

Surface Transport Infrastructure Construction (STIC) Framework

Gallows Corner Flyover Refurbishment Concept Design

Stage 1 Road Safety Audit

Document Ref: STPJ388-CST-MAC-15_XX-ASM-HE-00001

Revision: C01

Status: A3 – Authorised and Approved





Document information			
Title	Stage 1 Road Safety Audit		
Structure Name:	Gallows Corner Flyover		
Structure Reference No	A127/00.00		
Date	August 2023		
Document reference	STPJ388-CST-MAC-15_XX-ASM-HE-00001	Revision	C01
Status	A3 – Authorised and Approved		
Originator	Client		
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Authorisation			
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Checked by	██████████	See Section 5	See Section 5
Approved for issue	██████████	See Section 5	See Section 5
Revision status			
Revision	Status	Description	Date
P01	S3	Initial Issue for Comment	20/05/2023
C01	A3	Authorised and Approved	30/06/2023

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TRANSPORT FOR LONDON ACCEPTANCE

Accepted by	Project Manager: Mike Dowding
Signature	See Section 5
Date	See Section 5
Accepted by	Project Sponsor: Nadia Kaddouri
Signature	See Section 5
Date	See Section 5

A127 Gallows Corner Refurbishment Scheme

Stage 1 Road Safety Audit

Ref: COS/133/2023

Prepared for:

TfL

By:

Costain Group

Prepared by: [REDACTED], Audit Team Leader

Checked by: [REDACTED], Audit Team Member

Approved by: [REDACTED]

Version	Status	Date
A	Audit report issued to TfL for compliance check	17/05/2023
B	Audit report issues with DfS information added	30/06/2023



1.0 INTRODUCTION

1.1 Commission

- 1.1.1 This report results from a Stage 1 Road Safety Audit carried out on the A127 Gallows Corner Refurbishment proposals.
- 1.1.2 The Audit was undertaken by Costain Group in accordance with the Audit Brief issued by the Client Organisation on 24th April 2023. The Audit team undertook the desktop site visit via Microsoft Teams on Wednesday 3rd May 2023 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 Thursday 4th May. During the site visit the weather was fine 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: Mike Dowding, Project Manager, TfL

1.3.2 Design Organisation

Design contact details: [REDACTED], Lead Highways Engineer, Costain Group

1.3.3 Audit Team Approval

The Audit Team specified in 1.3.4 below were given approval to undertake this Audit by Chris Gooch of TfL Road Safety Audit on 25th April 2023.

1.3.4 Audit Team

Audit Team Leader: [REDACTED] - Costain

Audit Team Member: [REDACTED] - Costain

1.4 Purpose of the Scheme

1.4.1 The purpose of the scheme is *Bridge Deck replacement scheme and associated work to the barriers and carriageway below.

*Taken directly from the Audit Brief.

1.5 Special Considerations (updated in report version B)

1.5.1 The Audit Team were issued a number of Departures from Standard (DfS) relating to the scheme via email on the 22nd June 2023.

1.5.2 The departures are as follows:

- DfS_H_0219 Geometry (Horizontal and Vertical Curvature)
- DfS_H_0220 Geometry (Parapet Set-back)
- DfS_H_0221 Geometry (Carriageway Width)
- DfS_H_0222 Pavement Surfacing
- DfS_H_0223 Geometry (Combination of Relaxations)

1.5.3 The audit team reviewed the DfS and at this time have the following comment:

With regards to DfS STPJ388-PEL-BAS-15_XX-DfS_H_0221

If cyclists are restricted from using the flyover due to the restricted carriageway width, then appropriate signing to state this should be provided on both approaches, with an alternative signed route. The audit team did not observe any existing signing to prevent cyclists from using the flyover.

Design Organisation Response	Accepted / Part Accepted / Rejected
No information or clarification has been available and noted to confirm whether cyclists are/are not able to utilise the flyover, in either it's current guise or when back open to 30mph speeds.	
Client Organisation Comments	
There are currently know restrictions on cyclists. The number of cyclists using the flyover currently is low and the lane width change will appear negligible to drivers using the flyover so should not drastically change driver behaviour and increase the current risk.	

A127 Gallows Corner Refurishment Scheme

Stage 1 Road Safety Audit Report

However, with the speed limit on the flyover increasing additional mitigation measures should be considered at detailed design to reduce risks to cyclists.

2.0 ITEMS RAISED IN PREVIOUS ROAD SAFETY AUDITS

The Audit Team is not aware of any other Audits having been carried out on the proposals.

3.0 ITEMS RAISED AT THIS STAGE 1 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 Road Markings

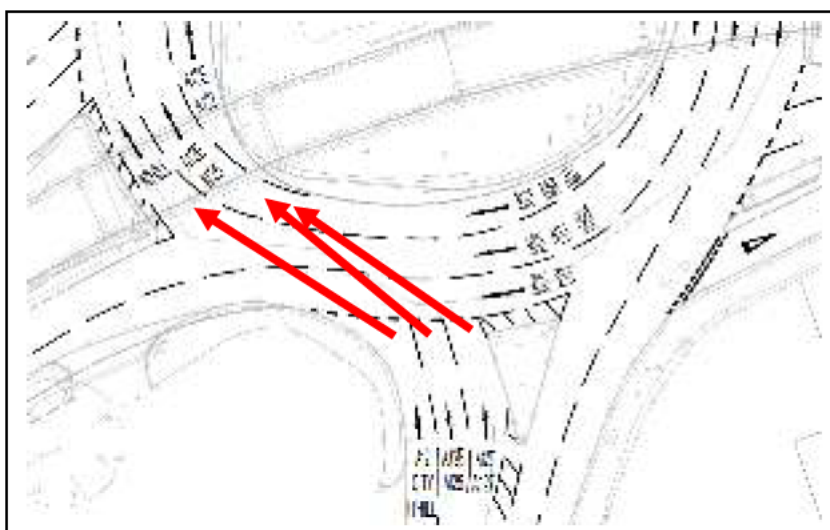
3.1.1 PROBLEM

Location: A – Eastern Avenue East & Main Road entries to Roundabout

Summary: Risk of side swipe collisions on the roundabout.

Both the Eastern Avenue East and Main Road entries onto the circulatory carriageway of the roundabout have three lanes proposed (as per the existing layout). However, the circulatory carriageway adjacent to these entries both have two circulatory lanes. Site observations have shown this leads to drivers entering the roundabout in the offside lane being forced to brake sharply and give way to vehicles located in the centre lane – due to their being insufficient carriageway space to accommodate three vehicles side by side.

The proposed slight amendments to the road markings on the circulatory carriageway appear to further limit the available carriageway for vehicles entering the roundabout in the offside (third) lane (see annotated drawing below). This could therefore increase the risk of a side swipe collision between vehicles in lanes two and three when entering the roundabout.



RECOMMENDATION

It is recommended that if three entry lanes be provided onto the roundabout, sufficient carriageway space should be provided to allow vehicles to safely enter the roundabout without the need to brake/swerve to avoid vehicles in adjacent lanes.

Design Organisation Response	Accepted / Part Accepted / Rejected
The current road marking layout has been amended on the northbound left lane to confirm 'left only' which resolves any issue.	
Client Organisation Comments	
The "left only" markings proposed to resolve the issue will need to be reviewed in the Detailed Design to confirm that there is no impact on the traffic capacity.	

3.1.2 PROBLEM

Location: B – Eastern Avenue East & A127

Summary: Removal of speed limit markings could increase vehicle speeds and therefore increase the risk of collisions at the roundabout.

On both the A127 approaches to the roundabout, the speed limit reduces down to 30mph. Adjacent to the speed limit terminal signs, carriageway roundels have been provided to compound the change in speed limit to drivers and encourage them to slow on approach to the roundabout (see photo below). However, the proposed alterations to the road markings don't appear to show these are to be replaced as part of this scheme. There is an increased risk of higher vehicle speeds should the roundels not be replaced, resulting in shunt type or overshoot collisions at the roundabout entry.



RECOMMENDATION

It is recommended that the speed limit roundels be provided.

Design Organisation Response	Accepted / Part Accepted / Rejected
The location of the start of the 30mph speed limit has been moved further to the west on Eastern Avenue East and speed limit roundels have been included. Also, on the A127 westbound the existing speed has been moved further east and 30mph speed limit roundels will be provided at this location, General Arrangement drawing updated as per comment.	
Client Organisation Comments	
Proposal accepted. The exact position of the speed limit markings and signs to be confirmed in the Detailed Design and reviewed again in the Stage 2 Road Safety Audit.	

3.2 Proposed Signing

3.2.1 PROBLEM

Location: C – Various throughout the scheme

Summary: Removal of signs could increase the risk of collisions.

The proposals detail that 27 signs are to be removed as part of the scheme. However, no details are provided on whether any of these are to be replaced or re-purposed. Failure to provide adequate signage could increase the risk of collisions throughout the scheme.

RECOMMENDATION

It is recommended that adequate signage be provided on approach to the roundabout.

Design Organisation Response	Accepted / Part Accepted / Rejected
<p>With no signing strategy available at this time, we have detailed on the drawings which signs require replacing/relocating due to the changes elsewhere in the design i.e. widening of carriageway. Further review of the proposals will be required at detailed design.</p> <p>All other signage is now detailed as remaining as per existing arrangement.</p>	
Client Organisation Comments	
<p>Proposal accepted. The exact position of the signs and signing strategy to be confirmed in the Detailed Design and reviewed again in the Stage 2 Road Safety Audit.</p>	

3.1 Walking, Cycling and Horse-Riding

3.3.1 PROBLEM

Location: D – Eastern Avenue East

Summary: Increased risk of pedestrians being struck by vehicles whilst crossing.

At the Eastern Avenue East exit from the roundabout, there is an uncontrolled pedestrian/cyclist crossing. The scheme proposals include the widening of the carriageway at this location, therefore increasing the crossing distance and exposure time between pedestrians/cyclists and vehicles.



There are existing warning signs at the Eastern Avenue East exit from the roundabout to inform drivers that pedestrians may be crossing ahead. However, the audit team have concerns that they are not ideally mounted to adequately inform drivers of the risk of pedestrians in the carriageway ahead. The signs appear to have been mounted too high and are therefore out of the eyeline of drivers.

With the carriageway being widened at the location of the crossing, it is increasingly important that the warning signs are mounted/positioned correctly to adequately warn drivers of the risk of pedestrians and cyclists in the carriageway ahead. Failure to do so could increase the risk of collisions between vehicles and pedestrians/cyclists.

RECOMMENDATION

It is recommended that adequate warning be provided to inform drivers of the risk of pedestrians in the carriageway ahead.

Design Organisation Response	Accepted / Part Accepted / Rejected
Sign relocated to grass verge as part of new proposals (due to carriageway widening in this area), correct height for signage will be reviewed/specified at detailed design to ensure it's visible to road users whilst being compliant to the design standards.	
Client Organisation Comments	
Proposal accepted. The exact position of the signs and signing strategy to be confirmed in the Detailed Design and reviewed again in the Stage 2 Road Safety Audit.	

End of list of problems identified and recommendations offered in this Stage 1 Road Safety Audit

4 ISSUES IDENTIFIED DURING THE STAGE 1 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.

4.1.1 ISSUE

Location: 1 - A127 at the eastern exit from the roundabout

Reason considered to be outside the Terms of Reference: This is an existing issue.

Between the A127 and the retail park, pedestrians have created an obvious pathway through the verge/hedge to access the retail park from the footway alongside the A127. This is a clear desire line here and it would benefit the pedestrians' safe passage if it were to be formalised.



Design Organisation Response	Accepted / Part Accepted / Rejected
<p>Although this issue is outside the main proposals, a simple fencing/pedestrian guardrail or hedge addition could be proposed to remove this desire line. There is a suitable option for pedestrians in utilising existing routes and an unofficial zebra crossing within retail park.</p> <p>However, the desire line is there as it's a shorter route to the retail park and it may be prudent to discuss with the local stakeholder as to whether they would be willing to install a crossing at this location across their 'service road'.</p>	
Client Organisation Comments	
<p>This is outside the scope of the project, however opportunities to improve the current situation will be investigated at Detailed Design Stage.</p>	

4.2 ISSUE

Location: 2 - Eastern Avenue East

Reason considered to be outside the Terms of Reference: This is an existing issue.

Between the Eastern Avenue East carriageways, there is a pedestrian/cyclist crossing. The height clearance is greatly restricted by the A127 structure. Considering cyclists could be cycling under this structure, there didn't appear to be sufficient clearance for them to not risk head injuries. There was a single cyclists dismount sign mounted at ankle height on the northern side of the crossing, but no other warning or instruction was provided.



Design Organisation Response	Accepted / Part Accepted / Rejected
<p>Although this issue is outside the main proposals, there could be some consideration at detailed design to relocate the crossing further along where the higher section of flyover construction exists, to ensure sufficient headroom is available. Alternatively, cyclists could be asked to dismount ahead of this crossing point to reduce the likelihood of any injuries.</p>	
Client Organisation Comments	
<p>This is outside the scope of the project , however opportunities to improve the current situation will be investigated at Detailed Design Stage. It is unlikely that cyclist will dismount. The clearance to the underside of the new flyover to be reviewed at Detailed Design. Relocating the Pedestrian Crossing should be investigated if this can be archived without reducing Traffic Capacity.</p>	

4.3 ISSUE

Location: 3 - Eastern Avenue East & A127

Reason considered to be outside the Terms of Reference: This is an existing issue.

Where the A127 overbridge deck joins the Gallows Corner slip roads, the parapet steel supports encroach into the space above the road restraint. Should a vehicle lose control and then collide with the road restraint, the parapet supports could strike the vehicle windscreen and encroach into the vehicle cabin, striking the driver or passengers. It is unclear whether this is to be mitigated as part of the proposed scheme.



Design Organisation Response	Accepted / Part Accepted / Rejected
<p>The road safety auditors were issued the DfS information for the existing arrangement and issues. Part of the proposals are to replace the existing road restraint and parapet, therefore removing the issue stated above.</p> <p>The kerbline below the structure is also being 'pulled out' to help resolve this issue, as shown on the drawings issued to the auditors (STPJ388-CST-MAC-15_XX-DRG-</p>	

CE-00010).

Client Organisation Comments

This issue has been designed out in the Concept Design and will be taken forward to Detailed Design

4.4 ISSUE

Location: 4 – Throughout the scheme

Reason considered to be outside the Terms of Reference: This is an existing issue.

Around the Gallows Corner roundabout there is a mix of segregated and shared use facilities for cyclists and pedestrians. In particular this comes to a head outside the retail park where a segregated facility meets the shared use with the toucan crossing. From the drawings it appears that the corduroy paving is to be removed, but there is no indication that this is to be replaced in the new scheme. Failure to replace this feature could lead to collisions between cyclist and pedestrians. Particularly those pedestrians who are vulnerable or with eyesight issues. Paving to allow partially sighted and blind pedestrians to distinguish between segregated and shared use facilities should be provided.

Design Organisation Response

Accepted / ~~Part Accepted~~ / Rejected

The proposed design has been amended; the short section of segregated cycleway has been amended to a shared cycleway that ensures consistency with the surrounding network.

Client Organisation Comments

This is outside the scope of the project, however the proposal to amend the cycleway should be taken forward into Detailed Design. Opportunities to improve the pedestrian and cycle facilities where there are proposed changes to the carriageway and footway to be reviewed during the Detailed Design.

5 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:

██████████
████████████████████████████████████████

Signed:

████████████████████

Position: Principal Road Safety Engineer

Date: 30th June 2023

Organisation: Costain Group

Contact:

██████████ [@Costain.com](mailto:██████████@Costain.com) - ██████████

AUDIT TEAM MEMBER:

Name:

██████████
████████████████████████████████████████

Signed:

████████████████████

Position: Principal Road Safety Engineer

Date: 30th June 2023

Organisation: Costain Group

Contact:

██████████ [@Costain.com](mailto:██████████@Costain.com) - ██████████

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 [1] 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: [REDACTED]

Position: Lead Principal Highways Engineer

Organisation: Costain

Signed: [REDACTED] **Dated:** 05/07/23

5.3 CLIENT ORGANISATION STATEMENT

I accept these proposals by the Design Organisation.

Name: Mike Dowding

Position: Project Manger

Organisation: Transport for London

Signed: [REDACTED] **Dated:**26/07/23

5.4 SECONDARY CLIENT ORGANISATION STATEMENT (where appropriate)

I accept these proposals by the Design Organisation.

Name: Nadia Kaddouri

Position: Portfolio Sponsor

Organisation: Transport for London

Signed: [REDACTED] **Dated:** See Signature

APPENDIX A

Documents Forming the Audit Brief

DRAWING NUMBER

DRAWING TITLE

STP123-CST-00112_01-D12-00-0001_PAVEMENT_01.dwg	Pavement Existing
STP123-CST-00112_01-D12-00-0002_PAVEMENT_PROPOSED.dwg	Pavement Proposed
STP123-CST-00112_01-D12-00-0003_DRAINAGE_PROPOSED.dwg	Drainage Proposed
STP123-CST-00112_01-D12-00-0004_LIGHTING_01.dwg	Lighting Existing
STP123-CST-00112_01-D12-00-0005_LIGHTING_PROPOSED.dwg	Lighting Proposed
STP123-CST-00112_01-D12-00-0006_GA_01.dwg	General Arrangement Existing
STP123-CST-00112_01-D12-00-0007_GA_PROPOSED.dwg	General Arrangement Proposed
STP123-CST-00112_01-D12-00-0008_SITE_CLEARANCE.dwg	Site Clearance
STP123-CST-00112_01-D12-00-0009_ROAD_RESTRAINTS_01.dwg	Road Restraints Existing
STP123-CST-00112_01-D12-00-0010_ROAD_RESTRAINTS_PROPOSED.dwg	Road Restraints Proposed
STP123-CST-00112_01-D12-00-0011_BARRIER_DETAIL.dwg	Barrier Detail
STP123-CST-00112_01-D12-00-0012_ROAD_MARKINGS_01.dwg	Road Markings Existing
STP123-CST-00112_01-D12-00-0013_ROAD_MARKINGS_PROPOSED.dwg	Road Markings Proposed
STP123-CST-00112_01-D12-00-0014_KERBS_FOOTWAYS_01.dwg	Kerbs & Footways Existing
STP123-CST-00112_01-D12-00-0015_KERBS_FOOTWAYS_PROPOSED.dwg	Kerbs & Footways Proposed
106880-PD-1545-777-060-D-000001_P00.pdf	Swept Path analysis
Long Section Box A.pdf	Long Section
STP158-PD-1545-15-XX-DRG-57-10001.pdf	Existing General Arrangement Plan 1
STP158-PD-1545-15-XX-DRG-57-10002.pdf	Existing General Arrangement Plan 2
STP158-PD-1545-15-XX-DRG-57-10003.pdf	Existing General Arrangement Plan 3
STP158-PD-1545-15-XX-DRG-57-10004.pdf	Proposed General Arrangement Plan 1
STP158-PD-1545-15-XX-DRG-57-10005.pdf	Proposed General Arrangement Plan 2
STP158-PD-1545-15-XX-DRG-57-10006.pdf	Proposed General Arrangement Plan 3
STP158-PD-1545-15-XX-DRG-57-10007.pdf	Existing typical trestle elevation
STP158-PD-1545-15-XX-DRG-57-10008.pdf	Existing abutment elevation
STP158-PD-1545-15-XX-DRG-57-10009.pdf	Proposed abutment plan
STP158-PD-1545-15-XX-DRG-57-10010.pdf	Proposed longitudinal elevation
STP158-PD-1545-15-XX-DRG-57-10011.pdf	Section & elevation
STP158-PD-1545-15-XX-DRG-57-10012.pdf	Section & elevation
STP158-PD-1545-15-XX-DRG-57-10013.pdf	Existing section & trough ramp
STP158-PD-1545-15-XX-DRG-57-10014.pdf	Existing section & trough ramp
STP158-PD-1545-15-XX-DRG-57-10015.pdf	Overbridge 3d render

DOCUMENTS

- Safety Audit Brief
- Site location plan
- Traffic signal details
- TfL signal safety checklist
- Departure 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)

Road Safety Audit Brief Checklist (SQA-0170 May 2014)

As detailed in Section 1.5 above

Design drawings

APPENDIX B

Problem Locations



Costain Limited

Costain House
Vanwall Road
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Berkshire SL6 1LN
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www.costain.com