

Quietway 7

Dulwich Village Junction

Stage 3 Road Safety Audit

Ref: 3215/008/UNC/BOR/2018

Prepared for:

London Borough of Southwark

By:

**Road Safety Audit
TfL Engineering Services - Highways Engineering Team**

Prepared by: Andrew Coventry, Audit Team Leader

Checked by: Chris Gooch, Audit Team Member

Approved by: Andrew Coventry

Version	Status	Date
A (Interim)	Audit report issued to Client	14/06/2018
B (Final)	Audit report updated following comments from the Metropolitan Police	02/07/2018



1.0 INTRODUCTION

1.1 Commission

- 1.1.1 This report results from a Stage 3 Road Safety Audit carried out on the Quietway 7, Dulwich Village Junction.
- 1.1.2 The Audit was undertaken by TfL Road Safety Audit in accordance with the Audit Brief issued by the Client Organisation in January 2018. It took place at the Palestra offices of TfL on during January, March and May 2018 and comprised an examination of the documents provided as listed in Appendix A, plus a visit to the site of the scheme.
- 1.1.3 Visits to the site of the scheme were made on 25th January, 28th March & 24th May 2018. During the site visit the weather was sunny and the existing road surface was dry.
- 1.1.4 Catherine Linney of the Metropolitan Police attended all three site visits.

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 scheme; 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 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.
- 1.2.5 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: Clement Agyei-Frempong – London Borough of Southwark

1.3.2 Design Organisation

Design contact details: Conway AECOM

1.3.3 Audit Team

Audit Team Leader: Andrew Coventry – TfL Road Safety Audit

Audit Team Member: Chris Gooch – TfL Road Safety Audit

Audit Team Observer: None present

1.3.4 Metropolitan Police

Police Contact: Catherine Linney

1.3.5 Other Specialist Advisors

Specialist Advisor Details: None present

1.4 Purpose of the Scheme

1.4.1 The purpose of the scheme is:

Reduction of traffic speeds and motor traffic volumes, improvement of conditions for cyclists and pedestrians using the area*.

*Taken directly from the Audit Brief.

1.5 Comments received from the Metropolitan Police

1.5.1 The Metropolitan Police attended the three daytime site visits, a copy of this report was provided to Catherine Linney for comments which have been incorporated into version 'B' of this Stage 3 Road Safety Audit.

1.6 Special Considerations

1.6.1 This site was originally visited during the hours of darkness prior to full completion of the scheme. A further night-time site visit is required, however, due to British summertime leading to darkness occurring significantly outside the evening peak period, the visit has been deferred to late September 2018 at a time more conducive to night-time site visits. Following the further site visit the report will be up-issued to include any findings of that visit.

2.0 ITEMS RAISED IN PREVIOUS ROAD SAFETY AUDITS

The proposals were subject to a Stage 2 Road Safety Audit carried out in April 2017 by TfL Road Safety Audit (Ref: 2943/008/UNC/BOR/2017). Items raised in the revised report can be summarised as follows:

- Problem 3.1.1 Design of raised kerbs within the pedestrian refuge islands may pose a trip hazard to pedestrians
This problem is considered to remain in the implemented layout and is raised again as problem 3.1.1 in this Stage 3 Road Safety Audit report.
- Problem 3.2.1 Inadequate carriageway width may create a potential conflict between vehicles and cyclists, leading to vehicle to cycle collisions
This problem is not considered to exist in the implemented layout and will not be raised again as part of this Stage 3 Road Safety Audit.
- Problem 3.3.1 Vehicles struggling to negotiate the refuge island may overrun into the path of adjacent vehicles, leading to side-swipe collisions or kerb strike
This problem is not considered to exist in the implemented layout and will not be raised again as part of this Stage 3 Road Safety Audit.
- Problem 3.3.2 Vehicles struggling to negotiate the curves / buildouts may overrun into the path of oncoming vehicles, leading to side-swipe collisions or kerb strike
This problem is not considered to exist in the implemented layout and will not be raised again as part of this Stage 3 Road Safety Audit.
- Problem 3.4.1 Reverse out echelon parking layout may lead to tail to nose or side impact collisions, and may expose pedestrians to collisions with oncoming vehicles
This problem is not considered to exist in the implemented layout and will not be raised again as part of this Stage 3 Road Safety Audit.

The proposals were also subject to a Stage 1 Road Safety Audit carried out in March 2016 and revised in October 2016 by TfL's Asset Management Directorate, Road Safety Audit Team (Audit Ref: 2529/008/VAR/TLRN/2016). Items raised in the revised report can be summarised as follows:

- Problem 3.1.1 Dulwich Village pedestrian crossing northwest of Calton Avenue: Proximity of school gates to pedestrian crossing may result in increased 'run out' type collisions.
This problem is not considered to exist in the implemented layout and will not be raised again as part of this Stage 3 Road Safety Audit.
- Problem 3.1.2 Calton Avenue junctions with Court Lane and Dulwich Village: Potential queues may result in increased shunt type collisions.

This problem is considered to remain in the implemented layout and is raised again as problem 3.2.1 in this Stage 3 Road Safety Audit report.

- Problem 3.1.3 Reverse stagger pedestrian islands on Calton Avenue / Turney Road: Absence of Pedestrian Guard Rail (PGR) may expose a potentially unsafe desire line.

This problem is considered to remain in the implemented layout and is raised again as problem 3.1.2 in this Stage 3 Road Safety Audit report.

- Problem 3.1.4 Approaches to cycle segregation islands on Turney Road and Calton Avenue: Proposed physical islands may not be conspicuous to approaching drivers and collided with as a result.

This problem is not considered to exist in the implemented layout and will not be raised again as part of this Stage 3 Road Safety Audit.

3.0 ITEMS RAISED AT THIS STAGE 3 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 PEDESTRIANS

3.1.1 PROBLEM

Location: General to scheme, multiple locations

Summary: Design of raised separator strip within the pedestrian islands may pose a trip hazard to pedestrians

A number of staggered pedestrian islands are installed with a raised delineator strip around the edge of the island, designed to act as a tapping rail for visually impaired pedestrians. Recent similarly designed islands have led to a number of pedestrians failing to appreciate the raised delineator strip, and tripping when traversing the staggered island incorrectly. Pedestrians that trip when negotiating the islands are at an increased potential for personal injury. This is of particular concern in areas of high pedestrian footfall, when pedestrian volumes may mask the raised strip.

RECOMMENDATION

It is recommended that the island design is changed to remove the trip hazard. This may require raising the central pedestrian area and/or the provision of a physical deterrent such as pedestrian guardrail.

Design Organisation Response	Rejected
Using 125mm upstand standard kerbs would not mitigate the trip hazard raised by the auditors. In addition, there is not sufficient width to install pedestrian guardrail and leave a reasonable capacity on the island for pedestrians, especially taking into account the high footfall in the area during school peak times. However, it is not an unusual layout, and it is expected that pedestrians would be familiar with this type of arrangement.	
Client Organisation Comments	
[Audit comments noted and recommendation rejected. Designers comments accepted. Potential measures to <i>accentuate the presence of the upstand could be e.g. painting kerb or information signs to alert pedestrians</i> . Risk assessment to be carried out on this issue]	

3.1.2 PROBLEM

Location: General to scheme, multiple locations

Summary: Absence of Pedestrian Guard Rail (PGR) may expose a potentially unsafe desire line

The Audit Team notes no pedestrian guardrail is implemented within the reverse stagger pedestrian islands. The 'non preferred' arrangement at this staggered pedestrian crossing guides pedestrians to 'walk away' from approaching traffic. The Audit Team are concerned that failure to provide PGR may invite pedestrians to ignore the stagger and cross in a straight ahead movement. Any pedestrian performing this manoeuvre may do so behind the stop-lines or within turning areas, and therefore potentially between stationary, accelerating or decelerating vehicles thereby increasing the potential for conflict.

RECOMMENDATION

Provide measures to encourage pedestrians to utilise the staggered arrangement correctly. This may require the provision of PGR within the reverse staggered pedestrian islands.

Design Organisation Response	Rejected
In accordance with LB Southwark policy for street furniture de-cluttering and Southwark Streetscape Design Manual (SSDM) the use of guardrail on the proposed islands is not recommended. Also, there is insufficient width to provide pedestrian guardrail and leave a reasonable width on the island for pedestrians, particularly during peak times at the start and end of the school day.	
In addition, it is expected that pedestrians will use the defined crossing points to cross Turney Road and Calton Avenue. More specifically:	
<ul style="list-style-type: none">- for pedestrians crossing Calton Avenue (southbound); the grass verge and the timber bollards with chain arrangement will deter them from crossing at any point other than at the controlled crossing.- for pedestrians crossing Turney Road (northbound); the presence of the pedestrian guardrail on the south western footway, will guide them to the controlled crossing.	

Client Organisation Comments

[Audit comments noted and recommendation rejected. Designers comments accepted. Risk assessment to be carried out on this issue]

3.2 JUNCTIONS

3.2.1 PROBLEM

Location: A – Calton Avenue junctions with Court Lane and Dulwich Village

Summary: Potential queues may result in increased shunt type collisions or collisions with pedestrians

The scheme reversed priorities so that Court Lane becomes give-way at the junction with Calton Avenue. As the Calton Avenue approach to Dulwich Village is reduced from three lanes to two this may result in increased queueing back across Court Lane. This may result in users attempting to turn right into Court Lane not being able to exit Calton Avenue and following eastbound vehicles may queue back onto Dulwich Village. This may result in an increased potential for shunt type collisions as southeast bound motorists passing through the traffic signals may not expect to encounter queueing traffic from the side-road.

Additionally, held up vehicles progress from the junction through the pedestrian crossing facility after the preceding signal stage has closed. This may exacerbate a potential for conflict with pedestrians.

It is further noted that congestion, particularly the vicinity of the Calton Avenue / Court Lane junction is leading to anti-social driving behaviour by road users. A local resident mentioned to the Audit Team that drivers regularly drove aggressively in an attempt to make progress through the congestion.

RECOMMENDATION

Provide measures to reduce the potential for vehicles to queue back on to Dulwich Village. This may include, but is not limited to, modifying the traffic signal timings and/or the introduction of additional road markings.

Design Organisation Response	Accepted
<p>In order to limit the possibility of traffic queueing back on to Dulwich Village, it is proposed that a half yellow box is installed on the westbound approach at the Calton Avenue junction with Court Lane. This will prevent westbound vehicles on Calton Avenue from blocking the access to Court Lane.</p> <p>Note: a yellow box was initially proposed at the final detailed design submitted for construction but it was not provided after resurfacing works following comments from the audit team that the layout was ambiguous.</p> <p>It is also recommended that TfL are instructed to review the signal timings at the junction, and that the amended layout is monitored for a 12 month period after remarking.</p>	
Client Organisation Comments	
[Audit comments noted and recommendation accepted. Designers comments accepted.]	

3.2.2 PROBLEM

Location: B – Dulwich Village junction with Turney Road

Summary: Kerb alignment may exacerbate a potential for side-swipe type conflicts

The Audit Team are concerned that the kerb-line and traffic island on the west side of the junction protrudes into the general direction for northbound vehicles. The protruding kerb may force northbound drivers to deviate to the right around the kerb, this may lead to an increased potential for side-swipe type conflicts with adjacent vehicles, or pinching cyclists against the kerb and adjacent guardrail.

RECOMMENDATION

It is recommended that the kerb-line is modified to remove the pinch point and allow a smoother merge for westbound road users.

Design Organisation Response	Rejected
<p>The kerb-line and traffic island on the western side of the junction provide a clear alignment for northbound vehicles on Dulwich Village. In addition, this approach narrows down gradually allowing for a smooth merge for motorists.</p> <p>It is proposed to monitor the layout at the junction for a 12 month period before considering any changes to the kerb-line and traffic island.</p>	
Client Organisation Comments	
<p>[Audit comments rejected and recommendation rejected. Designers comments accepted. Risk assessment to be carried out on this issue.]</p>	

3.3 TRAFFIC SIGNS AND ROAD MARKINGS

3.3.1 PROBLEM

Location: C – Dulwich Village junction with Calton Avenue

Summary: Junction alignment may lead to drivers proceeding into oncoming traffic

The Audit Team are concerned that nothing is provided to discourage eastbound drivers travelling ahead from Turney Road to travel the wrong side of the pedestrian island, towards oncoming traffic. Driver travelling on the wrong side of the island are at an exacerbated potential for head-on type conflicts with opposing vehicles.

This is of particular concern at this location due to the offset crossroads layout of the junction. It is noted that a local resident spoken to at the site visit has observed drivers heading the wrong way through the junction on the wrong side of the island.

RECOMMENDATION

It is recommended that additional traffic signs and road markings are introduced to clarify Calton Avenue opposite Turney Road is no-entry.

Design Organisation Response	Accepted
It is proposed to install a bollard with a 'keep left' sign face on the island on Calton Avenue as per the 'For Construction' detailed design drawings. This will provide sufficient guidance to traffic travelling eastbound from Turney Road.	
Client Organisation Comments	
[Audit comments noted and recommendation accepted. Designers comments noted]	

End of list of problems identified and recommendations offered in this Stage 3 Road Safety Audit

4.0 ISSUES IDENTIFIED DURING THE STAGE 3 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: 1 – Calton Avenue junction with Court lane

Reason considered to be outside the Terms of Reference: Safety concern but not witnessed at the time of the most recent site visit and therefore may be resolved

At the first site visit, drivers turning right into Court Lane were observed to fail to give-way to opposing vehicles from Calton Avenue. This was how the junction operated prior to the schemes implementation.

At the most recent site visit, drivers appeared to adhere to the layout better and give-way, although this may be in part due to the very light traffic flow experienced.

The Audit Team are concerned that if drivers fail to give way correctly, a significant risk of side-swipe type conflicts may exist.

It is recommended that the junction is monitored over an extended to period to ensure all vehicles are giving way correctly. If drivers are observed to fail to give way, modifications to junction priority should be undertaken to clarify the layout.

It is also noted that the edge detail for the raised crossing on Calton Avenue may falsely give the impression that the road is give way and priority exists to drivers turning right. It may be beneficial to modify the junction table to asphalt to make the layout clearer.

Design Organisation Response	Part Accepted
The auditors' recommendation to monitor the revised layout before considering further amendments is accepted. The raised blockwork crossing on Calton Avenue is to be retained unchanged as it highlights this crossing point used by school children. Replacing it with an asphalt construction would likely reduce its effectiveness.	
Client Organisation Comments	
[Audit comments noted. Designers comments accepted..]	

4.2 ISSUE

Location: 2 – Calton Avenue junction with Court lane

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

The Audit Team are concerned that the southbound cycle facility on Calton Avenue is not intuitive and is easily missed due to the junction geometry. A number of cyclists were observed to bypass the start of the facility. It is recommended that measures are introduced to better highlight the start of the facility. This may include modifying the junction alignment combined with the use of a conspicuous colour to act as a wayfinding measure.

Design Organisation Response	Part Accepted
Following resurfacing works, additional cycle logo markings and lane markings were proposed to be installed across the mouth of Court Lane in order to provide further guidance to cyclists approaching the segregated cycle facility on Calton Avenue..	
Client Organisation Comments	
[Audit comments noted. Designers response accepted]	

4.3 ISSUE

Location: 3 – Turney Road junction with Dulwich Village

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

The Audit Team noted that the staggered pedestrian crossing facility has evidence of vehicle over-run, presumably by those turning left from Turney Road. Vehicles over-running the island are likely to lead to damage to the pedestrian island and an ongoing maintenance liability. It is recommended that the swept path for larger vehicles turning left is checked and modifications to the alignment of the island are undertaken.

Design Organisation Response	Part Accepted
According to the Swept Path Analysis carried out during the design stage, the left turning movements from Turney Road can be carried out without overrunning the new traffic island, so no modifications are proposed.	
Client Organisation Comments	
[Audit comments noted. Designers response accepted..]	

5.0 SIGNATURES AND SIGN-OFF

5.1 AUDIT TEAM STATEMENT

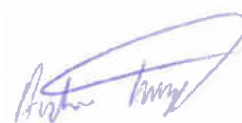
We certify that we have examined the drawings and documents listed in Appendix A. to this Safety Audit report. The Road Safety Audit has been carried out in accordance with TfL Procedure SQA-0170 dated May 2014, with the sole purpose of identifying any feature that could be removed or modified in order 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: Andrew Coventry
BEng (Hons), CMILT, MCIHT, MSoRSA,

Signed:



Date: 02/07/2018

Organisation: Transport for London, Road Safety Audit
Engineering Services, Highways Engineering Team

Address: 3rd Floor Palestra, 197 Blackfriars Road, London, SE1 8NJ

Contact: andrewcoventry@tfl.gov.uk (020 3054 2237)

AUDIT TEAM MEMBER:

Name: Chris Gooch
BSc. (Hons), CMILT, MCIHT, MSoRSA

Signed:



Date: 02/07/2018

Organisation: Transport for London, Road Safety Audit
Engineering Services, Highways Engineering Team

Address: 3rd Floor Palestra, 197 Blackfriars Road, London, SE1 8NJ

Contact: christophergooch@tfl.gov.uk (020 3054 4965)

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 3 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: Hara Papadopoulou

Position: Senior Engineer

Organisation: Conway AECOM



Signed:

Dated: 11/07/2018

5.3 CLIENT ORGANISATION STATEMENT

I accept these proposals by the Design Organisation.

Name: Clement A-Frempong

Position: Principal Projects Manager

Organisation: London Borough of Southwark

Signed: *cafrempong*

Dated: 25/ 07/2018

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

60493383-C0255-DD-DWG-S3J-200-01, A
60493383-C0255-DD-DWG-S3J-SO-01, A
60493383-C0255-DD-DWG-S3J-SO-02, A
60493383-C0255-DD-DWG-S3J-500-01 to 6, A

60493383-C0255-DD-DWG-S3J-1100-01, A
60493383-C0255-DD-DWG-S3J-SD-01 to 08, A
60493383-C0255-DD-DWG-S3J-1200-01, A
60493383-C0255-DD-DWG-S3J-1200-02, A

DRAWING TITLE

Series 200, Site Clearance
Setting Out, Sheet 1 of 2, Kerb Lines
Setting Out, Sheet 2 of 2, Traffic Islands

Series 500, Drainage & Cross Sections, Sheet 1 to 6
Series 900 & 1100, Kerbs, Footway & Paved Areas

Standard Details, Sheet 1 to 8

Series 1200, Road Markings & Signs

Series 1200, Road Markings & Sign, Schedule

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)

2729/008/VAR/TLRN/2016
2943/008/UNC/BOR/2017

APPENDIX B

Problem Locations

