

## **A105 from Berkeley Gardens to Borden Avenue Cycle Enfield - Section 12**

Stage 2 Road Safety Audit

Ref: 2759.02.12/032/A105/BOR/2016

Prepared for:

**London Borough of Enfield**

By:

**Road Safety Audit, TfL Asset Management Directorate**

Prepared by: Shane Martin, Audit Team Leader

Checked by: Kevin Seymour, Audit Team Member

Approved by: Andrew Coventry

<b>Version</b>	<b>Status</b>	<b>Date</b>
A	Audit report issued to Client	25/11/2016



## **1.0 INTRODUCTION**

### **1.1 Commission**

- 1.1.1 This report results from a Stage 2 Road Safety Audit carried out on the A105 from Berkeley Gardens to Borden Avenue, Cycle Enfield - Section 12 proposals.
- 1.1.2 The Audit was undertaken by TfL Road Safety Audit in accordance with the Audit Brief issued by the Client Organisation on 14<sup>th</sup> November 2016. It took place at the Palestra offices of TfL on 15<sup>th</sup> November 2016 and comprised an examination of the documents provided as listed in Appendix A, plus a visit to the site of the proposed scheme.
- 1.1.3 The visit to the site of the proposed scheme was made on 15<sup>th</sup> November 2016. During the site visit the weather was sunny and the existing road surface was dry.

### **1.2 Terms of Reference**

- 1.2.1 The Terms of Reference of this Audit are as described in TfL Procedure SQA-0170 dated May 2014. The Audit Team has examined and reported only on the road safety implications of the scheme as presented and how it impacts on all road users and has not examined or verified the compliance of the designs to any other criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem the Audit Team may, on occasion, have referred to a design standard without touching on technical audit. An absence of comment relating to specific road users / modes in Section 3 of this report does not imply that they have not been considered; instead the Audit Team feels they are not adversely affected by the proposed changes.
- 1.2.2 This Safety Audit is not intended to identify pre-existing hazards which remain unchanged due to the proposals; hence they will not be raised in Section 3 of this report as they fall outside the remit of Road Safety Audit in general as specified in the procedure SQA-0170 dated May 2014. Safety issues identified during the Audit and site visit that are considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Client Organisation, are set out in Section 4 of this report.
- 1.2.3 Nothing in this Audit should be regarded as a direct instruction to include or remove a measure from within the scheme. Responsibility for designing the scheme lies with the Designer and as such the Audit Team accepts no design responsibility for any changes made to the scheme as a result of this Audit.
- 1.2.4 In accordance with TfL Procedure SQA-0170 dated May 2014, this Audit has a maximum shelf life of 2 years. If the scheme does not progress to the next stage in its development within this period, then the scheme should be re-audited.
- 1.2.5 Unless general to the scheme, all comments and recommendations are referenced to the detailed design drawings and the locations have been indicated on the plan located in Appendix B.

- 1.2.6 It is the responsibility of the Design Organisation to complete the Designer's response section of this Audit report. Where applicable and necessary it is the responsibility of the Client Organisation to complete the Client comment section of this Audit report. Signatures from both the Design Organisation and Client Organisation must be added within Section 5 of this Audit report. A copy of which must be returned to the Audit Team.

### **1.3 Main Parties to the Audit**

#### 1.3.1 Client Organisation

Client contact details: Paul Rogers – London Borough of Enfield

#### 1.3.2 Design Organisation

Design contact details: Deepak Sharma - Jacobs

#### 1.3.3 Audit Team

Audit Team Leader: Shane Martin – TfL Road Safety Audit

Audit Team Member: Kevin Seymour – TfL Road Safety Audit

Audit Team Observer: None present

#### 1.3.4 Other Specialist Advisors

Specialist Advisor Details: None present

### **1.4 Purpose of the Scheme**

The purpose of the scheme is to provide 5.5km of two-way segregated cycle route with public realm improvements at town centres\*.

\*Taken directly from the Audit Brief.

### **1.5 Special Considerations**

- 1.5.1 This Audit Report covers Section 12 (Sheets 30, 31 & 32) of this route only, A105 Ridge Avenue / Village Road junction with Bush Hill Road / Church Street and approaches.

- 1.5.2 A Quietway route is proposed which crosses the A105 on Church Street / Bush Hill Road, no details of these proposals are indicated and are therefore not subject to this Stage 2 Road Safety Audit.

- 1.5.3 Full details of the traffic signal staging / timings have not yet been provided and therefore the Audit Team could not fully comment on this element of the proposals.

## **2.0 ITEMS RAISED IN PREVIOUS ROAD SAFETY AUDITS**

The proposals were subject to a Stage 1 Road Safety Audit carried out in March 2016 by TfL Road Safety Audit, Asset Management Directorate (Ref 2524/032/A105/BOR/2016). This report covered the whole route and therefore many of the issues raised are not specific to this (Section 12) part of the proposals. Items raised in the previous Audit Report deemed relevant to this section can be summarised as follows:

**Problem 3.1.3** Cycle lanes past junction locations - Segregated cycle lanes terminating just before side road junctions may increase left turning collisions between vehicles and cyclists

This problem remains and is therefore raised as problem 3.1.2 within this Audit Report.

**Problem 3.4.1** Bush Hill Road / Avenue Parade access - Two-way cycle lane past side road access may increase the potential for turning collisions involving cyclists

The layout has been altered to incorporate part of the recommendation and the potential for collisions appears to be mitigated. However, as there is a recommendation which could further reduce the potential for collisions this is raised as part of problem 3.3.1 in this Audit Report.

Items raised in the Stage 1 Road Safety Audit report that are outside the Terms of Reference:

**Issue 4.6** Cycle routes, pedestrian crossing facilities and tie-ins to the Quietway scheme (on the side roads) appear to be unclear.

This layout has been altered significantly and the pedestrian and cycle facilities are now clarified. The tie in to the Quietway scheme is still unclear and this is raised as part of 4.2 in this Audit report.

### 3.0 ITEMS RAISED AT THIS STAGE 2 ROAD SAFETY AUDIT

This section should be read in conjunction with Paragraphs 1.2.1, 1.2.2 and 1.2.3 of this report.

#### 3.1 CYCLING FACILITIES

##### 3.1.1 PROBLEM

**Location:** General to scheme, multiple locations

**Summary:** The use of 'Orcas' as a segregation measure may lead to trips / falls for cyclists and pedestrians.

The proposals include 'Orcas' as a semi / soft segregation measure alongside the cycle tracks. The Audit Team are concerned that the 'Orcas' may not be adequately visible to road users, particularly pedestrians, cyclists and powered-two-wheelers.

Pedestrians crossing the carriageway may fail to appreciate the raised nature of the 'Orcas', with a potential for trips and falls within the carriageway.

Riders of two wheeled vehicles may fail to appreciate that the 'Orcas' are raised, particularly in inclement weather. Riders may become destabilised as they over-run the features, leading to an increased potential to become unseated, with a resultant potential for personal injury.

The potential for injury is exacerbated as the features are situated in positions where they are encouraged to be traversed, such as outside residential accesses.

##### RECOMMENDATION

It is recommended that any potential trip hazards are removed, this may require the use of an alternative type of segregation measure.

Design Organisation Response	Accepted / Part Accepted / Rejected
<p>The use of light segregation Orcas has been a proposed element of the scheme since initial development. The Orcas will be set inside the mandatory cycle lane marking (diag 1049B) and are white/black marked to stand out. In addition, the start and finish of an Orca line will be marked by a wand to further highlight the Orca line as it is approached. Orcas placed alongside vehicular access will be of a lower profile to allow vehicular over run. Orcas will be sited away from pedestrian crossing points to minimise the risk of trips</p> <p>Post construction monitoring is recommended at a number of agreed locations to determine if there are any issues and to allow for modifications if necessary.</p>	
Client Organisation Comments	
<p>Designer's response accepted – post implementation monitoring will be carried out.</p>	

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### 3.1.2 PROBLEM

**Location:** General to the scheme – cycle lanes past junction locations

**Summary:** Segregated cycle lanes terminating just before side road junctions may increase left turning collisions between vehicles and cyclists

At a number of locations, segregated cycle lane / bypasses are returned to the carriageway just before side road junction locations. At such locations it may be difficult for both sets of road users to understand who has priority and this may lead to turning collisions involving cyclists, particularly where bus stop bypasses are located on the approach to junctions and where ‘floating’ parking / loading areas are close to junctions. Cyclists may find it difficult to avoid vehicles entering or emerging from side roads if constrained by the segregation features, which could lead to increased risk of merging / failure to give way type collisions.

#### RECOMMENDATION

Research from TRL (PPR703 – Trials of segregation set-back at side roads) indicates that setting back cycle lanes by at least 20m from side roads may improve cyclist safety at junctions. Such an approach would have an effect on bus stop locations and the cycle bypass facilities provided at them. There is also likely to be an effect on the length of ‘floating’ parking / loading bays.

Design Organisation Response	Accepted / Part Accepted / Rejected
This only occurs where cyclists are returning to the carriageway whilst exiting the bus stop borders. Due to limitations of moving the bus stops and the number of side roads it was not possible to provide a set back of at least 20m from all side roads when cyclists are returning to the carriageway. Many of the side roads are tight residential streets which can only fit one car at a time when cars are parked, therefore vehicles should be travelling at low speeds whilst turning into the side roads. Majority of the radii at side road bellmouths have been tightened to further reduce speeds for turning vehicles.	
Client Organisation Comments	
Designer’s response accepted	

### 3.1.3 PROBLEM

**Location:** General to scheme, multiple locations

**Summary:** Visually impaired pedestrians may inadvertently enter the carriageway via cycle track ramps / flush sections at raised tables.

The Audit Team are concerned that proposed cycle track ramps / sections which are completely flush with raised junction tables may lead to a visually impaired pedestrian inadvertently entering the carriageway. Visually impaired pedestrian unknowingly within the carriageway are at an increased potential for collisions with motorists.

#### RECOMMENDATION

It is recommended that the cycle track ramps / flush sections are altered. This may include, but is not limited to, providing tramline tactile paving prior to the ramps down to carriageway level.

Design Organisation Response	Accepted / Part Accepted / Rejected
The cycle lane edging will comprise of 3 x 100x100mm cropped silver grey setts. The	

texture and differing contrast will indicate to visually impaired pedestrians that they should not enter the cycle lane.

In addition, the cycle track will be surfaced in a suitable colour, to provide tonal difference with the surrounding footway.

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**Client Organisation Comments**

Designer's response accepted. The design will be reviewed post-implementation to identify any problems for visually impaired pedestrians.

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### 3.1.4 PROBLEM

**Location:** A - Bush Hill Road – Avenue Parade access

**Summary:** Two-way cycle lane past side road access may increase the potential for turning collisions involving cyclists

The two-way cycle lane past the shopping parade vehicular exit increases the complexity of decision making for drivers making turns from the access. Drivers may not be able to wait at a right angle to the give-way line and have to gap seek between two traffic lanes as well as both directions of. Pedestrians are also likely to be attempting to cross here. The Audit Team are concerned that vehicles egressing may find it difficult to find a suitable gap and may pull out not noticing an approaching motorist, cyclist or pedestrian as they attempt to exit / turn on to Bush Hill Road. This may increase the likelihood of collisions involving cyclists, pedestrians and other road users at this location.

### RECOMMENDATION

It is recommended that the layout is altered so that more simple interactions occur. This may include, but is not limited to, making the cycle lanes one-way, with a more conventional with flow cycle track on each side of the carriageway. Alternatively, if that is not feasible it may be beneficial to make the exit from the shopping parade left turn only and alter the northern extent of the parking bay to enable vehicles to better align at the give way.

Design Organisation Response	Accepted / Part Accepted / Rejected
<p>Noted. This section is a link to a proposed quietway scheme and it is not expected for cyclist flows to be high. We accept that vehicles may not be able to wait at a right angle to the give way, however due to limitations in scope it is not feasible to alter the layout here. Avenue Parade is an access road and not a side road therefore we do not think there will be a large traffic flow exiting from here. There is a ramp up to the cycle lane at the exit which will have vehicles approaching very slowly and anticipating a shared space area with cycle symbols on the surface. We do not believe that making the exit right turn only will solve the issue as it will not be easily enforced without making alterations to the junction. Keep clear road markings will be considered on Bush Hill Road to make it easier for vehicles to exit from Avenue Parade access to travel in a south easterly direction.</p>	
Client Organisation Comments	
<p>Location C - scheme to stop short of the service road egress. This will allow further consideration to be given to the way that the Quietway ties into the junction.</p>	

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### 3.1.5 PROBLEM

**Location:** B – A105 Village Road opposite northeast of junction with Bush Hill Road (Sheet 30/47)

**Summary:** Northeast bound motorists may not notice the kerbed segregation island.

The Audit Team are concerned that northeast bound motorists may not appreciate that the segregation at this location becomes a kerbed physical segregation which commences within the carriageway running lane. No features to highlight this physical feature or guide users alongside it are proposed, it may therefore not be clear or conspicuous. Northeast bound users may collide with the kerb or swerve to avoid the feature if they notice it in close proximity, which may result in loss of control type collisions and injury to those on or within the vehicle.

#### RECOMMENDATION

It is recommended to alter the layout to suitably guide vehicles alongside the kerbed island. This may include but is not limited to providing a vertical illuminated feature such as an Illuminated Guide Post (IGP) and altering the path of the orcas / mandatory cycle lane marking so that it suitably highlights and ‘ties in’ to the physical island providing suitable guidance alongside the feature.

Design Organisation Response	Accepted / Part Accepted / Rejected
TfL confirm that this is actually Location D on the drawing. On the approach to Location D, the segregated cycle lane within the carriageway is denoted by a white line and a line of orcas. These show a clear edge of ‘motor users’ carriageway as the cycle lane transfers to footway, through the bus boarder.	
Client Organisation Comments	
The cycle lane is denoted by way of the solid white line, orcas and ‘wand’ to mark the start of the orcas - there is no kerbed segregation in this location.	

## 3.2 BUS STOPS

### 3.2.1 PROBLEM

**Location:** C – A105 Ridge Avenue junction with Berkeley Gardens (Sheet 30/47)

**Summary:** Bus stop located close to side road may restrict junction visibility splays and lead to left hook type collisions

The northeast bound bus stop is located close to Berkeley Gardens (side road junction) whilst occupied by a bus this may obstruct visibility. The Audit Team are concerned that the reduced visibility may result in vehicles turning into the side road not suitably sighting cyclists exiting the off carriageway cycle route across the side road. Therefore, an increased potential for collisions between motorists turning into the side road and cyclists travelling northeast bound between the two sections of off carriageway cycle facilities at this location.

#### RECOMMENDATION

It is recommended to ensure that appropriate visibility splays are provided. This may involve, but is not limited to, relocating the bus stop.

Design Organisation Response	Accepted / Part Accepted / Rejected
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Tflconfirm that this is actually Location B on the drawing. The bus stops along this route are mainly for residential areas and will not be used as heavily as main routes. It is also expected that a bus stopped at the bus stop will hold up traffic and allow for vehicles to safely manoeuvre out of Berkeley Gardens. It is not expected that vehicles will overtake the bus at this location due to its close proximity to the Bush Hill Road/Church Street junction.

**Client Organisation Comments**

Designer’s response accepted

**3.2.2 PROBLEM**

**Location:** D – A105 Ridge Avenue southwest of junction with Berkeley Gardens (Sheet 30/47)

**Summary:** Bus passengers boarding or alighting may result in collisions with cyclists on the track

The Audit Team are concerned that the proposed cycle track runs immediately adjacent to the proposed bus stop boarder. Therefore bus passengers would board / alight a bus from / onto the cycle track. This may result in cyclists diverting away from the cycle track whilst their path is obscured, which may result in increased risk of collisions with pedestrians or vehicles who may not expect cyclists diverting from the track. In addition, bus passengers alighting may not anticipate or be able to see approaching cyclists immediately adjacent to the bus, which may result in cycle to pedestrian type collisions.

**RECOMMENDATION**

It is recommended that the layout of the bus stop boarder / cycle track is altered to mitigate the potential interactions with bus passengers. This may include, but is not limited to, providing an increased separation between the boarding / alighting area and the cycle track.

Design Organisation Response	Accepted / Part Accepted / Rejected
<p>The bus boarders in section 12 will incorporate a 540mm wide buffer strip of kerb and tegula blocks between kerb face and edge of the cycle track running lane.</p> <p>The boarder areas where they alter to footway level will be highlighted in different materials and contrasting colours to signify to all users that they are entering what is, effectively, a shared area.</p> <p>Approaching cyclists will access this area via a ramp, which together with the visual layout of the bus boarder area will indicate to slow their speed and take caution.</p>	
<p><b>Client Organisation Comments</b></p>	
<p>Location B - Designer’s response accepted – operation of the bus stop boarders will be monitored post-implementation.</p>	

### 3.3 TRAFFIC SIGNALS

#### 3.3.1 PROBLEM

**Location:** E – A105 Ridge Avenue northbound approach to junction with Bush Hill Road (Sheet 30/47)

**Summary:** Proposed traffic signal layout may not be conspicuous and may lead to shunt or overshoot type collisions.

The Audit Team are concerned that the nearside primary and offside / far sided secondary traffic signals may be obscured by large vehicles,. Therefore this may result in an increased potential for motorists, particularly those in the offside lane during busy periods may not suitably sight a traffic signal. This may result in late braking and an increased potential for shunt type collisions or failure to adhere to a red traffic signal with an increased potential for collisions with opposing flows within the junction or pedestrians crossing.

#### RECOMMENDATION

It is recommended to ensure that at least a single primary traffic signal is clearly visible from each approach lane to the junction. This may include but is not limited to providing a traffic island to house an offside primary traffic signal or an extended height traffic signal pole or mast arm.

Design Organisation Response	Accepted / Part Accepted / Rejected
For vehicles travelling northbound approaching the junction with Bush Hill Road there are 3 traffic signals for vehicles to look at. We do not believe that providing an additional primary signal pole will decrease the potential for late braking or shunt type collisions. Due to road space constraints it is not feasible to alter the layout of the junction so that an additional traffic island for a signal pole can be provided.	
Client Organisation Comments	
Designer's response accepted.	

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### 3.4 PARKING

#### 3.4.1 PROBLEM

**Location:** F – A105 Village Road parking bays to the nearside of the southwest bound lanes approaching Bush Hill Road (Sheet 30/47)

**Summary:** Proposed parking bays may result in increased collisions

The Audit Team are concerned that vehicles entering / exiting the proposed on footway parking bays may:

- Over-run on to the adjacent cycle track to align themselves within the bays,
- Have reduced inter-visibility to cyclists on the adjacent track due to the proximity of the bus shelter,
- Not have sufficient visibility of cyclists in the cycle tracks due to the angle of approach / entry and cyclists being in a potential blind spot,
- Result in dooring of cyclists in the cycle tracks.

This may therefore result in increased potential for injuries to cyclists as vehicles utilise these parking bays.

#### RECOMMENDATION

It is recommended to alter the parking provision so that it does not involve motorists entering (including dooring) or crossing the cycle tracks.

Design Organisation Response	Accepted / Part Accepted / Rejected
There is 2.5m space from kerb to edge of cycleway which is more than adequate for a vehicle to manoeuvre into the parking bay without over running onto the cycleway. Due to the bus stop being just before the parking bays, cyclists will be travelling at a much lower speeds because of the shared space so they will be more aware of their surroundings. The lining for the parking leaves a 0.5m buffer between the cycle lane to help prevent dooring.	
Client Organisation Comments	
Designer's response accepted.	

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End of list of problems identified and recommendations offered in this Stage 2 Road Safety Audit

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## 4.0 ISSUES IDENTIFIED DURING THE STAGE 2 ROAD SAFETY AUDIT THAT ARE OUTSIDE THE TERMS OF REFERENCE

Safety issues identified during the audit and site inspection that are considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Client Organisation, are set out in this section. It is to be understood that, in raising these issues, the Audit Team in no way warrants that a full review of the highway environment has been undertaken beyond that necessary to undertake the Audit as commissioned.

### 4.1 ISSUE

**Location:** General cycle routes in both directions on the A105 Ridge Avenue / Village Road junction with Bush Hill Road (Sheet 30/47)

**Reason considered to be outside the Terms of Reference:** Unclear pedestrian provision.

The proposed layout may be considered too inconvenient for cyclists attempting to keep momentum through the junction. For example southwest bound cyclists approaching the junction could be 'held up' or delayed as other users cross their path such as:

1. Pedestrians accessing / congregating around the bus stop area
2. Pedestrians accessing / congregating around the pedestrian crossing (across Village Road)
3. Opposing cyclists crossing diagonally to the south-eastern side of the junction (give-way indicated)
4. Opposing cyclists attempting to cross westbound, entering from Church Street and potentially crossing the path of southwest bound cyclists
5. Pedestrians accessing / congregating around the pedestrian crossing (across both sections of Church Street)

This may result in cyclists taking to the carriageway near to the bus stops on each approach where they are given very little assistance.

It is appreciated that a significant level of intervention is provided to encourage segregated cycling and that provision on carriageway may be perceived as guidance to deviate from the designated and predominantly segregated cycle routes. Therefore, it is recommended that the use of the cycle facilities and cyclists remaining on carriageway at this junction are carefully monitored with a view to developing proposals if necessary.

Design Organisation Response	Accepted/ Part Accepted / Rejected
Noted. Due to capacity and layout of the junction, as well as providing a link to a crossing quietway scheme it was not possible to keep the cycleway on carriageway across this junction. Nevertheless, monitoring post construction may be advisable.	
Client Organisation Comments	
Designer's response accepted – operation of the junction will be monitored post-implementation.	



#### 4.2 ISSUE

**Location:** Various – throughout segregated on footway cycle tracks

**Reason considered to be outside the Terms of Reference:** Issue for clarification rather than a defined road safety concern.

The typical cross section of the on footway cycle track indicates that 3 rows of granite setts will be provided alongside the edges of the track. It is considered that these are likely to provide a reasonable tonal contrast and a texture / tactile difference to highlight the cycle track / edge of footway.

It is assumed that these will be laid almost flush (maximum upstand of less than 6mm) so that they do not present a trip hazard for pedestrians.

Design Organisation Response	Accepted / Part Accepted / Rejected
Confirmed	
Client Organisation Comments	
Designer's response accepted.	

#### 4.3 ISSUE

**Location:** 1 – Bush Hill Road junction with Avenue Parade.

**Reason considered to be outside the Terms of Reference:** Unclear pedestrian provision.

The proposed layout at the northern extent of Avenue Parade vehicular exit on to Bush Hill Road appears to have a section of bi-directional cycle track which is raised to footway level. This is slightly unclear as a ramp is only indicated on Avenue Parade side and not on Bush Hill Road side of the raised track.

The existing pedestrian route from the large island between Avenue Parade and Bush Hill Road / Ridge Avenue may be unclear. Particularly for visually impaired users who are likely to encounter the ramped section of carriageway across Avenue Parade, the tramline tactile paving for the cycle track and pedestrian tactile paving across the cycle track but none leading to an onward footway.

This is considered to be a reduced level of service, which may cause confusion and potential discomfort rather than mislead pedestrians into a potential hazard. However, it is recommended that these issues are considered alongside the recommendation to problem 3.3.1.

There is also a give way road marking indicated to the north of this area which crosses the vehicular access to No.2 Bush Hill Road. As this is a vehicular crossover to a house it is considered that this has been indicated in error.

Design Organisation Response	Accepted / Part Accepted / Rejected
It is expected that pedestrians will continue on to the shop fronts. Pedestrians that wish to cross the road at the junction will continue along the cycle track edge to the shared space. The 'give way' marking mentioned at no.2 Bush Hill road is not a give way marking and is a marking to indicate to cyclists that there is a ramp up.	

**Client Organisation Comments**

Scheme to stop short of service road egress, allowing detailed design to be reviewed as part of the Quietway works.

**4.4 ISSUE**

**Location:** 2 – A105 Ridge Avenue / Village Road junction with Bush Hill Road (Sheet 30/47)

**Reason considered to be outside the Terms of Reference:** Issue for consideration.

The tactile paving for controlled crossing points appears to have been provided inconsistently within the junction. At various locations the 'stem' has been reduced in length so that it terminates before the likely cyclist route. However, at the locations indicated the 'stem' has been continued to the rear of the footway area. Whilst the extended stems may comply with guidance they are considered to be excessive and inconsistent with the current provision, the provision elsewhere within the junction and less likely to guide visually impaired users away from the likely routes for cyclists.

It is therefore recommended that a consistent method is used for the tactile paving 'stems' this may include but is not limited to terminating them prior to the likely cycle routes.

Design Organisation Response	Accepted / Part Accepted / Rejected
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Tactiles have been updated to be consistent.

**Client Organisation Comments**

Designer's response accepted.

**4.5 ISSUE**

**Location:** 3 – A105 Ridge Avenue / Village Road junction with Church Street / Bush Hill Road (Sheet 30/47)

**Reason considered to be outside the Terms of Reference:** Issue for consideration.

The proximity and alignment of the cycle track may result in confusion for a visually impaired pedestrian. Locations where this has been identified as a potential issue include:

- Northeast bound across Bush Hill Road,
- Southbound across the left turn filter on Church Street (pedestrians may end up in the cycle track / lane),
- Northeast bound pedestrians walking kerbside southwest of Berkeley Gardens (pedestrians may inadvertently enter the carriageway)

It is therefore recommended that tramline tactile paving may be beneficial to inform visually impaired users that they are entering a designated cycle lane.

Design Organisation Response	Accepted / Part Accepted / Rejected
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Corduroy paving was considered to notify pedestrians that they were entering a shared space, however after consultation with safety advisors it was decided not to include these. This was because even though they will inform a visually impaired person that the environment has changed, it does not necessarily protect them or remove the risk. Within the areas it will be the responsibility of cyclists as much as pedestrians to proceed in a cautious manner.

**Client Organisation Comments**

Designer's response accepted – however, operation of the junction will be reviewed post-implementation.

**4.6 ISSUE**

**Location:** 4 – A105 Ridge Avenue / Village Road junction with Church Street / Bush Hill Road (Sheet 30/47)

**Reason considered to be outside the Terms of Reference:** Issue for consideration.

The proposed 'ramps' are located immediately adjacent to the controlled pedestrian crossing carpets. It is possible therefore that a pedestrian straying from the crossing carpets / crossing the studs such as to avoid another pedestrian may unexpectedly encounter the ramp and could be destabilised.

It is therefore recommended to increase the distance between the crossing carpet and the 'ramps'.

<b>Design Organisation Response</b>	<b>Accepted / Part Accepted / Rejected</b>
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Extending the ramps may lead to vehicles being half on half off the ramps whilst waiting at the stop lines which would be inappropriate. Extending the raised table further may lead to it losing its effectiveness and vehicles travelling at higher speeds across the junction.	
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**Client Organisation Comments**

Designer's response accepted.

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## 5.0 SIGNATURES AND SIGN-OFF

### 5.1 AUDIT TEAM STATEMENT

We certify that we have examined the drawings and documents listed in Appendix A. to this Safety Audit report. The Road Safety Audit has been carried out in accordance with TfL Procedure SQA-0170 dated May 2014, with the sole purpose of identifying any feature that could be removed or modified in order to improve the safety of the measures. The problems identified have been noted in this report together with associated suggestions for safety improvements that we recommend should be studied for implementation.

No one on the Audit Team has been involved with the design of the measures.

#### AUDIT TEAM LEADER:

Name: Shane Martin MCIHT, MSoRSA Signed: 

Position: Principal Road Safety Auditor Date: 25/11/2016

Organisation: Transport for London, Road Safety Audit  
Asset Management Directorate

Address: 4<sup>th</sup> Floor Palestra, 197 Blackfriars Road, London, SE1 8NJ

Contact: [shane.martin@tfl.gov.uk](mailto:shane.martin@tfl.gov.uk) (020 3054 2590)

#### AUDIT TEAM MEMBER:

Name: Kevin Seymour Signed: 

B Sc, PG Dip TS, MCIHT, MSoRSA Date: 25/11/2016

Position: Principal Road Safety Auditor

Organisation: Transport for London, Road Safety Audit  
Asset Management Directorate

Address: 4<sup>th</sup> Floor Palestra, 197 Blackfriars Road, London, SE1 8NJ

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## **5.2 DESIGN TEAM STATEMENT**

In accordance with SQA-0170 dated May 2014, I certify that I have reviewed the items raised in this Stage 2 Safety Audit report. I have given due consideration to each issue raised and have stated my proposed course of action for each in this report. I seek the Client Organisations endorsement of my proposals.

**Name:** Colin Aarons

**Position:** Project Manager

**Organisation:** Jacobs

**Signed:** *Colin Aarons*

**Dated:** 10.02.17

## **5.3 CLIENT ORGANISATION STATEMENT**

I accept these proposals by the Design Organisation.

**Name:** David Taylor

**Position:** Head of Traffic & Transportation

**Organisation:** LB Enfield

**Signed:**



**Dated:** 13.03.2017

## **5.4 SECONDARY CLIENT ORGANISATION STATEMENT (where appropriate)**

I accept these proposals by the Design Organisation.

**Name:**

**Position:**

**Organisation:**

**Signed:**

**Dated:**

## APPENDIX A

### Documents Forming the Audit Brief

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE</b>
B240A024-DG-A105-0100-030 Rev A	Cycle Enfield A105 - General Arrangement Sheet 30 of 47
B240A024-DG-A105-0100-031 Rev -	Cycle Enfield A105 - General Arrangement Sheet 31 of 47
B240A024-DG-A105-0100-032 Rev -	Cycle Enfield A105 - General Arrangement Sheet 32 of 47
B240A024-DG-A105-0200-030 Rev -	Cycle Enfield A105 - Site Clearance Sheet 30 of 47
B240A024-DG-A105-0200-031 Rev -	Cycle Enfield A105 - Site Clearance Sheet 31 of 47
B240A024-DG-A105-0200-032 Rev -	Cycle Enfield A105 - Site Clearance Sheet 32 of 47
B240A024-DG-A105-0500-030 Rev A	Cycle Enfield A105- Proposed drainage plan Sheet 30 of 47
B240A024-DG-A105-0500-031 Rev A	Cycle Enfield A105- Proposed drainage plan Sheet 31 of 47
B240A024-DG-A105-0500-032 Rev A	Cycle Enfield A105- Proposed drainage plan Sheet 32 of 47
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B240A024-DG-A105-0700-031 Rev -	Cycle Enfield A105 – Road Pavements General Sheet 31 of 47
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B240A024-DG-A105-1100-031 Rev -	Cycle Enfield A105 - Kerbs footways and paved areas Sheet 31 of 47
B240A024-DG-A105-1100-032 Rev -	Cycle Enfield A105 - Kerbs footways and paved areas Sheet 32 of 47
B240A024-DG-A105-1200-030 Rev B	Cycle Enfield A105 - Traffic signs and road markings Sheet 30 of 47
B240A024-DG-A105-1200-031 Rev B	Cycle Enfield A105 - Traffic signs and road markings Sheet 31 of 47
B240A024-DG-A105-1200-032 Rev A	Cycle Enfield A105 - Traffic signs and road markings Sheet 32 of 47
B240A024-DG-A105-1300-030 Rev A	Cycle Enfield A105 – MCHW Series 1300 Road Lighting Column & Bracket Mainline Layout Plan Sheet 30 of 47
B240A024-DG-A105-1300-031 Rev A	Cycle Enfield A105 – MCHW Series 1300 Road Lighting Column & Bracket Mainline Layout Plan

## A105 from Berkeley Gardens to Borden Avenue, Cycle Enfield - Section 12

Stage 2 Road Safety Audit Report

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B240A024-DG-A105-1400-012 Rev A	Cycle Enfield A105 – MCHW Series 1400 Schedule of Electrical Works Section 12 of 14

### DOCUMENTS

- Safety Audit Brief
- Site Location Plan
- Traffic signal details
- TfL signal safety checklist
- Departures from standard
- Previous Road Safety Audits
- Previous Designer Responses
- Collision data
- Collision plot
- Traffic flow / modelling data
- Pedestrian flow / modelling data
- Speed survey data
- Other documents

### DETAILS (where appropriate)

2524/032/A105/BOR/2016

A105 Enfield - Proposed Road Marking Schedule  
A105 Enfield - Sign Schedule - Section 12

## **APPENDIX B**

### **Problem Locations**

