

Cycle Enfield - Section 14

A105 Bush Hill to Roseneath Walk

Stage 2 Road Safety Audit

Ref: 2759.03.14/032/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

Version	Status	Date
A	Audit report issued to Client	12/01/2017



1.0 INTRODUCTION

1.1 Commission

- 1.1.1 This report results from a Stage 2 Road Safety Audit carried out on the Cycle Enfield - Section 14, A105 Bush Hill to Roseneath Walk 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 25th November 2016. It took place at the Palestra offices of TfL on 16th December 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 16th December 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 14 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: Demos Kettenis – 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 14 (Sheets 39 – 44) of this route only, along the A105 from Bush Hill to Roseneath Walk.

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 14) part of the proposals. Items raised in the previous Audit Report deemed relevant to this section can be summarised as follows:

- Problem 3.1.1 Combined zebra / cycle crossing facilities – Proposed zebra and cycle crossing layouts may result in drivers failing to give way to cyclists.
This problem remains in the detailed design proposals and is therefore raised again within this report as problem 3.2.1.
- 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 in the detailed design proposals and is therefore raised again within this report as problem 3.1.2.
- Problem 3.1.4 Side road cycle crossovers at raised junction tables - Drivers turning from main roads to side roads may brake late due to cyclists crossing side roads, leading to nose to tail collisions, or cycle to vehicle conflict.
This problem remains in the detailed design proposals and is therefore raised again within this report as problem 3.1.4.
- Problem 3.1.5 Bus stops / loading bays close to side road junctions and accesses – may restrict visibility splays and lead to failure to give way type collisions.
This problem remains in the detailed design proposals and is therefore raised again within this report as part of problem 3.3.2.
- Problem 3.2.1 Zebra Crossing near Village Road – narrow footways may bring cyclists and pedestrians into conflict.
This problem does not appear to be present in the detailed design proposals but a similar issue relating to conflicts between cyclists and pedestrians is raised as part of problem 3.2.1 and issue 4.2.
- Problem 3.3.1 Zebra crossing near Bush Hill – Poor visibility at the bend may lead to failure to give way type collisions involving pedestrians.
This problem is resolved in the detailed design proposals and is therefore not raised again within this report.
- Problem 3.3.2 Bush Hill and Uvedale Road – Inconsistent cycle crossing facilities may lead to late braking nose to tail or failure to give way type collisions.
This problem is resolved in the detailed design proposals and is therefore not raised again within this report.

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

Issue 4.1 The revised kerb lines at side roads may alter vehicle swept paths and it is not clear if these have been assessed or may result in conflicts between turning vehicles.

This issue is considered to remain in part and will therefore be raised again as part of problem 3.3.1 in this Audit report.

Issue 4.2 Bus boarders separated from the footways by cycle lanes may result in difficulties for some users to access the bus stop and may lead to low level cycle / pedestrian conflicts.

This issue is considered to remain in part and will therefore be raised again as part of problem 3.1.3 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>	

3.1.2 PROBLEM

Location: General to scheme, multiple locations

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

The cycle lanes return to the general carriageway just before various side road junctions. It may be difficult for both sets of road users to understand who has priority and this may lead to turning collisions involving cyclists. Cyclists may not anticipate and vehicles turning across their path in close proximity to them leaving the semi segregated cycle lane, which could lead to increased risk of side impact collisions as motorists cross the path of cyclists.

RECOMMENDATION

It is recommended that the priority is clearly defined. Furthermore, 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.

Design Organisation Response	Accepted / Part Accepted / Rejected
Many of the side roads are tight residential streets. Therefore vehicles should be travelling at low speeds whilst turning into the side roads. Some have had radii tightened which should further reduce vehicular speed and reaction/assessment time. Cycle symbols have been provided on the carriageway across the mouths of the junctions to help warn motorists of the presence of cyclists.	
Client Organisation Comments	
Designer's response accepted	

3.1.3 PROBLEM

Location: General to scheme, multiple locations

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

The Audit Team are concerned that the proposed cycle tracks run immediately adjacent to proposed bus stop boarders. Therefore bus passengers would board / alight a bus from / onto the cycle tracks. This may result in cyclists diverting away from the cycle track whilst their path is obscured, which may result in increased 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. Visually impaired pedestrians, particularly those alighting from a bus may follow the kerb line and inadvertently enter the carriageway. Visually impaired pedestrian unknowingly within the carriageway are at an increased potential for collisions with motorists.

RECOMMENDATION

It is recommended that the layout of the bus stop boarders / cycle tracks are altered to mitigate the potential interactions with bus passengers. This may include, but is not limited to, providing tramline tactile paving prior to the ramps down to carriageway level and an increased separation between the boarding / alighting area and the cycle track.

Design Organisation Response	Accepted / Part Accepted / Rejected
<p>Bus boarders have been introduced with a 0.5m buffer at locations where there is not scope to introduce a bus stop by-pass, to deliver an acceptable level of route continuity particularly at conflict points such as bus stops, where buses will be pulling into the kerb, through the desire line of a cyclist. The proposed bus stop boarders will use different material/tones to clearly show a change in environment from a segregated facility to a shared space. This is not dissimilar to a shared space environment adjacent to a toucan crossing, where pedestrian and cycles mix.</p> <p>Monitoring can be undertaken post-implementation to review the safe operation of the proposed design.</p>	
Client Organisation Comments	
Designer's response accepted – operation of the bus stop boarders will be monitored post-implementation.	

3.1.4 PROBLEM

Location: General to the scheme – side road cycle crossovers at raised junction tables

Summary: Drivers turning from main roads to side roads may brake late due to cyclists crossing side roads, leading to nose to tail collisions, or cycle / vehicle conflicts

At a number of locations the off-road cycle facilities cross side roads at raised table areas. Drivers turning from the main road have a short stacking space between the main road and these cycle crossovers due to the location of the give way lines to create priority for cyclists. Drivers may be confused by the arrangement and fail to give way to cyclists, or may stop suddenly and remain partially within the main carriageway, which may lead to late braking nose to tail collisions.

Drivers entering the main road may be confused by the double give way feature, and/or stop across the cycle lane, which may lead to nose to tail collisions or cycle to vehicle conflict.

There is inconsistency in the provision of give ways at such crossing locations and this may confuse users and lead to failure to give way type conflicts between cycles and vehicles, or vehicle to vehicle type conflicts where give-ways have not been provided as vehicles enter the main road.

RECOMMENDATION

It is recommended that if such cycle priority is to be provided at side roads then this should be clearly designated, an appropriate stacking space should be provided between the main road and cycle crossing to allow vehicles to wait between the main road and cycle crossing without encroaching in to the main carriageway or blocking the cycle crossing (reference London Cycle Design Guide). Additionally, it may be beneficial to provide additional give way markings consistently as vehicles enter the main road.

Design Organisation Response	Accepted / Part Accepted / Rejected
Where there is available footway space an offset of 6m between the cycle lane and junction mouth has been provided to allow cycle priority with scope for a car to turn into the side road and wait, without blocking A105 traffic. However, given the available space this is not possible at the majority of side roads and has only been included where possible.	
Client Organisation Comments	
Designers response accepted	

3.1.5 PROBLEM

Location: General – various footway level sections of cycle track

Summary: Potential lack of delineation may lead to collisions with visually impaired pedestrians

The Audit Team are concerned that the proposed measures do not appear to indicate a delineator between the footway and cycle tracks provided at footway level. This could lead to visually impaired pedestrians inadvertently entering these sections of cycle lanes or potentially entering the carriageway via the ramp between the two facilities. Cyclists on the cycle track or motorists on the carriageway are unlikely to anticipate a visually impaired pedestrian and this may therefore result in increased collisions between these users.

RECOMMENDATION

It is recommended that as well as a good visual differentiation between the footway and cycle tracks, a detectable delineator should be provided to ensure that all users are aware of the edge of footway whilst not presenting a trip hazard.

Design Organisation Response	Accepted / Part Accepted / Rejected
<p>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.</p> <p>The cycle track will be surfaced in a suitable colour, to provide tonal difference with the surrounding footway.</p>	
Client Organisation Comments	
Designer's response accepted	

3.1.7 PROBLEM

Location: General – Parking permitted adjacent to cycle track

Summary: Parking / loading permitted adjacent to the cycle track may result in users exiting or unloading within the cycle track

The proposals include retention of existing parking bays in this area. There appears to be a buffer of approximately 0.5m between the parking bays and the proposed cycle track. The Audit Team are concerned that pedestrians, users unloading and disabled users entering / exiting these vehicles, may do so within the cycle track which may result in an increased potential for collisions between southbound cyclists and people using / loading to / from the parking bays.

RECOMMENDATION

It is recommended that the buffer is increased to ensure that the cycle path is kept as clear as possible and suitable pedestrian and disabled user access to the parking bays is provided over the cycle track.

Design Organisation Response	Accepted / Part Accepted / Rejected
<p>A minimum of 1.0m buffer has been provided between the edge of cycle lane and the carriageway/parking or loading bays for this section. This is considered wide enough to allow for opening doors and people to disembark from vehicles without causing an obstruction to the cycle lane.</p> <p>Should there be occasion when users unload onto the cycle track, rather than within the parking bay, then forward visibility on the approach to the parking area is sufficient for cyclists to slow down and warn of their approach to the person unloading.</p>	
Client Organisation Comments	
<p>Designer's response accepted</p>	

3.1.8 PROBLEM

Location: Various – commencements of full height kerbs

Summary: Motorists may not notice and collide with the commencement of full height kerbs

The Audit Team are concerned that motorists may not appreciate that the edge of the cycle track includes a full height kerb alongside the 'floating' bus stops. This kerbed physical segregation commences within the carriageway running lane and it may not include a suitable vertical feature to highlight its presence or guide users alongside it, particularly in dark conditions. It may therefore, not be clear or conspicuous. Motorists may collide with the kerb or swerve to avoid the features if they are noticed within close proximity, which may result in loss of control type collisions / injury to those on or within the vehicle.

RECOMMENDATION

It is recommended to alter the layout to suitably guide vehicles alongside the kerbs. This may include but is not limited to providing a vertical illuminated feature such as an Illuminated Guide Post (IGP) to provide suitable guidance alongside the feature.

Design Organisation Response	Accepted / Part Accepted / Rejected
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On the approach to the location the cycle lane is marked with line of Orcas, so motorists should already be in the correct alignment. Line marking to diagram no. 1010 has been used to delineate the edge of carriageway. This line marking will also be offset 150mm from the edge of the kerb to ensure vehicles don't travel too closely to the kerb.

Client Organisation Comments

Designer's response accepted – the need for additional features to increase the conspicuity of the kerbing will be reviewed post-implementation.

3.2 CROSSING FACILITIES

3.2.1 PROBLEM

Location: General – parallel zebra and cycle crossing

Summary: Proposed parallel zebra and cycle crossings may result in drivers failing to give way to cyclists

The Audit Team are concerned that the proposed parallel zebra and cycle crossings may not be understood by motorists particularly as the layout is new to drivers. The following issues may result in an increased potential for collisions:

- Zebra crossings are well established and the conspicuousness of the thick black and white striped road markings help to clearly indicate that a pedestrian has priority over vehicular traffic in this area. The lack of these markings within the proposed cycle section of the crossing may lead to ambiguity over who has priority and motorists may fail to give way to cyclists.
- Slow approach speeds by pedestrians enable an approaching motorist to notice they intend to cross, slow down and stop. Cyclists are likely to approach faster than pedestrians and may therefore fail to be noticed by approaching motorists.
- Motorists turning out of side road junctions encountering the crossings in close proximity may fail to give way, particularly the cycle element of the crossing which is less conspicuous.
- The routes / dropped kerb facilities intended for cyclists to enter the cycle crossing from the cycle track / carriageway are not clearly defined. This may result in cyclists using undetermined and inconstant routes which may result in increased collisions with pedestrians.

These issues may lead to an increased potential for collisions between motorists and cyclists or shunt type collisions as motorists brake hard as they unexpectedly encounter a cyclist attempting to assert priority. It is also noted that the cycle part of the proposed crossing indicates kerbs with an upstand of 25mm rather than flush kerbs and does not include cycle symbol road markings as prescribed in TSRGD 2016.

RECOMMENDATION

It is recommended to provide measures which will allow cyclists to assert priority over motorists. This could include an alternative crossing type, or provide appropriate temporary signing etc to inform drivers of the intended usage until this layout becomes more commonplace. It may also be beneficial to include cycle symbols and to relocate the crossing further away from the side roads.

Design Organisation Response	Accepted / Part Accepted / Rejected
This type of crossing appears in the new TSRGD which came into force on the 22nd of April 2016. We refer to page 476 Sign table Item 53, Schedule 14, Part 2 in the new TSRGD document. The crossings are proposed for the A105 as well as other major corridors as part of Cycle Enfield so will be common within the borough of Enfield within the next few years. The crossings have been sited at locations where a Greenway is intersecting with the A105 corridor and crossing facilities are required to safely link the routes.	
Client Organisation Comments	

Cycle Enfield - Section 14, A105 Bush Hill to Roseneath Walk
Stage 2 Road Safety Audit Report

Designer's response accepted

3.3 JUNCTIONS

3.3.1 PROBLEM

Location: General to scheme, multiple locations

Summary: The altered kerb lines may result in increased collisions as turning vehicles increasingly encroach into the path of another user

The proposals include various kerb line alterations which may increase the potential for turning vehicles to encroach into another user's path. This could lead to an increased potential for head on or side impact type collisions as a user turning into or out of the side roads or accesses is encountered by a vehicle travelling in the opposing direction.

RECOMMENDATION

It is recommended to undertake / check swept path analysis and make alterations if necessary to ensure that the vehicles likely to use these roads can undertake typical manoeuvres with minimal intrusion into the path of another vehicle.

Design Organisation Response	Accepted / Part Accepted / Rejected
Swept paths have been checked.	
Client Organisation Comments	
Designer's response accepted	

3.3.2 PROBLEM

Location: A – Bus stop close to Park Crescent

Summary: Stationary vehicles close to side road junctions may restrict junction visibility splays and lead to failure to give way type collisions

Bus stops are proposed close to this side road junction. Stationary vehicles close to side roads may restrict visibility for drivers emerging from the side roads and this may lead to failure to give way type collisions. The Audit Team are concerned that vehicles passing waiting buses may not suitably observe vehicles egressing from this side road which may result in side impact type collisions.

RECOMMENDATION

It is recommended that appropriate visibility splays at side roads should be provided and kept free of obstruction and stationary vehicles. This may require alterations to the positioning and / or extent of these bus stops.

Design Organisation Response	Accepted / Part Accepted / Rejected
This is an existing bus stop. Additionally, the scheme reduces carriageway widths, which will reduce traffic speeds along the corridor, compared to existing, which will mitigate the reduction in visibility splays when compared to existing. We would also expect to see a behavioural change for all road users give the introduction of the transformational cycle facilities along the length of the corridor.	
Client Organisation Comments	
Designer's response accepted	

3.3.3 PROBLEM

Location: B – access to Roseneath Walk

Summary: Potential ambiguity over priorities may lead to collisions between vehicles and pedestrians / cyclists

It appears that the existing slip road area between Roseneath Walk and the main carriageway is to be converted to footway with a cycle path but also facilitates vehicular access to the property frontages. It is not clear whether motorists, pedestrians or cyclists have priority in this area or to what extent vehicles are permitted to use the footway area. Therefore this may lead to an increased potential for collisions between vehicles which may not be expected by pedestrians or cyclists particularly those with visual impairments.

RECOMMENDATION

It is recommended to provide a clear priority and defined extents to which vehicles are permitted. To ensure that the extents which vehicles may be present is clear to all users this may include, but is not limited to providing a detectable kerb upstand between the area to be used as carriageway and the footway and cycle track.

Design Organisation Response	Accepted / Part Accepted / Rejected
This area is designated as a shared area.	
Client Organisation Comments	
The area north of Roseneath will become a shared space with markings used to clearly define the cycle track and parking bays. The vehicle access to the rear of Lincoln Court forms part of the shared space but additional markings could be considered if necessary following post-implementation feedback/monitoring.	

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

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: Various – junctions with proposed raised tables

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

Various junctions are proposed to have raised tables implemented. The kerb details indicate that away from crossing points where transition or flush kerbs are proposed the kerbs will have an upstand of 125mm or to match existing. It is not clear therefore what the upstand will be at the raised tables.

It is assumed that these will provide a detectable upstand for visually impaired users.

Design Organisation Response	Accepted / Part Accepted / Rejected
Upstand will be 25mm.	
Client Organisation Comments	
Designer's response accepted	

4.2 ISSUE

Location: Various – shared use cycle / footway

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

It is not clear what the extents of the shared use surfaces are as none of the shared use extents appear to be defined. Additionally, at some locations it is not clear what the intended cyclist route is. For example, the parallel zebra / cycle crossing south of Village Road indicates that cyclists can cross on to the footway but does not define the extents of the shared use area.

In order to avoid cyclists continuing on the footway and the potential for low level cycle / pedestrian conflicts / unexpected cycle manoeuvres, it may be beneficial to clearly determine what the intended cycle routes are. This may include but is not limited to appropriate tactile paving and road markings / signs to indicate the intended routes / manoeuvres.

Design Organisation Response	Accepted / Part Accepted / Rejected
Shared areas will be identified by appropriate signage and the change from specific cycle track surfacing (buff asphalt) to generic footway surfacing (paving slabs).	
Client Organisation Comments	

Designer's response accepted

4.3 ISSUE

Location: Various – throughout this section

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

Planting / SuDs 'Rain Gardens' are proposed immediately adjacent to the carriageway / cycle lanes at various junctions throughout this section.

The full details of the proposed features have not been provided but it is assumed that these will be of a type / maintained so that they do not restrict visibility or overgrow into the live carriageway areas.

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

4.4 ISSUE

Location: Various – Tactile paving provisions

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

The proposed tactile paving layouts may be confusing such as the sections at the northeastern section at Roseneath Walk which are very close together and may be difficult for visually impaired users to distinguish between. Additionally the 'tail' or 'stem' of the tactile paving on the eastern side of the zebra crossing north of Lincoln Road and south of Bush Hill extend to the rear of the wide footway which seems excessive and inconsistent with the surrounding area. It may therefore be beneficial to review the tactile paving to ensure that a suitable and consistent provision is provided to aid visually impaired users.

Design Organisation Response	Accepted / Part Accepted / Rejected
The arrangement of tactile pavement at the north-eastern section at Roseneath Walk is constrained by an existing on-footway parking bay on the northern side and the pedestrian desire lines.	
The 'stem' of the tactile paving on the eastern side of the zebra crossing north of Lincoln Road and south of Bush Hill has been extended to keep consistency with other locations on the scheme where the tail has been extended to the back of the footway/building line. In both these cases, the recommended maximum tail length of 5m as per TfL guidance doesn't cover the pedestrian desire lines, which are behind the on-footway cycle track. TfL guidance recommends eliminating the tail completely in cases where the maximum length of 5m does not cover the pedestrian desire lines. However, to be consistent with other locations on the scheme and to help guide visually impaired pedestrians, it was deemed to retain and extend the tactile	

paving tails at these locations.

Client Organisation Comments

Designer's response accepted.

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: 12/01/2017

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

Address: 4th Floor Palestra, 197 Blackfriars Road, London, SE1 8NJ

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

AUDIT TEAM MEMBER:

Name: Kevin Seymour Signed: 
B Sc, PG Dip TS, MCIHT, MSoRSA

Position: Principal Road Safety Auditor Date: 12/01/2017

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

Address: 4th Floor Palestra, 197 Blackfriars Road, London, SE1 8NJ

Contact: kevinseymour@tfl.gov.uk (020 3054 1037)

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 Organisation's endorsement of my proposals.

Name: Colin Aarons

Position: Project Manager

Organisation: Jacobs

Signed: *Colin Aarons*

Dated: 24.02.17

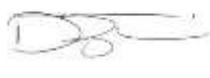
5.3 CLIENT ORGANISATION STATEMENT

I accept these proposals by the Design Organisation.

Name: David Taylor

Position: Head of Traffic & Transportation

Organisation: LB Enfield

Signed: 

Dated: 31.05.2017

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

DRAWING NUMBER	DRAWING TITLE
B240A024-DG-A105-0100-039 Rev -	Cycle Enfield A105 - General Arrangement Sheet 39 of 47
B240A024-DG-A105-0100-040 Rev -	Cycle Enfield A105 - General Arrangement Sheet 40 of 47
B240A024-DG-A105-0100-041 Rev -	Cycle Enfield A105 - General Arrangement Sheet 41 of 47
B240A024-DG-A105-0100-042 Rev -	Cycle Enfield A105 - General Arrangement Sheet 42 of 47
B240A024-DG-A105-0100-043 Rev -	Cycle Enfield A105 - General Arrangement Sheet 43 of 47
B240A024-DG-A105-0100-044 Rev -	Cycle Enfield A105 - General Arrangement Sheet 44 of 47
B240A024-DG-A105-0200-039 Rev -	Cycle Enfield A105 - Site Clearance Sheet 39 of 47
B240A024-DG-A105-0200-040 Rev -	Cycle Enfield A105 - Site Clearance Sheet 40 of 47
B240A024-DG-A105-0200-041 Rev -	Cycle Enfield A105 - Site Clearance Sheet 41 of 47
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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 14

APPENDIX B

Problem Locations

