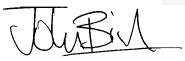
## Project Details

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| **Report title:** | Stage 1 Road Safety Audit Response |
| **Date:** | 6 August 2024 |
| **Document reference and revision** | 142_8220585_DK_Moorhead RSA Response (Issue 1) |
| **Prepared by:** | Glanville Consultants |
| **On behalf of:** | West Sussex County Council |

## Authorisation Sheet

| | |
|---|---|
| **Project:** | Mowbray Development, Land North of Horsham |
| **Report title:** | Stage 1 Road Safety Audit Response |

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|---|---|
| **Prepared by** | |
| **Name:** | David Kemp |
| **Position:** | Associate Director |
| **Signed:** |  |
| **Organisation:** | Glanville Consultants |
| **Date:** | 6 August 2024 |
| **Approved by** | |
| **Name:** | John Birch |
| **Position:** | Director |
| **Signed:** |  |
| **Organisation:** | Glanville Consultants |
| **Date:** | 6 August 2024 |

## Introduction

This Stage 1 Safety Audit Response has been prepared to provide a designer's response to the Stage 1 Road Safety Audit (dated 17 July 2024) undertaken by Alpha Highway Consultants (document reference AC/GC/1707241) for the proposed junction improvements at the A264 Moorhead Roundabout near Horsham, West Sussex. The junction proposals form part of the Mowbray development on land to the North of Horsham.

The Road Safety Audit reviews the proposed revised junction arrangement for the Moorhead Roundabout at the A264 / B2195 Crawley Road junction. The consented arrangement has been reduced in size due to site constraints and a reduction in base traffic flows following the COVID-19 pandemic. It is therefore proposed to enlarge the roundabout and signalise two of the three entries.

## Key Personnel

| | |
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| **Overseeing Organisation:** | Ian Gledhill (West Sussex County Council) |
| **RSA Team:** | Audit Team Leader – Jason Bown (Alpha Consultants)<br>Audit Team Member – B Newiss (Alpha Consultants) |
| **Design Organisation:** | David Kemp (Glanville Consultants)<br>Graeme Turner (Glanville Consultants) |
| **Developer's Representative:** | Mark Wild (Legal & General) |

## Road Safety Audit Decision Log

| RSA Problem | RSA Recommendation | Design Organisation's Response | Overseeing Organisation's Response | Agreed RSA Action |
|---|---|---|---|---|
| 3.1 | It is noted that the proposals include a two-lane south-eastern exit from the roundabout. However, this will quickly merge into a single lane, which could lead to side-swipe collision between adjacent vehicles as they leave the roundabout. Sudden braking and rear shunts could also occur. Particularly where longer vehicles are involved, this may also lead to obstruction on the roundabout itself.<br><br>It is recommended that sufficient distance is provided from the exit to allow the merging manoeuvre to take place in a safe and efficient manner (as prescribed in standards/guidance, such as DMRB CD116). If this is not feasible, it may be appropriate to make this a single-lane exit. Also see Problem 3.2. | The recommendation to ensure sufficient distance is provided from the exit to allow the merging manoeuvre to take place in a safe and efficient manner is accepted. A single lane exit would not provide sufficient junction capacity and so has not been considered further.<br><br>To each side of the B2195 Crawley Road arm of the roundabout is a steep embankment so the scope for increasing the merge length on the Crawley Road exit is constrained by the proximity of the top of the embankment and the need to include a VRS barrier.<br><br>The Moorhead Roundabout general arrangement (drawing Mowbray-GLA-S106-Ph2-SK-H-6115 P2 within Appendix A) has been updated to show an increased merge length on the Crawley Road exit. The top of the embankment has been identified based on previous topographical surveys but will need to be confirmed on site once the vegetation has been trimmed at detailed design stage.<br><br>Clause 3.28.6 of CD116 identifies that '*where traffic is required to merge after exiting, sufficient distance should be provided from the exit to allow the merging manoeuvre to take place in a safe and efficient manner*.' Clause 3.28.3 of CD116 identifies that the exit width should be reduced at a taper of between 1:15 and 1:20. Consequently, a taper of 1:15 is shown within the updated Moorhead Roundabout layout is tangential with the edge of the carriageway on the outside of the bend on Crawley Road. | The revised arrangement on drawing Mowbray-GLA-S106-Ph2-SK-H-6115 P2 is noted. The width and length of the merge on the B2195 exit has been increased.<br><br>It's noted also that only a single lane on the A264 east and north bound approaches to the roundabout are to be marked for B2195 traffic. This will likely be supported with directional signage. This will likely reduce the possibility of traffic needing to merge on the B2915 roundabout exit.<br><br>The RSA problem has been resolved through the amended design. | No further action required. |
| 3.2 | It appears from the proposed layout that there will be limited separation between vehicles about to enter the roundabout in the offside lane and vehicles attempting to merge at the roundabout exit. This could leave little margin for driver error, particularly given the concern raised in Problem 3.1, and may increase the likelihood of collisions between opposing traffic flows as a result.<br><br>It is recommended that measures to reduce the risk of conflict between opposing traffic flows are introduced. | The recommendation to extend the splitter island to provide increased physical segregation between opposing traffic flows is accepted. As noted above under Problem 3.1, a single lane exit would not provide sufficient junction capacity and so has not been considered further<br><br>The steep embankments to either side of the Crawley Road arm limit the amount of widening that can be undertaken. The splitter island, however, has | The splitter island and hatching have been lengthened as shown on drawing Mowbray-GLA-S106-Ph2-SK-H-6115 P2. The arrangements now increase the separation between opposing lanes of traffic on the roundabout entry and exit.<br><br>The issue is addressed through the revised design. | No further action required. |

| RSA Problem | RSA Recommendation | Design Organisation's Response | Overseeing Organisation's Response | Agreed RSA Action |
|---|---|---|---|---|
| | Such measures could include:<br><br>• Reduction of the exit to a single lane only (as discussed under Problem 3.1).<br>• Extension of the splitter island to provide increased physical segregation between opposing traffic flows. | been lengthened from 6.5m to 10.6m and the end radius reduced to maximise the achievable length of the splitter island and increase the physical segregation between opposing traffic flows (see drawing Mowbray-GLA-S106-Ph2-SK-H-6115 P2 within Appendix A). | | |
| 3.3 | The proposed entry markings on the south-eastern arm indicate that motorists can use both the nearside and offside entry lanes to turn right at the roundabout. However, it appears that this could potentially lead to conflict at the north-western exit, which is two lanes, as illustrated above.<br><br>It is recommended that adjustments are made to the road markings as appropriate, to ensure that the risk of conflict between vehicle movements is minimised. | The recommendation to adjust road markings to ensure that the risk of conflict between vehicle movements is minimised is accepted.<br><br>The junction modelling assumes right turning vehicles use just the offside lane on the Crawley Road approach. Consequently, the road markings and spiral markings on drawing Mowbray-GLA-S106-Ph2-SK-H-6115 P2 (see Appendix A) have been amended to show right turning vehicles would only be able to use the offside lane on the approach to ensure the risk of conflict between vehicle movements is minimised. | The lane markings on the B2195 roundabout entry have been amended with separate lanes indicated for straight ahead and turning movements.<br><br>The issue is addressed through the revised design on drawing Mowbray-GLA-S106-Ph2-SK-H-6115 P2. | No further action required. |
| 3.4 | The A264 to the north of Horsham is a high-speed derestricted dual carriageway. The proposals at the Moorhead Roundabout, and those at other nearby junctions, will change the nature of this route over time. The proposed installation of traffic signal control and other alterations at a number of these junctions, combined with high vehicle speeds, may heighten the risk of collisions involving, for example, late braking, red light running or vehicle loss of control<br><br>It is recommended that further measures are incorporated during the detailed design, in order to ensure the safe operation of the new arrangement, including:<br><br>• Review of existing speed limits and reduction if appropriate.<br>• Traffic signal speed discrimination if appropriate.<br>• Appropriate advance direction and warning signs. These should be consistent with any similar junctions along the route and in the local area.<br>• Clearance and ongoing maintenance of roadside vegetation, to ensure adequate forward visibility of all traffic signals, signing and the road layout itself. | The recommendation to introduce further measures to ensure the safe operation of the new junction arrangement is accepted. Such measures will be incorporated in the detailed design but are outlined below.<br><br>The A264 currently has a derestricted posted speed limit of 70mph. However, as part of the proposals for the Mowbray development at North Horsham, it is already proposed to reduce the speed limit on parts of the A264 to 50mph, including just to the west of the Moorhead Roundabout. Ultimately, it is proposed to reduce the speed limit on the A264 from the A24 / A264 Great Daux Roundabout in the west to a point east of the A264 / Wimland Road junction in the east. As such, both A264 approaches to the Moorhead Roundabout would be subject to a reduced speed limit of 50mph.<br><br>The junction capacity assessment has been undertaken to incorporate a 7s intergreen to reflect the higher vehicle speeds experienced on the approaches to the junction. This will ensure that sufficient clearance is provided for vehicles who fail to stop in time. Additional speed discrimination | The introduction of numerous traffic signal-controlled junctions along the A264 between Great Daux and Moorhead roundabouts as well as the significant accompanying residential development was acknowledged as part of the initial outline planning consent as changing the nature of the A264 in this location. As part of implemented junctions, the speed limit on the approaches has already been lowered to 50mph and this is expected to also take place for those unimplemented works at Moorhead and Langhurstwood Road. Longer term, the speed limit may be reduced to 50mph between Great Daux and Moorhead.<br><br>As part of the detailed design, the positioning of signal heads and additional detector loops on the approaches to signals will be considered.<br><br>Appropriate warning and directional signage will form part of the detailed design.<br><br>Following the construction and adoption of the traffic signals, the traffic signals and roundabout will be included as part of the WSCC routine maintenance program with vegetation then cut back as needed. | No further action at this stage.<br><br>As part of the detailed design, the Designer will fund and promote the lowering of the existing speed limit to 50mph on the approaches (or as otherwise may be agreed) to the proposed roundabout.<br><br>The detailed design of the traffic signals is to form part of the detailed design. This is to include the positioning and height of signal heads. The need for speed discrimination detection will also be assessed and included if required.<br><br>Suitable warning and direction signage is to be agreed as part of the detailed design.<br><br>The traffic signals once constructed and adopted will form part of the WSCC routine scheme of maintenance. |

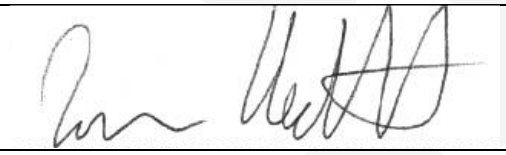
| RSA Problem | RSA Recommendation | Design Organisation's Response | Overseeing Organisation's Response | Agreed RSA Action |
|---|---|---|---|---|
| | | measures will be considered during the detailed design of the traffic signals installation.<br><br>Appropriate advance direction and warning signage consistent with similar junctions along the route and in the local area and with suitable forward visibility will be included as part of the detailed design.<br><br>As part of the construction work, the vegetation will be reviewed and trimmed where required to ensure all signs and traffic signals are visible from the outset. The A264 is a major east/west route and is maintained by WSCC. It is currently a dual carriageway with a posted speed limit of 70mph. Consequently, WSCC will already have a rolling programme of maintenance and vegetation trimming to ensure that forward visibility is maintained. Therefore, this upgraded roundabout would continue to form part of this existing maintenance programme. If more frequent maintenance is identified as being necessary by WSCC then the programme can be updated as required. | | |

# Design Organisation and Overseeing Organisation Statements

### Design Organisation Statement

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| On behalf of the design organisation, I certify that:<br><br>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:** | |
| **Signed:** | |
| **Position:** | |
| **Organisation:** | |
| **Date:** | |

### Overseeing Organisation Statement

| | |
|---|---|
| On behalf of Overseeing Organisation, I certify that:<br><br>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<br>2) the agreed RSA actions will be progressed. | |
| **Name:** | Ian Gledhill |
| **Signed:** |  |
| **Position:** | Principal Planner – County Highways |
| **Organisation:** | West Sussex County Council |
| **Date:** | 16th January 2025 |

# Appendix A

# Moorhead Roundabout – Updated Drawings