1 INTRODUCTION

1.1 WSP | Parsons Brinckerhoff in collaboration with Phil Jones Associates, has been commissioned by the Homes and Communities Agency (HCA) to advise on transport and highways issues at a forthcoming Planning Inquiry, which seeks to promote the residential led mixed use development at Land East of Hardingstone, Northampton. The proposed development includes junction improvements with the A45, at Brackmills Interchange and Queen Eleanor Interchange and these are the focus of this note.

1.2 This technical note has been prepared in response to the Statement of Case by Northampton Borough Council (NBC) and issues raised by their consultants Glanville in their letters dated 11/2/15 and 10/4/15. It considers the proposed junction improvements on the A45 from the perspective of design, compliance of standards and safety. Design Manual for Roads and Bridges (DMRB), mainly TD16 and TD50, provide general guidance on roundabouts and signalised roundabout designs.

1.3 Swept path envelopes have been assessed on a chosen number of turning movements around both junctions.

1.4 Stage One Road Safety Audits have been undertaken at both of the A45 interchanges to assess the proposed junction works. A summary of the audit findings and designers response are provided within this note with full audits and Designers Responses appended. The RSA were undertaken using the latest guidance in HD 19/15.

1.5 The original junction designs were developed using the Ordnance Survey as a base. A series of topographic survey checks have been undertaken at the junctions to determine the accuracy of the OS mapping. Details of the results of these surveys are provided within this note.

1.6 It is important to remember that the proposals for mitigation at the two A45 junctions, as submitted within the planning application, are indicative feasibility designs to demonstrate that workable solutions are possible at the junctions. Ultimately, the works are subject to a detailed Section 278 design progress, which is likely to mean the improvements will evolve. Additionally, it is possible that a different combination of local junction improvements and NGMS proposals emerge.
2 BRACKMILLS INTERCHANGE

Design Rationale

2.1 The proposed improvements at Brackmills Interchange from the original Transport Assessment are enclosed in Appendix A. To guide the reader, an annotated diagram is also included below. The improvement comprises of widening approach and circulatory carriageway as well as partial signalisation. The improvement includes 3 traffic lanes on the existing northern bridge (point 1, see diagram). This will require some minor modification to convert the existing hardstanding area into running carriageway.

2.2 The existing Brackmills Interchange is already operating as a partial signalised junction, with both the off-slip roads from A45 as signal controlled (point 2). The proposed layout maintains the same arrangement. As a result, the stopping distance, intervisibility and other characteristics of a roundabout are largely unchanged.

2.3 The design has been developed to address the existing turning demand, which has an unusually high volume of u-turning traffic from A45 South. The u-turn movement is associated with the office development that provides an access along the southbound on-slip road, in the form of a "left-in/left-out" (point 3) to Pavilion Drive. Although this arrangement is unusual, it is normally found in some roadside service facilities.

2.4 In order to accommodate the right and u-turn demand from A45 northbound off-slip, the approach is widened to 3 traffic lanes (point 4). The widening will take place on the nearside, so that earthwork strengthening works will not affect the A45 mainline. The widening work will tie in to the existing highway layout without affecting the existing pedestrian subway (point 5).
2.5 The access to the west (Eagle Drive) has a very modest traffic demand, only connected to a hotel and a golf club. As a result, no improvement is proposed on this approach (point 6).

2.6 The circulatory carriageway at the north-west quadrant is improved, with an extra traffic lane added (point 7). This new arrangement will improve lane discipline. The A45 northbound off-slip traffic is likely to use lanes 2-4, whereas the traffic from the circulatory (south bridge) requires lanes 1 & 2 to join the A45 northbound on-slip. The signal-controlled junction will minimise the chance of having 4 vehicles travelling abreast on the circulatory at any one time, thus improving safety.

2.7 Due to the A45 northbound off-slip requiring effectively 3 traffic lanes to right turn (and u-turn), the lane continuation will provide 3 lanes onto the north bridge (point 1). Lanes 1 & 2 are then marked for Caswell Road and the offside lane exclusively used for the A45 southbound on-slip (u-turns).

2.8 The existing north bridge, currently marked for 2 wide traffic lanes, is slightly too narrow to re-mark into 3 traffic lanes. The current preferred option is to make use of part of the hardstanding area on the nearside to slightly increase the width of carriageway in order to achieve 3 traffic lanes. These will be 3.0m wide lanes (again point 1).

2.9 The Caswell Road approach will be improved to a part-time signal controlled junction (point 8). The approach will operate as a traditional roundabout approach in the AM but signal controlled in the PM to accommodate the higher traffic demand from Brackmills. The approach will be widened to 3 traffic lanes to provide additional capacity. It is important to note that the widening is achieved by realigning the central reserve as well as the nearside channel, in order to avoid works extending into the adjacent office development. In terms of entry deflection, the existing and proposed layouts are similar; neither of them achieves the desirable entry deflection outlined in the current TD16. However, it is not considered the proposed layout is worsening the situation.

2.10 In terms of safety, the part-time signal is important for safe signal operation. In the AM peak, there is the large demand in u-turn traffic into Pavilion Drive, via a single lane on the circulatory carriageway. It is important to ensure the circulatory traffic is unimpeded. Widening the circulatory to 2 lanes was considered, and rejected. This is due to a 2-lane arrangement having the potential to result in undesirable weaving, and that is not helped with the proximity to the “Left-in/Left-out” access at Pavilion Drive.

**Swept Path Envelopes**

2.11 A selected number of movements have been tested using the Autotrack software to understand the interaction of vehicles around the proposed upgraded junctions. These are attached in Appendix B.

2.12 The assessment is to demonstrate the situation when an articulated vehicle and a large car (in this case a long wheel based 4x4) are travelling side-by-side heading for the same exit. During the AM and PM peaks, the proportion of heavy vehicles, particularly articulated vehicle, is low. Therefore, this side-by-side event is relatively infrequent. Outside the traditional commuting peak periods, overall traffic flow is lower but there are increased heavy vehicle activities. In practice, large vehicles often involuntarily disregard the lane marking when negotiating the circulatory carriageway unless it is absolutely necessary. Also, a car travelling alongside often feels vulnerable and exercises some courtesy to avoid the blind spot of a large vehicle. As a result, the “side-by-side” event is merely demonstrating the realistic worst case scenario.
Sketch 10a

2.13 This demonstrates 3 vehicles can travel abreast from the A45 northbound off-slip towards Caswell Road and u-turn. It will be a challenge for a large vehicle (on the nearside) to fully keep the trailer within the lane markings.

Sketch 10b

2.14 This demonstrates the A45 southbound off-slip can accommodate the left-turning movement.

Sketch 10c

2.15 Traffic travelling on Caswell Road, particularly in the PM peak, may encounter this situation. It is shown that the 2 large vehicles can travel abreast, with a car in the off-side lane.

Safety – Personal Injury Accidents

2.16 Accident records between 2008 and 2013 show that only 2 slight accidents were recorded at Brackmills Interchange and are enclosed in Appendix C. Both accidents shared the same “Rear shunt” characteristics with a causation of “Fail to stop”. One accident occurred at the “Left-in/Left-out” junction and the other at the A45 northbound off-slip road.

2.17 The proposed modifications on A45 northbound off-slip will reduce the scale of queuing, and will therefore improve safety.

Safety - Stage One Road Safety Audit

2.18 Independent Stage One Road Safety Audits have been undertaken on the Brackmills Interchange mitigation proposals by TMS Consultancy. A summary of the audit is provided within this Technical Note, along with the proposed Designers Response. Full copies of the audits and responses are appended to this note in Appendix D.

2.19 In summary, it is considered that all items raised within the audits can be addressed through the detailed design process and are minor in significance. There are no fundamental problems identified that require a significant redesign of the proposed mitigation measures.

2.20 In summary, the audit identified the following items:

- A45 Northeast bound off slip road – potential hazard to occupants of errant vehicles. The widening of the off slip requires some localised embankment re-shaping and adjustments to Vehicle Restraint System. There is also a potential hazard caused by existing vegetation limiting forward visibility.
- Circulatory carriageway northwestern quadrant – potential for land changing, sideswipe and shunt type collisions due to insufficient lane marking and guidance.
- Eagle Drive – splitter island street furniture potential for collisions with widening of circulatory carriageway.
- Eagle Drive – potential pull-out collisions across 4-lane circulatory carriageway;
- A45 Northeast bound on-slip – splitter island street furniture potential for collisions with widening of circulatory carriageway
- Circulatory carriageway – potential vehicle collisions at single lane section at part-time traffic signal.
• Caswell Road – current location of the Advanced Direction Sign could result in collisions. The vegetation on the approach is also identified as a potential hazard.

• Traffic signal heads – potential obscuring of traffic signals by three-lane circulation.

• Markings and Signage – clear signage and markings to avoid lane changing and sideswipe type collisions.

2.21 As detailed above, it is considered that all items listed above can be addressed through the detailed design process with an itemised Designers Response provided as an appendix to this note.

3 QUEEN ELEANOR INTERCHANGE

Design Rationale

3.1 The proposed improvements at Queen Eleanor Interchange include widening approaches and circulatory carriageway and the design proposals reproduced from the original Transport Assessment are enclosed in Appendix A. An annotated diagram is also shown below to guide the reader. The existing junction is already partially signalised and the control method is unchanged in the proposed scheme.

3.2 The design proposal seeks to manage traffic demand and make best use of the approaches by providing additional stacking capacity. This in turn will manage the level of queuing and improve safety. The physical constraints, road bridges and pedestrian underpasses, are complex and have influenced the proposed works.
3.3 The A5076 Mere Way approach already has 3 traffic lanes at the stopline. The proposed improvement is to lengthen the 3 lane section, so that traffic can maximise the stopline capacity (point 1). The widening will take place on the wide central reserve.

3.4 The A508 London Road approach also has 3 traffic lanes, but operates as give way with the roundabout (point 2). The proposed improvement is to lengthen the 3 lanes section, offering more stacking space.

3.5 The circulatory carriageway with the A508 is widened to accommodate 4 traffic lanes (point 3). This allows lanes 1 & 2 to be used for the A45 northbound on-slip and leaving the 2 offside lanes for circulating traffic. Although the circulatory has 4 traffic lanes, it is unlikely to have 4 vehicles abreast at any one time, given the composition and magnitude of peak hour traffic.

3.6 The northern bridge over the A45 is to be re-marked into 3 traffic lanes (point 4). Visual inspection suggests the structure has the same cross-section as the southern bridge, which is already marked with 3 traffic lanes. The proposed lane widths are 3.0m

3.7 Hardingstone Lane approach is slightly modified to fit into the works of the circulatory carriageway widening (point 5). The geometric parameters create a slightly enlarged give way junction.

3.8 An important aspect of the design is the improvement on the circulatory carriageway section with Hardingstone Lane. The Newport Pagnell Road exit will be enhanced, by providing 2 traffic lanes exiting the circulatory carriageway (point 6). At the same time, it is equally important to provide 2 traffic lanes exiting for the A45 southbound on-slip and 3 lanes continuing onto the southern bridge. As a result, a 5th traffic lane is added at the circulatory carriageway with Newport Pagnell Road (point 7). The widening will take place on the off-side, which will require some minor strengthening works on the embankment. An overhead gantry may be needed to improve lane legibility.

3.9 Newport Pagnell Road approach is widened to accommodate 3 traffic lanes (point 8). Widening will take place on the nearside and that will affect the footway access of Premier Inn Northampton South (Wootton). This is in line with proposals included within the NGMS scheme for the Queen Eleanor junction.

3.10 In terms of entry deflection, the proposed layout is not modifying the give way approaches heavily. Therefore, the existing geometric characteristics are largely retained. For signal intersections, stopping distance, intervisibility and other characteristics are largely unchanged.

Swept Path Envelopes

3.11 As discussed above, selective swept path analysis has been undertaken at the Queen Eleanor Interchange to demonstrate the potential interaction of vehicles on the circulatory carriageways. Details are enclosed in Appendix B.

3.12 Like Brackmills, the assessment is to demonstrate the situation when an articulated vehicle and a large car (in this case a long wheel based 4x4) are travelling side-by-side heading for the same exit. During the AM and PM peaks, the proportion of heavy vehicles, particularly articulated vehicle is low and, like Brackmills, driver behaviour generally means this situation does not arise.
3.13 This demonstrates 3 vehicles can travel abreast from the A45 northbound off-slip. It will be challenging for a large vehicle right turning towards Newport Pagnell Road to fully keep the trailer within the lane marking. However, a car is able to travel alongside with ease.

3.14 This shows 3 vehicles abreast on the A5076 approach. A car is in the middle lane travelling alongside a large vehicle towards A45 northbound on-slip. Again, the large vehicle right turning towards A45 southbound on-slip will have difficulties in fully keeping the trailer within the lane marking across the north bridge section of circulatory carriageway.

3.15 The A45 southbound off-slip can accommodate 3 vehicles abreast (car in the middle lane). The 3 vehicles can keep clear of each other within their own lane.

3.16 Large vehicles using Hardingstone Lane is a highly unlikely scenario. However, it demonstrates the realigned channel is suitable for large vehicle to negotiate.

3.17 This scenario could happen if large vehicles from Brackmills Industrial Estate choose to use Landmore Road for egress. In practice, the large vehicle on the offside lane will utilise the “hatched” area near the stopline on Newport Pagnell Road.

Safety – Personal Injury Accidents

3.18 The accident records enclosed in Appendix C, between 2008 and 2013 indicate 29 accidents in total, of which 3 were serious. The most common causations are: “Fail to observe”, “Unable to judge speed”, and “Rear shunt into stationary vehicle”. The A5076 section has the most number of accidents. This follows by both A45 Off-slip roads and Newport Pagnell Road section. Only 2 accidents were related to fail to obey traffic signal.

3.19 There are 11 accidents occurred in AM or PM peak, 15 accidents during the day (outside peaks) and 3 at night. The 3 serious accidents include a motorcycle, a pedestrian (not expected on roundabout) and a single vehicle incident.

3.20 The proposed widening at A5076 and Newport Pagnell Road is designed to capacity, but may not actively manage approach traffic speed. The improvement may require appropriate warning signs. In addition, warnings should be given on the Hardingstone Lane approach.

3.21 The improved lane discipline through road markings will reduce side swipe accidents. However, this relies on vehicle speeds are managed properly, as indicated above.

Safety – Stage One Road Safety Audit

3.22 Independent Stage One Road Safety Audits have been undertaken on the Queen Eleanor Interchange mitigation proposals by TMS Consultancy. A summary of the audit is provided below, along with the proposed Designers Response. Full copies of the audits and responses are appended in Appendix D.
3.23 In summary, it is considered that all items raised within the audits can be addressed through the detailed design process and are relatively minor in significance. There are no fundamental problems identified that require a significant redesign of the proposed mitigation measures.

3.24 The audit identified the following items:

- London Road approach – relocation of advance lane destination sign could reduce visibility due to vegetation;
- Circulatory carriageway northern quadrant - widening of circulatory carriageway will require the relocation of a manhole cover and may require additional VRS.
- Radius between Hardingstone Lane and Newport Pagnell Road may require a lighting column to be relocated;
- Newport Pagnell Road approach – potential for shunting collisions due to vegetation affecting visibility;
- Newport Pagnell Road – informal pedestrian crossing is sub-standard. Potential for relocation of existing bus stop;
- A5076 approach – location of trees in central reserve may affect visibility and potential for pedestrian collisions at informal crossings;
- Traffic signal heads – potential obscuring of traffic signals by three-lane circulation.
- Markings and Signage – clear signage and markings to avoid lane changing and sideswipe type collisions.

3.25 Again, it is considered that all items listed above can be addressed through the detailed design process with an itemised Designers Response provided as an appendix to this note. Specific issues related to pedestrian crossings are issues with the current arrangement and can therefore be improved through these upgrade works.

4 HIGHWAYS AGENCY (HIGHWAYS ENGLAND)

4.1 The A45 is part of the Strategic Road Network managed by Highways Agency (now known as Highways England). The proposed improvement at Brackmills Interchange includes works on the A45 northbound off-slip. This requires approval from Highways England. Also, the potential structural modification to provide 3 traffic lanes may require the collaboration of the two highways authorities. However, collaboration agreements of this type are common place and Highways England have confirmed their intention to deliver further improvements to Queen Eleanor and Brackmills after the Section 278 works are implemented.

4.2 The A45 off-slip widening is towards the end of the slip road, which is already signalised. The improvement will increase capacity and reduce the likelihood of excessive queuing extending back onto the mainline carriageway. The improvements would provide better resilience, and improve safety.

4.3 The proposed improvement at Queen Eleanor Interchange does not include works on the slip roads. However, the lane re-marking on North Bridge will involve both authorities working together. As discussed above, proposals included within the NGMS improvements for Queen Eleanor allow for widening of the Newport Pagnell Road approach and so are in line with the mitigation proposals.

5 TOPOGRAPHICAL SURVEY

5.1 The original designs as submitted and agreed with Northamptonshire Highways were based upon Ordnance Survey digital mapping. The possible accuracy of OS data has been
highlighted by the Northampton Borough Council within their Statement of Case as a potential issue.

5.2 In response to these comments and those received from NBC’s transport consultants Glanvilles in their letter dated 11/2/15 and 10/4/15, sample topographical information has been collected at both A45 interchanges to understand the extent to which the OS data is accurate.

5.3 Appended to this note in Appendix E, SK10 and SK11, provide a comparison of the OS base with the sample topographic survey results taken on relevant kerblines. As can be seen from these drawings, the variation from the OS base is very minimal across the area of interest with an extremely high level of accuracy compared to ‘on the ground’ measurements. There are very slight variations on the A45 over-bridges with the topo surveys showing a slightly narrower carriageway. However, such a variation is not considered significant.

5.4 As such, it is not considered that any alterations to the proposed junction designs are required based on these results.

6 SUMMARY

6.1 The mixed-use development promoted by HCA requires local junction capacity improvements at Brackmills and Queen Eleanor Interchanges. This technical note discusses the design rationale of these proposed improvements, and the physical constraints. The Swept path analysis highlights how large vehicles manoeuvring around the roundabouts will coexist safely with other vehicles. Junction safety and accident records are also discussed.

6.2 The proposed improvements will provide the necessary additional highway capacity and improve road safety. The designs are considered reasonable and practicable to accommodate all road users. The proposals remain compatible with further works to the untaken by Highway England via the Northampton Growth Management Scheme.

6.3 On-site topographical surveys have demonstrated that the OS base used to develop the proposed mitigation designs is sufficiently accurate with very little deviation on the ground.

6.4 Stage One Road Safety Audits have not identified any significant issues with the designs that cannot be overcome through the detailed design process that will follow and upon which planning consent is conditional.
Appendix B – Swept Path Envelopes
Appendix C – Personal Injury Accidents Data
<table>
<thead>
<tr>
<th>Police Ref.</th>
<th>Acc Class</th>
<th>Date</th>
<th>Time</th>
<th>Grid References</th>
<th>Casualties Ftl Ser</th>
<th>Casualties Ftl Slt</th>
<th>Cause</th>
<th>Factors/Prob</th>
<th>Ped L M D</th>
<th>Light</th>
<th>Weather</th>
<th>Road</th>
<th>Surface</th>
<th>Vehicle Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>WN585908</td>
<td>Slight</td>
<td>04/12/2008</td>
<td>1753</td>
<td>477257</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>403V1A 405V1A</td>
<td>0 0 0</td>
<td>Dark</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN604408</td>
<td>Slight</td>
<td>17/12/2008</td>
<td>1600</td>
<td>477142</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>405V1A 302V1A</td>
<td>0 0 0</td>
<td>Dark</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN029909</td>
<td>Slight</td>
<td>07/01/2009</td>
<td>1739</td>
<td>477111</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>304V1A 405V1A</td>
<td>0 0 0</td>
<td>Dark</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN075909</td>
<td>Slight</td>
<td>07/02/2009</td>
<td>0730</td>
<td>475556</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>103V1A 405V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Snowing without high winds</td>
<td>Snow</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TN137709</td>
<td>Slight</td>
<td>02/04/2009</td>
<td>1050</td>
<td>475987</td>
<td>0 0 2</td>
<td>0 0 2</td>
<td>406V1A 307V2B</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TN28509</td>
<td>Slight</td>
<td>05/07/2009</td>
<td>1000</td>
<td>475572</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>406V1A 408V2B</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TN362609</td>
<td>Slight</td>
<td>01/09/2009</td>
<td>1117</td>
<td>475516</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>410V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN368409</td>
<td>Slight</td>
<td>03/09/2009</td>
<td>0745</td>
<td>475739</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>410V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN465809</td>
<td>Slight</td>
<td>08/11/2009</td>
<td>1142</td>
<td>475668</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>103V1A 308V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TN519409</td>
<td>Serious</td>
<td>07/12/2009</td>
<td>0222</td>
<td>475656</td>
<td>0 1 0</td>
<td>0 1 0</td>
<td>802CIB 803CIA</td>
<td>5 3 8</td>
<td>Dark</td>
<td>Snowing without high winds</td>
<td>Snow</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN003110</td>
<td>Slight</td>
<td>03/01/2010</td>
<td>1300</td>
<td>475724</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>405V1A 406V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN424710</td>
<td>Slight</td>
<td>01/06/2010</td>
<td>1705</td>
<td>475725</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>405V1A 406V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TN242510</td>
<td>Slight</td>
<td>17/06/2010</td>
<td>0140</td>
<td>475594</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>405V1A 406V1B</td>
<td>0 0 0</td>
<td>Dark</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN311910</td>
<td>Slight</td>
<td>29/07/2010</td>
<td>1530</td>
<td>475728</td>
<td>0 0 2</td>
<td>0 0 2</td>
<td>408V1A 405V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN305710</td>
<td>Slight</td>
<td>30/07/2010</td>
<td>0305</td>
<td>475726</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>403V1A 305V1A</td>
<td>0 0 0</td>
<td>Dark</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN459210</td>
<td>Slight</td>
<td>11/08/2010</td>
<td>1505</td>
<td>475597</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>405V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN392710</td>
<td>Slight</td>
<td>26/09/2010</td>
<td>0840</td>
<td>475727</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>405V1A 406V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN393110</td>
<td>Slight</td>
<td>01/10/2010</td>
<td>0827</td>
<td>476656</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>802CIA 405V1A</td>
<td>5 1 5</td>
<td>Dark</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TN466010</td>
<td>Slight</td>
<td>16/11/2010</td>
<td>2106</td>
<td>475578</td>
<td>0 1 0</td>
<td>0 1 0</td>
<td>301V1A 307V1B</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN501110</td>
<td>Serious</td>
<td>12/12/2010</td>
<td>1130</td>
<td>475724</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>706V1A 405V1A</td>
<td>0 0 0</td>
<td>Dark</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN105111</td>
<td>Slight</td>
<td>21/03/2011</td>
<td>1047</td>
<td>475529</td>
<td>0 0 2</td>
<td>0 0 2</td>
<td>405V1A 406V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN141711</td>
<td>Serious</td>
<td>08/04/2011</td>
<td>1600</td>
<td>476012</td>
<td>0 1 0</td>
<td>0 1 0</td>
<td>409V1A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN354211</td>
<td>Slight</td>
<td>12/04/2011</td>
<td>1800</td>
<td>476779</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>308V1B 405V1B</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN169911</td>
<td>Slight</td>
<td>16/05/2011</td>
<td>1545</td>
<td>475578</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>306V1B 301V2A</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN207711</td>
<td>Slight</td>
<td>16/06/2011</td>
<td>1600</td>
<td>474900</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>407V1B</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN228411</td>
<td>Slight</td>
<td>01/07/2011</td>
<td>0615</td>
<td>477196</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>704V1A 405V1B</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN231411</td>
<td>Slight</td>
<td>05/07/2011</td>
<td>1420</td>
<td>475727</td>
<td>0 0 1</td>
<td>0 0 1</td>
<td>306V2B 510V1B</td>
<td>0 0 0</td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Wet/Damp</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Police Ref.</td>
<td>Acc Class</td>
<td>Date</td>
<td>Time</td>
<td>Grid References</td>
<td>Casualties FIt</td>
<td>Grid References</td>
<td>Weather</td>
<td>Road Surface</td>
<td>Vehicle Types</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>--------------</td>
<td>--------</td>
<td>-----------------------</td>
<td>----------------</td>
<td>-----------------------</td>
<td>------------------</td>
<td>--------------</td>
<td>---------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN336711</td>
<td>Slight</td>
<td>15/09/2011</td>
<td>1410</td>
<td>475594 258031</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN357811</td>
<td>Slight</td>
<td>17/10/2011</td>
<td>1045</td>
<td>477280 258267</td>
<td>0 0 2</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>19 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN376211</td>
<td>Slight</td>
<td>30/10/2011</td>
<td>1510</td>
<td>476661 257252</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN383411</td>
<td>Slight</td>
<td>04/11/2011</td>
<td>1715</td>
<td>477163 258395</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN406911</td>
<td>Slight</td>
<td>18/11/2011</td>
<td>1605</td>
<td>475572 258015</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN459011</td>
<td>Slight</td>
<td>23/12/2011</td>
<td>1155</td>
<td>475501 257982</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN466311</td>
<td>Slight</td>
<td>30/12/2011</td>
<td>1500</td>
<td>475471 257981</td>
<td>0 0 2</td>
<td>00 0 Light</td>
<td>Raining without high winds</td>
<td>Wet/Damp</td>
<td>9 19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN017012</td>
<td>Slight</td>
<td>19/01/2012</td>
<td>0710</td>
<td>475717 257998</td>
<td>0 0 1</td>
<td>00 0 Dark</td>
<td>Raining without high winds</td>
<td>Wet/Damp</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN025312</td>
<td>Slight</td>
<td>27/01/2012</td>
<td>1800</td>
<td>475734 257941</td>
<td>0 0 2</td>
<td>00 0 Dark</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN110612</td>
<td>Serious</td>
<td>06/02/2012</td>
<td>1415</td>
<td>476710 258867</td>
<td>0 1 0</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN111212</td>
<td>Slight</td>
<td>01/05/2012</td>
<td>1800</td>
<td>475733 257852</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN197912</td>
<td>Slight</td>
<td>12/08/2012</td>
<td>1028</td>
<td>476488 257224</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN231512</td>
<td>Slight</td>
<td>19/09/2012</td>
<td>0855</td>
<td>475680 257875</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>21 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN243312</td>
<td>Serious</td>
<td>01/10/2012</td>
<td>0900</td>
<td>475494 257964</td>
<td>0 1 0</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN248912</td>
<td>Slight</td>
<td>07/10/2012</td>
<td>1425</td>
<td>475573 257923</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>5 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN292912</td>
<td>Slight</td>
<td>17/11/2012</td>
<td>2340</td>
<td>476721 257580</td>
<td>0 0 1</td>
<td>00 0 Dark</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN307612</td>
<td>Slight</td>
<td>02/12/2012</td>
<td>1245</td>
<td>475671 257875</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN315512</td>
<td>Slight</td>
<td>10/12/2012</td>
<td>1355</td>
<td>476708 257254</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN303613</td>
<td>Slight</td>
<td>19/02/2013</td>
<td>1015</td>
<td>476760 258594</td>
<td>0 0 2</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>19 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN062513</td>
<td>Slight</td>
<td>17/03/2013</td>
<td>1650</td>
<td>475683 257883</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN083713</td>
<td>Serious</td>
<td>18/04/2013</td>
<td>0800</td>
<td>477131 258417</td>
<td>0 1 0</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN111513</td>
<td>Slight</td>
<td>25/05/2013</td>
<td>1000</td>
<td>476488 257228</td>
<td>0 0 1</td>
<td>1 3 1 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN140913</td>
<td>Slight</td>
<td>29/05/2013</td>
<td>2015</td>
<td>475794 257937</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN116313</td>
<td>Slight</td>
<td>03/06/2013</td>
<td>2015</td>
<td>475939 257435</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN116613</td>
<td>Slight</td>
<td>03/06/2013</td>
<td>0948</td>
<td>476039 257375</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WN149013</td>
<td>Slight</td>
<td>08/07/2013</td>
<td>1850</td>
<td>475577 257924</td>
<td>0 0 1</td>
<td>00 0 Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## SUMMARY REPORT

**Run on:** 20/12/2013

### Accidents between dates 01/11/2008 and 31/10/2013

**Selection:**
Selected using Pre-defined Query:

**Notes:**
Land South of Brackmills Northampton. 5 Years Collision Data up to and including the 31st October 2013.

<table>
<thead>
<tr>
<th>Police Ref.</th>
<th>Acc Class</th>
<th>Date</th>
<th>Time</th>
<th>Grid References</th>
<th>Casualties</th>
<th>Fixed</th>
<th>Slit</th>
<th>Causation Factors/Prob</th>
<th>Ped L</th>
<th>M</th>
<th>D</th>
<th>Light</th>
<th>Weather</th>
<th>Road Surface</th>
<th>Vehicle Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>WN162313</td>
<td>Slight</td>
<td>25/07/2013</td>
<td>1936</td>
<td>475425 258162</td>
<td>0 0 2</td>
<td></td>
<td></td>
<td>406V1A 308V1A</td>
<td>0 0 0</td>
<td></td>
<td></td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9 9</td>
</tr>
<tr>
<td>WN183213</td>
<td>Slight</td>
<td>17/08/2013</td>
<td>0005</td>
<td>475973 258184</td>
<td>0 0 3</td>
<td></td>
<td></td>
<td>306V1A 308V1A 408V1A</td>
<td>0 0 0</td>
<td></td>
<td></td>
<td>Dark</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9 9</td>
</tr>
<tr>
<td>WN203113</td>
<td>Slight</td>
<td>03/09/2013</td>
<td>0900</td>
<td>475672 257879</td>
<td>0 0 1</td>
<td></td>
<td></td>
<td>405V1A 403V1A 305V1A</td>
<td>0 0 0</td>
<td></td>
<td></td>
<td>Light</td>
<td>Fine without high winds</td>
<td>Dry</td>
<td>9 9 9</td>
</tr>
<tr>
<td>WN209813</td>
<td>Slight</td>
<td>18/09/2013</td>
<td>0845</td>
<td>475587 258027</td>
<td>0 0 1</td>
<td></td>
<td></td>
<td>103V1A 307V1B 308V1B 406V1A</td>
<td>0 0 0</td>
<td></td>
<td></td>
<td>Light</td>
<td>Other</td>
<td>Wet/Damp</td>
<td>9 9 9</td>
</tr>
</tbody>
</table>

**Column Totals**

|               |           |           |       |               | 0 6 0 |       |     |           |       |   |   |     |               |             |              |

**Total number of accidents listed:** 57
**TRAFFMAP**

AcsMap - Accident Analysis System

**Accidents between dates** 01/11/2008 and 31/10/2013 (60) months

**Selection:**

Selected using Pre-defined Query:

**Notes:**

Land South of Brackmills Northampton. 5 Years Collision Data

up to and including the 31st October 2013.

---

**Police Ref.** | **Date** | **Cas.** | **Sev.** | **Cycs** | **Peds** | **Ch** | **OAPs** | **Vis.** | **Manv.** | **Road Cond.** | **Time** | **Location**
---|---|---|---|---|---|---|---|---|---|---|---|---
WN585908 | 04/12/2008 | 1 | Slight | 0 | 0 | 0 | 0 | Dark | Right | Wet/Damp | 1753 | D8681, CASWELL ROAD, NORTHAMPTON. AT THE JCT WITH A
WN604408 | 17/12/2008 | 1 | Slight | 0 | 0 | 0 | 0 | Dark | No turn | Wet/Damp | 1640 | D7854, CASWELL ROAD, NORTHAMPTON. AT THE RAB WITH TH
WN029909 | 07/01/2009 | 1 | Slight | 0 | 0 | 0 | 0 | Dark | No turn | Wet/Damp | 1739 | D7854, CASWELL ROAD, NORTHAMPTON. AT THE RAB WITH TH
WN075909 | 07/02/2009 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Snow | 0730 | A45, MEREWAY, NORTHAMPTON. AT THE A45 QUEEN ELEANOR RAB.
TN137709 | 02/04/2009 | 2 | Slight | 0 | 0 | 0 | 2 | Light | No turn | Dry | 1050 | A45, W/B, NORTHAMPTON. 100M E OF THE A45 QUEEN ELEANO
TN280309 | 05/07/2009 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Dry | 1000 | A45, E/B, EXIT SLIP, NORTHAMPTON. AT THE RAB WITH THE A45
TN362609 | 01/09/2009 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Wet/Damp | 1717 | A45, MEREWAY, NORTHAMPTON 58M W OF THE A45 QUEE
WN368409 | 03/09/2009 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Dry | 0745 | D8346, HARGINGSTONE LANE, NORTHAMPTON. AT THE A45
WN465809 | 08/11/2009 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Wet/Damp | 1142 | A45, QUEEN ELEANOR RAB, NORTHAMPTON. AT THE JCT FOR TH
TN519409 | 07/12/2009 | 1 | Serious | 0 | 1 | 0 | 0 | Dark | No turn | Wet/Damp | 0222 | A45, E/B, ENTRY SLIP, NORTHAMPTON. AT THE QUEEN ELEANO
WN003110 | 03/01/2010 | 0 | 0 | 0 | 0 | Light | No turn | Dry | Light | No turn | 1330 | A45, W/B, EXIT SLIP. AT THE QUEEN ELEANOR RAB.
WN424710 | 01/06/2010 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Wet/Damp | 1705 | A45, W/B EXIT SLIP ROAD, NORTHAMPTON. AT THE A508, QUEE
TN242510 | 17/06/2010 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Dry | 0140 | A508, QUEEN ELEANOR RAB, NORTHAMPTON. AT THE RAB WIT
WN311909 | 29/07/2010 | 2 | Slight | 0 | 0 | 1 | 0 | Light | No turn | Dry | 1530 | A45, W/B, EXIT SLIP ROAD, NORTHAMPTON. AT THE A508, QUEE
WN305710 | 30/07/2010 | 1 | Slight | 0 | 0 | 0 | 0 | Dark | Left | Dry | 0305 | A508, QUEEN ELEANOR RAB, NORTHAMPTON. AT THE RAB WIT
WN459210 | 11/08/2010 | 1 | Slight | 0 | 0 | 0 | 0 | Dark | No turn | Dry | 1505 | A508, LONDON ROAD, NORTHAMPTON. AT THE QUEEN ELEANO
WN392710 | 26/09/2010 | 1 | Slight | 1 | 0 | 0 | 0 | Light | Left | Dry | 0840 | B526, NEWPORT PAGNELL ROAD, NORTHAMPTON. AT THE JC
WN393110 | 01/10/2010 | 1 | Slight | 0 | 1 | 1 | 0 | Light | No turn | Wet/Damp | 0827 | B526, NEWPORT PAGNELL ROAD, WOOTTON. AT THE RAB WITH TH
TN466100 | 16/11/2010 | 1 | Slight | 0 | 0 | 0 | 0 | Dark | No turn | Wet/Damp | 2106 | A508, QUEEN ELEANOR RAB, NORTHAMPTON. AT THE JCT WITH TH
WN501110 | 11/12/2010 | 1 | Serious | 0 | 0 | 0 | 0 | Light | No turn | Wet/Damp | 1130 | A508, QUEEN ELEANOR RAB, NORTHAMPTON. AT THE JC WIT
WN105111 | 21/03/2011 | 2 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Dry | 1047 | A45, MEREWAY, NORTHAMPTON. 30M E OF THE A45, QUEE
WN141711 | 08/04/2011 | 1 | Serious | 0 | 0 | 0 | 0 | Light | No turn | Dry | 1600 | A45, E/B, ENTRY SLIP, NORTHAMPTON. AT THE JCT WITH THE A45
WN354211 | 12/04/2011 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Dry | 1800 | U8343, PAVILION DRIVE, NORTHAMPTON. AT THE ENTRY SLIP FO
WN169911 | 16/05/2011 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Dry | 1545 | A45, W/B, EXIT SLIP, NORTHAMPTON. AT THE A45 QUEEN ELEANO
WN207711 | 16/06/2011 | 1 | Slight | 1 | 0 | 0 | 0 | Light | Right | Dry | 1600 | U8057, CASWELL ROAD, NORTHAMPTON. AT THE ENTRANCE TO THE A50
WN228411 | 01/07/2011 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Dry | 0615 | U8372, RHOSILI ROAD, NORTHAMPTON. AT THE RAB WITH TH
WN253111 | 05/07/2011 | 1 | Slight | 0 | 0 | 0 | 0 | Light | Right | Wet/Damp | 1420 | B526, NEWPORT PAGNELL ROAD, NORTHAMPTON. AT THE JC
WN336711 | 15/09/2011 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Dry | 1410 | A508, LONDON ROAD, NORTHAMPTON. AT THE QUEEN ELEANO
WN357811 | 17/10/2011 | 2 | Slight | 0 | 0 | 0 | 0 | Light | Right | Dry | 1045 | U8054, CASWELL ROAD, NORTHAMPTON. AT THE ENTRANCE TO THE A50
WN376211 | 30/10/2011 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Dry | 1510 | B526 NEWPORT PAGNELL ROAD AT THE ROUNDABOUT WIT
WN383411 | 04/11/2011 | 1 | Slight | 0 | 0 | 0 | 0 | Dark | No turn | Wet/Damp | 1715 | U8054, CASWELL ROAD, NORTHAMPTON. AT THE RAB WITH TH
WN409611 | 18/11/2011 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Dry | 1605 | A508 LONDON ROAD AT THE ROUNDABOUT WITH A5076 MEREWAY
WN459011 | 23/12/2011 | 1 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Wet/Damp | 1155 | A5076 MEREWAY 80M W OF A45/A508 QUEEN ELEANOR RAB
WN466311 | 30/12/2011 | 2 | Slight | 0 | 0 | 0 | 0 | Light | No turn | Wet/Damp | 1500 | A5076 MEREWAY, 90M W OF THE A45 QUEEN ELEANOR RAB
<table>
<thead>
<tr>
<th>Police Ref.</th>
<th>Date</th>
<th>Cas.</th>
<th>Sev.</th>
<th>C cycs</th>
<th>Peds</th>
<th>Ch</th>
<th>OAPs</th>
<th>Vis.</th>
<th>Manv.</th>
<th>Road Cond.</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>WN017012</td>
<td>19/01/2012</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Dark</td>
<td>No turn</td>
<td>Wet/Damp</td>
<td>0710</td>
<td>A508, QUEEN ELEANOR RAB, NORTHAMPTON. AT THE RAB WITH TH</td>
</tr>
<tr>
<td>WN025312</td>
<td>27/01/2012</td>
<td>2</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>Dark</td>
<td>No turn</td>
<td>Dry</td>
<td>1800</td>
<td>A508, QUEEN ELEANOR RAB, WOOTTON. AT THE RAB WITH TH</td>
</tr>
<tr>
<td>WN110612</td>
<td>06/02/2012</td>
<td>1</td>
<td>Serious</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>1415</td>
<td>U8100, EAGLE DRIVE, NORTHAMPTON. AT THE ENTRANCE TO TH</td>
</tr>
<tr>
<td>WN111212</td>
<td>01/05/2012</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>1800</td>
<td>B526, NEWPORT PAGNELL ROAD, NORTHAMPTON. 44M SE OF TH</td>
</tr>
<tr>
<td>WN197912</td>
<td>12/08/2012</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>1028</td>
<td>B526 NEWPORT PAGNELL RD 33M EAST OFTURNERS COUR</td>
</tr>
<tr>
<td>WN231512</td>
<td>19/09/2012</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Left Dry</td>
<td>0855</td>
<td>QUEEN ELEANOR RAB OF A508 LONDON RD AND B526 NEWPOR</td>
</tr>
<tr>
<td>WN243312</td>
<td>01/10/2012</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>0900</td>
<td>A5076 MEREWAY APPROACH 80M FROM A508 QUEEN ELEANO</td>
</tr>
<tr>
<td>WN248912</td>
<td>07/10/2012</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>1425</td>
<td>QUEEN ELEANOR RAB OF A508 AND A5076 MEREWAY</td>
</tr>
<tr>
<td>WN292912</td>
<td>17/11/2012</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Dark</td>
<td>No turn</td>
<td>Dry</td>
<td>2340</td>
<td>U8171 THE WARREN 60M S OF JUNC WITH U8469 WINDRUSH RD</td>
</tr>
<tr>
<td>WN307612</td>
<td>02/12/2012</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>1245</td>
<td>QUEEN ELEANOR RAB OF A508 LONDON RD AND B526 NEWPOR</td>
</tr>
<tr>
<td>WN315512</td>
<td>10/12/2012</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>1355</td>
<td>B526 NEWPORT PAGNELL ROAD AT THE JUNCTION WITH U817</td>
</tr>
<tr>
<td>WN306813</td>
<td>19/02/2013</td>
<td>2</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Left Dry</td>
<td>1015</td>
<td>A45 EASTBOUND 50M EAST OF EXIT SLIP FOR BRACKMILLS</td>
</tr>
<tr>
<td>WN062513</td>
<td>17/03/2013</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>1650</td>
<td>A508 QUEEN ELEANOR ROUNDABOUT AT THE JUNCTION WIT</td>
</tr>
<tr>
<td>WN083713</td>
<td>18/04/2013</td>
<td>1</td>
<td>Serious</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>0800</td>
<td>RAB OF U8343 PAVILION DR AND U8372 RHOSILI R</td>
</tr>
<tr>
<td>WN111513</td>
<td>25/05/2013</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>1000</td>
<td>B526 NEWPORT PAGNELL RD ON PED XING 30M E OF JUNC WIT</td>
</tr>
<tr>
<td>WN140913</td>
<td>29/05/2013</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>2015</td>
<td>U8171 HARDINGSTONE LANE 35M OF A508 QUEEN ELEANOR RA</td>
</tr>
<tr>
<td>WN116313</td>
<td>03/06/2013</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>2015</td>
<td>B526, NEWPORT PAGNELL ROAD, NORTHAMPTON. AT THE JC</td>
</tr>
<tr>
<td>WN116613</td>
<td>03/06/2013</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>0948</td>
<td>B526 NEWPORT PAGNELL ROAD 14M FROM B526 ROUNDABOU</td>
</tr>
<tr>
<td>WN149013</td>
<td>08/07/2013</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>1850</td>
<td>QUEEN ELEANOR ROUNDABOUT AT MEREWAY A508</td>
</tr>
<tr>
<td>WN162313</td>
<td>25/07/2013</td>
<td>2</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>Right Dry</td>
<td>Dry</td>
<td>1936</td>
<td>A508 LONDON ROAD AT THE JUNCTION WITH U8341 PARKFIEL</td>
</tr>
<tr>
<td>WN183213</td>
<td>17/08/2013</td>
<td>3</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Dark</td>
<td>No turn</td>
<td>Dry</td>
<td>0005</td>
<td>A45 E/B 400M FROM A508 LONDON RD AT END OF SLIP RD</td>
</tr>
<tr>
<td>WN203113</td>
<td>03/09/2013</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Dry</td>
<td>0900</td>
<td>ON R/ABOUT A508 BETWEEN MEREWAY &amp; HARDINGSTONE LANE</td>
</tr>
<tr>
<td>WN209813</td>
<td>18/09/2013</td>
<td>1</td>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Light</td>
<td>No turn</td>
<td>Wet/Damp</td>
<td>0845</td>
<td>A508 JUNC WITH QUEEN ELEANOR R/ABOUT, NORTHAMPTON</td>
</tr>
</tbody>
</table>

Column Totals 67 4 4 3 4

No. of Accidents 4 4 3 3

Total number of accidents listed: 57
Appendix D – Stage One Road Safety Audits
Brackmills Interchange (A45), Northampton

Road Safety Audit Stage 1

on behalf of WSP / Parsons Brinckerhoff

TMS reference no: 12103
Brackmills Interchange (A45), Northampton

Road Safety Audit Stage 1

1. Introduction

1.1 This report describes a Stage 1 Road Safety Audit carried out on proposed improvements to the A45 Brackmills Interchange, Northampton, on behalf of WSP / Parsons Brinckerhoff. The audit was carried out on 9th April 2015 in the offices of TMS Consultancy.

1.2 The audit team members were as follows:

Darren Newbold – MSc, BSc (Hons), MCIHT, MSoRSA
HA Approved Certificate of Competency
Senior Engineer, TMS Consultancy

Harminder Aulak - BSc (Hons), IEng, FIHE, RegRSA (IHE)
HA Approved Certificate of Competency
Technical Director – Engineering Services, TMS Consultancy

Audit Team Observer

Amy Sutherland – BSc (Hons)
Graduate Road Safety Engineer, TMS Consultancy

1.3 The audit comprised an examination of the drawing and other information relating to the scheme supplied by the design office, which is listed in Appendix A. The site was visited by the Audit Team on 8th April 2015 at 12.25pm. The weather was fine and dry. Traffic flows were moderate to heavy. Pedestrian and cycle flows were light.

1.4 The terms of reference of the audit are as described in HD 19/03. The team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the design to any other criteria.

1.5 All of the problems described in this report are considered by the audit team to require action in order to improve the safety of the scheme and minimise accident occurrence. The locations of specific problems are referenced on the plan in Appendix B.
1.6 The scheme consists of improvements to the A45 Brackmills Interchange, Northampton. Works includes localised widening of the Caswell Road and north east bound A45 off-slip road approaches to the interchange as well as widening of the circulatory carriageway in the north eastern quadrant.
2. **Items resulting from this Stage 1 Audit**

2.1 **PROBLEM**

Location – A45 northeast bound off slip road

Summary: Potential hazard to occupants of errant vehicles

A section of vehicle restraint system (VRS) is provided within the nearside verge towards the top of the A45 northeast bound off slip road to protect against errant vehicles descending the embankment. However, the widening of the slip road will mean that a longer length of the slip road will now be closer to the top of the embankment than before, increasing the risk of errant vehicles descending the embankment further south along the slip road. Serious injury may result to vehicle occupants if a vehicle should roll and overturn down the embankment slope.

**RECOMMENDATION**

A risk assessment should be undertaken to assess whether VRS is required to protect errant vehicles from leaving the carriageway to the nearside and descending the embankment.

*In addition, there are a number of signs and lighting columns that will need to be relocated on the nearside verge to ensure that they have sufficient road edge clearance. If they are to be located behind new safety barrier, it should be ensured they are outside of the working width of such barrier.*
2.2 PROBLEM

Location – A45 northeast bound off slip road

Summary: Potential late braking and shunt type vehicle collisions

Due to existing vegetation within the nearside verge, the widening of the north east bound slip road may mean that the nearside traffic signal head is obscured to approaching drivers. Late braking and shunt type vehicle collisions may occur if approaching drivers do not see the traffic signal head until late.

RECOMMENDATION

It should be ensured that adequate forward visibility is provided to the traffic signal head, which may require some cutting back or removal of vegetation.

2.3 PROBLEM

Location – Brackmills Interchange circulatory carriageway; north western quadrant

Summary: Potential lane changing, sideswipe and shunt type vehicle collisions

Three approach lanes at the stop line of the A45 northeast bound off slip road and two lanes provided at the stop line of the south western over bridge section of the circulatory carriageway. There is a lack of lane guidance between the stop lines and where the four lanes open up past the exit for Eagle Drive. The lack of lane guidance may result in late lane changing, sideswipe and shunt type vehicle collisions.
RECOMMENDATION

Additional lane marking guidance should be provided between the stop lines and the four lane section of the circulatory carriageway.

2.4 PROBLEM

Location – Eagle Drive; splitter island

Summary: Potential hazard to occupants of errant vehicles

There are a number of items of street furniture (direction signs and lighting column) located close to the nosing of the splitter island on Eagle Drive that will be closer to the edge of carriageway as a result of the localised circulatory carriageway widening. Due to the widening, these items of street furniture may be more vulnerable to vehicle strikes in the event that a vehicle loses control whilst circulating the junction. Injury may result to the occupants of the vehicles.

RECOMMENDATION

The items of street furniture should be suitably relocated away from the edge of carriageway.
2.5 PROBLEM

Location – Eagle Drive; entry onto circulatory carriageway

Summary: Potential pull-out and circulatory type vehicle collisions

The widening of the circulatory carriageway in the northern quadrant may make the entry of drivers on Eagle Drive onto the circulatory more onerous than at present, as they will now potentially have four lanes of traffic to negotiate (especially if the intend to exit the right turn lane for A45 south east). Pull-out and circulatory type vehicle collisions may result.

RECOMMENDATION

The feasibility of increasing the inter-green times between the two sets of traffic signals prior to Eagle Drive should be assessed, which would give drivers on Eagle Drive a longer period of time to pull out onto the circulatory carriageway.

2.6 PROBLEM

Location – Brackmills Interchange; splitter island at A45 north east bound on slip

Summary: Potential hazard to occupants of errant vehicles

There is a direction signs and lighting column located close to the nosing of the splitter island on separating the circulatory carriageway and the A45 north east bound on slip that will be closer to the edge of carriageway as a result of the localised circulatory carriageway widening. Due to the widening, these items of street furniture may be more vulnerable to vehicle strikes in the event that a vehicle loses control whilst circulating the junction. Injury may result to the occupants of the vehicles.
RECOMMENDATION

The items of street furniture should be suitably relocated away from the edge of carriageway.

2.7 PROBLEM

Location – Brackmills Interchange circulatory carriageway; southern quadrant

Summary: Potential vehicle collisions

A new traffic signal will be introduced at the single lane section of the circulatory carriageway on the southern quadrant of the junction (between the entry and exits to Caswell Road). The introduction of the traffic signal at this location may result in queuing which if backs up significantly may end up blocking the exit to Caswell Road. Shunt or side impact type vehicle collisions my result.

In addition, it may not be prudent to provide a traffic signal stop line adjacent to a section of hatching, as drivers may use this as a pseudo lane to gain an advantage at the signals.

RECOMMENDATION

The feasibility of providing a second lane on approach to this traffic signal should be assessed based on anticipated queue lengths.

If a second lane is not to be provided, it may be prudent to replace the hatching with a physical kerb line.
2.8 PROBLEM

Location – Caswell Road

Summary: Potential failure to stop, lane changing and sideswipe type collisions

There is a large advanced direction sign in the nearside verge on Caswell Road on the approach to the Brackmills Interchange, which is partially obscured by vegetation. The sign will have to be relocated further into the verge to accommodate the carriageway widening, which will further obscure the sign. If drivers are unable to see the sign, the lack of information may mean that drivers do not appreciate the junction layout or destinations when they reach the junction. This may result in potential failure to stop, lane changing and sideswipe type collisions.

RECOMMENDATION

The advanced direction sign should be relocated into the central reserve where they will be greater forward visibility for approaching drivers.
2.9 PROBLEM

Location – Caswell Road approach to the Brackmills Interchange

Summary: Potential hazard to occupants of errant vehicles

At present there is fairly dense vegetation within the nearside verge on Caswell Road on the approach to the Brackmills Interchange. It was noted on site that behind the vegetation there is a steep embankment, which may become exposed if vegetation is cleared to accommodate the carriageway widening. If the embankment does become exposed and its proximity to the carriageway reduced, there may be a risk of an errant vehicle leaving the carriageway to the nearside and descending the embankment. Serious injury may result to vehicle occupants if a vehicle should roll and overturn down the embankment slope.

RECOMMENDATION

The clearance of vegetation should be clarified at detailed design stage and a suitable risk assessment undertaken to ascertain if a vehicle restraint system will be required to protect the embankment.

2.10 PROBLEM

Location – Caswell Road approach to Brackmills Interchange

Summary: Potential late braking and shunt type vehicle collisions

Due to existing vegetation within the nearside verge, the widening of the Caswell Road approach may mean that the nearside traffic signal head is obscured to approaching drivers. Late braking and shunt type vehicle collisions may occur if approaching drivers do not see the traffic signal head until late.

RECOMMENDATION

It should be ensured that adequate forward visibility is provided to the traffic signal head, which may require some cutting back or removal of vegetation.
2.11 PROBLEM

General – Traffic signal heads

Summary: Potential failure to stop and shunt type vehicle collisions

Where approaches to the traffic signal stop lines is to be increased to three lanes around the Brackmills Interchange, large vehicles in the outer lanes may mask the traffic signal heads to drivers of smaller vehicles in the middle lane. Failure to see the traffic signal heads may result in failure to stop, late braking or shunt type vehicle collisions.

RECOMMENDATION

Duplicate high mounted primary traffic signal heads should be provided where there are three (or more) approach lanes.

2.12 PROBLEM

General – Markings and signage

Summary: Potential lane changing and sideswipe type vehicle collisions

At a junction where there are multiple circulatory carriageway lanes and approach lanes to traffic signals, signage and road markings are critical to inform drivers which lane is correct for their intended exits and destinations. A lack of good and concise information may result in potential lane changing and sideswipe type vehicle collisions.

RECOMMENDATION

At detailed design stage, a signage schedule should be provided for the Brackmills Interchange. Signs should be clear and concise and consistent with the carriageway lanes provided. It may also be prudent to provide carriageway lane destination markings. New signage should be provided on passively safe posts unless otherwise protected.
3. **Audit Team Statement**

I certify that the terms of reference of the audit are as described in HD 19/03.

**Audit Team Leader**

Darren Newbold – MSc, BSc (Hons), MCIHT, MSoRSA  
HA Approved Certificate of Competency  
Senior Engineer, TMS Consultancy

Signed  ...........................................................................

Date  .............................................................................

**Audit Team Member**

Harminder Aulak - BSc (Hons), IEng, FIHE, RegRSA (IHE)  
HA Approved Certificate of Competency  
Technical Director – Engineering Services, TMS Consultancy

**Audit Team Observer**

Amy Sutherland – BSc (Hons)  
Graduate Road Safety Engineer, TMS Consultancy

**TMS Consultancy**

Unit 1b, Sovereign Court 2,  
University of Warwick Science Park  
Sir William Lyons Road  
Coventry  
CV4 7EZ

📞 + 44 (0)24 7669 0900  
/msg + 44 (0)24 7669 0274  
✉️ info@tmsconsultancy.co.uk  
✨ www.tmsconsultancy.co.uk
Appendix A

List of Drawing Examined:
- Drawing No. SK10

Other Information Provided:
- Road Safety Audit Brief
- Accident Data
- Traffic Flow Data
Appendix B

Please refer to the following page for a plan illustrating the locations of the problems identified as part of this audit (location numbers refer to paragraph numbers in the report).

The location of the scheme is shown below
1 INTRODUCTION

1.1 This note is the Designer’s Response to the Road Safety Audit Stage 1 for Brackmills Interchange.

1.2 The proposed improvement for Brackmills Interchange is an indicative layout primarily showing the realignment of kerbs, road markings and signal controlled junctions. This indicative layout is to support the Outline Planning Application for Hardingstone. The next stage of project, subjected to planning permission, is to undertake a detailed design of the improvement.

1.3 The following section responses to each item raised in the Stage 1 Road Safety Audit.

2 RSA1 ITEMS

2.1 A45 Northeast bound Off Slip

2.1.1 Widening of the northbound off slip road will realign the nearside kerb, verge and require some localised embankment re-shaping. The existing street furniture and Vehicle Restraint System will be relocated and updated.

2.1.2 These will be dealt with in the detailed design stage.

2.2 A45 Northeast bound Off Slip

2.2.1 Cutting back vegetation may be necessary to maintain reasonable forward visibility and a clear view to a primary signal.

2.2.2 This will be identified in the detailed design stage.

2.3 Circulatory Carriageway – Northwest Quadrant

2.3.1 Additional lane markings will be included in the detailed design. This will be supplemented by road and destination markings.

2.3.2 These will be dealt with in the detailed design stage.
2.4 Eagle Drive – Splitter Island

2.4.1 Existing street furniture will be identified in the topographical survey. There will be opportunity to consolidate these existing signs and reposition them suitably. The existing lighting column can also be repositioned.

2.4.2 These will be dealt with in the detailed design stage.

2.5 Eagle Drive Entry

2.5.1 The observed traffic demand at Eagle Drive suggests that this approach has relatively low traffic flow in peak periods. It is acknowledged that this give way arrangement allows vehicles to cross up to 4 lanes on the circulatory carriageway. The junction capacity analysis has demonstrated that Eagle Drive will be operating well within capacity. Lengthening the inter-green period at the previous intersection will, nevertheless, improve the give way ability. This will be investigated and adjusted, if necessary, at the detailed design stage.

2.6 A45 Northeast bound On Slip

2.6.1 Existing street furniture at the splitter island will be identified and relocated suitably at the detailed design stage.

2.7 Circulatory Carriageway – Southern Quadrant

2.7.1 The proposed traffic signal with Caswell Road is intended to operate in PM peak only. The junction capacity analysis has demonstrated the part-time arrangement is adequate.

2.7.2 The circulatory carriageway is sufficiently wide to provide 2 traffic lanes. However, if there are two lanes of traffic exiting the roundabout, the current arrangement on the A45 southbound on-slip would result in an “unsafe” layout. Hatching on the circulatory carriageway is to accommodate a break-down event. Providing a kerbed section would also be identified in the RSA as circulatory traffic would not be able to go round broken down vehicle.

2.8 Caswell Road

2.8.1 Location of the Advanced Directional Sign along Caswell Road will be reviewed at detailed design stage. It is likely that there will be destination markings as well as a revised sign to reflect the new layout. Cutting back vegetation will be necessary.

2.9 Caswell Road Approach

2.9.1 The realignment of Caswell Road approach will affect the nearside kerb, verge and require some localised re-shaping of the embankment. The detailed design will be able to verify whether safety barrier is needed.

2.10 Caswell Road Approach

2.10.1 Appropriate forward visibility and a clear view to a primary traffic signal will be maintained. This may require cutting back vegetation.

2.10.2 This will be identified at the detailed design stage.
2.11 Traffic Signal Heads

2.11.1 Existing provision of the traffic signal heads will be reviewed at the detailed design stage. The proposed signal improvement on Caswell Road is to increase the number of traffic lanes on the approach. It may be suitable to provide additional high mounted signal head at this location.

2.12 Markings and Signage

2.12.1 Signs and road markings drawing(s) will be produced at the detailed design stage. This will be accompanied with the sign schedule in accordance with TSRGD.
Queen Eleanor Interchange (A45), Northampton

Road Safety Audit Stage 1

on behalf of WSP / Parsons Brinckerhoff

TMS reference no: 12104
Queen Eleanor Interchange (A45), Northampton

Road Safety Audit Stage 1

1. Introduction

1.1 This report describes a Stage 1 Road Safety Audit carried out on proposed improvements to the A45 Queen Eleanor Interchange, Northampton, on behalf of WSP / Parsons Brinckerhoff. The audit was carried out on 9th April 2015 in the offices of TMS Consultancy.

1.2 The audit team members were as follows:-

Darren Newbold – MSc, BSc (Hons), MCIHT, MSoRSA
HA Approved Certificate of Competency
Senior Engineer, TMS Consultancy

Harminder Aulak - BSc (Hons), IEng, FIHE, RegRSA (IHE)
HA Approved Certificate of Competency
Technical Director – Engineering Services, TMS Consultancy

Audit Team Observer

Amy Sutherland – BSc (Hons)
Graduate Road Safety Engineer, TMS Consultancy

1.3 The audit comprised an examination of the drawing and other information relating to the scheme supplied by the design office, which is listed in Appendix A. The site was visited by the Audit Team on 8th April 2015 at 10.40am. The weather was fine and dry. Traffic flows were moderate to heavy. Pedestrian and cycle flows were light.

1.4 The terms of reference of the audit are as described in HD 19/03. The team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the design to any other criteria.

1.5 All of the problems described in this report are considered by the audit team to require action in order to improve the safety of the scheme and minimise accident occurrence. The locations of specific problems are referenced on the plan in Appendix B.
1.6 The scheme consists of improvements to the A45 Queen Eleanor Interchange, Northampton. Works includes localised widening of the A5076, London Road and Newport Pagnell Road approaches to the interchange as well as widening of the circulatory carriageway in the northern and southern quadrants.
2. **Items resulting from this Stage 1 Audit**

2.1 **PROBLEM**

Location – London Road

Summary: Potential late lane changing and sideswipe type collisions

There is a large advanced lane destination direction sign in the nearside verge on London Road on the approach to the Queen Eleanor Interchange. The sign will have to be relocated further into the verge to accommodate the carriageway widening, which will further obscure the sign. If drivers are unable to see the sign, the lack of information may mean that drivers do not appreciate the junction layout or destinations when they reach the junction. This may result in potential failure to stop, lane changing and sideswipe type collisions.

**RECOMMENDATION**

It should be ensured that the sign is sited in an appropriate location where adequate forward visibility to the sign can be provided for approaching drivers.
2.2 PROBLEM

Location – Queen Eleanor Interchange; circulatory carriageway, northern quadrant

Summary: Potential hazards to vehicles

There is a large metal service cover that is likely to be within the tracking of vehicles entering into the right turn lane on the northern quadrant of the circulatory carriageway. The cover may be a slip hazard to vehicles, particularly two wheeled vehicles, making the turning manoeuvre into this lane.

In addition, the taper into the right turn lane is very close to the end of the parapet fence to the pedestrian subway. Although difficult to tell at this stage, the end of the parapet fence may be vulnerable to being struck by vehicles entering the right turn lane.

RECOMMENDATION

The metal service cover should be relocated out of the carriageway if possible. Alternatively, a surface infill type cover should be provided that has similar skid resistance qualities to the surrounding carriageway.

At detailed design stage the details of the parapet fence in conjunction with the right turn lane taper should be clarified.
2.3 PROBLEM

Location – Radius between Hardingstone Lane and Newport Pagnell Road

Summary: Potential hazard to occupants of errant vehicles

There is a lighting column (No. 16) on the grass verge area on the radius between Hardingstone Lane and Newport Pagnell Road. Due to the localised widening, the lighting column will be closer to the edge of carriageway and may be more vulnerable to vehicle strikes in the event that a vehicle loses control whilst circulating the junction. Injury may result to the occupants of the vehicles.

RECOMMENDATION

The lighting column should be relocated away from the edge of carriageway.

2.4 PROBLEM

Location – Newport Pagnell Road approach to Queen Eleanor Interchange

Summary: Potential late braking and shunt type vehicle collisions

Due to existing vegetation within the nearside verge, the widening of the Newport Pagnell Road approach may mean that the nearside traffic signal head is obscured to approaching drivers. Late braking and shunt type vehicle collisions may occur if approaching drivers do not see the traffic signal head until late.
RECOMMENDATION

It should be ensured that adequate forward visibility is provided to the traffic signal head, which may require some cutting back or removal of vegetation.

2.5 PROBLEM

Location – Newport Pagnell Road

Summary: Potential hazard to pedestrians

There is an existing informal pedestrian crossing on Newport Pagnell Road. The existing footway on the west side already has a steep gradient down to the crossing point; this will be exacerbated when the carriageway is widened. The steep gradient may be difficult for those with visual and mobility impairments or those with wheelchairs and pushchairs to negotiate.

RECOMMENDATION

At detailed design stage the footway should be amended to provide a shallower gradient (1:20 recommended) down to the crossing point.

It may also be prudent to relocate the bus stop at this location.
2.6 PROBLEM

Location – A5076

Summary: Potential hazard to occupants of errant vehicles

There are two trees within the central reserve on the A5076 which are likely to be located closer to the edge of carriageway as part of the widening works. The trees may be more vulnerable to vehicle strikes in the event that a vehicle loses control to the offside. Injury may result to the occupants of the vehicles.

RECOMMENDATION

The trees should be removed.

2.7 PROBLEM

Location – A5076

Summary: Potential vehicle to pedestrian collisions

Inter-visibility between pedestrians at the crossing point on the north side of the A5076 and eastbound drivers approaching Queen Eleanor Interchange is at present restricted by a row of trees in the nearside verge. Although an existing issue, the widening of the A5076 approach is likely to increase vehicle speeds and weaving manoeuvres, making inter-visibility between pedestrians and drivers more critical. Poor inter-visibility may lead to vehicle to pedestrian collisions.
RECOMMENDATION

It should be ensured that adequate inter-visibility is provided to and from the crossing point which may require some removal of trees / vegetation.

2.8 PROBLEM

Location – A5076

Summary: Potential vehicle to pedestrian collisions

There are currently two informal crossing points across the A5076 via the central reserve that are located very close together. Pedestrians crossing the eastbound running lane will now have to cross three lanes rather than the existing two, which may be more onerous given that approach speeds may increase as well as vehicle weaving manoeuvres. Vehicle to pedestrian collisions may result. This problem will be exacerbated for pedestrians with visual or mobility impairments or the elderly.
RECOMMENDATION

The two crossing points should be rationalised into one and located at a point where pedestrians only have to negotiate crossing two traffic lanes rather than three.

In addition, the existing crossings do not feature dropped kerbs or tactile paving. As part of any improvement to the footways / crossings, dropped kerbs and tactile paving should be provided.

2.9 PROBLEM

General – Traffic signal heads

Summary: Potential failure to stop and shunt type vehicle collisions

Where approaches to the traffic signal stop lines is to be increased to three or more lanes around the Queen Eleanor Interchange, large vehicles in the outer lanes may mask the traffic signal heads to drivers of smaller vehicles in the middle lane(s). Failure to see the traffic signal heads may result in failure to stop, late braking or shunt type vehicle collisions.

RECOMMENDATION

Duplicate high mounted primary traffic signal heads should be provided where there are three (or more) approach lanes.

2.10 PROBLEM

General – Markings and signage

Summary: Potential lane changing and sideswipe type vehicle collisions

At a junction where there are multiple circulatory carriageway lanes and approach lanes to traffic signals, signage and road markings are critical to inform drivers which lane is correct for their intended exits and destinations. A lack of good and concise information may result in potential lane changing and sideswipe type vehicle collisions.
RECOMMENDATION

At detailed design stage, a signage schedule should be provided for the Queen Eleanor Interchange. Signs should be clear and concise and consistent with the carriageway lanes provided. Gantry signage may be required for the wide multi-lane sections of the circulatory carriageway. It may also be prudent to provide carriageway lane destination markings. New signage should be provided on passively safe posts unless otherwise protected.

2.11 PROBLEM

General –Utility Service Covers

Summary: Potential hazard to vehicles

There is a large number of utility service covers around the Queen Eleanor Interchange that are currently within verge areas but are likely to be within the carriageway as part of the widening works. Where utility service covers are located within the carriageway, they may be a slip hazard to vehicles if they have a differential skidding resistance quality to the surrounding carriageway (metal covers generally). This may be a problem in particular to two wheeled vehicles. Service covers in the carriageway may also pose a maintenance access problem.

RECOMMENDATION

Where possible utility service covers should be relocated out of carriageway into verge areas. If not possible to relocate, it should be ensured that access chambers and covers are suitable for carriageway loading. Metal or polished service covers in likely vehicle tracking areas should be changed for surface infill type covers with a similar skid resistance quality to the surrounding carriageway.
2.12 PROBLEM

General – pedestrian crossings

Summary: Potential hazard to pedestrians

There are a number of pedestrian crossings around the Queen Eleanor Interchange that feature full height kerbs and or no tactile paving. Full height kerbs at crossing points may present a trip hazard to pedestrians and where flush kerbs are provided without tactile paving, visually impaired pedestrians may inadvertently step out into the carriageway risking being struck by passing vehicles.

RECOMMENDATION

As part of the works, the pedestrian crossing points should be upgraded to feature dropped kerbs and tactile paving in accordance with the DfT document ‘Guidance on the use of tactile paving surfaces’.
3. **Audit Team Statement**

I certify that the terms of reference of the audit are as described in HD 19/03.

**Audit Team Leader**

Darren Newbold – MSc, BSc (Hons), MCIHT, MSoRSA
HA Approved Certificate of Competency
Senior Engineer, TMS Consultancy

Signed ......................................................

Date ......................................................

**Audit Team Member**

Harminder Aulak - BSc (Hons), IEng, FIHE, RegRSA (IHE)
HA Approved Certificate of Competency
Technical Director – Engineering Services, TMS Consultancy

**Audit Team Observer**

Amy Sutherland – BSc (Hons)
Graduate Road Safety Engineer, TMS Consultancy

**TMS Consultancy**

Unit 1b, Sovereign Court 2,
University of Warwick Science Park
Sir William Lyons Road
Coventry
CV4 7EZ

📞 + 44 (0)24 7669 0900
✉️ + 44 (0)24 7669 0274
✉️ info@tmsconsultancy.co.uk
🌐 www.tmsconsultancy.co.uk
Appendix A

List of Drawing Examined:

- Drawing No. SK11

Other Information Provided:

- Road Safety Audit Brief
- Accident Data
- Traffic Flow Data
Appendix B

Please refer to the following page for a plan illustrating the locations of the problems identified as part of this audit (location numbers refer to paragraph numbers in the report).

The location of the scheme is shown below
1 \hspace{1cm} \textbf{INTRODUCTION} \\
1.1 This note is the Designer’s Response to the Road Safety Audit Stage 1 for Queen Eleanor Interchange. \\
1.2 The proposed improvement for Queen Eleanor Interchange is an indicative layout primarily showing the realignment of kerbs, road markings and signal controlled junctions. This indicative layout is to support the Outline Planning Application for Hardingstone. The next stage of project, subjected to planning permission, is to undertake a detailed design of the improvement. \\
1.3 The following section responses to each item raised in the Stage 1 Road Safety Audit. \\

2 \hspace{1cm} \textbf{RSA1 ITEMS} \\
2.1 London Road \\
2.1.1 The Advanced Directional Sign (ADS) located on the London Road approach is approximately 150m from the junction (existing give way line). The proposed modification to the nearside kerb would commence at around 130m from the junction. Position of the ADS would probably be acceptable but it is clear that the content of the sign will be reviewed and revised to reflect the proposed layout where appropriate. \\
2.1.2 Cutting back vegetation may be necessary to maintain a reasonable forward visibility. \\
2.1.3 These will be dealt with in the detailed design stage. \\
2.2 Circulatory Carriageway – northern quadrant \\
2.2.1 Widening of the circulatory carriageway would require repositioning of the offside kerb. The alignment would make best endeavour to avoid the existing manhole cover. A risk assessment will be undertaken to consider whether the existing parapet is adequate or it should be supplemented by a suitable Vehicle Restraining System. \\
2.2.2 These will be dealt with in the detailed design stage.
2.3 Radius between Hardingstone Lane and Newport Pagnell Road

2.3.1 Existing street furniture will be identified and relocated suitably at the detailed design stage.

2.4 Newport Pagnell Road Approach

2.4.1 Appropriate forward visibility and a clear view to primary traffic signal will be maintained. This may require cutting back vegetation.

2.4.2 This will be identified at the detailed design stage.

2.5 Newport Pagnell Road

2.5.1 The existing pedestrian footway may require re-grade. The existing bus stop may require relocation.

2.5.2 These will be dealt with at the detailed design stage.

2.6 A5076

2.6.1 Existing trees will be identified in the topographical survey. Their positions will be reviewed and risk assessment will be undertaken with the proposed layout. A suitable way forward will be agreed with the highway authority to ensure the safety of the road users and if necessary protect the tree. Removing the tree will be a last resort.

2.6.2 This will be dealt with at the detailed design stage.

2.7 A5076

2.7.1 Existing vegetation may require cutting back to provide suitable visibility at these informal crossing points.

2.7.2 This will be dealt with at the detailed design stage.

2.8 A5076

2.8.1 The existing informal crossings could be consolidated. However, this depends on how well these crossings are being used and by which groups of road users. It may be prudent to undertake some observations in order to establish the existing conditions before considering the best course of action to address these crossing points.

2.8.2 This will be dealt with at the detailed design stage.

2.9 Traffic Signal Heads

2.9.1 Existing provision of the traffic signal heads will be reviewed at the detailed design stage. The proposed improvement is to increase the number of traffic lanes on the eastern half of the junction. The intersection with Newport Pagnell Road already has high mast signal heads. Additional high mounted signal heads will be considered where it is practicable and reasonable to include.

2.10 Markings and Signage

2.10.1 Signs and road markings drawing(s) will be produced at the detailed design stage. This will be accompanied with the sign schedule in accordance with TSRGD.
2.11 Utility Service Covers

2.11.1 Statutory undertaker’s apparatus will be identified at the detailed design stage. The proposed layout would make best endeavour to avoid these equipment and if necessary relocate the access covers onto the verge.

2.12 Pedestrian Crossings

2.12.1 Existing conditions of the pedestrian crossings will be reviewed at the detailed design stage. It may be prudent to establish the usage of these crossings and consider whether the general tidying to include drop kerbs and tactile paving are beneficial.
Appendix E – Topographical Survey Results