

Road Safety Audit response report

Report title	A31/B3081 (Verwood Road) Junction Improvement – Stage 1 RSA response
Date	2/7/24
Document reference & revision	132.0001/RSA1RR/1
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On behalf of:	National Highways & Dorset Council
Project:	132.0001 – Alderholt Meadows, Alderholt
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Introduction

This RSA Response Report has been prepared in relation to a Stage 1 RSA of proposed junction improvements at the junction of the A31 / B3081 (Verwood Road). The Stage 1 RSA document reference is PBA/24/132.0001/1/BS Version 3, dated 25th June 2024.

The proposed junction improvement scheme consists of the signalisation of the B3081/Verwood Road junction, amendments to the entry to the A31 northbound on-slip and provision of signalised crossing points. The objectives of the scheme are to provide increased capacity at the junction and improve road safety through simplification of the entry to the A31 on-slip and provision of signalised crossing points.

This RSA Response Report has been prepared by James Rand of Paul Basham Associates, the design organisation.

Key Personnel

Overseeing Organisations	Gaynor Gallacher, National Highways Alison Curtis, Dorset Council
RSA team	Bryan Shawyer, M & S Traffic Martin Morris, M & S Traffic
Design Organisation	Paul Basham Associates

Road Safety Audit decision log

RSA Problem	RSA Recommendation	Design Organisation response	Overseeing Organisation Response (Dorset Council)	Agreed RSA action
<p>3.1.1 PROBLEM</p> <p>Location: Approaches to the proposed signalised junction.</p> <p>Summary: Inappropriate surfacing could lead to vehicle to pedestrian / cyclist collisions or rear end shunts.</p> <p>The proposals do not include the introduction of anti-skid surfacing or a surface with a high polished stone value (PSV) on the approaches to the signalised junction. Surfacing with an inadequate PSV could lead to vehicles not being able to stop, leading to possible rear end shunt or vehicle to pedestrian / cyclist collisions.</p>	<p>It is recommended that antiskid surfacing or surfacing with a high PSV should be used on the approaches to the signalised junction.</p>	<p>Accepted – details to be provided at S278 stage.</p>	<p>Agreed</p>	
<p>3.1.2 PROBLEM</p> <p>Location: Proposed signalised junction.</p> <p>Summary: Insufficient surface water drainage may increase the risk of skidding type collisions.</p> <p>At this early stage, no details have been provided on the proposed drainage arrangements. It was noted that the</p>	<p>It is recommended that drainage details are provided at the next stage of road safety audit including locations of gully locations, levels and contours.</p>	<p>Accepted – details to be provided at S278 stage.</p>		

<p>kerblines are being altered , as such, this may require measures to manage surface water around the junction areas to consequently reduce the risk of skidding type collisions in these areas due to excessive surface water.</p>				
<p>3.1.3 PROBLEM</p> <p>Location: B3081, northbound approach to the proposed signalised junction.</p> <p>Summary: Obscured signal heads could lead to fail to stop collisions, vehicle to pedestrian / cyclist collisions or rear end shunts.</p> <p>On the northbound approach to the signalised junction, existing vegetation on the western side of the B3081 may interfere with the visibility of the signal heads and poles, and to waiting pedestrians / cyclists at the Toucan crossing, see figure 1 overleaf. This may result in overshoot of the signal stop line, with resultant fail to stop collisions, vehicle to pedestrian / cyclist collisions or rear end shunts.</p>	<p>It is recommended that the vegetation should be removed from the northbound forward visibility and the pedestrian visibility splays.</p>	<p>Accepted</p>	<p>Relocating the north/south toucan crossing to the west with amendments to the stop lines may address the visibility issues raised. Subject to modelling, the stop line on the eastbound approach could be relocated south to improve visibility. This could also enable the long toucan crossing to be relocated south to reduce the length of the crossing a improve capacity of the junction.</p>	
<p>3.1.4 PROBLEM</p> <p>Location: B3081, northbound approach to the proposed signalised junction.</p>	<p>It is recommended that a road restraints risk assessment for local roads should be undertaken to determine whether protection</p>	<p>Accepted. Indicatively shown on submitted drawing, risk</p>		

<p>Summary: Lack of restraint system could increase severity of a loss of control collision.</p> <p>On the northbound approach to the signalised junction, the B3081 is to be widened to accommodate a two-lane discharge. However, there is existing banking with a drop on the western side of the carriageway with an adjacent footpath. Should vehicles leave the carriageway, the severity of a loss of control collision could be increased.</p>	<p>is needed, and that protection should be installed should the assessment show that it is required.</p>	<p>assessment to be completed as part of S278.</p>		
<p>3.1.5 PROBLEM</p> <p>Location: B3081, eastbound approach to the proposed signalised junction.</p> <p>Summary: Obscured signal heads could lead to fail to stop collisions or rear end shunts.</p> <p>On the eastbound approach to the signalised junction, an existing wall / fencing on the northern side of the B3081 may interfere with the visibility of the signal heads and poles, and to waiting pedestrians at the Toucan crossing, see figure 2 below. This may result in overshoots of the signal stop line, with resultant fail to stop collisions or rear end shunts.</p>	<p>It is recommended that the Stop Line and primary signal head should be relocated further west to improve visibility to the signal head, or that mast arm or double aspect signals should be installed on this approach.</p>	<p>Accepted – mast arm / double aspect signal details to be confirmed at detailed design.</p>	<p>The Designer has accepted the recommendation of mast arm/double aspect signal signals to be included at detailed design stage, however, Dorset Council do not accept either solution proposed. The first part of the Auditor’s recommendation would be accepted, equally additional advice is included below</p> <p>Relocating the north/south toucan crossing to the west with amendments to the stop lines may address the</p>	

			visibility issues raised. Subject to modelling, the stop line on the eastbound approach could be relocated south to improve visibility. This could also enable the long toucan crossing to be relocated south to reduce the length of the crossing and improve capacity of the junction.	
<p>3.2.1 PROBLEM</p> <p>Location: Eastbound bend on A31 at proposed on slip right turn lane.</p> <p>Summary: Inappropriate alignment on bend could lead to side swipe or head on collisions.</p> <p>A right turn lane leading to the A31 on slip is proposed before the signalised junction, where the west to southeast alignment is not smooth. There is concern that vehicles travelling west to southeast may cut across the bend and enter the hatching and opposing right turn lane, which could lead to side swipe collisions or head on collisions.</p>	<p>It is recommended that a traffic island should be installed in the hatching at the western end of the right turn lane to prevent the bend being cut across.</p>	<p>Accepted – details to be provided as part of S278.</p>	<p>Agreed</p>	

<p>3.2.2 PROBLEM</p> <p>Location: B3081, northbound approach to the proposed signalised junction.</p> <p>Summary: Masking of primary signal head could lead fail to stop collisions, vehicle to pedestrian / cyclist collisions or rear end shunts.</p> <p>On the northbound approach to the signalised junction, the B3081 is to be widened to accommodate a two-lane discharge. However, should there be a high-sided vehicle in lane 1 this could restrict northbound forward visibility to the primary signal head. A vehicle approaching in lane 2 may not be able to see the signal aspects until quite late when travelling towards the stop line. Restricted visibility could lead to fail to stop collisions, vehicle to pedestrian / cyclist collisions or rear end shunts.</p>	<p>It is recommended that mast arm or hinged double aspect signals should be installed.</p>	<p>Accepted – to be detailed at S278 stage.</p>	<p>Whilst the Designer has accepted the recommendation, Dorset Council do not accept mast arms or double aspect signals. An alternative solution is required to resolve the problem</p>	
<p>3.2.3 PROBLEM</p> <p>Location: Proposed maintenance bay east of the right turn lane for A31 on slip.</p> <p>Summary: Inappropriate alignment and shape of maintenance bay on bend could lead to collisions with parked vehicles or side swipe collisions.</p>	<p>It is recommended that the maintenance bay should be widened, and that hatching should be used to delineate a safety zone between the bay and the main carriageway. It is also recommended that the swept paths of expected vehicles using the</p>	<p>Accepted – to be provided as part of S278.</p>	<p>Agreed</p>	

<p>A maintenance bay is proposed on a right-hand bend to the immediate east of the opposing right turn lane for A31 on slip. There is concern that the shape of the maintenance bay and alignment just after the bend onsets may lead to overhanging vehicles on this section of the Verwood Road carriageway. Due to challenging parking, the position of the driver in the vehicle being part the way around the bend and the position of the right turn pocket may lead to obstructions and subsequent collisions with parked vehicles, where the alignment of the bay on the radius could lead to side swipe collisions.</p>	<p>maintenance bay should be supplied for assessment at Stage 2 Road Safety Audit.</p>			
<p>3.3.1 PROBLEM</p> <p>Location: Access to commercial yard.</p> <p>Summary: Restricted visibility at access could lead to side impact collisions or rear end shunts.</p> <p>The southern side of the carriageway of Verwood Road is proposed to be realigned, including the commercial yard access with Verwood Road. However, the eastern visibility splay at the access will be restricted by excess vegetation and the bridge abutment, see figure 3 below. Restricted visibility could lead to</p>	<p>It is recommended that access should be realigned to improvement visibility. or that the access should be incorporated into the signal design with its own staging. It is also recommended that the excess vegetation should be cut back and that a 'Crossroads on bend ahead' sign to diagram 512.3 should be installed on the westbound approach to the access.</p>	<p>Accepted.</p> <p>The changes to southern side of carriageway are required to facilitate inclusion of right turn lane in the design, which addresses an</p>	<p>Agreed</p>	

<p>side impact collisions or rear end shunts, particularly with slow moving vehicles leaving the commercial yard.</p>		<p>existing safety issue.</p> <p>The access will be realigned to maximise visibility as part of S278.</p>		
<p>3.3.2 PROBLEM</p> <p>Location: Westbound approach to proposed signalised junction.</p> <p>Summary: Insufficient forward visibility to queuing traffic could lead to rear end shunts.</p> <p>The proposed Stop line for westbound traffic is after a left-hand bend, where a 'Traffic signals ahead' sign is proposed. There is concern that forward visibility to the rear of westbound queuing traffic may be restricted due to the bridge abutment, where north westbound vehicles have to pass under the A31 bridge which is unlit during daylight hours. Insufficient forward visibility and dark to light conditions could lead to rear end shunts.</p>	<p>It is recommended that section of the road under the bridge should be continually lit. It is also recommended that a 'Traffic queues likely on road ahead' sign to diagram 584 and accompanying 'Queues likely' plate should be installed on the westbound approach to the signalised junction</p>	<p>Accepted – to be detailed at S278 stage.</p>	<p>Agreed</p>	

<p>3.3.3 PROBLEM</p> <p>Location: A31 on slip, prior to proposed signalised junction.</p> <p>Summary: Insufficient forward visibility to queuing traffic could lead to side swipe collisions or rear end shunts.</p> <p>A right turn lane leading to the A31 on slip is proposed before the signalised junction. There is concern that queuing vehicles for the right turn lane may on occasion extend beyond the right turn lane, where forward visibility to the rear of queue may be restricted as north westbound vehicles have to pass under the A31 bridge. Insufficient forward visibility could lead to side swipe collisions or rear end shunts.</p>	<p>It is recommended that the section of the road under the bridge should be continually lit. It is also recommended that a 'Crossroads on bend ahead' sign to diagram 512.3 should be installed on the westbound approach to the access.</p>	<p>Accepted – to be detailed at S278 stage.</p>	<p>Agreed</p>	
<p>3.3.4 PROBLEM</p> <p>Location: Eastbound approach to proposed signalised junction.</p> <p>Summary:</p> <p>Insufficient forward visibility to queuing traffic could lead to rear end shunts.</p> <p>The proposed Stop line for eastbound traffic is on a left-hand bend, where a 'Traffic signals ahead' sign is proposed.</p>	<p>It is recommended that a 'Traffic queues likely on road ahead' sign to diagram 584 and accompanying 'Queues likely' plate should be installed on the eastbound approach to the signalised junction.</p>	<p>Accepted – to be detailed at S278 stage.</p>	<p>Agreed</p>	

<p>There is concern that forward visibility to the rear of eastbound queuing traffic may be restricted due to the fencing / brick wall. Insufficient forward visibility could lead to rear end shunts.</p>				
<p>3.3.5 PROBLEM</p> <p>Location: Proposed signalised junction.</p> <p>Summary: Insufficient capacity may increase the risk of vehicle to pedestrian / cyclist collisions, side impact collisions or rear end shunts.</p> <p>Modelling results were provided for assessment, where the pedestrian stages were included within the Staging Diagrams. However, on further examination of the model, the pedestrian stages are not included in any of the scenarios. The exclusion of the pedestrian stages from the model could lead to excessive queuing at the junction that may lead to driver frustration and the use of inappropriate gaps, increasing the risk of vehicle to pedestrian / cyclist collisions, rear end shunts or side impact collisions.</p>	<p>It is recommended that the signalised junction should operate without excessive queuing and that at Stage 2 Safety Audit a LINSIG run including the pedestrian phases within the scenarios should be provided for assessment.</p>	<p>Accepted – to be provided at S278 stage.</p>	<p>Agreed</p>	

<p>3.4.1 PROBLEM</p> <p>Location: Proposed Toucan crossings.</p> <p>Summary: Insufficient crossing width could lead to cyclist collisions or cyclist to pedestrian collisions.</p> <p>Two Toucan crossings are proposed at the junction, where the width of the crossing points is 2.8m. The flows of pedestrian and cyclist traffic expected at the crossings have not been provided, where insufficient clearance for two passing cyclists, or cyclists and pedestrians may result in cyclists colliding with each other on the crossing, or cyclist collisions with pedestrians.</p>	<p>It is recommended that the width of the crossing points should be 3m, where a 3.2m width would also negate the need to cut the tactile paving slabs.</p>	<p>Accepted. Submitted drawings include 3m wide crossings.</p>	<p>Agreed</p>	
<p>3.4.2 PROBLEM</p> <p>Location: Proposed maintenance bay.</p> <p>Summary: Lack of pedestrian facilities could compromise pedestrian safety.</p> <p>A maintenance bay is proposed to the east of the signals to enable the signal's engineer to park near the signals when they are undertaking signals works. However, from this location the engineer is unable to cross via the signal-controlled crossings, where the signal engineer is may also be carrying equipment i.e. a ladder. This may</p>	<p>It is recommended that the maintenance bay should be located in a position where the engineer can utilise the signalised crossing, though the bay should also be outside the junction intervisibility zone.</p>	<p>Disagree.</p> <p>Signal engineer can use existing unsignalised crossing of the A31 on-slip to reach the proposed signalised crossing. No accident history</p>	<p>The proposal is introducing a new signal arrangement that will increase pedestrian movements at the junction due to the need to monitor and maintain the signals. The existing informal crossing does not benefit from tactile paving, and the northern side is within the bus stop and does not benefit from a dropped kerb or tactile paving. If the Auditor agrees</p>	

<p>present the engineer with difficulties could lead to pedestrian trips and falls at full kerb heights, additionally traffic may not be expecting a pedestrian to cross at this location, so close to signalised crossings, that could lead to vehicle to pedestrian collisions.</p>		<p>involving pedestrians.</p> <p>Signal control cabinet location to be confirmed at S278 stage.</p> <p>No obvious alternative location for maintenance bay.</p>	<p>that this solution overcomes the problem, improvements to the existing crossing are likely to be required.</p>	
<p>3.5.1 PROBLEM</p> <p>Location: Proposed scheme.</p> <p>Summary: Insufficient street lighting could increase the risk of collisions during the hours of darkness.</p> <p>At this early stage no details of street lighting have been provided for assessment, where this current junction arrangement is unlit. A lack of lighting could increase the risk of collisions during the hours of darkness.</p>	<p>It is recommended that the junction should be lit and that a plan showing the light distribution should be provided for assessment at Stage 2 Safety Audit.</p>	<p>Accepted – to be detailed at S278 stage.</p>	<p>Agreed</p>	