# Appendix 34

Road Safety Audit Stage 1 2016 and Designer's Response

WARRINGTON
Borough Council

Traffic Management & Road Safety

# SA478 PEEL HALL

# ACCESS PROPOSAL (6 JUNCTIONS)

## Stage 1 Safety Audit

Warrington Borough Council
Environment & Regeneration
Traffic Management, Road Safety & Highways Adoptions
New Town House
Buttermarket Street
Warrington
WA1 2NH

# STAGE 1 SAFETY AUDIT

# PEEL HALL (NORTH OF POPLARS AVENUE)

## 1.0 Introduction

This report results from a Stage 1 Safety audit carried out on roads surrounding Peel Hall. The scheme involved the proposal for six potential access points and was at the request of Ms Fiona Bennett of Highgate Transportation Ltd, Box13, 42 Triangle West, Park Street, Bristol, BS8 1ES.

The Audit Team was:

Jamie Fisher MIHE - Audit Team Leader
Principal Highway Engineer
Traffic Management, Road Safety & Highways Adoptions

Mark Tune – Audit Team Member
Team Manager
Traffic Management, Road Safety & Highways Adoptions

The audit comprised an examination of the documents provided by Fiona Bennett listed below:-

| Project Number | Drawing Number | Title |
|---|---|---|
| | HTp1107 08N | Birch Avenue Access |
| | HTp1107 09K | Poplars Avenue West Access |
| | HTp1107 10K | Blackbrook Avenue Access |
| | HTp1107 11J | Mill Lane Access |
| | HTp1107 12O | Poplars Avenue Central Access |
| | HTp1107 30E | Grasmere Avenue Access |

A visit to the site was made on the afternoon of 8 June 2016.

The Terms of Reference of the audit are as described in Chapter 2 of HD 19/03 Design Manual for Roads and Bridges (DMRB) 5.2.2 and DMRB HA 42/94 5.2.3. In addition guidance is taken from The Institution of Highways and Transportation (IHT) Guidelines for The Safety Audit of Highways.

The team has examined and reported only on the road safety implications of the scheme as presented and has not examined verified the compliance of the designs to any other criteria.

## 2.0 Auditors Comments

**Location: Birch Avenue**

2.1 Problem

Given that this proposed access road will receive substantial use the inter-visibility through the junction should not be hindered by parked vehicles both on and off carriageway. Masked vehicles may result in side or head on impaction junction collisions.

Recommendation

Restrict on and off road parking about the junction to maximise visibility.

2.2 Problem

Given the proposed informal 10 space off road parking 4.8m of carriageway would not allow sufficient avoidance manoeuvring of vehicles exiting the parking area. This may lead to side impact or head on collision occurrence.

Recommendation

Maintain 5.5m carriageway width at this point.

2.3 Problem

There is overhanging hedge line at the boundary of No.4 Birch Avenue that will restrict visibility of the junction. This may lead to turning vehicle conflicts.

Recommendation

Have hedge line set back or removed.

2.4 Problem

The width of Birch Avenue with the addition of on street parking results in a very narrow carriageway that is unsuitable for substantial addition of through traffic. This may lead to head on and glancing collisions.

Recommendation

Consider volume of additional traffic in relation to guidance in Manual for Streets and make alterations accordingly.

**Location: Poplars Avenue West**

2.5 Problem

The proposed 4 bay parking opposite the junction would not be legally accessibly due to the proposed double yellow line provision. This type of parking restriction is enforceable to the back of the footpath at this location. This will force parking to migrate without proper management and may result in collision occurrence elsewhere on Poplars Avenue.

Recommendation

Provide alternate parking location or consider the requirement of the proposed parking restrictions about the junction.

2.6 Problem

The close proximity of the proposed junction to the existing bend may result in emerging vehicle conflicts with approaching traffic due to restricted visibility of the bend to the west.

Recommendation

Ensure that visibility splays agree with the Design Manual for Roads and Bridges (DMRB) for the intended / existing speed limit (taking into account the existing off street parking occurrence and trees).

**Location: Blackbrook Avenue**

2.7 Problem

The proposed roundabout offsets approaching traffic heading northbound to Mill Lane. This will reduce forward visibility for vehicles exiting Mill Lane and may result in side impact collisions.

Recommendation

Ensure that the forward visibility from Mill Lane is in adherence to the standards set in the DMRB.

2.8 Problem

The short section of carriageway created between the existing Enfield Park Round roundabout and the proposed roundabout is likely to cause queuing traffic to back up through the proposed junction during peak hours. This may result in the northbound access being restricted, aggressive driving and/or side impact collisions.

Recommendation

Assess the present and expected traffic flow requirements as part of the Transport Assessment Report for this proposal and ensure that the proposals do not have a negative impact on the road network.

2.9 Problem

The southbound approach to the proposed roundabout has little deflection to slow entry vehicle speeds. This will promote higher speed of southbound through traffic leading to potential side impact and tail end collisions.

Recommendation

Provision a greater deflection in the southbound approach to the roundabout.

2.10 Problem

The straight line pedestrian crossing alignments shown on the south side, southbound carriageway of the proposed roundabout increase pedestrian time in the live carriageway, raising the risk of vehicle strikes.

Recommendation

Ensure that all pedestrian crossing points are perpendicular to the kerb to reduce the width of requires carriageway crossing.

**Location: Mill Lane**

2.11 Problem

Visibility at the termination point of the proposed shared surface will be restricted by the existing hedge and bend to the south east. This may result in cyclists being struck by passible vehicles on crossing at this point.

Recommendation

Ensure adequate visibility splays are provisioned to allow inter-visibility between approaching drivers and cyclists.

2.12 Problem

Although the northbound route from the proposed junction is for very lightly traffic access the proposed width of the carriageway would restrict passing vehicles potentially leading to side or head on conflicts.

Recommendation

With little footfall requirements the removal of one of the proposed footpaths would allow a wider access road construction reducing the risk of vehicle conflicts.

2.13 Problem

The proposed tabled junction may cause adverse camber for long or trailered vehicles turning north onto the access road. This may result in loss of loads taking into account that the horse fields may be retained.

Recommendation

Track such vehicles through the junction and consider alternative forms of traffic calming if deemed necessary.

**Location: Poplars Avenue Central**

2.14 Problem

The proposed relocated bus stop layby is depicted with the shelter to the rear of the provision which is away from the alighting area that the bus will pull up to. This may cause trips or falls by pedestrians rushing to the pickup point.

Recommendation

Relocate the shelter to the alighting point that a bus would pull up to in the layby.

2.15 Problem

The proposed right turn filter lane on Poplars Avenue to feed the proposed junction will be an ideal overtaking opportunity for through traffic in both directions which may result in head on collisions.

Recommendation

Provision traffic or refuge islands to protect the right turn lane and restrict vehicles from overtaking.

2.16 Problem

The stop lines for the relocated controlled crossing provision to the south east of the proposed junction would seem close proximity to the crossing studs. This reduces the safety margin for vehicles to stop potentially conflicting with pedestrians. The Borough standard between stop line to stud line on controlled crossings is 3m to maximise this safety margin.

Recommendation

Ensure that all crossing stop lines are set back 3m from the stud line. This may affect the positioning of the bus laybys to allow signal post positioning.

2.17 Problem

Tactile paving is not shown on either verge of the proposed uncontrolled crossing provision between Brathay Close and Newhaven Road. This may lead to confusion for visually impaired pedestrians.

Recommendation

Ensure tactile paving is provisioned at all dropped pedestrian crossing points.

2.18 Problem

There are existing trees close to the location of the proposed controlled crossing relocation which may reduce the visibility of the signal heads to oncoming traffic. Late signal appreciation may result in collisions with pedestrians or rear end shunts.

Recommendation

Ensure that forward visibility of signal heads is within the guidance set in the DMRB TD9/93 Table 3 taking into account the roads design speed.

2.19 Problem

The proposed exclusion of parking restrictions between the 10 space layby and the junction with Brathay Close may result in obstructive parking particularly with the introduction of a traffic island to protect the right turn filter lane. This may result in collision with the island and/or parked vehicles and would specifically restrict through access.

Recommendation

Extend junction protection to the south side of Poplars Avenue between the 10 space layby and the junction with Brathay Close.

**Location: Grasmere Avenue**

2.20 Problem

Parking on Windermere Avenue may lead to access obstruction or impatient overtaking that may result in a head on or avoidance manoeuvre collision.

Recommendation

If access road must be provisioned on Grasmere Avenue the parking restrictions should be introduced on Windermere Avenue to the junction with Poplars Avenue to maintain through access.

2.21 Problem

Although Mallard Close is lightly trafficked the staggered junction proposal may lead to vehicles merging from opposite side roads resulting in head on or side impact collisions.

Recommendation

Consider removal of the stagger for a standard cross road junction or offset the stagger further.

2.22 Problem

The high sided boundary fence to no 37 Windermere Avenue will restrict the inter-visibility of the proposed junction to the right on exit. This may lead to side impact collisions with passing vehicles.

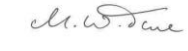
Recommendation

Reduce the height of the boundary fence or set the junction further away from this boundary line to ensure visibility splay to TD 42/95 of the DMRB (Vol6 SEC2 Part6 Ch7).

## 3.0 Auditors Statement

We certify that we have examined the drawings and documents listed. The examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified in order to improve the safety of the scheme. The problems identified have been noted in this report together with associated safety improvement suggestions that we recommend should be studied for implementation. No one on the Audit Team has been involved with the scheme design.

**Audit Team Leader**
Jamie Fisher MIHE — Signed: 
Principal Highway Engineer — Date: 16 June 2016
Traffic Management, Road Safety & Highways Adoptions

**Audit Team Members**
Mark Tune — Signed: 
Team Manager — Date: 16 June 2016
Traffic Management, Road Safety & Highways Adoptions

## RSA1 DESIGNERS RESPONSE

PROJECT: Peel Hall, Warrington

RSA DATE: June 2016

RSA REF.: SA478 Peel Hall

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Access Location - Birch Avenue

| Para. No. | Problem | Recommendation | Designers Response |
|---|---|---|---|
| 2.1 | Given that this proposed access road will received substantial use the inter-visibility through the junction should not be hindered by parking vehicles both on and off carriageway. Masked vehicles may result in side or head on impact junction collisions. | Restrict on and off road parking about the junction to maximise visibility. | It is not considered that 20 dwellings (combined total accessed from these two junctions) can be classified as substantial use.<br>In terms of visibility splays, ref: HTp/1107/91, it can be seen that the parked vehicles should not obstruct visibility. Furthermore, this road is subject to a 20mph speed limit and it is reasonable to assume that in this location vehicles would be travelling at even lower speeds than this. |
| 2.2 | Given the proposed informal 10 space off road parking 4.8m of carriageway would not allow sufficient avoidance manoeuvring of vehicles exiting the parking area. This may lead to side impact or head on collision occurrence. | Maintain 5.5m carriageway width at this point. | The parking spaces are set back at a greater depth (6.0m) than the required 4.8m specified, therefore combined with the 4.8m carriageway width this enables cars to manoeuvre safely (as shown on the swept path plan HTp/1107/TR08/A).<br>Furthermore, this is an access road for only circa 15 houses, and should generally be no wider than the main access road, Birch Avenue (also 4.8m wide). |
| 2.3 | There is overhanging hedge line at the boundary of No.4 Birch Avenue that will restrict visibility of the | Have the hedge line set back or removed. | Overhanging vegetation to be removed and where within client control the hedge line is to be set back. The visibility splays are shown on plan HTp/1107/91. |

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| | junctions. This may lead to turning vehicle conflicts. | | |
| 2.4 | The width of Birch Avenue with the addition of on street parking results in a very narrow carriageway that is unsuitable for substantial addition of through traffic. This may lead to head on and glancing collisions. | Consider volume of additional traffic in relation to guidance in Manual for Streets and make alterations accordingly. | The additional volume of through traffic on Birch Avenue forecast to arise from the 20 dwellings is not considered to be substantial, based on the agreed trip rates in the busiest peak hour (PM) of: Arrivals 0.495 (10 vehicle trips) and Departures 0.307 (6 vehicle trips), which gives a total of an additional 16 vehicles in the peak hour, which equates to around one vehicle every four minutes. Furthermore, the forward visibility along Birch Avenue is good, reducing the likelihood of head-on collisions occurring, coupled with the low vehicle speeds. |

Access Location - Poplars Avenue West

| Para. No. | Problem | Recommendation | Designers Response |
|---|---|---|---|
| 2.5 | The proposed 4 bay parking opposite the junction would not be legally accessible due to the proposed double yellow line provision. This type of parking restriction is enforceable to the back of the footpath at this location. This will force parking to migrate without proper management and may result in collision occurrence elsewhere on poplars Avenue. | Provide alternative parking location or consider the requirement of the proposed parking restrictions about the junctions. | It is accepted that by retaining the parking bay, this negates the need for the TRO. Therefore the double yellow lines have been omitted from the revised scheme. See plan ref: HTP/1107/09/M. Further to correspondence with the Highway Officer, all proposed yellow lining at this junction has been removed. |
| 2.6 | The close proximity of the proposed junction to the existing bend may result in emerging vehicle conflict with approaching traffic due to restricted visibility of the bend to the west. | Ensure that visibility splays agree with the Design Manual for Roads and Bridges for the intended/existing speed limit (taking into account the existing off street parking occurrence and trees). | This section of Cotswold Road and Poplars Avenue is subject to a 20mph speed limit within an urban area and therefore Manual for Streets applies. Visibility splays shown on plan HTp/1107/87, however for robustness 2.4 x 43m visibility splays (commensurate to 30mph) have been demonstrated as achievable.<br>Swept plan analysis has been provided on plan ref: HTP/1107/TR09 which demonstrates that two no. 9.5m rigid vehicles can pass on the bend of Cotswold Road/Poplars Avenue.<br>Plan ref: HTP/1107/09/M demonstrates that it has been proposed to ease the inside radius of the existing bend to assist large vehicles.<br>Other minor kerb amendments have been made in the vicinity of the existing parking area adjacent to the bend. The parking area has an aisle width of circa 8.4m with a depth of 5.0m for the parking bays. |

Access Location - Blackbrook Avenue

| Para. No. | Problem | Recommendation | Designers Response |
|---|---|---|---|
| 2.7 | The proposed roundabout offsets approaching traffic heading northbound to Mill lane. This will reduce forward visibility for vehicles existing Mill Lane and may result in side impact collisions. | Ensure that the forward visibility from Mill Lane is in adherence to the standards set out in the Design Manual for Roads and Bridges. | Visibility splays are shown on plan HTp/1107/85. Vehicle speeds exiting the roundabout are unlikely to be above 20mph. 2.4 x 50m visibility splay towards the roundabout from Mill Lane which is one step below the DMRB visibility splay for 50kph (30mph). 2x4 x 61m to the junction is also shown.<br>Due to the existing road alignment of Mill Lane (north-south) in this location from the existing Blackbrook Avenue roundabout, existing vehicle approach speeds to the Mill Lane priority junction will be higher than with the proposed roundabout. |
| 2.8 | The short section of carriageway created between the existing Enfield Park Road roundabout and the proposed roundabout is likely to cause queuing traffic to back up through the proposed junction during peak hours. This may result in the northbound access being restricted, aggressive driving and/or side impact collisions. | Assess the present and expected traffic flow requirements as part of the Transport Assessment Report for this proposal and ensure that the proposals do not have a negative impact on the road network. | The proposals include for a two lane approach on this section of realigned carriageway in both directions in order to accommodate additional queuing traffic.<br>The SATURN modelling demonstrates that there will be no capacity issues on the existing roundabout to the south, and the proposed roundabout will not cause queuing traffic to back up through either junction during peak hours. Notwithstanding the above, the carriageway section is a minimum of 90 metres in length. |
| 2.9 | The southbound approach to the proposed roundabout has little deflection to slow entry vehicle speeds. This will promote higher speed of southbound through traffic leading to potential side impact and tail end collisions. | Provide a greater deflection in the southbound approach to the roundabout. | The deflection was relaxed following discussion with highway officers in Spring 2016.<br>Notwithstanding this, a revised plan has been provided, HTp/1107/10/M, which increases deflection for southbound vehicles. |

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| 2.10 | The straight line pedestrian crossing alignments shown on the south side, southbound carriageway of the proposed roundabout increase pedestrian time in the live carriageway, raising the risk of vehicle strikes. | Ensure that all pedestrian crossing points are perpendicular to the kerb to reduce the width of required carriageway crossing. | Agreed.<br>Pedestrian crossings have been reviewed and amended where necessary as shown on plan HTp/1107/10/M. |

Access Location – Mill Lane

| Para. No. | Problem | Recommendation | Designers Response |
|---|---|---|---|
| 2.11 | Visibility at the termination point of the proposed shared surface will be restricted by the existing hedge and bend to the south east. This may result in cyclists being struck by passing vehicles on the crossing point. | Ensure adequate visibility splays are provisioned to allow inter-visibility between approaching drivers and cyclists. | Drawing HTp/1107/11/L demonstrates that vegetation is to be cut back and maintained to below 0.6m in height to ensure adequate visibility of 43m.<br>The access road will be 20mph. Visibility splays are shown on plan HTp/1107/81 for cyclists leaving the shared cycle route and for the vehicles entering the junction from the north. |
| 2.12 | Although the northbound route from the proposed junction is for very lightly traffic access the proposed width of the carriageway would restrict passing vehicles potentially leading to side or head on conflicts. | With little footfall requirements the removal of one of the proposed footpaths would allow a wider access road construction reducing the risk of vehicle conflicts. | Please see revised access proposals on plan HTp/1107/11/L and swept path analysis on HTp/1107/TR11. |
| 2.13 | The proposed tabled junction may cause adverse camber for long or trailers vehicles turning north onto the access road. This may result in loss of loads taking into account that the horse fields may be retained. | Track such vehicles through the junction and consider alternative forms of traffic calming if deemed necessary. | As above. The table has been extended to accommodate a 'car and caravan' (equivalent to a vehicle pulling a horsebox). |

Access Location – Poplars Avenue Central

| Para. No. | Problem | Recommendation | Designers Response |
|---|---|---|---|
| 2.14 | The proposed relocated bus stop layby is depicted with the shelter to the rear of the provision which is away from the alighting area that the bus will pull up to. This may cause trips or falls by pedestrians rushing to the pickup point. | Relocate the shelter to the alighting point that a bus would pull up to in the layby. | Relocation of shelter shown on plan HTp/1107/12/R. |
| 2.15 | The proposed right turn filter lane on Poplars Avenue to feed the proposed junction will be an ideal overtaking opportunity for through-traffic in both directions which may result in head on collisions. | Provide traffic or refuge islands to protect the right turn lane and restrict vehicles from overtaking. | We do not agree that traffic splitter islands are required where suggested as to the west we have a pedestrian island prior to the junction with Brathay Close, and to the east there is the signalised pedestrian crossing. |
| 2.16 | The stop lines for the relocated controlled crossing provision to the south east of the proposed junction would seem in close proximity to the crossing study. This reduces the safety margin for vehicles to stop potentially conflicting with pedestrians. The Borough standard between stop line to stud line on controlled crossings is 3m to maximise this safety margin. | Ensure that all crossing stop lines are set back 3m from the stud line. This may affect the positioning of the bus laybys to allow signal post positioning. | Dimensions checked and updated where necessary on plan HTp/1107/12/R. |
| 2.17 | Tactile paving is not shown on either verge of the proposed uncontrolled | Ensure tactile paving is provisioned at all | Tactile paving provided for the crossing at Brathay Close on plan HTp/1107/12/R. |

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| | crossing provision between Brathay Close and Newhaven road. This may lead to confusion for visually impaired pedestrians. | dropped pedestrian crossing points. | |
| 2.18 | There are existing trees close to the location of the proposed controlled crossing relocation which may reduce the visibility of the signal heads to oncoming traffic. Late signal appreciation may result in collisions with pedestrians or rear end shunts. | Ensure that forward visibility of signal heads is within the guidance set in the Design Manual for Roads and Bridges TD 9/93 Table 3 taking into account the roads design speed. | Visibility shown on plan HTp/1107/83, and tree locations highlighted.<br>Road is subject to 30mph speed limit in this location. Forward visibility to the signal heads is shown and demonstrated to be in excess of 50m even with a bus stationary in the bus stops at the locations shown. |
| 2.19 | The proposed exclusion of parking restrictions between the 10 space layby and the junction with Brathay Close may result in obstructive parking particularly with the introduction of a traffic island to protect the right turn filter lane. This may result in collision with the island and/or parked vehicles and would specifically restrict through access. | Extend junction protection to the south side of Poplars Avenue between the 10 space layby and the junction with Brathay Close. | Extension to junction protection markings shown on plan HTp/1107/12/R as an option to be considered by WBC highway officers. |

Access Location – Grasmere Avenue

| Para. No. | Problem | Recommendation | Designers Response |
|---|---|---|---|
| 2.20 | Parking on Windermere Avenue may lead to access obstruction or impatient overtaking that may result in a head on or avoidance manoeuvre collision. | If access road must be provisioned on Grasmere Avenue the parking restrictions should be introduced on Windermere Avenue to the junction with Poplars Avenue to maintain through access. | Current plan ref: HTp/1107/30/H.<br>This access is currently an existing access serving playing fields with a small leisure facility (changing rooms, bowl club, etc.) and as such already experiences a level of traffic movement.<br>Whilst it is acknowledged that there is likely to be an increase in traffic movements at the location as a result of the proposed improvements to the existing facilities, there will a very limited level of peak hour trips (if any).<br>Vehicle speeds on Grasmere Avenue and Windermere Avenue in this location are low and therefore the likelihood of collisions is very low. |
| 2.21 | Although Mallard Close is lightly trafficked the staggered junction proposal may lead to vehicles merging from opposite site roads resulting in head on or side impact collisions. | Consider removal of the stagger for a standard cross road junction or offset the stagger further. | As set out above, this is an existing access and the proposals are for improvement works to the playing fields and facilities. No housing is proposed off this access. There will be limited increase in vehicular movements, particularly during peak hours; therefore it is considered that likelihood of vehicular conflict will be low. |
| 2.22 | The high sided boundary fence to No.37 Windermere Avenue will restrict the inter-visibility of the proposed junction to the right on exit. This may lead to side impact collisions with passing vehicles. | Reduce the height of the boundary fence or set the junction further away from this boundary line to ensure visibility splay to TD 42/95 to the Design Manual for Roads and Bridges (vol.6, SEC2, Part6, Ch7). | This is not a proposed junction, but an existing junction.<br>The visibility splay is demonstrated on plan HTp/1107/89, of 43m to the east and to the junction with Windermere Road in the west. |