This Combined Stage 1&2 RSA comprised an examination of the drawings and RSA brief provided by the design organisation, and a visit to the site by both members of the Audit Team, together, on the morning of Thursday 4th November 2021. The site was visited in daylight between the hours of 10:00am and 10:35am. During the visit the weather was overcast with heavy cloud cover. Whilst it was not raining at the time of the site visit, the carriageway surface was wet following a period of rain earlier in the day. Traffic was generally light and free-flowing. NMU movements were light at the time of the site visit.
- 1.9 All comments and recommendations are referenced to the design drawings provided (where applicable) and the locations have been indicated on the problem location plan appended to this report (refer §7.0).
- 1.10 The Audit Team are not aware of any previous Road Safety Audits associated with this scheme.

1.11 Documents/drawings Provided:

Documents:

- RSA Request & Brief (dated 19/10/2021, approved 21/10/2021)
- Police Traffic Evaluation Record

Drawings:

- CBC-234912-000-001 General Arrangement
- *CBC-234912-200-001 Site Clearance Plan*

2.0 DEPARTURES FROM STANDARD

2.1 No details of any departures from standards, or relaxations applied, have been provided to the Audit Team.

3.0 REVIEW OF PERSONAL INJURY COLLISION HISTORY

3.1 The Audit Team were not provided with validated collision data associated with this location. Unverified data from CrashMap UK indicates that there have been 4no. Personal Injury Collisions (PIC) during the five years 2016 – 2020. Three of the 4 PICs were categorised as 'Slight', the remaining was recorded as 'Serious'. No further information on the nature of these collisions is provided. Refer also §5.5.

4.0 ISSUES RAISED AT THIS COMBINED STAGE 1&2 AUDIT

4.1 GENERAL

4.2 PROBLEM

Location: Eastbound and westbound approaches to the Zebra Crossing.

Summary: Risk of failure to stop / overshoot type incidents leading to on-crossing collisions

due to inadequate skid resistance associated with the existing carriageway

pavement.

No detail is provided on the pavement construction and surfacing material. It is assumed that the road pavement on either side of the crossing is to remain as existing. The skid resistance of this previous 'non-event' section is unknown. There is a risk of failure to stop / overshoot type incidents, potentially leading to on-crossing collisions, due to inadequate skid resistance within the newly created braking / deceleration zone on the approaches to the crossing.

RECOMMENDATION:

It is recommended that the skid resistance levels are measured and, where appropriate, surfacing of suitable PSV is provided commensurate with the approach to a controlled (Zebra) crossing facility.

4.3 PROBLEM

Location: North side of proposed Zebra crossing point.

Summary: Risk that road users may fail to see the Belisha Beacon on the north side of the

crossing due to its location at the rear of the footway, resulting in sudden braking

/ on-crossing collisions.

The proposed Belisha beacon on the north side of the crossing is detailed as being towards the rear of the northern footway. No detail is provided on the mounting arrangement for the beacon (i.e. cantilevered / bracketed). A beacon mounted on a pole at the rear of the footway may be inconspicuous to approaching road users given the offset from the edge of carriageway. This could result in sudden braking and/or on-crossing type collisions.

RECOMMENDATION:

It is recommended that the Belisha beacon on the north side of the crossing is suitably bracketed or cantilevered from the post at the rear of the footway to ensure forward visibility to the beacon is afforded for approaching road users.

4.4 PROBLEM

Location: South side of proposed Zebra crossing point.

Summary: Risk of road user loss of control collisions and/or pedestrian slip / fall type

incidents associated with inadequate drainage on the southern side of the proposed

crossing / crossing carpet.

Evidence of the formation of standing water / ponding was noted during the site visit on the southern side of the existing uncontrolled crossing point, indicating a potential drainage issue. Inadequate drainage provision can lead to the formation of standing water within the carriageway and/or pedestrian waiting. Areas of ponding within the carriageway increase the risk of loss of control / aquaplaning type collisions (potentially with secondary on-crossing type collisions). Additionally, should standing water form within the pedestrian waiting areas (i.e. within the tactile paving extents), crossing users may be susceptible to slip / fall type injury. The risk may be exacerbated during periods of heavy rain, inclement weather and/or icy conditions.



Images 1 & 2 – Evidence of surface deposits and ponding

RECOMMENDATION:

It is recommended that the local drainage is reviewed by a drainage engineer and that, where appropriate, levels are adjusted and/or drainage detail revised accordingly to eliminate the issue of standing water within the carriageway or pedestrian waiting areas.

4.5 THE ALIGNMENT

No Road Safety issues identified under this heading.

4.6 THE JUNCTIONS

4.7 PROBLEM

Location: Ivel Road junction with B1042 High Street.

Summary: Proximity of crossing to junction increases the risk of on-crossing type collisions.

The proposed crossing is located immediately west of the junction with Ivel Road (west). Left turning road users emerging from Ivel Road (west) will be looking to their right in order to join the High Street and head west. There is a risk that as the left-turning road user emerges from the give way line, they may fail to see / react to crossing users either on the crossing carpet or waiting

to cross. Siting a controlled crossing in such close proximity to a junction increases the risk of on-crossing type collisions.

RECOMMENDATION:

It is recommended that the Zebra crossing location is moved further west along B1042 High Street away from the junction (a corresponding extension of the existing raised table is likely to be required).

4.8 NON MOTORISED ROAD USERS

No Road Safety issues identified under this heading.

4.9 SIGNING, LIGHTING, ROAD MARKINGS

4.10 PROBLEM

Location: B1042 eastbound approach (west of proposed Zebra crossing).

Summary: Risk of sudden braking post-opening due to absence of temporary signage.

Under the scheme proposals, temporary signage "New Zebra Crossing Ahead" (permitted variant of TSRGD Diagram No.7014) is provided on the B1042 westbound approach, St Swithun's Way and Ivel Road (all east of the proposed crossing location. No such temporary signage is detailed on the B1042 High Street eastbound approach. Road users approaching from the west, particularly those familiar with the existing layout, may not expect to encounter a controlled crossing point at this location. The absence of advanced temporary signing could result in sudden braking, failure to stop and/or on-crossing type collisions.

RECOMMENDATION:

It is recommended that temporary signing to TSRGD Diagram No.7014. ("New Zebra Crossing Ahead") is also deployed on B1042 (High Street) an appropriate distance west of the crossing to inform eastbound road users of the facility.

4.11 PROBLEM

Location: Proposed location of Zebra crossing.

Summary: Risk of on-crossing collisions associated with inadequate illumination of the

crossing carpet.

Zebrite beacons are to be installed at the crossing location. Note 9 of Drawing No. CBC-234912-000-001 Rev.0 (General Arrangement) states: "Refer to Lighting Layout and other relevant street lighting design documents for more detail". Whilst lighting column (ref L.C. 12) is noted within southern footway, west of the proposed crossing, no detail of the lighting layout or information pertaining to street lighting (e.g. contours) has been provided within the material for review. There is a risk that inadequate street lighting could result in on-crossing type collisions in low-light conditions, poor visibility and/or during the hours of darkness.

RECOMMENDATION:

It is recommended that a lighting assessment is undertaken, and/or the design is reviewed by a street lighting engineer to ensure the crossing carpet it adequately illuminated, and lighting levels comply with the County standards for such a crossing facility. The lighting design should be forwarded to the Audit Team for review.

4.12 PROBLEM

Location: Eastern end of scheme – location of Road Sign TS4.

Summary: Vegetation within the southern verge (founded in private land) is obscuring the

existing sign / location of proposed TS4.

Vegetation is currently obscuring the existing School sign (to TSRGD Diagram No.545). Under the scheme proposals the existing 'Patrol' subplate (also obscured) is to be replaced with a 'School' subplate. Obscuration of the proposed sign may result in road users failing to see / process the information conveyed and so unexpectantly encounter the hazard described by the sign. This could lead to sudden braking and/or collision with pedestrians (school children).



Image 3 – Vegetation obscuring existing sign / proposed location of TS4

RECOMMENDATION:

It is recommended that the vegetation is cut-back / removed to afford unobscured forward visibility to the proposed road sign (liaison with landowners / property owners may be required).

5.0 ADDITIONAL COMMENTS RAISED DURING THE COMBINED STAGE 1&2 RSA

5.1 Some of the existing sign faces (notably to TSRGD Diagram No.545) are faded and in poor condition. These sign faces are to be retained under the scheme proposals (TS3 & TS4), with only subplates being revised/replaced. It is suggested that the main sign faces are replaced to enhance their conspicuity to approaching road users. In addition, it is noted that TS3 is to be located coincident with the narrowest part of the footway within this section. The existing sign has rotated about the post, possibly as a result of impact / buffeting effects from adjacent traffic flows and minimal lateral clearance to the carriageway edge. It is suggested that the location of this sign is reviewed and relocated to alleviate the risk of the signface being struck by passing LGV/PCV/deliveries.



Image 4 – Rotation of existing sign at location of TS3

- 5.2 Flashing Belisha beacons associated with the proposed Zebra crossing may promote objection from local residents on the basis of light pollution. It is suggested that suitable cowls are attached to the beacons to shield the light dispersion from adjacent private dwellings.
- 5.3 It is suggested that arrow subplates, handed appropriately, are added to the temporary signage (to TSRGD Diagram No.7014) deployed on St Swithun's Way and Ivel Road (TS6 & TS5, respectively) to indicate the location (direction) of the new Zebra crossing.
- 5.4 Carriageway depressions (settlement cracking) is noted around an existing road gully west of the proposed crossing point on the southern side of the B1042. There is also evidence that the gully may be blocked. It is suggested the gully is cleaned and the carriageway defects repaired as part of the scheme.



Image 5 – Carriageway defects surrounding partially blocked gully west of crossing (south side of B1042)

As noted in §3.1, no validated personal injury collision data / history was provided for review as part of the Stage 2 RSA submission. It is suggested that 5-year validated collision history records are interrogated to establish the nature of any PICs within the locality of the scheme and so inform the final detailed design (i.e. prior to the construction phase / scheme implementation). Validated collision data should be passed to the Audit Team for independent review.

6.0 AUDIT TEAM STATEMENT

We certify that this audit has been undertaken in accordance with Essex Highways HPN 039.

AUDIT TEAM LEADER

Matthew Elliston

Road Safety Engineer

Road Safety Engineering Team

Essex County Council/Ringway Jacobs

Seax House

Chelmsford

Essex, CM1 1QH

Signed:
Date:

19th November 2021

AUDIT TEAM MEMBER

Mark Hemingway

Road Safety Engineer

Road Safety Engineering Team

Essex County Council/Ringway Jacobs

Seax House

Chelmsford

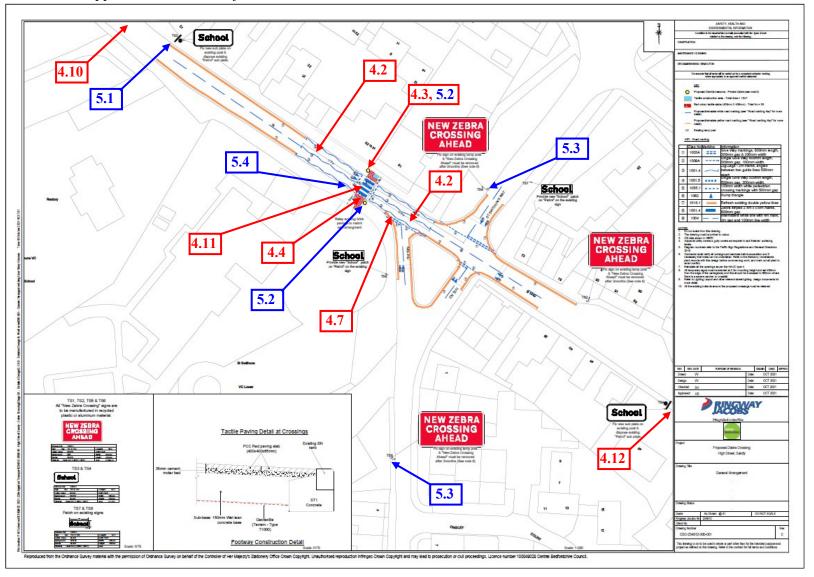
Essex, CM1 1QH

Signed:

Date: 19th November 2021

7.0 COMBINED STAGE 1&2 ROAD SAFETY AUDIT - PROBLEM LOCATION PLAN

Additional Note 5.5 applies to the extents of the scheme



APPENDIX A

Road Safety Audit Designers Response (Combined Stage 1&2 RSA)





* Designers Response to be read in conjunction with the Audit Report:					
Safety Audit Problem Number/ Summary	RSA Recommendation	Designers Response to Recommendation: Acceptance details + design proposals OR Rejection details + alternative design proposals	Audit Team Comments following designers response	Exception Report Required	
4.2	It is recommended that the skid resistance levels are measured and, where appropriate, surfacing of suitable PSV is provided commensurate with the approach to a controlled (Zebra) crossing facility.	DO Response: Agree – A high PSV surfacing (68 PSV) are added on either side of the proposed crossing to the current proposal. Refer to enclosed drawing CBC-234912-000-001 – Revision C. OO Response: Agree Surfacing to take place as per Revision A on enclosed drawing CBC-234912-000-001	Designers Response Accepted.	No.	

4.3	It is recommended that the Belisha beacon on the north side of the crossing is suitably bracketed or cantilevered from the post at the rear of the footway to ensure forward visibility to the beacon is afforded for approaching road users	DO Response: Agree –The Street light layout includes suitably brackets and cantilevered from the posts to improve visibility. Refer to enclosed street light layout drawing number CBC-21-234912-1300-001. OO Response: Agree designers' response Revised Lighting to be installed as per street light layout drawing number CBC-21-234912-1300-001	Designers Response Accepted.	No.
4.4	It is recommended that the local drainage is reviewed by a drainage engineer and that, where appropriate, levels are adjusted and/or drainage detail revised accordingly to eliminate the issue of standing water within the carriageway or pedestrian waiting areas.	DO Response: Agree – The levels at the considered section are proposed to be raised and the kerbs are proposed to be relayed at 6mm upstand. Refer to enclosed drawing CBC-234912-000-001 – Revision C. OO Response: Agree with the revised levels. The resurfacing with covers the effected gully. Install with amended levels as per Drainage Drawing CBC-234912-000-001 – Revision A. This main road is part of subject gritting route will be gritted in line with Winter Service Plan. CBC will continue to monitor the area following the schemes implementation as part of the cyclic inspection regime.	Designers Response Accepted.	No.

4.7	It is recommended that the Zebra crossing location is moved further west along B1042 High Street away from the junction (a corresponding extension of the existing raised table is likely to be required).	DO Response: Disagree – According to LTN 2/95 (paragraph 2.1.1.1), a crossing can be 5m away from the uncontrolled junctions. The proposed crossing is around 5.2m away from the adjacent junction. This problem is also discussed with Matthew Elliston (Road Safety Engineer) and agreed to keep in the proposed location as per the proposal since the crossing is 5.2m away from the junction. Currently, there is an uncontrolled crossing and school patrol at the location. Also, the location is the desired line for the pedestrians and school children, therefore moving the crossing as recommended by the audit is not required. OO Response: CBC agree with the Designers response and note the further discussion with Matthew Elliston (Road Safety Engineer) from the Audit Team. The crossing is 5.2 metres away from the junction on existing raised feature that is not being moved. In addition to the crossing being on the raised feature it is also located within a 20mph speed limit. It is also noted that the traffic flow from Ivel Road is very low as there is No through traffic from this road. The proposed location is on the existing pedestrian desire line, where there is an existing uncontrolled crossing and school crossing patrol currently in operation. Install Zebra in proposed location on the existing raised table.	Designers Response Accepted.	No.
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4.10	It is recommended that temporary signing to TSRGD Diagram No.7014. ("New Zebra Crossing Ahead") is also deployed on B1042 (High Street) an appropriate distance west of the crossing to inform eastbound road users of the facility.	DO Response: Agree – A "New Zebra Crossing Ahead" sign (TSRGD No 7014) is added at west of the proposed zebra crossing in front of property number 45 (on existing lamp post). Refer to enclosed drawing CBC-234912-000-001 – Revision C. OO Response: Agree designers' response. Install additional sign as per drawing CBC-234912-000-001 – Revision C.	Designers Response Accepted.	No.
4.11	It is recommended that a lighting assessment is undertaken, and/or the design is reviewed by a street lighting engineer to ensure the crossing carpet it adequately illuminated, and lighting levels comply with the County standards for such a crossing facility. The lighting design should be forwarded to the Audit Team for review.	DO Response: Agree – The street lighting design for the scheme is now completed and refer to enclosed drawing CBC-21-234912-1300-001. OO Response: Street lighting design has been completed and is Agreed. Revised Lighting to be installed as per street light layout drawing number CBC-21-234912-1300-001.	Designers Response Accepted.	No.

	oro: Ingli street, stallay,	Central Dedicites mie – Comonica Stage 1822 KSA		
4.12	It is recommended that the vegetation is cut-back / removed to afford unobscured forward visibility to the proposed road sign (liaison with landowners / property owners may be required).	DO Response: Agree – The client (Lisa Wright) to contact the property owner (property number 48) to cut back the overhanging vegetation and instruct the owner to regularly maintain the vegetation. OO Response: Request has been sent to instruct the removal of the vegetation that is obstructing the signage and for this to maintained. CBC to confirm the vegetation has been removed by the property owner and if no carry out the removal by the Highways Area Team.	Designers Response Accepted.	No.
5.1	Some of the existing sign faces (notably to TSRGD Diagram No.545) are faded and in poor condition. These sign faces are to be retained under the scheme proposals (TS3 & TS4), with only subplates being revised/replaced. It is suggested that the main sign faces are replaced to enhance their conspicuity to approaching road users. In addition, it is noted that TS3 is to be located coincident with the narrowest part of the footway within this section. The existing sign has rotated about the post, possibly as a result of impact / buffeting effects from adjacent traffic flows and minimal lateral clearance to the carriageway edge. It is suggested that the location of this sign is reviewed and relocated to alleviate the risk of the signface being struck by passing LGV/PCV/deliveries.	DO Response: Agree – The existing signs (at locations TS3 & TS4) are removed and renewed with new signs. The sign TS3 is relocated on other side of the road to improve lateral clearance and visibility. Refer to enclosed drawing CBC-234912-000-001 – Revision C. OO Response: Agree designers' response. Install revised signage as per drawing CBC-234912-000-001 – Revision C.	Designers Response Accepted.	No.

		Central Dediordshire – Combined Stage 1&2 KSA		
5.2	Flashing Belisha beacons associated with the proposed Zebra crossing may promote objection from local residents on the basis of light pollution. It is suggested that suitable cowls are attached to the beacons to shield the light dispersion from adjacent private dwellings.	DO Response: Agree – The proposal includes shroud/cowls for the beacons. Refer to enclosed drawing numbers CBC-21-234912-1300-001 and CBC-234912-000-001 – Revision C. OO Response: Agree designers' response. Install revised beacons as per drawing numbers CBC-21-234912-1300-001 and CBC-234912-000-001 – Revision C.	Designers Response Accepted.	No.
5.3	It is suggested that arrow subplates, handed appropriately, are added to the temporary signage (to TSRGD Diagram No.7014) deployed on St Swithun's Way and Ivel Road (TS6 & TS5, respectively) to indicate the location (direction) of the new Zebra crossing.	DO Response: Agree – The signs TS5 & TS6 are modified and include arrows. Refer to enclosed drawing CBC-234912-000-001 – Revision C. OO Response: Agree designers' response. Install revised signage as per drawing CBC-234912-000-001 – Revision C.	Designers Response Accepted.	No.
5.4	Carriageway depressions (settlement cracking) is noted around an existing road gully west of the proposed crossing point on the southern side of the B1042. There is also evidence that the gully may be blocked. It is suggested the gully is cleaned and the carriageway defects repaired as part of the scheme.	DO Response: Agree – The cracking will be repaired as part of the scheme surfacing works (refer to enclosed drawing CBC-234912-000-001 – Revision C) and the gully cleaning works will be carried out as part of the scheme or part of the CBC maintenance work. OO Response: Agree designers' response. Resurface as per Drawing CBC-234912-000-001 – Revision C. CBC will continue to monitor the area following the schemes implementation as part of the cyclic inspection regime.	Designers Response Accepted.	No.

5.5		As noted in §3.1, no validated personal injury collision data / history was provided for review as part of the Stage 2 RSA submission. It is suggested that 5-year validated collision history records are interrogated to establish the nature of any PICs within the locality of the scheme and so inform the final detailed design (i.e. prior to the construction phase / scheme implementation). Validated collision data should be passed to the Audit Team for independent review.	DO Response: Agree – Currently the CBC client officers are working on a system to get validation data and unfortunately, these data could not be obtained and provided as part of the safety audit response. However, I have enclosed crash map accident data for the location and a record of accidents in the near by area provided by Bedfordshire police. OO Response: Accident data provided. Accident data provided.		Designers Response Accepted.	No.	
DESIGN TEAM	DESIGN TEAM REPRESENTATIVE			ROAD SAFE	TY AUDIT TEAM LEAD	ER	
Name*:	Name*: Vinayagamoorthy Vinovan			Name:	Matthew Elliston		
Position:	Position: Senior Engineer			Position:	Road Safety Engineer		
Signed: To Vinovan			Signed:	W/			
Date:	: 25/03/2022			Date:	25 th March 2022		

^{*}The design team have carefully considered the problems and recommendations raised as part of this Road Safety Audit Report.

APPENDIX B

Arbitrational Review Required: Yes / No

((please delete as appropriate)

Road Safety Audit Exception Report Essex County Council Please read in conjunction with Appendix A Designers Response and Road Safety Audit Report **Designers Response to rejected RSA** Safety Audit **Audit teams Comments** Problem Recommendation: following designers **Project Sponsor Statement** Number response PROJECT SPONSOR Name: Position: Signed: Date: **Additional Comments:** SENIOR ROAD SAFETY ENGINEER DECISION IF ARBITRATIONAL REVIEW REQUIRED Name: Position: Signed: Date: The Project Sponsor Statement as part of this Exception Report is accepted The Project Sponsor Statement as part of this Exception Report is rejected: (please delete as appropriate)

	ARBITRATIONAL REVIEWER						
	Name:	Position:	Signed:	Date:			
		rt of this Exception Report is accepted					
	The Project Sponsor Statement as pa	nt of this Exception Report is rejected: (·**):				
	ollowing acceptation the Project Sponsor will instru						
**)	Following rejection the Project Sponsor will obtain	the final decision from ECC commissioning team.					
	ECC COMMISSIONING TEAM (FINAL						
	DECISION)						
	Name:	Position:	Signed:	Date:			
	This Exception Report is accepted						
	This Exception Report is rejected:						