

Cycle Enfield - Section 8

A105 Queens Avenue / Compton Road

Stage 2 Road Safety Audit

Ref: 2759.03.08/032/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	11/01/2017



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 8, A105 Queens Avenue junction with Compton Road 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 8 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 8 (Sheet 19) of this route only, on the A105 Green Lanes at the junction with Queens Avenue / Compton Road.

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

- Problem 3.1.2 General to the scheme – town centre / shopping street areas – Narrowed footway areas in shopping streets may bring cyclists and pedestrians closer together and lead to pedestrian to cycle collisions.
- This problem remains in the detailed design proposals and is therefore raised again within this report as problem 3.1.7
- 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 3.1.2.
- 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 3.2.2.
- Problem 3.6.2 Compton Road – Loading bay and bus stop located close to the junction may lead to failure to give way type collisions.
- This problem remains in the detailed design proposals and therefore this is raised again as problem 3.2.2 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>	

3.1.2 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

The off-road cycle facilities cross the 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. No give way markings are present as vehicles enter the side roads, neither is there sufficient stacking space to accommodate a vehicle without it overhanging on to the main road. Therefore, drivers may be confused by the arrangement and / or reluctant to give way to cyclists as it results in them remaining partially within the main carriageway, which may lead to late braking nose to tail collisions. The potential for conflicts may be exacerbated by the proposed parking relatively close to the side road between the main carriageway and segregated cycle track.

Drivers entering the main road may be confused by the lack of give way markings and therefore an unclear priority. As a result motorists may fail to give way to traffic on the main road or stop across the cycle lane, which may lead to nose to tail collisions or cycle to vehicle conflict.

RECOMMENDATION

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 a single vehicle 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). Any 'floating' loading / parking bays should be located to ensure that sufficient intervisibility is provided between cyclists and motorists. 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
As much stacking space as the constraints of the road layout allow has been provided. The entry treatment should slow vehicles down enough to ensure that late breaking nose to tail collisions and cycle to vehicle conflict does not occur. The double give way features should emphasise the need for drivers to be more careful and avoid conflict with others. However, the layouts will be checked for consistency and updated, if necessary.	
Client Organisation Comments	
Designer's response accepted.	

3.1.3 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.	

3.1.5 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. 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
Due to site constraints a minimum of 0.5m buffer has been provided throughout the scheme between the edge of cycle lane and the carriageway/parking or loading bays. This is considered wide enough to allow for opening doors and people to disembark from vehicles without causing an obstruction to the cycle lane.	
On occasions where passengers are unloading vehicles, visibility ahead is good and cyclists will be given enough time to check speed and warn of approach, if necessary.	
Client Organisation Comments	
Designer's response accepted.	

3.1.6 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 stop' facility. This kerbed physical segregation commences within the carriageway running lane and it does not include a suitable vertical feature to highlight its presence or guide users alongside it. It may therefore, not be clear or conspicuous particularly during the hours of darkness. 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
It is unclear where this applies in Section 8. However, on the approach to such locations 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 further measures to increase conspicuity of the kerbing will be reviewed post-implementation.

3.1.7 PROBLEM

Location: A – Cycle track through shopping area north of j/w Compton Road

Summary: Narrowed footway areas in shopping streets may bring cyclists and pedestrians closer together and lead to pedestrian to cycle collisions

Within the main shopping streets the cycle lanes will reduce footways and segregate pedestrians from crossing points, bus stops and parking / loading bays. Pedestrians using or crossing the cycle lanes may be at a greater risk of collision with cyclists. This is of particular concern at, but not limited to, the area of narrowed footway to the north of the junction with Compton Road west of the bus stop. The constrained footway area which results from the proposed on footway cycle track may exacerbate the potential for collisions between cyclists and pedestrians.

RECOMMENDATION

It is recommended to alter the layout of the cycle track to ensure that the effective width of footway remains suitable to accommodate the high footfall in this area. This may include, but is not limited to, altering the alignment of the cycle track to maximise the available footway width.

Design Organisation Response	Accepted / Part Accepted / Rejected
Minimum footway width available at this location is 2.0m. The alignment for cycle track has been altered (pushed north-west) to accommodate more space for pedestrians waiting at the proposed bus stop area. It was suggested by TfL Bus team that this bus stop area is highly likely to be crowded by local school children, so it was deemed better to increase the capacity of the waiting area.	
Client Organisation Comments	
Designer's response accepted.	

3.2 JUNCTIONS

3.2.1 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
Vehicle tracking has been carried out.	
Client Organisation Comments	

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Designer's response accepted.

3.2.2 PROBLEM

Location: B – bus stops / loading / parking bays close to Compton Road

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

The proposed layout includes loading / parking bays to the south and a bus stop to the north of the junction with Compton Road. The Audit Team are concerned that 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 / side impact type collisions.

RECOMMENDATION

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 the bus stops / parking / loading bays.

Design Organisation Response	Accepted / Part Accepted / Rejected
<p>The bus stop is served by the 329 and 629, as well as the N29. The 629 is a school bus so the only regular bus is the 329, which has a frequency of 8 PCUs per hour. So the amount of time when the bus stop is in use over the hour will be low. Also the bus cage is 22m long so a bus would be located in the front portion of the bus cage and not block back to the rear of the cage.</p> <p>It is not considered possible to relocate the bus stop further north, as this will reduce the footway.</p> <p>The loading bay is located 20m from the side road and is 6m in length, so will not be used by MGVs/HGVs or other high sided vehicles.</p> <p>It is accepted that the visibility splays are below recommend length. However, although reduced, the visibility splays are comparable with existing. The proposed design is considered better in terms of visibility as Compton Road is at right angles to the A105, whereas previously it was at an acute angle, even though both the right and the left turns were permitted.</p> <p>Furthermore, the scheme reduces the carriageway width, which is anticipated to reduce traffic speeds on the A105.</p>	
Client Organisation Comments	
<p>Designer's response accepted – post-implementation monitoring will be carried out to review operation of the junction.</p>	

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 blind / partially sighted users.

Design Organisation Response	Accepted / Part Accepted / Rejected
Raised tables will have a 25mm upstand.	
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.

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, dropped kerbs 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: General – Compton Road junction

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

It is not clear what the demand for cyclists to turn right on to the cycle track or continue east or westbound along these side roads. No provision is proposed for example for an eastbound cyclist on Compton Road to continue eastbound via the A105 onto Queens Avenue.

It is assumed that no provision is proposed as the cycle volumes / demands for these manoeuvres are low. It may be beneficial to monitor these movements post implementation to determine if and how cyclists undertake such manoeuvres and if any additional mitigation measures are required.

Design Organisation Response	Accepted / Part Accepted / Rejected
Accepted. Cyclists' movements will be monitored post implementation.	
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: 11/01/2017

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: 11/01/2017

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: 07.04.2017

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-A105-0100-019 Rev -	Cycle Enfield A105 - General Arrangement Sheet 19 of 47
B240A024-DG-A105-0200-019 Rev -	Cycle Enfield A105 - Site Clearance Sheet 19 of 47
B240A024-DG-A105-0500-019 Rev A	Cycle Enfield A105- Proposed drainage plan Sheet 19 of 47
B240A024-DG-A105-0700-019 Rev -	Cycle Enfield A105 – Road Pavements General Sheet 19 of 47
B240A024-DG-A105-1100-019 Rev -	Cycle Enfield A105 - Kerbs footways and paved areas Sheet 19 of 47
B240A024-DG-A105-1200-019 Rev B	Cycle Enfield A105 - Traffic signs and road markings Sheet 19 of 47
B240A024-DG-A105-1300-019 Rev A	Cycle Enfield A105 – MCHW Series 1300 Road Lighting Column & Bracket Mainline Layout Plan Sheet 19 of 47

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)

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A105 Enfield - Proposed Road Marking Schedule
 A105 Enfield - Sign Schedule - Section 8

APPENDIX B

Problem Locations

