

Audit No. RSA 2199

Stage 1 Road Safety Audit

Bermuda Park, Nuneaton

Getting West Nuneaton Moving: Bermuda Connection



*Working for
Warwickshire*

1.0 INTRODUCTION

- 1.1 This report results from a Stage 1 Road Safety Audit for a highways connectivity project to link Heath End Road to Griff Roundabout, via Bermuda Bridge. The report was requested by the WCC Transport Planning.
- 1.2 A site inspection was carried out on Tuesday, 09 June 2015, during which the weather was sunny and the road surface was dry.

2.0 AUDIT REFERENCE

- 2.1 **The audit was carried out in June 15** by L Williams BSc (Hons), Senior Engineer, Road Safety Unit, Warwickshire County Council . It was checked by J Edwards MIHE Eng Tech, Principal Engineer, Road Safety Unit, Warwickshire County Council.
- 2.2 The audit has been carried out in accordance with Warwickshire County Council's safety audit procedures. These procedures largely follow those recommended in document HD 19/03 – 'Road Safety Audit' of The Highways Agency's Design Manual for Roads and Bridges.
- 2.3 All recommendations and comments relate only to the drawings and documentation supporting the proposed. (listed in Section 3.0 below).
- 2.4 It is a requirement under Section 6 of Quality Procedure 321 'Road Safety Audits' that the Designers of the scheme prepare an appropriate Designers Response to each of the Recommendations raised in the Audit. This should be completed by 24 July 2015 . For any Recommendations that are not being adopted, the Designer should notify the Auditors and discuss these issues to try to achieve a mutually agreed compromise. If agreement between the Designer and Auditors cannot be reached, the Designer should then prepare an Exception report to the Head of Transport for Warwickshire for his agreement and signature. If an Exception report is required a narrative of the exchanges between the Designer and Auditors should be detailed and submitted alongside the Exception report to the Head of Transport and Highways for his information.

3.0 ITEMS EXAMINED IN THE AUDIT

3.1 Drawings:

- Drawings number – 513052-ATK-BCP-DR-105-02
– 513052-ATK-BCP-DR- 110-01
– 513052-ATK-BCP-DR- 110-05
– 513052-ATK-BCP-DR- 120-01
– 513052-ATK-BCP-DR- 125-01
– 513052-ATK-BCP-DR-130-01
– 513052-ATK-BCP-DR-130-02
– 513052-ATK-BCP-DR- 130-03

The above named drawings should all be attached to this report for reference but are not.

Current FOI request outstanding to have these drawings released

3.2 Documentation:

E-mail dated 5^h June 2015, confirming request for a Stage 1 Audit, and design brief with details of the proposals.

Previous Stage 1 feasibility Audit: RSA2198 – This means this not the first BUT the 2nd Road Safety Audit undertaken for this project despite the claims made by Cllr Butlin that no safety issues have been identified.

3.3 No departures from standards have been notified.

As demonstrated & noted in some of the BBAG drawings there are indeed 'departures from Standards' so this should the safety auditors should have been notified

4.0 SITE DESCRIPTION

- 4.1 The audit covers a proposed connection route heading from Griff roundabout on the A444 along St Georges way. This is currently a dead end, where there once was access to a bridge heading over the A444. It is intended to reconnect (factually incorrect as the bridge & road have technically never been connected to provide a through route therefore the term 'reconnected' should not be used as it is misleading) and upgrade this bridge. The route then continues through a residential area heading along Bermuda Road and finally connecting to Heath End Road. This terminates into a busy residential

area with already very high traffic volumes and evidence of long queues at peak times.

- 4.2 The purpose of this connection route is to provide additional access for a new railway station in Bermuda Park which is currently under construction.
- 4.3 There are proposals to upgrade some of the existing junctions along Heath End Road including the Bermuda Road and Tenlons Road intersections.
- 4.4 There are existing cycleway facilities along St Georges Way, which are planned to be linked with a shared route heading partly along Bermuda Road. **(Cycleway has been moved onto the footway!)**
- 4.5 St Georges Way, Bermuda Road, The Bridleway, Heath End Road and all other roads are subject to a 30mph speed limit by virtue of street lighting.

5.0 ITEMS ARISING FROM THE AUDIT

5.1 PROBLEM

Location – Bermuda Road/ The Bridleway

Summary – Increased traffic through a heavily residential area could lead to increased conflicts with pedestrians and vehicles at side roads

With sending potentially high volumes of traffic from the train station through the residential areas along Bermuda Road, this could increase the risk of conflicts. This includes for both pedestrians and vehicles, where collisions from residents emerging from the multitude of side roads could occur.

Recommendation

Ensure that all junctions are signed accordingly and consider improvements for visibility. **(This has not been done)**

Designers Response	
<p>Agreed. The junction layout has now been revised to provide a minimum 90m forward and junction visibility as per the requirements of DMRB. Refer to the following drawings for details:</p> <p>5131052-ATK-BCP-DR-110-01_F 5131052-ATK-BCP-DR-120-02_A 5131052-ATK-BCP-DR-120-03_A</p> <p>Appropriate signage will be proposed at the detailed design stage.</p>	
Date:	Approved:

Auditors Comments

The above problem & recommendation refers to the whole of Bermuda Road & The Bridleway yet the designers response only refers to the junction at the point where Bermuda Road & The Bridleway meet.

5.2 PROBLEM

Location – Proposed junction with Templar Drive, The Bridleway and new link road section to the bridge

Summary – Complex junction with two converging roads could confuse drivers to who has the right of way and increase the risk of collisions.

With this proposed design, with having two roads (Templar Drive/ The Bridleway) converging into the new bridge link road, this could lead to conflicts. For drivers approaching this junction from either side road, there is no clear indication to who has the right of way. There is also an access road and turning point which branches off for property number 2 along the Bridleway which could cause further conflicts.

Recommendation

An alternative junction layout should be considered or give way lines introduced to allow one of the side roads priority over the other.

Designers Response
<p>Junction give way marking is proposed where The Bridleway meets the proposed link road to the bridge in order to allow priority to those on the main route. The area within the housing development is a local residential street where a low speed is expected due to the geometry of the roads, narrow carriageway and on-street parking. The volume of traffic is also deemed low, and motorists are expected to give way to each other.</p> <p>This does not address the problem. It's the same as saying that because traffic is</p>

<p>deemed to be low volume it is acceptable to provide an unsafe junction. This is wholly unacceptable. In addition, no existing junction marking has been applied at Knights Road and Templar Drive at present. This is not currently a junction so there won't be any junction markings at present!</p>	
Date:	Approved:
Auditors Comments	
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5.3 PROBLEM

Location – Proposed junction with Templar Drive, The Bridleway and new link road section to the bridge

Summary – Visibility restricted for persons pulling out of side road could lead to collisions

At this location for persons pulling out from The Bridleway/ Templar Drive, visibility is restricted to the right. This is due to the proposed curvature of the new bridge link road. Drivers will have to look over their shoulder behind them to see approaching vehicles to the right. This could result in them not seeing them and collisions occurring.

The proposed curvature of the new bridge link road is below standard.

Recommendation

The junction should be relocated further away from the bend on the link road, such as Joining the Bridleway near Knights Road. Alternatively the curvature of the link road should be modified to improve visibility. Backs up the above comment that the proposed design is below standard & therefor unsafe

Designers Response

The close vicinity of the junction to the bridge and existing site constraints do not allow the junction to be moved further to the east. This means that they will be attempting to open the bridge with full knowledge that it is unsafe to do so as there is no way this can be changed due to existing constraints.

The proposed splitter island is nearly 7m, almost 1.5 times the length of an average car. This should be sufficient to lead the motorists to arrive perpendicularly at the give-way line. At this point, the junction visibility has been assessed which shows a minimum of 90m visibility to the right. Refer to: 5131052-ATK-BCP-DR-120-03_A.

This means any delivery vehicles will not be able to access The Bridleway/Templar Drive estate through the new access road as most delivery vehicles are over 7 metres long.

The layout will be re-assessed at the detailed design stage with a view to re-align the south side kerb in The Bridleway to allow for a wider right turning movement. Tracking analysis will also be carried out at this stage.

This confirms that nothing will be changed before consultation so WCC will be going to consultation with an unsafe design. If passed there is no redress for the community if they fail to re-assess at the detail design stage & plough ahead using the unsafe design.

Date:	Approved:
Auditors Comments	

5.4 PROBLEM

Location –The Bridleway proposed access road leading to property No. 2

Summary – The turning head layout is spread out, meaning vehicles having to reverse for a long distance, increasing the risk of collisions with vehicles turning into the side road

For this proposed layout for vehicles travelling along this access, they are presented with a dead end with no easy way to turn back around. Although there is an intended turning provision, this is a long distance away, meaning vehicles will have to reverse back for some way, and could be a difficult

manoeuvre. If other vehicles happen to be turning into the access at the same time, collisions could occur.

Recommendation

The road layout should be modified to allow for vehicles to be able to turn back around easily.

Designers Response	
Agreed. The length of the proposed service road has now been reduced to ease the turn back. Refer to: 5131052-ATK-BCP-DR-110-01_F.	
Date:	Approved:
Auditors Comments	

The above confirms that rather than address an unsafe situation & provide better turning provision for residents by modifying the new link WCC have chosen to just remove the provision all together.

This is yet another example of WCC putting cost before the needs of residents.

5.5 PROBLEM

Location –The Bridleway junction with Bermuda Road (Bermuda Village)

Summary – Visibility restricted by foliage and trees for vehicles exiting Bermuda Road could lead to collisions

With the new proposed layout there are plans to change the priority of this give way junction from Bermuda Road to the Bridleway. Vehicles turning onto the Bridleway from Bermuda Way could have restricted visibility due to existing foliage and trees. This could lead to collisions from vehicles pulling out into oncoming traffic.

Recommendation

Foliage and trees should be trimmed back to increase visibility.

Designers Response	
Agreed. This will be considered as part of the detailed design.	
Date:	Approved:
Auditors Comments	

In the Design Manual for Roads & Bridges it is stated that 90 metres of visibility should be standard. Trees & Shrubs will grow back obscuring the visibility and reducing it to below what is required. The trees & shrubs are also on private land.

5.6 PROBLEM

Location –Bermuda Road access to Harefield Lane shared cycleway

Summary – Proposed refuge crossing point and cycleway do not tie in with the existing route, meaning cyclists may use the footpath and collide with pedestrians.

With proposals for a new crossing point and shared cycleway, this does not tie into the existing one from Harefield Lane. Cyclists may emerge from this lane and use the crossing point to access the new shared route on the opposite side of the road. To do this they are likely to cut across the non-shared space footpath, where they may collide with pedestrians who may not be expecting them to be using the footpath.

Recommendation

The footpath on the south side of the refuge should be changed to shared space to join up the existing cycle route.

Designers Response	
Agreed. This will be considered as part of the detailed design.	
Date:	Approved:
Auditors Comments	

This confirms that nothing will be changed before consultation so WCC will be going to consultation with an unsafe design. If passed there is no redress for the community if they fail to re-assess at the detail design stage & go ahead using the unsafe design.

This is yet another example of WCC putting cost before the needs of residents.

5.7 PROBLEM

Location –Bermuda Road opposite Hazell Way

Summary – Termination point for cycle route leads cyclist into road at junction and onto wrong side of the road (if heading north) which could lead to collisions.

For cyclists travelling north, the cycle route terminates at a point opposite Hazell Way. They will also be on the wrong side of the road, where they must cut over to the other side. At this point with vehicles turning out of the side road, they may not see the cyclists merging back onto the carriageway and collide with them. There could also be the issue of cyclists having to cut across traffic flow to allow them back onto the left hand lane of the carriageway.

Recommendation

The merge point should be located away from any side road junctions. There should also be a crossing point to allow them safe access the left hand lane of the carriageway.

Designers Response	
Agreed. The proposed shared route has now been extended to link in to the footpath leading to Ensors Pool. A refuge has also been provided to allow for a safe crossing point. Refer to: 5131052-ATK-BCP-DR-125-01_D	
Date:	Approved:
Auditors Comments	

The crossing point is not safe as proposed & the merge is unsafe as there are no lines to warn motorists.

5.8 PROBLEM

Location –Bermuda Road junction with Tenlons Road

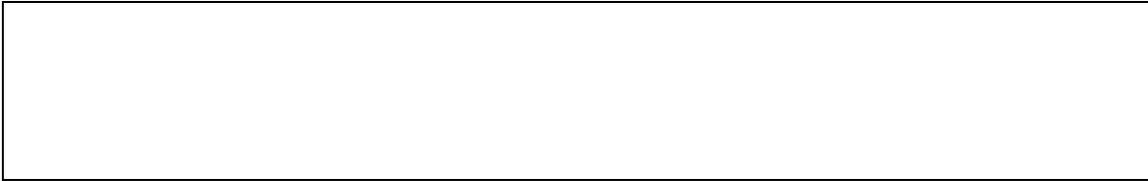
Summary – Close Proximity of mini roundabout with junction of Heath End Road could result in queues backing up on to it. This could result in shunt collisions with vehicles on the main road

With the proposed mini roundabout for Tenlons Road, this will give priority for potentially large vehicles to pull out onto Bermuda Road. Given its close proximity to the Heath End Road junction, vehicles turning into Bermuda Road may have to wait and queue while a large vehicle is making this manoeuvre. This could cause the traffic to stack up into Heath End Road. With a green light situation approaching vehicles may not be expecting stationary traffic and slow down sufficiently, resulting in a shunt type collision.

Recommendation

The mini roundabout should be replaced with a give way junction and ‘Keep clear’ markings. Ensuring traffic on Bermuda way is given the priority and doesn’t queue back up into the signalised junction.

Designers Response	
<p>The mini-roundabout has been proposed to provide a balanced priority to those motorists using Tenlons Road to access Bermuda Road in order to avoid the Heath Road End / Bermuda Road junction. (Confirmation that WCC are aware there will be issues at the new traffic light junctions & to avoid this junction motorists will use Tenlons Road to rat run. No acceptance they will then run through the Shillingstone Drive as this road is deemed out of scope & hasn't been included in modelling) This route will be signed as not suitable for bypassing HGVs (see drawing 5131052-ATK-BCP-DR-130-02_F).</p> <p>With this, only a limited number of the HGVs accessing the properties on Tenlons road are expected to carry out such a manoeuvre. The risk is therefore deemed to be low.</p> <p>In addition, the junction modelling has demonstrated that queues on the Bermuda Road arm on the proposed Heath End road junction are not likely to extend back into the mini-roundabout, and queues on the mini-roundabout are not likely to extend back into the Heath End Road junction.</p>	
Date:	Approved:
Auditors Comments	



No housing or future growth has been modelled in this instance meaning that the junction will fail almost immediately. HGV's also regularly access Tenlons Road to access the various businesses in the industrial area. This could lead to a possible extinguishing of business

5.9 PROBLEM

Location –Bermuda Road approach to Heath End Road

Summary – Tight geometry of this road on approach to Heath End Road and its junction, could lead to large vehicle crossing the centre line and colliding with oncoming vehicles

There is a tight curvature on this road for the approach to Heath End Road and at the junction for vehicles turning into it. For larger vehicles they may have to cross the centre line and collide with oncoming vehicles.

Recommendation

Vehicle tracking should be checked and amendments made to the layout if there is a risk of conflicts.

Designers Response	
Tracking analyses have been carried out and the stop lines on all the arm have been moved back accordingly. See: 5131052-ATK-BCP-DR-130-04_B Moving the stop lines back has reduced the capacity of the junction. There appears to have been a failure to remodel the junction to test if this new layout will work in conjunction with the rest of the new proposed road lay out.	
Date:	Approved:
Auditors Comments	

5.10 PROBLEM

Location –Heath End Road junction with Bermuda Road and junction with The Raywoods

Summary – Low storage capacity for queuing vehicles, given very close proximity between the two signalised junctions could lead to shunt type accidents.

With a new signalised junction to be installed for Bermuda Road / Heath End Road this is in very close proximity to an existing signalised junction for The Raywoods. As a result there is very little storage capacity (approximately two/ three vehicles) to queue between the two junctions, including the right hand turn lanes and this could easily get gridlocked. With a green light situation, approaching vehicles may not be expecting stationary traffic and slow down sufficiently, resulting in shunt type collisions.

Recommendation

The two signalised junctions should be synchronised to minimise queuing between them or a new layout should be considered.

Designers Response

Agreed. The two proposed signalised junctions have been synchronised and the traffic modelling suggests that there would be no queuing issues at these junctions. Additional measures should be included in the controller specifications / MOVA datasets at the detailed design stage to ensure that this synchronisation will occur.	
Date:	Approved:
Auditors Comments	

Auditors have pointed out that the new proposed traffic light junction at Heath End Road/Bermuda Road/The Raywoods will not work as the right hand turn lane could get '*easily gridlocked*'

The designer has commented they agree, confirming they are aware the proposed design is not workable.

Additional to this is the comment made previously regarding the stop lines at one arm of the junction being moved therefore making the junction even less workable.

This junction is unsafe for pedestrians & residents but will have capacity issues from the outset with a poor design that cannot be changed due to the existing layout of all the roads involved.

5.11 PROBLEM

Location –Hare and Hounds public house car park

Summary – Vehicles potentially cutting across full height kerb to take short cut to access junction, with the risk of vehicles turning at the junction colliding with them.

Although it has been stated on the drawing that a full height kerb will be installed for the public house car park. There is no indication of an alternative route for patrons to exit the car park. Drivers may still decide to take a short cut regardless of the full height kerb onto Heath End Road junction. At this

location other vehicles may be turning and collide with the vehicle exiting the car park, who will be unaware of the status of the signals.

Recommendation

Bollards or railing should be installed to stop persons accessing Heath End Road from the pub car park and alternative route onto Hare and Hound Lane should be sought.

Designers Response	
<p>Agreed. It is proposed that the main entry/exit will be via Hare and Hounds Lane as marked on drawing 5131052-ATK-BCP-DR-130-01_E</p> <p>The capital cost estimates at this preliminary stage take account of a low height wall (similar to existing between the pub car park and Hare and hounds Lane) along the south side of the car park preventing direct access to/from Heath End Road. This hasn't been specifically mentioned on the preliminary design drawing but will be included on detailed design drawings.</p>	
Date:	Approved:
Auditors Comments	

Hare & Hounds lane is a small single track road that cannot accommodate a lot of traffic, with poor visibility from Heath End Road. The car park at the pub is heavily used.

Moving the entrance to the pub car park will lead to issues on Hare & Hounds Lane with possible collisions of vehicles turning into Hare & Hounds Lane from Heath End road into traffic waiting to turn into the pub car park. There is already, contained within the proposals, a footway to be constructed using some of the pub car park.

Also moving the pub car park entrance will result in a very tight turn to exit which will require the driver to drive on the wrong side of the carriageway. There is also a significant height difference between Hare & Hounds Lane & the pub car park with the car park being level & steps at the far end descending to the pub entrance.

5.12 PROBLEM

Location –Heath End Road junction with Arbury Road and Greenmoor Road

Summary – Increased volume of traffic could cause additional conflicts at these two linking junctions to Heath End Road

For the two junctions which link to the ends of Heath End Road (Arbury Road at the west, Greenmoor Road at the east) there has been no consideration for these two mini roundabouts to be upgraded for the additional volume of traffic which could pass through them. In their current state, both have a history of accidents and with additional traffic flow could increase the level of potential collisions occurring at these.

Recommendation

Consideration should be given to upgrading these junctions to allow for the greater volume of traffic.

Designers Response	
These junctions are outside the scope of this study.	
Date:	Approved:
Auditors Comments	

This is a very important point to make. The above is Confirmation that WCC are fully aware that this scheme, rather than alleviating traffic issues in the wider area is actually going to create more & not only that but as they consider these issues to be 'out of scope' they will not be doing anything about them.

6.0 GENERAL COMMENTS

6.1 COMMENT

Location –Bermuda Road/ The Bridleway whole extents of route

Summary – Double yellow lines across the entire route could increase vehicle speeds and increase the chance of collisions occurring.

There was evidence of numerous parked vehicles along this route which acted as a natural traffic calming feature. With parking restrictions put in place, this could increase vehicle speeds along the route and increase the risk of speed related collisions occurring. There is also the possibility that residents may park down the side roads and near the mouths of the many junctions along Bermuda Road without any other provision to park.

Recommendation

Traffic calming / speed reducing measures should be installed along the route and consideration to additional residents parking considered.

Designers Response	
Comment noted. Traffic calming / speed reduction measures will be considered as part of the detailed design and in conjunction with the client’s requirements.	
Date:	Approved:
Auditors Comments	

This is another very important point:

This confirms that nothing will be changed before consultation so WCC will be going to consultation with an unsafe design. If passed there is no redress for

the community if they fail to re-assess at the detail design stage & go ahead using the unsafe design.

Despite lobbying from the Bermuda Bridge Action Group & assurances received personally from Councillor Peter Butlin, Portfolio for Transport Holder, that safety of residents & road users alike was taken into account, traffic calming & speed reduction measures are not being implemented as they are not part of the client (Warwickshire County Council's) requirement.

Clear indication that WCC are not putting cost well before the safety of residents as there is the need to squeeze every penny from the Benefit/Cost ratio to make this project appear much more appealing than it actually is & to slow traffic down with speed reduction or traffic calming measures will reduce the BCR.

If anyone is injured or killed, which is a real possibility if this route opens up, the blame can be laid squarely at the door of Warwickshire County Council.

7.0 AUDIT TEAM STATEMENT

7.1 We certify that we have examined the drawings and documents listed in Section 3.0 of this report. The examination has been carried out with the sole purpose of identifying any features that could be removed or modified that would improve the safety of the scheme. The problems identified have been notified in this report together with a recommendation, which should be studied for implementation. No one on the Audit Team Membership was linked to the scheme design.

AUDIT TEAM LEADER

Name: Lee Williams BSc (Hons)

Signed:

Position: Senior Engineer

Date: 12/06/2015

Organisation: Warwickshire County Council

Address: Communities, PO Box 43, Warwick, CV34 4SX

AUDIT TEAM MEMBER

Name: Jo Edwards (Mrs) MIHE Eng Tech Signed:

Position: Principal Engineer Date: 12/06/2015

Organisation: Warwickshire County Council

Address: Communities, PO Box 43, Warwick, CV34 4SX