



# **Streets and Walkways Sub (Planning and Transportation) Committee**

## **Appendices**



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## **Streets and Walkways Sub (Planning and Transportation) Committee**

### **Appendix Pack**

**Date:** TUESDAY, 17 OCTOBER 2017  
**Time:** 10.00 am  
**Venue:** COMMITTEE ROOMS, 2ND FLOOR, WEST WING, GUILDHALL

- c) Greening Cheapside: St. Paul's Tube Station Area and St. Peter Westcheap Churchyard Improvements (Pages 1 - 14)  
*Appendices 4, 5 and 6 to this report are attached.*
- d) Shoe Lane Quarter Public Realm Enhancements - Phase 2 (Pages 15 - 26)  
*Appendices 2, 4, 5 and 6 to this report are attached.*
- g) North - South Cycle Superhighway Phase 2 (Pages 27 - 72)  
*Appendices 1, 2, 3 and 4 to this report are attached.*

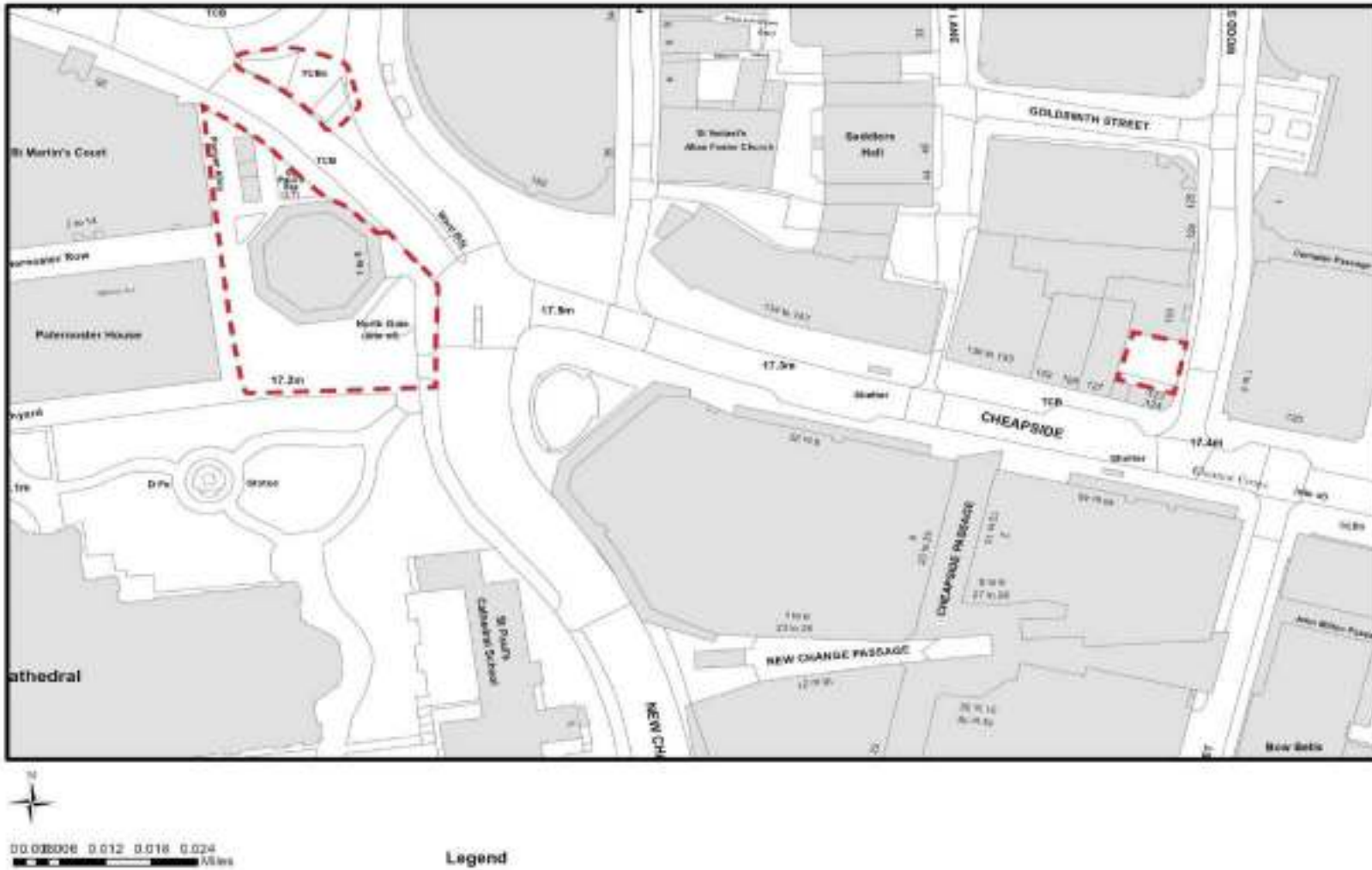
**John Barradell**  
**Town Clerk and Chief Executive**



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## Appendix 1: Location Plan





## Appendix 2 – Issue and Objectives / Assessment of Options Against Criteria

### St. Paul's Area Station

Issues		Objectives	Option 1	Option 2	Option 3
<b>Poor Wayfinding</b>	<ul style="list-style-type: none"> <li>Difficult to navigate to St. Paul 's Cathedral upon exiting Tube station</li> <li>No indication of other landmarks</li> </ul>	<ul style="list-style-type: none"> <li>Better wayfinding to help orientation</li> <li>Design intuitive wayfinding with planters and seating to guide the desire lines of the site and encourage people to walk through</li> </ul>	✓ ✓	✓ ✓	✓ ✓
<b>Poor Circulation</b>	<ul style="list-style-type: none"> <li>Bulky planters obstructing what is normally large groups of tourists</li> <li>Car dominated shared surface - single yellow line</li> <li>Street furniture impeding pedestrian movement</li> </ul>	<ul style="list-style-type: none"> <li>Planters to be broken up to improve flow and circulation</li> <li>Look to make single yellow line double and shared surface</li> <li>Remove unnecessary street furniture and replace with benches</li> </ul>	✓	✓  ✓	✓  ✓
<b>Lack of Seating</b>	<ul style="list-style-type: none"> <li>Lack of appropriate seating throughout site</li> <li>Planter beds that are too low for seating, or unpleasant and exposed brick planter beds</li> <li>Seating not friendly to larger groups</li> </ul>	<ul style="list-style-type: none"> <li>Install different types of seating to optimise accessibility in area</li> <li>Design accessible seating with integrated planters</li> <li>Design layout to accommodate for large groups to sit, and potentially an amphitheatre style layout to enable a tourist guide to speak in front of them</li> </ul>	✓	✓  ✓	✓  ✓
<b>High Maintenance Planters</b>	<ul style="list-style-type: none"> <li>Planting that requires a reduced level of maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Look at sustainable planting that would provide better flower coverage all year long</li> </ul>	✓	✓	✓
<b>Lack of Place</b>	<ul style="list-style-type: none"> <li>Lack of sense of arrival</li> </ul>	Create a paving pattern/line to reflect the former gateway and tell the history of the site			✓
Assessment of Options against each criteria			5	8	10
Conclusion			Not recommended	Recommended	Recommended



## Appendix 2 – Issue and Objectives / Assessment of Options Against Criteria

### St.Peter Westcheap Churchyard

Issues		Objectives	Option 1	Option 2
<b>Uncared for space</b>	<ul style="list-style-type: none"> <li>Heavily Shaded with poor quality planting</li> <li>"Smoker's Ashtray" - a smoker's hang out and therefore unwelcoming to others</li> <li>Littering</li> <li>Tired looking benches</li> <li>Old uneven paving</li> <li>Blank Frontages</li> <li>Poor condition of historic railings, headstones and wall</li> </ul>	<ul style="list-style-type: none"> <li>Introduction of new planting</li> <li>Encourage use from all users of Cheapside</li> <li>Provide flexibility of space</li> <li>Encourage a sense of care/ ownership to discourage people from littering</li> <li>Reconfigure and introduce new bespoke seating</li> <li>Repaving area</li> <li>Introduce design elements to soften the effect of the surrounding buildings</li> <li>Restore railings and wall and headstone's</li> </ul>	✓ ✓  ✓ ✓ ✓ ✓ ✓	✓ ✓  ✓  ✓ ✓ ✓
<b>Lack of accessibility</b>	<ul style="list-style-type: none"> <li><b>Lack of accessibility</b></li> </ul>	<ul style="list-style-type: none"> <li>May not be feasible to install a ramp due to size restrictions of site</li> </ul>		
<b>Not enough information of history presented on site</b>	<ul style="list-style-type: none"> <li>Little known information presented about the historic plane tree.</li> </ul>	<ul style="list-style-type: none"> <li>With the woodland planting strategy, enhance and make reference to Wordsworth's "Poor Susan" with signage to provide information.</li> </ul>	✓	✓
Assessment of Options against each criteria			9	8
Conclusion			Recommended	Not recommended



### Appendix 3: Finance Tables:

#### 16800073: Greening of Cheapside Area

**Table 1: Expenditure to date**

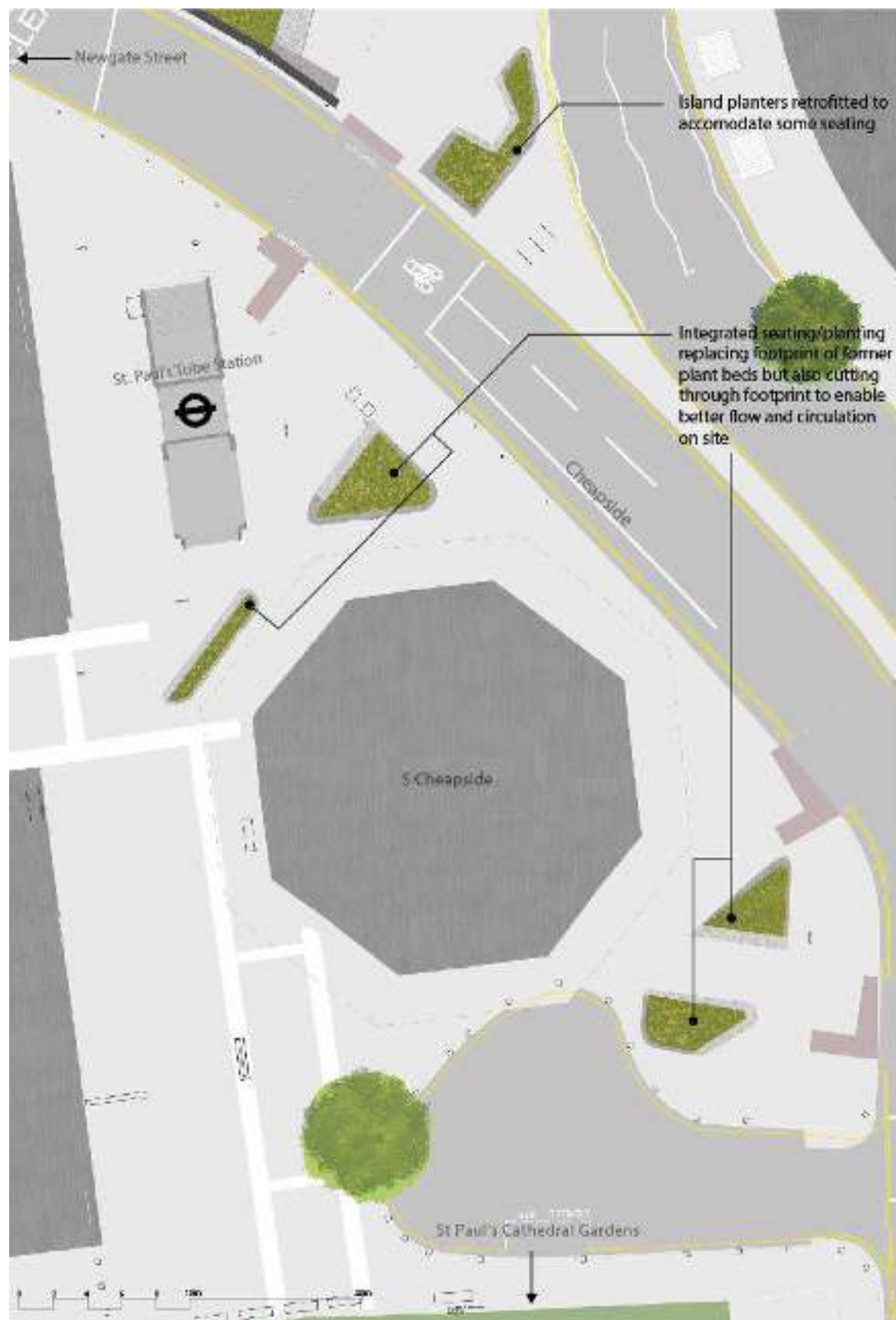
Description	Approved Budget (£)	Spend to Date (£)	Balance (£)
Env Serv Staff Costs	3,000	1,074	1,926
P&T Staff Costs	23,000	23,807	(807)
Open Spaces Staff Costs	3,000	-	3,000
Fees	16,000	12,650	3,350
<b>Total</b>	<b>45,000</b>	<b>37,531</b>	<b>7,469</b>

**Table 2: Phase 1 / Phase 2- Resources required to reach for next Gateway**

Description	Approved Budget (£)	Additional Resources required to reach next Gateway (£)	Revised Budget to next Gateway (£)
Env Serv Staff Costs	3,000	8,000	11,000
P&T Staff Costs	23,000	33,000	56,000
Open Spaces Staff Costs	3,000	3,000	6,000
Fees	16,000	65,000	81,000
<b>TOTAL</b>	<b>45,000</b>	<b>109,000</b>	<b>154,000</b>

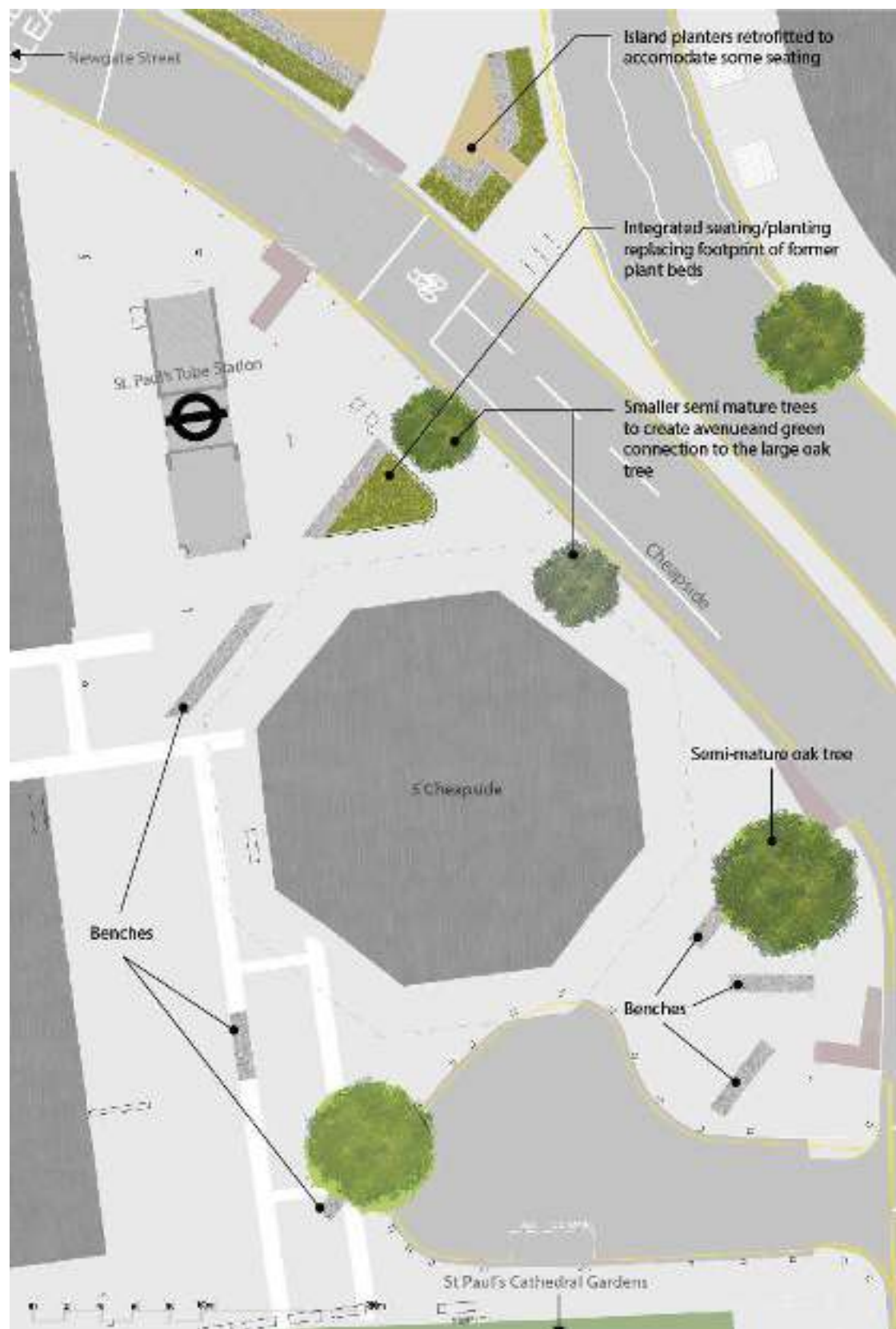


## Appendix 4 – St. Paul's Tube Station Area Option 1





## Appendix 4 - St. Paul's Tube Station Area - Option 2



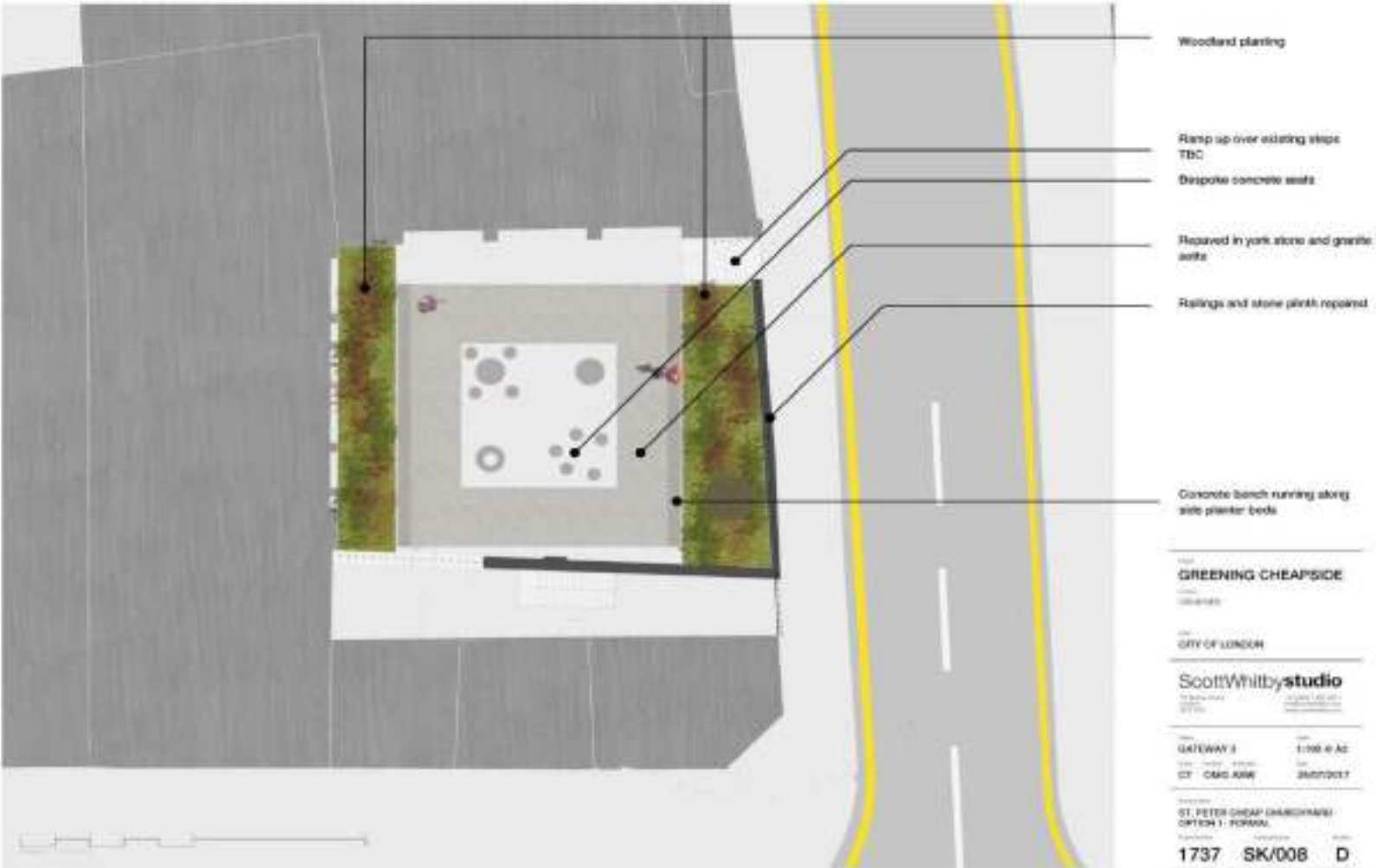


## Appendix 4 - St. Paul's Tube Station Area - **Option 3**



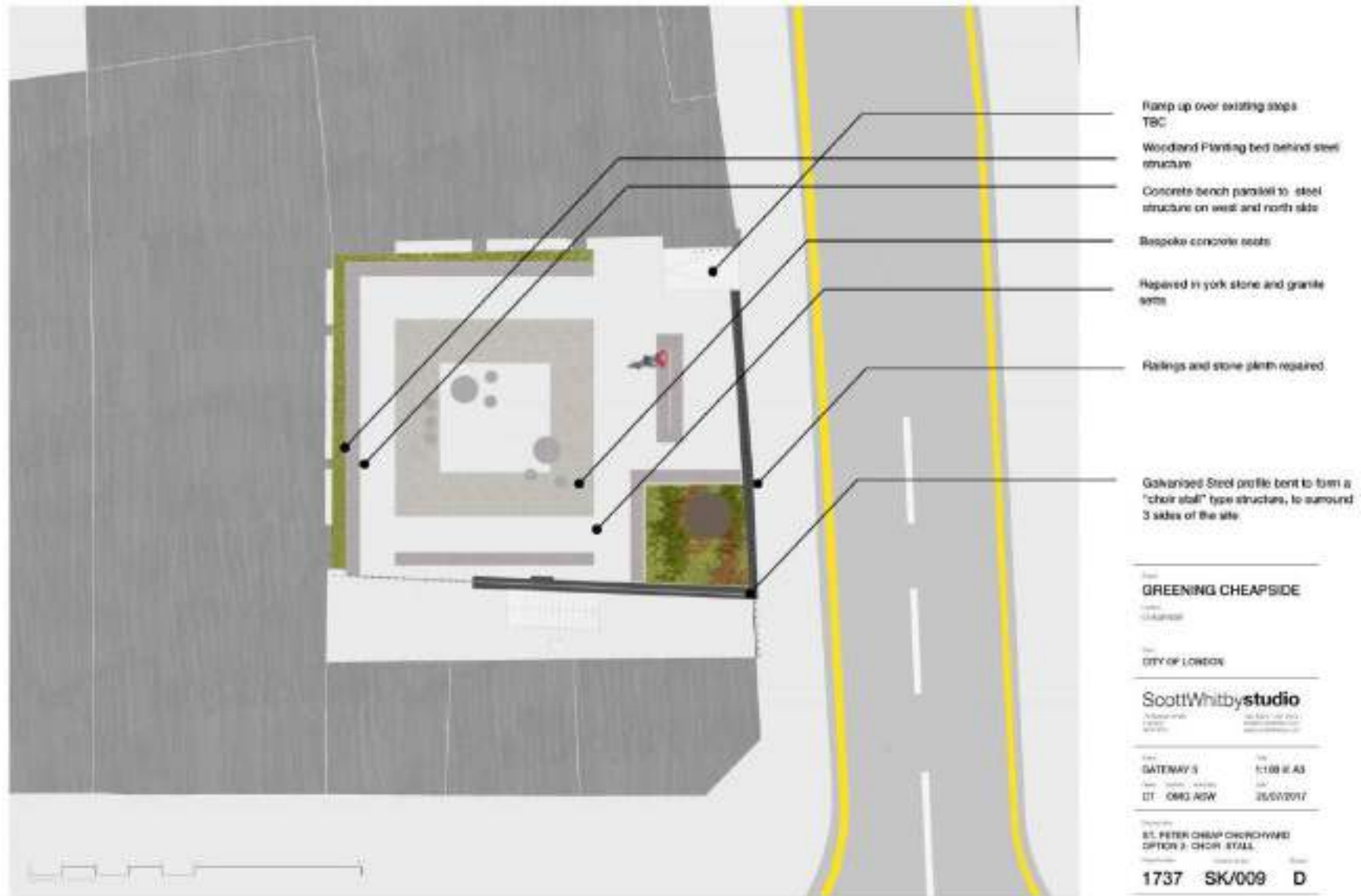


Appendix 5 – St. Peter Westcheap Churchyard **Option 1**





## Appendix 5 – St. Peter Westcheap Churchyard **Option 2**





Appendix 6: St. Peter Westcheap **Existing**





Appendix 6: St. Peter Westcheap **Option 1**





Appendix 5: St. Peter Westcheap Sketch **Option 1**





Appendix 5: St. Peter Westcheap **Option 2**





Appendix 5: St. Peter Westcheap Sketch **Option 2**









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Shoe Lane - before



Shoe Lane – proposed after





Stonecutter Street - before



Stonecutter Street – proposed after





Plumtree Court – before



Plumtree Court – proposed after



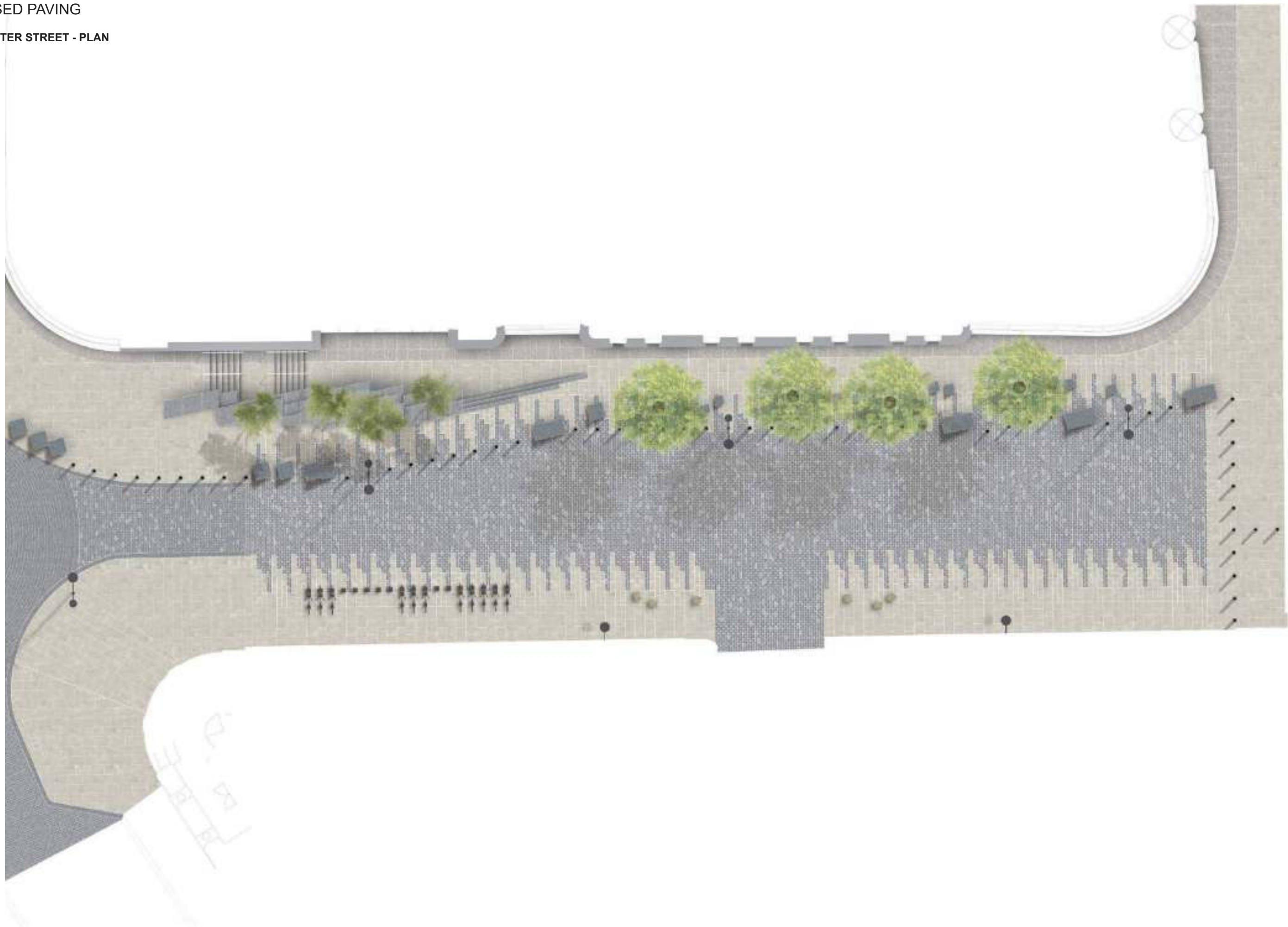


Shoe Lane north - before

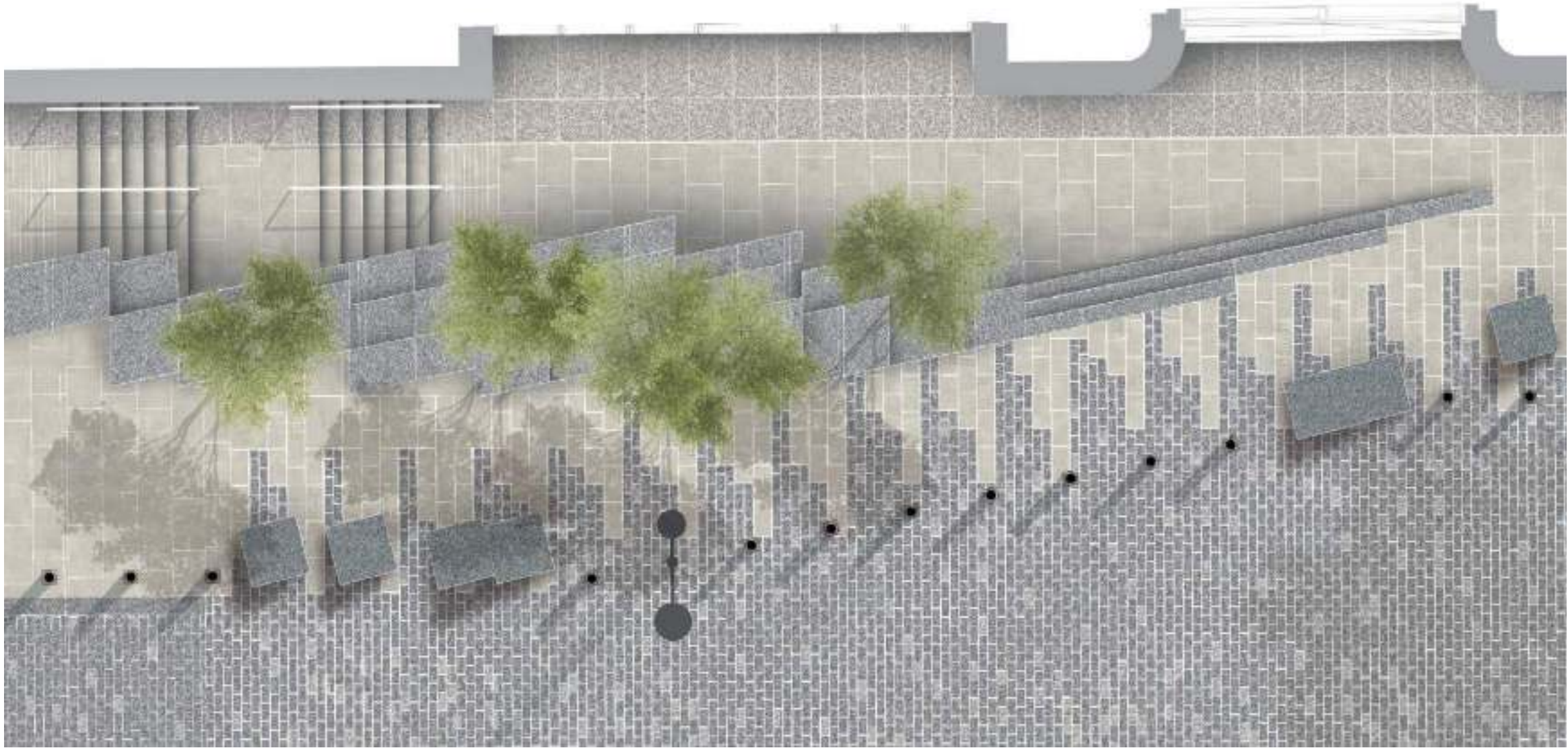


Shoe Lane north – proposed after

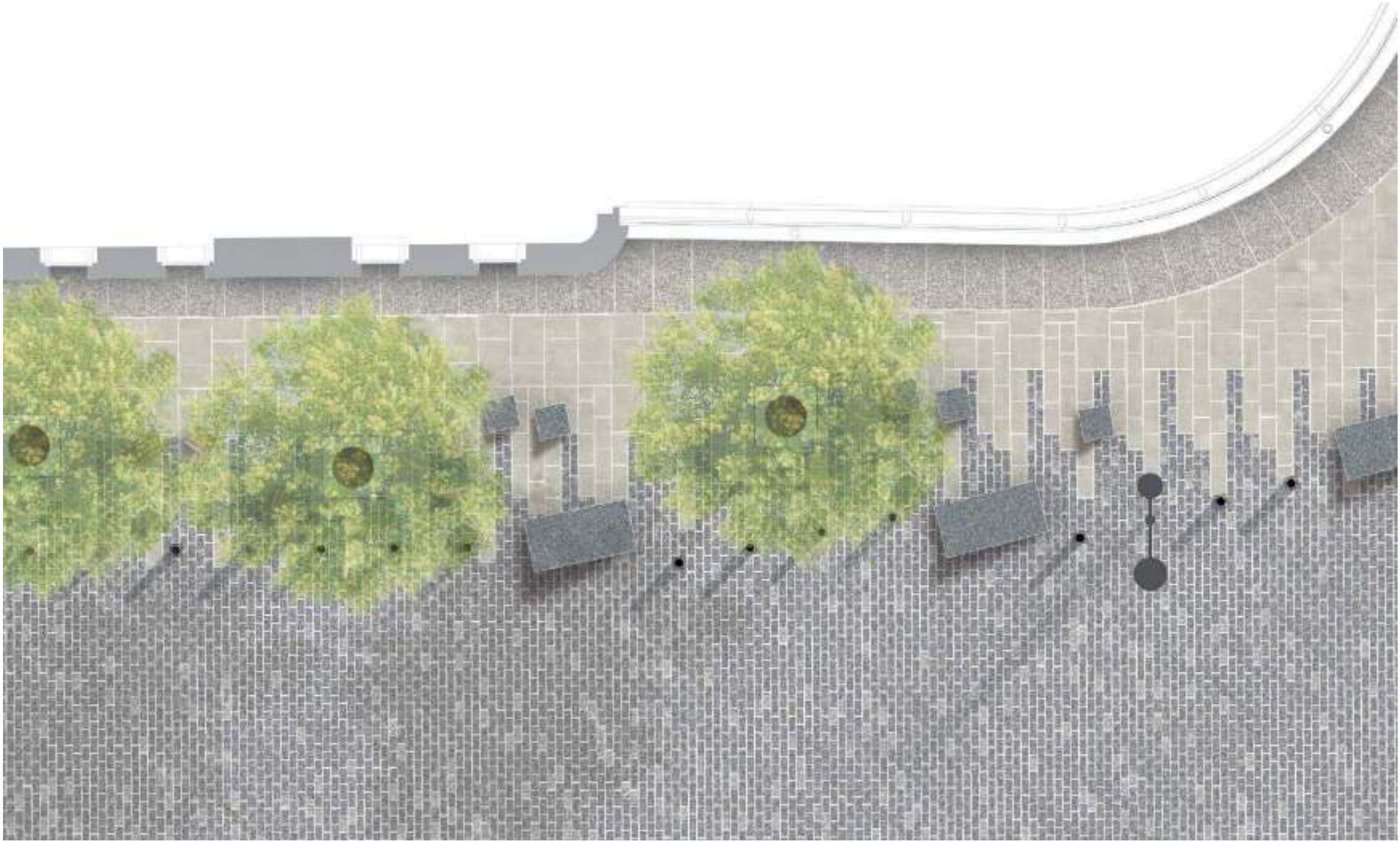








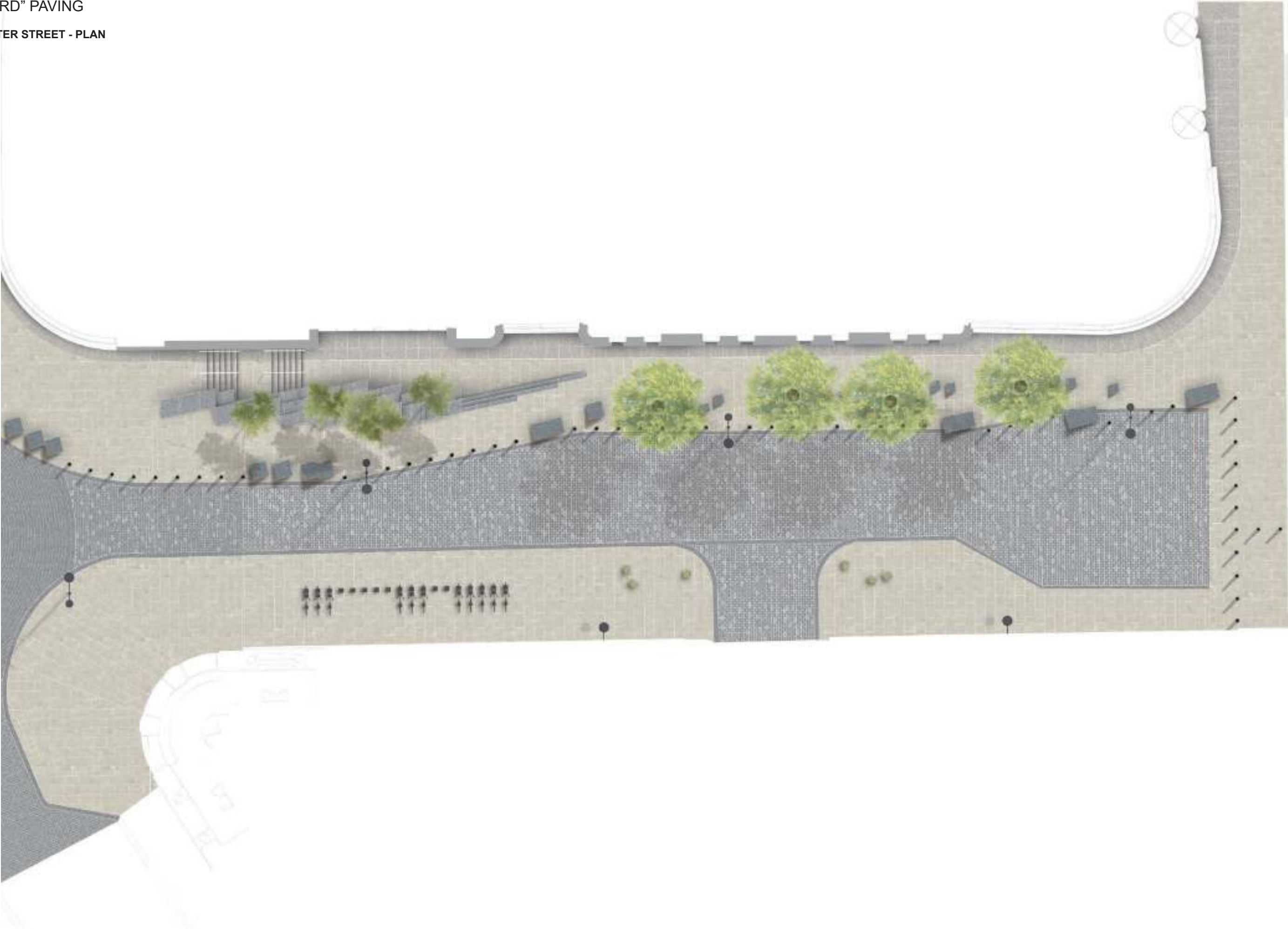








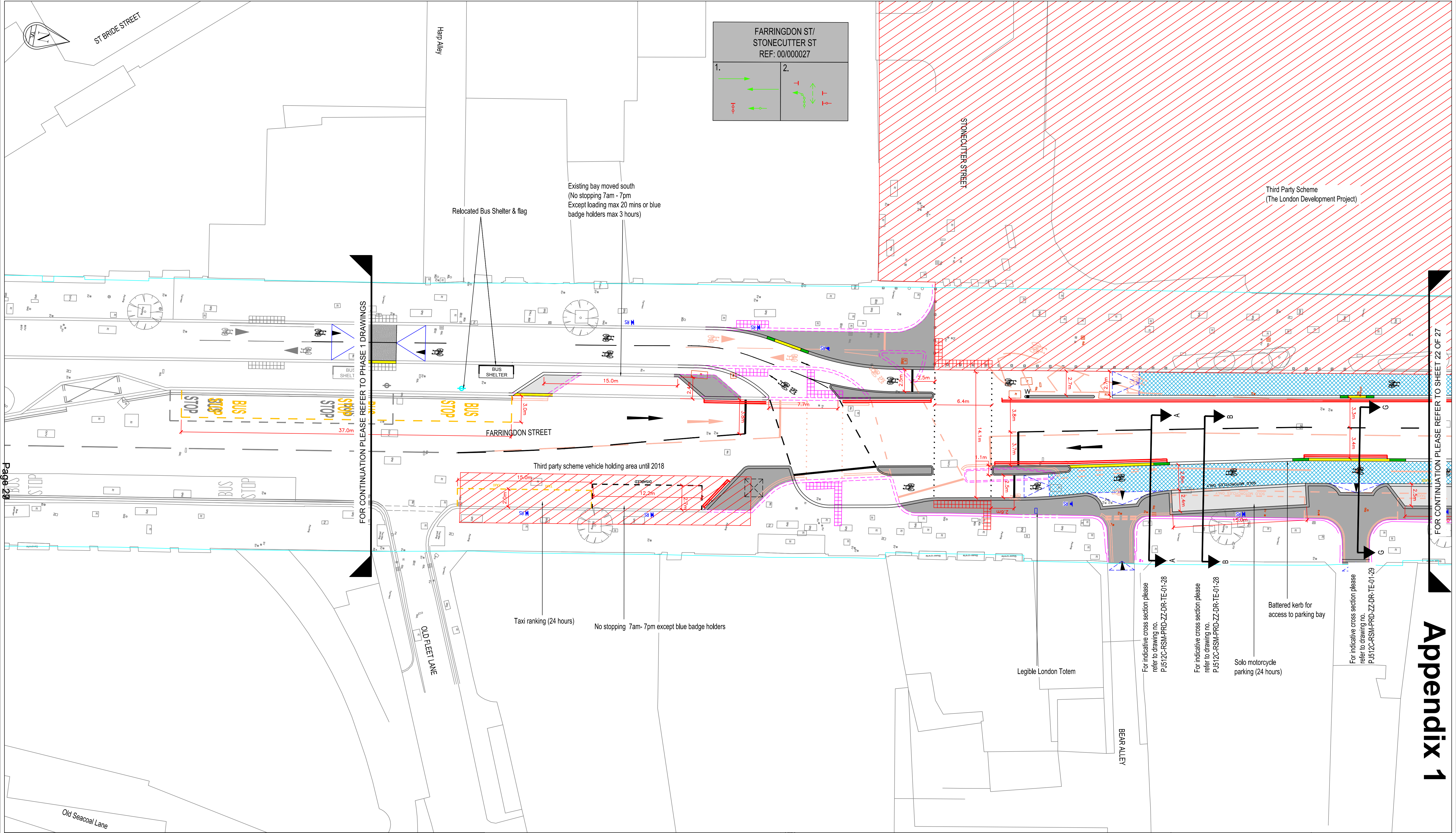




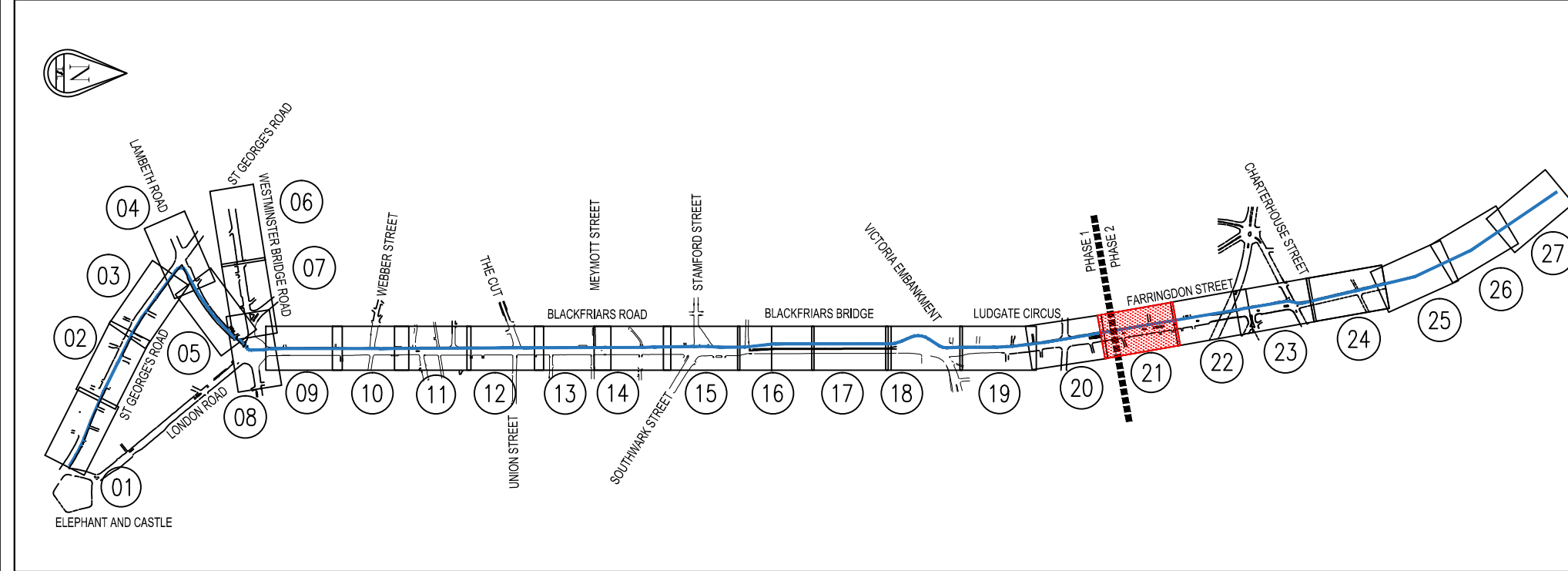








# Appendix 1



Road Markings to be Removed	Proposed flush area	Proposed Bus Stop flag
Street furniture to be removed	Proposed Sheffield cycle stand	Proposed bollard
Kerb / Tactile to be removed	Proposed sign face (refer to signage drawings)	Proposed wand
Retained Infrastructure	Proposed bus shelter	Proposed ramp
Proposed Road Markings	TLRN Boundary	Blue Surfacing
Proposed red lines	Gully/stat affected by proposals	Intermediate Level Cycle Track
Proposed yellow lines	Surface dressing to match footway tone	Footway Level Cycle Track
Proposed transition kerb	Proposed lighting column (TBC)	Trief kerb Level Cycle Track
Proposed dropped kerb	Sign face to be removed (refer to signage drawings)	Potential tree pit
Proposed CS cycle logo	Proposed sign post (refer to signage drawings)	Proposed backless bench
Proposed red tactile paving	Proposed traffic signal (indicative locations)	Proposed bench with back
Proposed charcoal tactile paving	Proposed traffic signals equipment (indicative locations)	Proposed bin
Proposed footway buildout/Island		Proposed raised delineator strip
		Proposed legible London totem


- NOTES**
- All designs to be in accordance with TIL and appropriate Highway Authority Streetscape Guidance.
  - All lining and signing to be in accordance with the current Traffic Signs Regulations and General Directions (TSRGD).
  - All dimensions in metres, unless otherwise stated.
  - All signs to be mounted on existing lighting columns / sign posts where possible (subject to structural assessment)
  - Signs on footway to be mounted at a height to ensure a minimum vertical clearance of 2.3m to bottom of sign where cycling is permitted on the footway, elsewhere to 2.1m.
  - All signs to have a minimum horizontal clearance of 450mm from face of trafficked kerb.
  - All signal heads to be mounted at a height to ensure a minimum vertical clearance of 2.3m to bottom of signal head where cycling is permitted on the footway.
  - All existing signs & lines to be retained unless otherwise stated.
  - Critical dimensions to be checked at detailed design stage.
  - Lighting to be assessed at detailed design stage
  - Proposed traffic signal positions are indicative only and are subject to detailed signal design.
  - Recessed covers to be considered for inspection chambers within areas of tactile paving.
  - Assess carriageway condition at detailed design stage.
  - Re-instate existing road markings adjacent to kerb and carriageway works.
  - Changes to drainage are subject to detail design.
  - Drawing based on topographical survey provided by Sunhill
  - All existing gullies to be retained in cycle track / lane to be converted to 'cycle friendly'
  - Statutory Undertakers equipment that has been identified potentially affected by the scheme has been highlighted in brown. Further investigation should be made at Detailed Design.
  - All signal controller locations to be assessed at point of signal audit.
  - All ramp lengths to be dictated by existing/ proposed kerb heights
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**THESE DRAWINGS DO NOT SHOW THE FULL DETAIL OF THE PROPOSED SCHEME.**

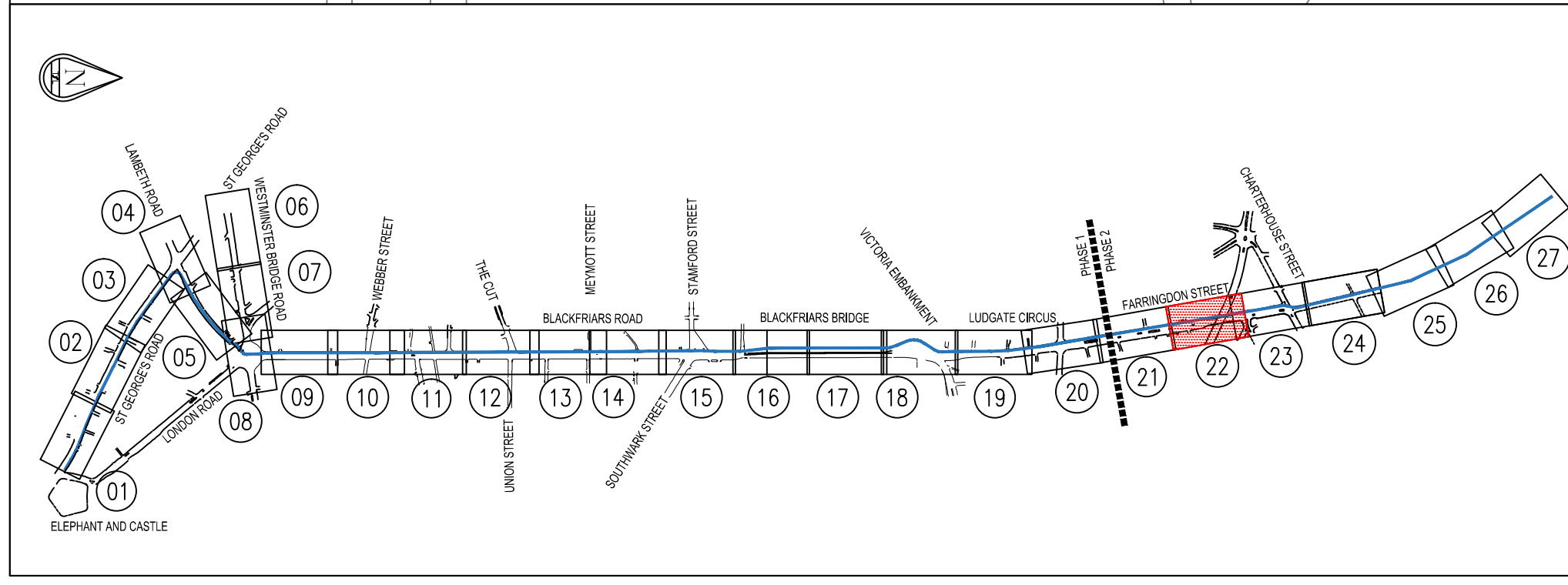
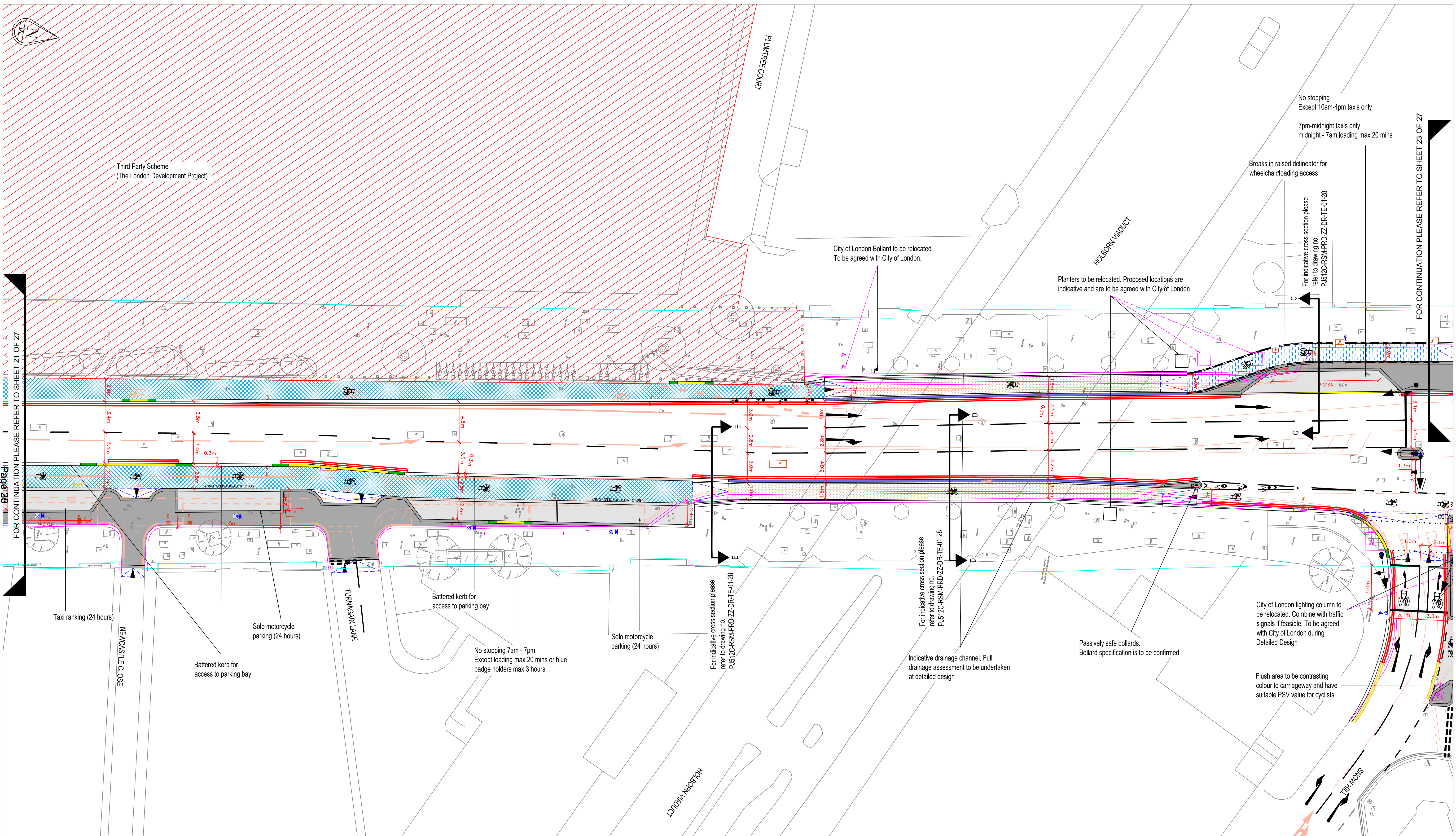
**DRAINAGE INVESTIGATION AND DESIGN IS TO BE UNDERTAKEN AT DETAILED DESIGN.**

**TRAFFIC SIGNAL LOCATIONS ARE INDICATIVE. PLEASE REFER TO TRAFFIC SIGNALS DRAWINGS.**

**THE TOPOGRAPHICAL SURVEY OF FARRINGTON STREET BETWEEN STONECUTTER STREET AND WEST SMITHFIELD CONTAINS UNVERIFIED AS-BUILT DRAWINGS. ACCURACY CHECKS SHOULD BE CARRIED OUT BEFORE DETAILED DESIGN COMMENCES**

Transport for London <b>Surface Transport</b>				Road Space Management Outcomes Design Engineering	
				Palestra 197 Bucklers Road London SE1 8NU	
scheme					
CYCLE SUPERHIGHWAY NORTH-SOUTH ROUTE (CS6) - PHASE 2 CONCEPT DESIGN					
PROPOSED ROUTE - DRAWING 21 OF 27					
date		scale		dm	chk
14/3/17		1:200 @ A1		JMG	CG
Dwg N° PJ512C-RSM-PRD-ZZ-DR-TE-01-21 SHEET 2 OF 2 (FINAL DESIGN)					rev
					C
rev	date	details	chk	app	
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  - Proposed yellow lines
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  - Proposed bollard
  - Proposed wand
  - Proposed ramp
  - Blue Surfacing
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  - Footway Level Cycle Track
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  - Potential tree pit
  - Proposed backless bench
  - Proposed bench with back
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  - Proposed raised delineator strip
  - Proposed legible London totem

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**Transport for London**  
**Surface Transport**

**Road Space Management**  
Outcomes Design Engineering

Palestra  
197 Blackfriars Road  
London  
SE1 1BU

scheme

**CYCLE SUPERHIGHWAY NORTH-SOUTH ROUTE (CS6) - PHASE 2 CONCEPT DESIGN**

**PROPOSED ROUTE - DRAWING 22 OF 27**

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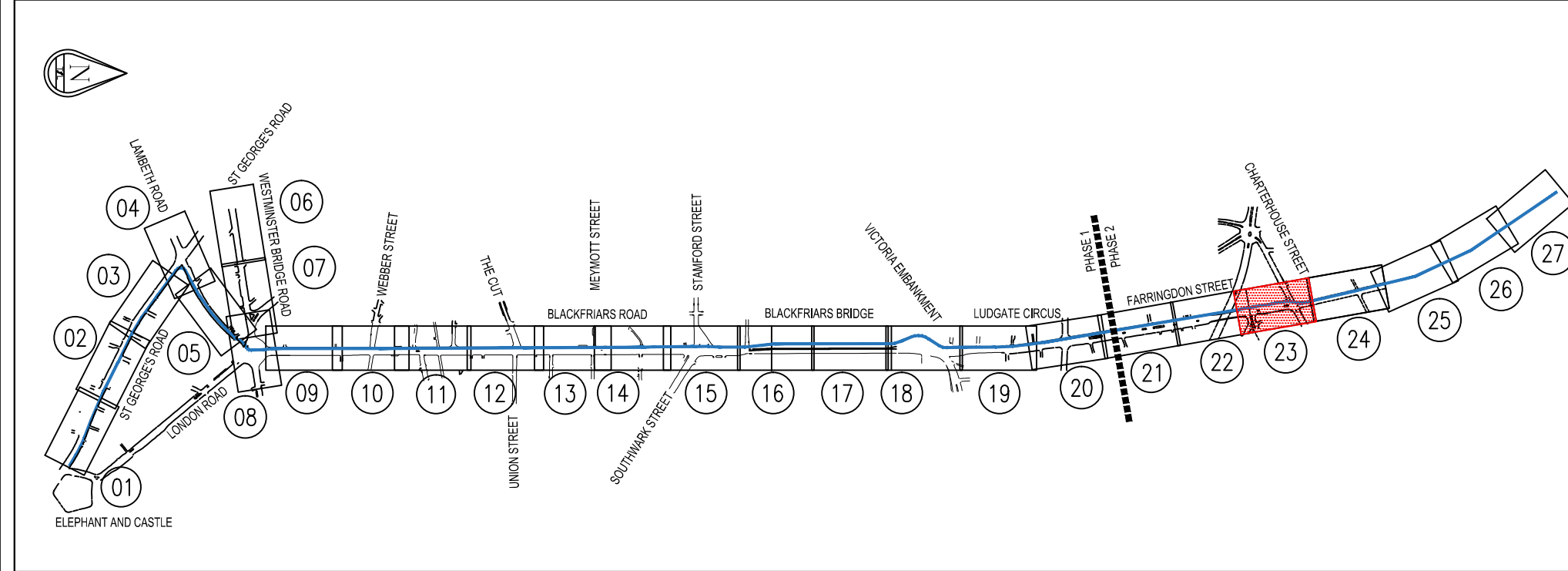
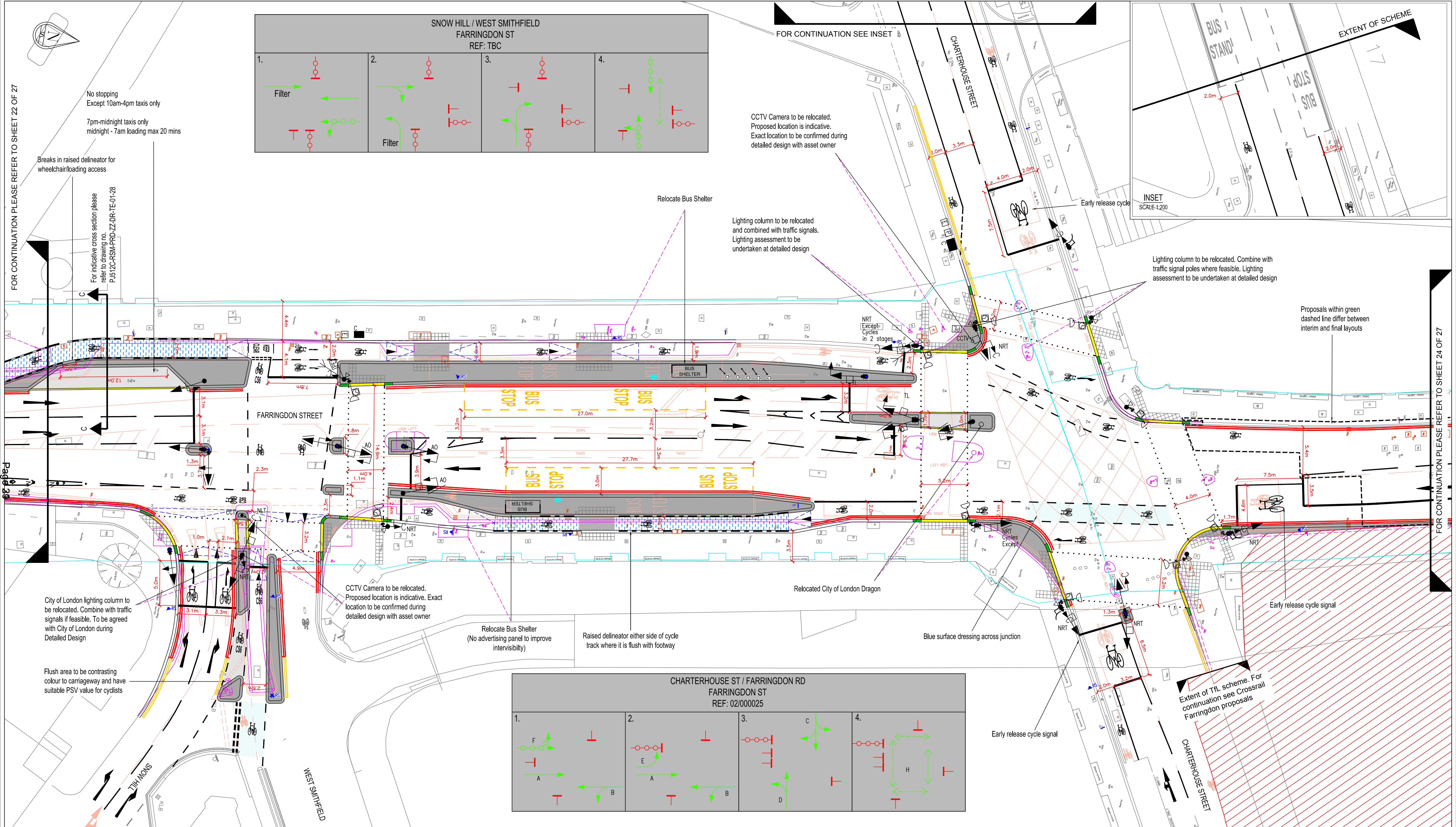
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**SHEET 2 OF 2 (FINAL DESIGN)**

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- |  |   |   |   |
|--|---|---|---|
| <ul style="list-style-type: none"><li>Road Markings to be Removed</li><li>Street furniture to be removed</li><li>Kerb / Tactile to be removed</li><li>Retained Infrastructure</li><li>Proposed Road Markings</li><li>Proposed yellow lines</li><li>Proposed transition kerb</li><li>Proposed dropped kerb</li><li>Proposed kerbs</li><li>Proposed tref kerb</li><li>Proposed CS cycle logo</li><li>Proposed red tactile paving</li><li>Proposed charcoal tactile paving</li><li>Proposed footway buildout/island</li></ul> | <ul style="list-style-type: none"><li>Proposed flush area</li><li>Proposed Sheffield cycle stand</li><li>Proposed sign face (refer to signage drawings)</li><li>Proposed bus shelter</li><li>TLRN Boundary</li><li>Gully/stat affected by proposals</li><li>Surface dressing to match footway tone</li><li>Proposed lighting column (TBC)</li><li>Sign face to be removed (refer to signage drawings)</li><li>Proposed sign post (refer to signage drawings)</li><li>Proposed traffic signal (indicative locations)</li><li>Proposed traffic signals equipment (indicative locations)</li></ul> | <ul style="list-style-type: none"><li>Proposed Bus Stop flag</li><li>Proposed bollard</li><li>Proposed wand</li><li>Proposed ramp</li><li>Blue Surfacing</li><li>Intermediate Level Cycle Track</li><li>Footway Level Cycle Track</li><li>Tref kerb Level Cycle Track</li><li>Potential tree pit</li><li>Proposed backless bench</li><li>Proposed bench with back</li><li>Proposed bin</li><li>Proposed raised delineator strip</li><li>Proposed legible London totem</li></ul> | <p><b>NOTES</b></p> <ol style="list-style-type: none"><li>All designs to be in accordance with TIL and appropriate Highway Authority Streetscape Guidance.</li><li>All lining and signing to be in accordance with the current Traffic Signs Regulations and General Directions (TSRGD).</li><li>All dimensions in metres, unless otherwise stated.</li><li>All signs to be mounted on existing lighting columns / sign posts where possible (subject to structural assessment).</li><li>Signs on footway to be mounted at a height to ensure a minimum vertical clearance of 2.3m to bottom of sign where cycling is permitted on the footway, elsewhere to 2.1m.</li><li>All signs to have a minimum horizontal clearance of 450mm from face of trafficked kerb.</li><li>All signal heads to be mounted at a height to ensure a minimum vertical clearance of 2.3m to bottom of signal head where cycling is permitted on the footway.</li><li>All existing signs &amp; lines to be retained unless otherwise stated.</li><li>Critical dimensions to be checked at detailed design stage.</li><li>Lighting to be assessed at detailed design stage.</li><li>Proposed traffic signal positions are indicative only and are subject to detailed signal design.</li><li>Recessed covers to be considered for inspection chambers within areas of tactile paving.</li><li>Assess carriageway condition at detailed design stage.</li><li>Re-instate existing road markings adjacent to kerb and carriageway works.</li><li>Changes to drainage are subject to detail design.</li><li>Drawing based on topographical survey provided by Sunhill.</li><li>All existing gullies to be retained in cycle track / lane to be converted to 'cycle friendly'.</li><li>Statutory Undertakers equipment that has been identified potentially affected by the scheme has been highlighted in brown. Further investigation should be made at Detailed Design.</li><li>All signal controller locations to be assessed at point of signal audit.</li><li>All ramp lengths to be dictated by existing/ proposed kerb heights.</li><li>All kerbs within cycle track are to be splayed (45°) where cycle track is at carriageway level.</li></ol> |
|--|---|---|---|

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Transport for London  
**Surface Transport**

**Road Space Management**  
Outcomes Design Engineering

Palestra  
197 Blackfriars Road  
London  
SE1 8JU

scheme

**CYCLE SUPERHIGHWAY NORTH-SOUTH ROUTE (CS6) - PHASE 2 CONCEPT DESIGN**

**PROPOSED ROUTE - DRAWING 23 OF 27**

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SHEET 1 OF 2 (INTERIM DESIGN)	C

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## CS North-South Cycle Route (Phase 2)

### TfL Proposals (Rev 2B.1 / 2C)

Stage 1 Road Safety Audit

Ref: 2462.01/000/A201/TLRN/2016

Prepared for:

**Sponsorship, TfL Road Space Management Directorate**

By:

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

Prepared by: [REDACTED], Audit Team Leader

Checked by: [REDACTED], Audit Team Member

Approved by: [REDACTED]

Version	Status	Date
A	Audit report issued to Client	27/10/2016



## **1.0 INTRODUCTION**

### **1.1 Commission**

- 1.1.1 This report results from a Stage 1 Road Safety Audit carried out on the Cycle Superhighway (CS) North-South Cycle Route (Phase 2), TfL Proposals (Rev 2B.1 / 2C) 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 13<sup>th</sup> October 2016. It took place at the Palestra offices of TfL on 25<sup>th</sup> October 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 25<sup>th</sup> October 2016. During the site visit the weather was overcast 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: [REDACTED] – TfL Sponsorship

#### **1.3.2 Design Organisation**

Design contact details: [REDACTED] - TfL Outcomes Design Engineering

#### **1.3.3 Audit Team**

Audit Team Leader: [REDACTED] – TfL Road Safety Audit

Audit Team Member: [REDACTED] – 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**

- 1.4.1 The purpose of the scheme is to extend the Cycle Superhighway North-South Route from Stonecutter Street to Ray Street\*.

\*Taken directly from the Audit Brief.

### **1.5 Special Considerations**

- 1.5.1 The Audit Team has no special considerations to raise.



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

A previous iteration of the proposals were subject to a Stage 1 Road Safety Audit in January 2016 by TfL Road Safety Audit (ref: 2462/VAR/A201/TLRN/2016). The design has been updated, and hence this Audit is not considered relevant to the revised proposals. Problems raised in this Audit that are also evident in the revised proposals have been raised again as part of this Stage 1 Road Safety Audit.



### 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 CYCLE FACILITIES

##### 3.1.1 PROBLEM

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

**Summary:** Hybrid track design may pose a hazard to cyclists and riders of other two wheeled vehicles

The Audit Team is concerned that a hybrid track is proposed with the provision of a small upstand from the carriageway. It is assumed that the track will not be provided in colour, to be consistent with the remainder of the north-south cycle route. As a result the hybrid track may have little differentiation from the adjacent carriageway and may appear to be a consistent surface at a similar level. Cyclists and riders of other two wheeled vehicles in particular may fail to appreciate the presence of the kerb upstand, with an exacerbated potential to become unseated and an associated potential for injury as a result.

##### RECOMMENDATION

Ensure the hybrid track is adequately visible to all road users. This may require but is not limited to, the provision of additional road markings to define the edge of the carriageway and the use of a different surface material and/or colour.

Design Organisation Response	Rejected
<p><b>Rejected:</b> The double red line 'no stopping' restrictions highlight to users where the edge of carriageway is, and at the edge of carriageway users are accustomed to a kerb height. 50mm kerb heights are increasingly common across London especially in busy high street contexts and along existing CS routes such as CS7 at Kennington Oval, confusion has not been raised as an issue. Cycle logos are provided at 50m intervals along the cycle track and the kerb will have a colour contrast with the cycle track material.</p> <p>A potential point of confusion could have been at the start of the hybrid (or stepped) cycle track. However, it is proposed that a triangular ramp marking (diag1062), a cycle logo, a retro-reflective yellow wand and tapered road markings on the approach to direct other traffic away from the stepped track will highlight the presence of the track and level change. The design team therefore feels that the proposed measures ensure the cycle track is sufficiently conspicuous so as not to pose the hazards raised by the audit.</p>	
Client Organisation Comments	
<p>Agree with the designer's response. Double red lines will be present along the majority of the edge of the carriageway parallel to the cycle track as well as a kerb edge in a contrasting colour. This is consistent with visual definition of a footway alongside a carriageway. Cycle logos in the track will provide further additional visual indication that there is a cycle track beyond the edge of the kerb.</p>	



### 3.1.2 PROBLEM

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

**Summary:** Commencement point of the segregation island may pose a hazard to road users

The cycle segregation is proposed at a width of 300mm with what appears to be a 100mm traffic wand at the commencement point. The Audit Team are concerned that the wand may not be adequately visible to approaching road users due to the narrowness of the vertical feature and the minimal lateral clearance to both the cycle track and the carriageway. Approaching drivers and riders may fail to appreciate the presence of the island with an exacerbated potential for conflict and associated potential for personal injury as a result.

#### RECOMMENDATION

Ensure the segregation island is adequately visible to approaching road users. This may require the provision of a wider island with a wider vertical illuminated feature at the commencement point. It may also be beneficial to ensure adequate lateral clearance is provided to both cyclists and users of the general traffic lane.

Design Organisation Response	Part Accepted
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**Part Accepted:** There are two start points with 300mm wide segregation; the northbound start point at the Charterhouse St junction, and the southbound start point at the Greville St junction.

At the Greville Street junction heading southbound, the preceding mandatory cycle lane directs adjacent vehicles past the segregation strip, however it is still important that it is visible. Cycle logos, double red line 'no stopping' restrictions and the retro-



reflective wands (similar to the photo above) highlight the segregation strip. Therefore the design team rejects that this is a hazard at the Greville Street junction.

The issue at the Charterhouse Street junction is slightly different as there is a turning movement around the start of the segregation and more variations in how vehicles approach it. However, the proposed visibility measures proposed for Greville Street also apply here. Maintaining a wide cycle facility is vital to the success of the scheme and narrowing the track at the most critical point, the start in order to provide a wider island, would reduce capacity at busy times. The cycle tracks are approximately 2m



wide, narrowing them further would mean cyclists would be unable to ride two abreast or overtake, which could discourage cyclists from using the dedicated cycle track in favour of the general traffic lane where provisions for cyclists have not been accommodated. The traffic lanes are already as narrow as 3m. For these reasons, the segregation strip is consistently narrow throughout the link.

Also, any increase in the lateral clearance between the wand and vehicles either side would reduce the physical space for those vehicles. It is recommended that the wands specified at detailed design are of a height below handlebars and wing mirrors to mitigate against striking. It should be noted that the wands are self-correcting.

It is recommended that visibility of the kerb edge is bolstered by retro-reflective paint at the detailed design stage.

#### **Client Organisation Comments**

Agree with the designer's response. Segregation will be adequately visible to approaching road users by means of retro-reflective wands, cycle logos on the cycle track side and double red lines on the carriageway side. The standard lateral clearance of 45mm is not proposed for vertical features such as this would require narrowing of the cycle lane leading to a reduced level of service for cyclists. The vertical wands are proposed to be self-correcting to reduce the impact of any strikes.



## 3.2 POWERED TWO WHEELERS

### 3.2.1 PROBLEM

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

**Summary:** Use of battered kerbs to access solo motorcycle bays may pose a hazard to powered two wheeler riders

It is proposed to provide battered kerbs for powered two wheelers to cross the cycle track and access the parking bay. The Audit Team are concerned that riders of powered two wheeled vehicles may attempt to access the parking bay at an acute angle, and the presence of the battered kerb may destabilise the rider. An exacerbated potential for the rider to become unseated, with an associated potential for personal injury may exist as a result.

#### RECOMMENDATION

Provide a smoother transition for powered two wheelers to access the parking bay. This may require the provision of a conventional dropped kerb or other similar measure.

Design Organisation Response	Part-accepted
<p><b>Part-accepted:</b> The current proposals show an angled 300mm wide kerb with a 50mm upstand. The pre-consultation drawings proposed a 150mm wide half battered kerb which would have been more severe for P2W to cross. The use of 150mm wide kerbs was raised in audit Ref: 2462/VAR/A201/TLRN/2016 and the design was amended.</p> <p>Additionally the design team anticipate that P2W users will slow down before attempting to cross the kerbs as they will be turning across a cycle track into a parking bay where they will become stationary. The design team are concerned that too shallow a gradient could encourage P2W users to cross the track at a high speed reducing their visibility of oncoming cyclists. TfL's Motorcycle guidance document is not specific on appropriate gradients for P2W, however it states that a 1 in 5 gradient at a raised side road entry treatment 'can cause issues for motorcyclists'. However, it is anticipated that P2W would have to approach a side road entry treatments at a higher speed in order to continue their onward journey. Side road entry treatments are recommended at TLRN side road junctions as part of TfL's Streetscape Guidance.</p> <p>An example of the angled kerbs is shown in the image below. These have a gradient of 1 in 6 because the whole kerb is angled rather than just the edge battered. This type of solution will be recommended to the detailed designers.</p>	

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Dropping the kerb to a flush or very low upstand across the mouth of the motorcycle bays would reduce the physical separation between cyclists and general traffic lanes, potentially compromising the safety and effectiveness of the scheme. P2W users and other vehicles may be more likely to enter a cycle track with less physical separation when accessing the side roads or parking bays along Farringdon Street.

#### **Client Organisation Comments**

Agree with designer's response.



### 3.3 TRAFFIC SIGNALS

#### 3.3.1 PROBLEM

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

**Summary:** Traffic signal locations may not be immediately visible to cyclists

The proposals require cyclists to adopt a carriageway position away from the normal primary stop-line at the two stage right turns. Encouraging cyclists to adopt this position may mean they are located in front or away from the primary traffic signal, relying heavily on the visibility of the secondary traffic signal to decide when to progress.

The absence of primary traffic signal visibility may lead to cyclists failing to appreciate when it is safe to continue, with an exacerbated potential for conflict as a result. This is particularly the case if the secondary traffic signal is obscured or not operational.

#### RECOMMENDATION

Ensure cyclists are located in a position to observe the primary traffic signals for the manoeuvre they wish to undertake. If this cannot be achieved it may be beneficial to provide additional cycle specific traffic signals at the position they are most likely to be observed.

Design Organisation Response	Rejected
<b>Rejected:</b> Findings from the TfL trials outlined that the optimal position for the signal for two-stage turns is a far sided secondary signal. This layout has already been applied at many other junctions across London within the Cycle Superhighway and Better Junction programmes and is continued on CSNS for consistency.	
Client Organisation Comments	
Agree with the designer's response. The London Cycling Design Standards (LCDS) describe requirements for formal two stage turns based on guidance contained in SQA0651 developed following the trial layout.	
This states that:	
<ul style="list-style-type: none"><li>an early release for cyclists in the ahead waiting area should be provided by a <i>far-sided</i> secondary signal;</li><li>these cyclists must have a clear-sighted view of this [far sided] signal, which should <i>not</i> therefore be a low-level signal head, with a 200mm green cycle aspect as the forth aspect;</li><li>the secondary signal must turn green at the same time as the low-level cycle signal for early release for cyclists waiting behind the stop line.</li></ul>	
These principles are proposed for the two-stage turns in this scheme.	

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#### 3.3.2 PROBLEM

**Location:** A – Farringdon Street junction with West Smithfield

**Summary:** Traffic signals may be masked for northbound drivers by proximity of loading / disabled bay

The Audit Team are concerned that a vehicle located within the loading bay on the west side of the junction may restrict forward visibility to any nearside traffic signal.



Northbound drivers may fail to appreciate the necessity to stop at this location, or react late upon a traffic signal coming into view. An exacerbated potential for drivers to enter the junction injudiciously, with a resultant potential for side-swipe or shunt type conflicts may exist as a result.

#### RECOMMENDATION

It is recommended that appropriate forward visibility to the nearside traffic signal is provided. This may require the relocation or reduction in length of the loading / disabled bay.

Design Organisation Response	Accepted
<p><b>Accepted:</b> An offside island and primary traffic signal are now included in the concept design. This will increase the forward visibility of the traffic signals. There will also be a far sided secondary signal on the southern side of the pedestrian refuge island.</p> <p>There are no other suitable locations for the bay to be relocated to and it is required by the businesses under the viaduct. As further mitigation the proposed controls of the bay will prevent vehicles from using it at peak times to ensure visibility of the nearside signal is maintained when traffic flows are highest. During the hours when the bay can be used it will be restricted to taxis between 10am and 4pm and 7pm – midnight. Between the hours of midnight - 7am loading and unloading will be permitted. The benefit of this arrangement is that it ensure high sided vehicles will only ever be permitted to use the bay during night time hours when traffic flows are lower.</p>	
Client Organisation Comments	
<p>Agree with the designer's response.</p>	

### 3.4 PARKING AND LOADING FACILITIES

#### 3.4.1 PROBLEM

**Location:** B – Farringdon Street opposite West Smithfield

**Summary:** Loading bay location may hamper visibility for pedestrians and cyclists

The Audit Team is concerned that the location proposed loading / disabled bay may restrict visibility to / from pedestrians and cyclists. The pedestrian and cycle facilities are located immediately downstream of the bay, hence any vehicle located within the bay is likely to impact on the visibility to / from these facilities. Pedestrians and cyclists may fail to appreciate when it is safe to proceed due to the reduced visibility, entering the carriageway injudiciously. Pedestrians and cyclists entering the carriageway injudiciously may be at an exacerbated potential for conflict with vehicles.

#### RECOMMENDATION

Increase the visibility for pedestrians and cyclists. This may require building out the footway at the location of the crossing points and modifying the layout of the loading / disabled bay.

Design Organisation Response	Part accepted
<p><b>Part-accepted:</b> The pedestrian and cycle crossings over Farringdon Street will be</p>	



signalised with traffic held while each crossing is running allowing pedestrians and cyclists to cross the road safely. Even with a high sided vehicle parked in the bay the minimum forward visibility requirement of 40m to the pedestrian crossing (LTN1/95) is achieved. The forward visibility to the cycle crossing is reduced due to the stop line set back in relation to the kerb line.

The design team accepts that road users who choose to ignore safe signalised facilities do so at their own risk. However it should be noted that the existing road layout does not have a controlled pedestrian or cycle crossing at this junction and pedestrians have far less visibility of oncoming traffic as the current uncontrolled crossing is immediately adjacent to a parking bay. There have been no recorded collisions involving pedestrians in the last 3 years at this junction. Additionally there are no other safe, feasible locations to relocate the loading bay to owing to the location which includes the Holborn Viaduct to the south and a bus stop to the north. It is important the loading bay is maintained to ensure businesses in the area can continue to be serviced.

As a means of mitigation the design has been amended so that loading and unloading is only permitted between midnight and 7am. With taxis allowed to use the bay for ranking between 10am and 4pm and 7pm - midnight. This change will ensure that high sided vehicles that may restrict visibility the most are not using the bay during the AM and PM peak when pedestrian footfall/cycle flows will be highest.

#### Client Organisation Comments

Agree with the designer's response. Pedestrians and cyclists have dedicated green time within the signal staging to cross the road separate from motor traffic.

Without a suitable location for the business under the Holborn Viaduct to service, there is a risk that freight vehicles will park in the area illegally which in turn could cause a greater risk to pedestrians or cyclists than the designated bay proposed.

### 3.4.2 PROBLEM

**Location:** C – Farringdon Street opposite Plumtree Court

**Summary:** Loading bay location may restrict visibility for powered two wheelers

The Audit Team is concerned that the location of the proposed loading / disabled / taxi bay may restrict visibility to / from powered two wheelers. Powered two wheeler riders may struggle to observe cyclists when backing out their motorcycle from the parking bay, due to the presence of taxis or other vehicles parked immediately upstream. Riders may enter the cycle facility injudiciously with an exacerbated potential for conflict with cyclists as a result.

#### RECOMMENDATION

Increase the inter-visibility for powered two wheeler riders. This may require modifying the layout of the loading / disabled / taxi bay.

#### Design Organisation Response

#### Accepted

**Accepted:** The design has been amended to switch the bays around so that the loading/disabled/taxi bay is now to the south of the motorcycle bay. This change should increase inter-visibility for P2W riders.

#### Client Organisation Comments



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Agree with the designer's response.

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### 3.4.3 PROBLEM

**Location:** D – Farringdon Road south of Greville Street

**Summary:** Loading bay location may pose a hazard to cyclists and drivers

The Audit Team is concerned that a loading bay is proposed within the cycle track on Farringdon Road (northbound) on the approach to Greville Street. This layout poses a number of safety concerns, namely:

- When the bay is occupied, cyclists within the cycle track will be required to re-join the general traffic lane. This manoeuvre is less likely to be anticipated by other road users with an exacerbated potential for conflict with cyclists as a result.
- Further to the point above, if cycle volumes experienced on the existing north-south superhighway are replicated at this location, the number of cyclists attempting to re-join the carriageway may be prohibitive and lead to congestion within the cycle track. Congestion within the cycle track may lead to cyclists re-joining the carriageway at the back of the queue which is also less likely to be anticipated by other road users with an exacerbated potential for conflict with cyclists as a result.
- Drivers attempting to enter the loading bay may experience difficulties in identifying cyclists on the nearside, exacerbating a potential for conflict, particularly if cycle approach speeds exceed the vehicle speed due to congestion. Furthermore, cyclists are unlikely to anticipate a goods vehicle pulling into the segregated facility when the remainder of the route is protected from vehicular incursion.
- Any cyclist who re-joins the carriageway and cycles on the offside of the vehicle may be situated within the 'dooring zone' of the drivers cab.

### RECOMMENDATION

It is recommended that the loading bay is relocated to an alternative location. If this cannot be achieved it may be preferable remove the cycle facility, or to modify the layout of the facility to clarify priorities in a similar manner to the layout surrounding the bus facility on the opposite side of the road.

Design Organisation Response	Part Accepted
<p><b>Part accepted:</b> The proposed loading bay is essential to ensure businesses along this section of Farringdon Road can be serviced. Alternative locations were investigated but no feasible locations were available. The design team appreciates the potential conflicts with large numbers of cyclists using the cycle track and as a means of mitigating this are proposing that loading and unloading will only be permitted between the hours of 12am and 6am. During these hours the number of cyclists using the cycle track will be much less than during peak hours/daytime. The likelihood of the potential issues outlined above should therefore be dramatically reduced.</p> <p>It is proposed to change the loading facility from a bay to a single red line and permit stopping only between the hours of 12am and 6am in order to facilitate loading and unloading. This has been proposed to discourage vehicles from illegally using the bay during peak times. TfL's enforcement team have advised that single red lines are used illegally less than red route bays.</p>	
Client Organisation Comments	
Agree with the designer's response. It is essential that provision is provided for	



servicing the businesses along this section of the route and no alternative locations are available as the only accesses to the businesses are on Farringdon Road.

Changing the proposed bay to a single red line should reduce the tendency for drivers to park illegally in this location as they may have been more likely to in a marked out bay.

Cycle logo patches have been proposed on the carriageway parallel to the loading facility to raise awareness to drivers of the potential presence of cyclists in the carriageway.

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### 3.5 CARRIAGEWAYS

#### 3.5.1 PROBLEM

**Location:** E – Farringdon Street approach to West Smithfield

**Summary:** Carriageway alignment may pose a hazard to road users

The Audit Team is concerned that the southbound carriageway in proximity to the bus stop guides road users into the central pedestrian refuge island. Should a bus be located within the bus stop, road users passing the bus may fail to appreciate the abrupt requirement to deviate around the pedestrian island. An exacerbated potential for conflict with the feature and associated potential for personal injury may exist as a result.

#### RECOMMENDATION

Increase the distance between the bus stop and the pedestrian refuge to provide a greater transition length. If this cannot be achieved it may be beneficial to maximise the visibility of the pedestrian island.

Design Organisation Response	Accepted
<p><b>Accepted:</b> There will also be a primary traffic signal on the island which should make drivers aware of the presence of a traffic island. However it is accepted that the traffic lane alignment curves abruptly on the approach to the island.</p> <p>Hatching to TSRGD diagram number 1040 has been added on the approach to the island to increase its visibility and to guide drivers around the island.</p> <p>It is not possible to move the bus stop further north to smooth the lane alignment due to the space required at the rear of the bus stop to track large vehicles around and leave adequate clearance between northbound and southbound traffic lanes. The current design allows for vehicles of all class to manoeuvre around the bus cage.</p>	
Client Organisation Comments	
Agree with the designer's response.	

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

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## 4.0 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 ISSUE

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

**Reason considered to be outside the Terms of Reference:** Detailed design issue

It is proposed to provide the cycle facility under the Holborn Viaduct at trief kerb level. Although no exact details regarding this layout have been provided, the Audit Team are concerned that without the provision of a physical feature to discourage cyclists from travelling close to the edge of the kerbing, there is a risk for cyclists to fall from the kerbing into the carriageway. It is recommended that the layout incorporates a raised upstand or feature at the carriageway side of the facility to discourage cyclists from travelling too close to the carriageway.

Design Organisation Response	Accepted
<b>Accepted:</b> The exact design of the trief kerb level cycle track is still to be determined. However, it is agreed that a raised feature should be present to discourage cyclists from travelling close to the kerb edge. This recommendation will be included in the final design handed over to the detailed designers.	
Client Organisation Comments	
Agree with the designer's response.	

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### 4.2 ISSUE

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

**Reason considered to be outside the Terms of Reference:** Detailed design issue

A number of the side roads are indicated without the provision of a give-way feature to indicate priority and to advise drivers of the location to wait when exiting. This is considered to be a design anomaly and it is recommended that a give-way is provided at all side road accesses that do not have priority.

Design Organisation Response	Rejected
<b>Rejected:</b> The locations of the side roads without give way markings are all situated on Farringdon Street. All of these side roads or accesses are anticipated to have very low flows as they provide access for loading/unloading to a small number of premises. Any driver who is emerging from one of these accesses must have entered from Farringdon Street and will therefore be aware that they are crossing a footway and cycle track and should give way before entering the main carriageway.	
Each side road has a raised entry treatment, with footway material which will prompt drivers to slow down and give way to traffic on the cycle track and carriageway as	

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well as pedestrians on the footway. Cycle symbols (diagram 1057) at the mouths of the side roads reinforce this.

The same approach has been taken at lightly trafficked side roads in Phase 1 of the North-South scheme on Blackfriars Road and no safety issues have been observed or reported.

Treating these accesses as crossovers rather than side roads has urban realm benefits from less road markings and gives the feel of a more pedestrian friendly and less traffic dominated environment.

#### **Client Organisation Comments**

Agree with the designer's response. Road markings such as give-way lines are not commonly used for vehicle access points such as these, therefore further markings are not recommended.

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#### 4.3 ISSUE

**Location:** 1 – Turnagain Lane junction with Farringdon Street

**Reason considered to be outside the Terms of Reference:** Detailed design issue

It is proposed to provide a give way facility at the edge of the building line on Turnagain Lane. The close proximity of the adjacent building is likely to significantly restrict visibility to the left for drivers. It may be beneficial to consider bringing the give-way facility forward to increase visibility.

Design Organisation Response	Accepted
<b>Accepted:</b> The design will be amended to bring forward the give way markings to increase visibility for drivers. It should be noted that traffic flows in and out of Turnagain Lane are likely to be low given that it is a minor access road to the loading bays at the rear of 14-21 A40 Holborn Viaduct.	
Client Organisation Comments	
Agree with the designer's response.	

#### 4.4 ISSUE

**Location:** 2 – Farringdon Street junction with West Smithfield

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

It is proposed to provide a give-way facility for northbound cyclists exiting from West Smithfield. The size of the facility is unlikely to accommodate more than a couple of cyclists before spilling out into the carriageway. Whilst unlikely to pose a road safety concern, it may be beneficial to review the size of the facility and ensure it is adequate to accommodate the volume of cyclists likely to use it.

This is of particular concern as if congested, cyclists may resort to turning right within the carriageway if their onward path is obstructed. Cyclists that perform this manoeuvre would do so through the pedestrian crossing on the exit to the junction which operates in the same traffic signal stage.

Design Organisation Response	Rejected
<b>Rejected:</b> Traffic surveys carried out in October 2016 recorded a maximum peak hour flow of 27 cyclists per hour turning right out of Snow Hill into Farringdon Street. This equates to less than 1 cyclist per cycle of the traffic signals that could turn right into the cycle track, which can comfortably be accommodated within the waiting area provided. The waiting area up to the give way marking can store at least 2 cyclists. A keep clear marking is also positioned east of the give way marking to prevent other cyclists blocking those entering from Snow Hill. This area provides space for at least an extra 2 cyclists to wait.	
Eastbound and westbound cyclists receive a green signal in the same stage so by the time cyclists from Snow Hill reach the northbound cycle track, most cyclists will have left the stop line and reservoir, creating space for cyclists to enter.	
The transition from stage 4 (cycle crossing) to stage 1 (northbound traffic) is likely to be controlled by the intergreen associated with the pedestrian crossing as this will be	



longer than the intergreens associated with the cycle crossing and northbound traffic. This adds extra time for cyclists to enter the cycle track before northbound and southbound traffic gain right of way.

#### **Client Organisation Comments**

Agree with the designer's response. Detailed traffic modelling has informed the design of this junction and the space provided for cyclists is deemed to be appropriate to the demand and layout of the junction.

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#### 4.5 ISSUE

**Location:** 3 – Farringdon Street north of West Smithfield

**Reason considered to be outside the Terms of Reference:** Detailed design issue

It is proposed to provide a bus shelter within the floating bus stop island. It would appear that the bus shelter is located in close proximity to the cycle track. It may be beneficial to ensure adequate lateral clearance is provided to the rear of the shelter to ensure the feature does not pose a hazard to cyclists.

Design Organisation Response	Rejected
<b>Rejected:</b> This has been accommodated within the design as there is 450mm lateral clearance between the western kerb face of the cycle track and the bus shelter. This is the clearance recommended in LCDS 2 and has been used as the standard throughout the North-South route and many other cycling schemes across London.	
Client Organisation Comments	
Agree with the designer's response. The design of the bus stop and shelter comply with TfL's standards for bus stop bypasses and adequate clearance is provided from the bus shelter to the cycle track.	

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#### 4.6 ISSUE

**Location:** 4 – Greville Street junction with Farringdon Road

**Reason considered to be outside the Terms of Reference:** Not safety related

It is proposed to provide an uncontrolled pedestrian crossing facility across the cycle track on Greville Street. Due to the number of pedestrians likely to use this footway it is highly likely that pedestrians will cross without giving regard to the presence of cyclists. Whilst unlikely to result in personal injury due to the very low speeds cyclists will need to be travelling to make this manoeuvre. It may be beneficial to provide measures to facilitate cyclists to pass through Greville Street less impeded. At peak times the number of cyclists waiting to pass may block the facility for other cyclists.

Design Organisation Response	Part Accepted
<b>Part Accepted:</b> The design team acknowledges there will be heavy pedestrian and cycle flows using Greville Street due to the Crossrail station opening at Farringdon in 2018. Alternative route alignments for the cycle track were considered at the planning stages and the alignment proposed is deemed the most suitable.	
Measures have therefore been taken to encourage pedestrians to cross the cycle track at the designated crossing point to ensure the potential conflict points are minimised. This has been achieved by positioning a line of street furniture alongside the cycle track. It is also proposed that the cycle track be at a different level to the surrounding footway to discourage pedestrians from crossing it away from the crossing point.	
An ASL is proposed on Farringdon Road for northbound cyclists. The ASL is 7m deep which should provide space for any northbound cyclists to wait without impeding cyclists turning left into Greville Street. The feeder lane for cyclists is 2m wide which is wide enough to allow cyclists to separate into streams; those turning left into Greville Street and those continuing north along Farringdon Road.	

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Signalising the crossing point over the cycle track was considered but ruled out due to the narrow crossing distance. It was thought pedestrians may not pay attention to the signals with such a narrow crossing and still cross when cyclists have right of way, potentially increasing the conflict issue. It was also decided that adding extra street furniture to such a busy footway would worsen pedestrian comfort and detract from the urban realm.

Similar courtesy crossings along the route with high pedestrian and cycle interaction have been observed to operate well.

#### **Client Organisation Comments**

Agree with the designer's response. It is not proposed to signalise the informal crossing over the cycle track due to the likelihood of non-compliance. Significant improvements have been made in this location to facilitate the increased pedestrian flows that are expected from the opening of Crossrail. These include wider footways on Greville Street with the closure to motor traffic and a wider pedestrian crossing over Farringdon Road.

The crossing and footways take into account pedestrian desire lines. In addition, there is currently a construction hoarding blocking the east footway on Farringdon Road. Once the Crossrail works are complete, this footway will be re-opened and those pedestrians heading south are likely to use this side of the road rather than crossing Farringdon Road and the cycle track to head south. Furthermore, four new signalised crossings are proposed at the Charterhouse Street junction to the south providing formal facilities for pedestrians to cross and continue in any direction.

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#### 4.7 ISSUE

**Location:** 5 – Farringdon Road junction with Ray Street

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

A previous iteration of the proposals included the provision of a right turn pocket for vehicles turning into Ray Street. The revised proposals remove this provision. It may be beneficial to provide a right turning pocket at this location to encourage correct road position and discourage encroachment into the opposing traffic lane.

Design Organisation Response	Accepted
<b>Accepted:</b> This was removed accidentally and has been reinstated into the designs.	
Client Organisation Comments	
Agree with the designer's response.	

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## 5.0 SIGNATURES AND SIGN-OFF

### 5.1 AUDIT TEAM STATEMENT

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

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

#### AUDIT TEAM LEADER:

Name: [REDACTED] A

Signed: [REDACTED]

Position: Road Safety Audit Manager

Date: 27/10/2016

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

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

Contact: [REDACTED]

#### AUDIT TEAM MEMBER:

Name: [REDACTED]

Signed: [REDACTED]

Position: Principal Road Safety Auditor

Date: 27/10/2016

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

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Contact: [REDACTED]



## 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 Organisation's endorsement of my proposals.

**Name:** 

**Position:** Lead Design Engineer

**Organisation:** ODE TfL

**Signed:** 

**Dated:** 2<sup>nd</sup> May 2017

## 5.3 CLIENT ORGANISATION STATEMENT

I accept these proposals by the Design Organisation.

**Name:** 

**Position:** Senior Sponsor

**Organisation:** RSM TfL

**Signed:** 

**Dated:** 19 April 2017

## 5.4 SECONDARY CLIENT ORGANISATION STATEMENT (where appropriate)

I accept these proposals by the Design Organisation.

**Name:** 

**Position:** Senior Portfolio Sponsor

**Organisation:** TfL RSM

**Signed:** 

**Dated:** 19 April 2017



## APPENDIX A

### Documents Forming the Audit Brief

#### DRAWING NUMBER

TDE-ST-PJ338-CSNS-ID-21  
TDE-ST-PJ338-CSNS-ID-22  
TDE-ST-PJ338-CSNS-ID-23  
TDE-ST-PJ338-CSNS-ID-24  
TDE-ST-PJ338-CSNS-ID-25  
TDE-ST-PJ338-CSNS-ID-26  
TDE-ST-PJ338-CSNS-ID-27

#### DRAWING TITLE

Drawing 21 of 27  
Drawing 22 of 27  
Drawing 23 of 27  
Drawing 24 of 27  
Drawing 25 of 27  
Drawing 26 of 27  
Drawing 27 of 27

#### 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)



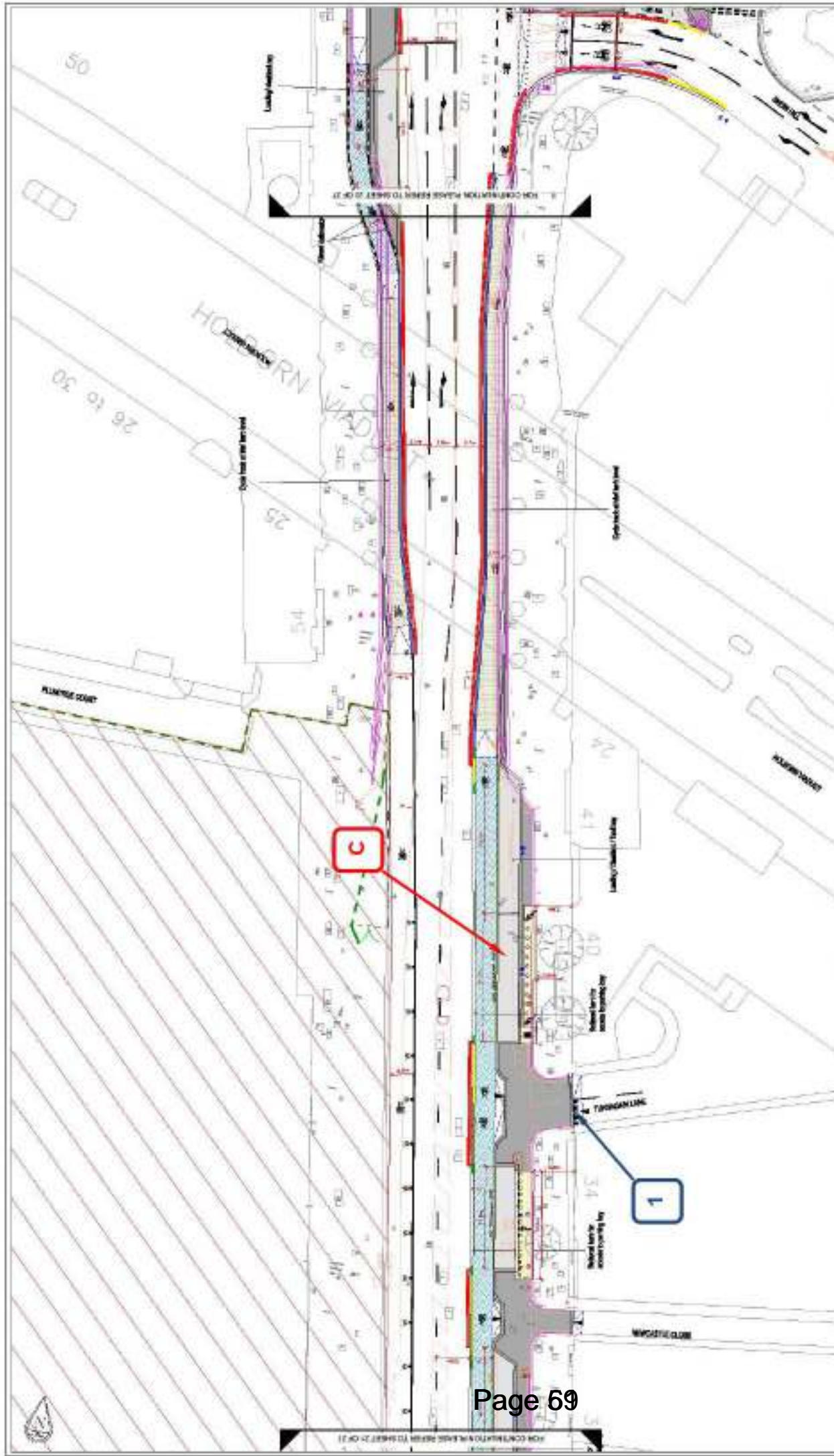
## **APPENDIX B**

### **Problem Locations**









**THESE DRAWINGS ARE PRELIMINARY**  
FOR CLIENT'S INFORMATION ONLY. ANY CHANGES TO THE DESIGN SHALL BE THE RESPONSIBILITY OF THE CLIENT.

**THESE DRAWINGS ARE SUBJECT TO**  
THE RESULTS OF THE FINAL INVESTIGATION AND DESIGN.

**THESE DRAWINGS ARE SUBJECT TO**  
THE RESULTS OF THE FINAL INVESTIGATION AND DESIGN.

**PROJECT INFORMATION**

PROJECT NAME: HOBURN VIADUCT  
PROJECT LOCATION: HOBURN VIADUCT  
PROJECT DESCRIPTION: HOBURN VIADUCT  
PROJECT OWNER: HOBURN VIADUCT  
PROJECT MANAGER: HOBURN VIADUCT  
PROJECT ENGINEER: HOBURN VIADUCT  
PROJECT ARCHITECT: HOBURN VIADUCT  
PROJECT LANDSCAPE: HOBURN VIADUCT  
PROJECT STRUCTURE: HOBURN VIADUCT  
PROJECT UTILITIES: HOBURN VIADUCT  
PROJECT SERVICES: HOBURN VIADUCT  
PROJECT MATERIALS: HOBURN VIADUCT  
PROJECT FINISHES: HOBURN VIADUCT  
PROJECT EQUIPMENT: HOBURN VIADUCT  
PROJECT FURNITURE: HOBURN VIADUCT  
PROJECT LIGHTING: HOBURN VIADUCT  
PROJECT SIGNAGE: HOBURN VIADUCT  
PROJECT SECURITY: HOBURN VIADUCT  
PROJECT MAINTENANCE: HOBURN VIADUCT  
PROJECT OPERATIONS: HOBURN VIADUCT  
PROJECT TRAINING: HOBURN VIADUCT  
PROJECT SUPPORT: HOBURN VIADUCT  
PROJECT EVALUATION: HOBURN VIADUCT  
PROJECT IMPROVEMENT: HOBURN VIADUCT  
PROJECT INNOVATION: HOBURN VIADUCT  
PROJECT SUSTAINABILITY: HOBURN VIADUCT  
PROJECT RESILIENCE: HOBURN VIADUCT  
PROJECT ADAPTABILITY: HOBURN VIADUCT  
PROJECT FLEXIBILITY: HOBURN VIADUCT  
PROJECT SCALABILITY: HOBURN VIADUCT  
PROJECT GROWTH: HOBURN VIADUCT  
PROJECT INFLUENCE: HOBURN VIADUCT  
PROJECT LEGACY: HOBURN VIADUCT  
PROJECT VISION: HOBURN VIADUCT  
PROJECT MISSION: HOBURN VIADUCT  
PROJECT VALUES: HOBURN VIADUCT  
PROJECT PRINCIPLES: HOBURN VIADUCT  
PROJECT STANDARDS: HOBURN VIADUCT  
PROJECT BEST PRACTICES: HOBURN VIADUCT  
PROJECT INNOVATIONS: HOBURN VIADUCT  
PROJECT SOLUTIONS: HOBURN VIADUCT  
PROJECT OUTCOMES: HOBURN VIADUCT  
PROJECT BENEFITS: HOBURN VIADUCT  
PROJECT IMPACTS: HOBURN VIADUCT  
PROJECT RISKS: HOBURN VIADUCT  
PROJECT OPPORTUNITIES: HOBURN VIADUCT  
PROJECT CHALLENGES: HOBURN VIADUCT  
PROJECT CONSTRAINTS: HOBURN VIADUCT  
PROJECT ENABLING FACTORS: HOBURN VIADUCT  
PROJECT SUPPORTING FACTORS: HOBURN VIADUCT  
PROJECT ENHANCING FACTORS: HOBURN VIADUCT  
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PROJECT CATALYST FACTORS: HOBURN VIADUCT  
PROJECT ACCELERATING FACTORS: HOBURN VIADUCT  
PROJECT MULTIPLYING FACTORS: HOBURN VIADUCT  
PROJECT AMPLIFYING FACTORS: HOBURN VIADUCT  
PROJECT REINFORCING FACTORS: HOBURN VIADUCT  
PROJECT STRENGTHENING FACTORS: HOBURN VIADUCT  
PROJECT SUSTAINING FACTORS: HOBURN VIADUCT  
PROJECT RESTORING FACTORS: HOBURN VIADUCT  
PROJECT REVITALIZING FACTORS: HOBURN VIADUCT  
PROJECT REGENERATING FACTORS: HOBURN VIADUCT  
PROJECT TRANSFORMING FACTORS: HOBURN VIADUCT  
PROJECT CATALYST FACTORS: HOBURN VIADUCT  
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PROJECT RESTORING FACTORS: HOBURN VIADUCT  
PROJECT REVITALIZING FACTORS: HOBURN VIADUCT  
PROJECT REGENERATING FACTORS: HOBURN VIADUCT









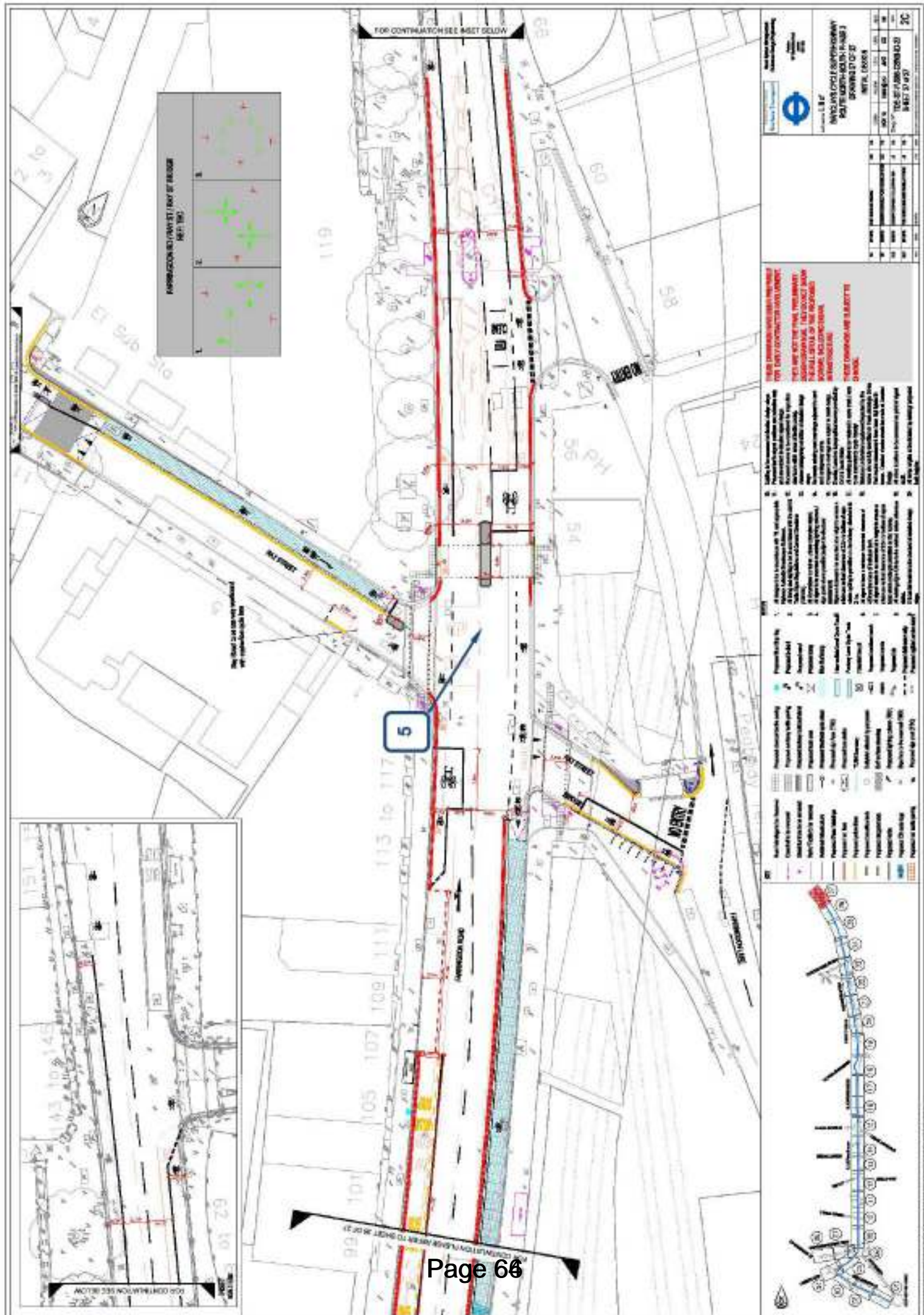






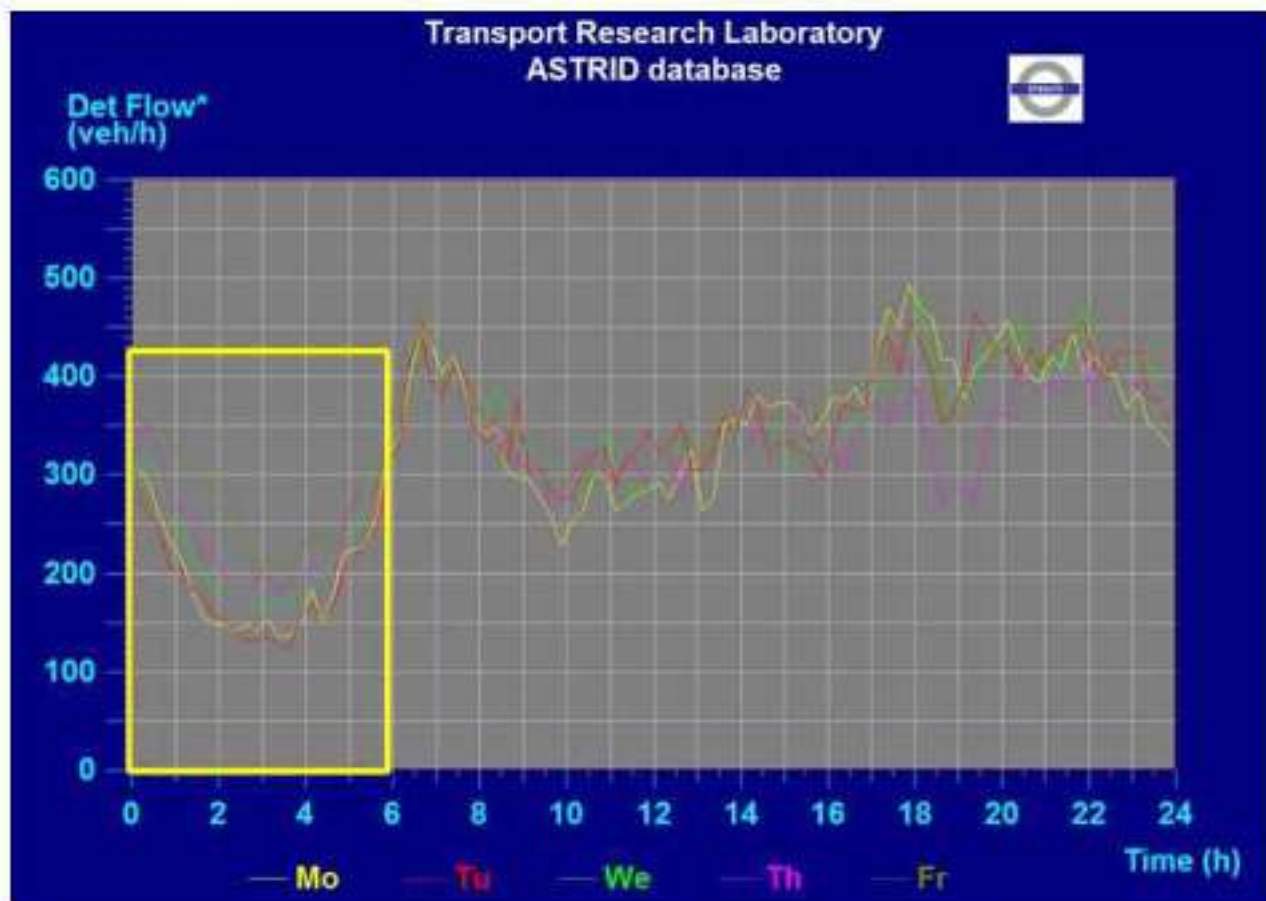








## Charterhouse St SB flow



Data from the Farringdon Street/Charterhouse Street junction



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**Client:** Transport for London

**Project:** 3378-LON-JB Farringdon

**Site:** 2. Farringdon Street/ West Smithfield/ Snow Hill

**Date:** 5 weekday Average

PCU Values						
Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC
1.0	1.0	1.5	2.3	2.0	0.4	0.2

Entry : Arm A

		Destination : Arm A									PCU Total	Destination : Arm B									PCU Total	Destination : Arm C									PCU Total
Time from	Time To	Car/ Lgv	Rigid 2 axle	HGV	PSV	MC	PC	Total	Car/ Lgv	Rigid 2 axle		HGV	PSV	MC	PC	Total	Car/ Lgv	Rigid 2 axle	HGV	PSV		MC	PC	Total							
00:00	01:00	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.6	0.6	9.0	1.2	1.0	3.2	0.0	0.2	0.2	14.8	19.2	207.8	39.2	7.0	2.8	16.6	5.4	11.4	290.2	301.6			
01:00	02:00	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	17.4	0.8	0.8	3.2	0.0	0.2	0.0	22.4	26.8	172.4	25.6	8.6	6.8	6.0	4.0	4.0	227.4	240.9			
02:00	03:00	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	20.6	0.4	1.0	2.0	0.0	0.2	0.0	24.2	27.2	120.2	11.4	8.8	8.0	2.2	3.2	3.0	156.8	169.5			
03:00	04:00	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.3	21.2	0.2	1.0	2.0	0.0	0.0	0.0	24.4	27.5	112.2	5.8	11.4	4.8	2.2	1.6	0.4	138.4	151.3			
04:00	05:00	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	23.4	0.2	1.6	0.4	0.0	1.0	0.0	26.6	27.3	125.2	6.2	11.8	9.6	4.0	6.4	4.2	167.4	182.6			
05:00	06:00	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.4	0.5	28.2	0.2	2.2	1.2	0.0	0.2	0.0	32.0	34.5	204.8	7.4	18.6	12.8	9.2	6.6	11.2	270.6	292.8			
06:00	07:00	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	17.2	0.2	4.0	1.6	0.0	5.0	1.8	29.8	29.4	312.4	10.8	39.2	9.4	21.2	32.0	47.0	472.0	468.2			
07:00	08:00	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.3	12.0	0.2	4.0	2.2	0.0	0.6	8.2	27.2	25.1	273.6	26.0	36.2	14.4	24.4	77.6	195.4	647.6	505.9			
08:00	09:00	1.0	0.2	0.2	0.0	0.0	0.0	0.0	1.4	1.5	11.8	2.0	2.2	2.0	0.0	2.2	12.6	32.8	25.1	233.2	53.2	44.6	11.2	25.4	111.6	463.0	942.2	567.1			
09:00	10:00	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.8	0.8	6.8	1.2	2.4	1.4	0.0	2.4	5.0	19.2	16.8	243.2	67.0	31.8	11.4	26.2	72.8	256.6	709.0	517.0			
10:00	11:00	0.6	0.6	0.0	0.0	0.0	0.2	0.0	1.4	1.3	7.0	3.4	3.4	1.4	0.0	1.2	1.2	17.6	19.4	233.4	57.2	36.4	11.8	30.0	40.4	55.8	465.0	459.7			
11:00	12:00	0.0	0.8	0.0	0.0	0.0	0.2	0.0	1.0	0.9	6.8	1.8	2.2	0.2	0.0	0.4	1.4	12.8	12.8	228.4	52.8	35.6	12.0	25.2	42.6	43.8	440.4	438.4			
12:00	13:00	0.8	0.4	0.4	0.0	0.0	0.0	0.0	1.6	1.8	7.4	1.4	2.4	0.2	0.0	2.4	2.0	15.8	14.2	212.4	49.4	30.2	11.4	25.0	40.8	46.6	415.8	409.0			
13:00	14:00	0.4	1.4	0.0	0.0	0.0	0.8	0.0	2.6	2.1	6.2	2.0	1.2	0.2	0.0	1.8	2.0	13.4	11.6	245.0	58.2	31.6	14.8	26.6	42.6	58.2	477.0	466.5			
14:00	15:00	0.6	1.0	0.0	0.2	0.0	0.0	0.0	1.8	2.1	7.8	2.2	1.6	1.0	0.0	1.6	1.6	15.8	15.7	260.2	62.6	27.2	8.6	24.2	47.8	49.2	479.8	460.7			
15:00	16:00	1.0	0.6	0.0	0.0	0.0	0.0	0.0	1.6	1.6	6.6	2.8	0.4	0.4	0.0	2.4	3.2	15.8	12.5	276.4	57.4	28.2	8.0	26.2	56.4	62.4	515.0	481.9			
16:00	17:00	0.2	1.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	6.0	2.0	1.8	0.2	0.0	1.6	2.2	13.8	12.2	304.2	55.4	14.4	4.8	24.8	79.2	123.2	606.0	498.2			
17:00	18:00	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.8	0.8	5.2	3.2	1.0	0.0	0.0	1.6	3.4	14.4	11.2	307.0	59.0	12.4	2.6	26.4	122.8	346.0	876.2	561.7			
18:00	19:00	0.4	0.6	0.0	0.0	0.0	0.0	0.0	1.0	1.0	7.2	2.4	0.4	0.2	0.0	2.0	3.4	15.6	12.1	300.8	44.6	10.0	4.2	25.2	94.2	446.6	925.6	547.5			
19:00	20:00	1.4	0.8	0.0	0.0	0.0	0.0	0.0	2.6	2.6	9.8	1.4	0.2	0.4	0.0	1.4	2.8	19.8	17.0	286.8	43.2	6.8	3.0	28.4	51.8	166.4	817.6	619.0			
20:00	21:00	1.8	0.8	0.0	0.0	0.0	0.0	0.0	2.6	2.6	10.4	3.8	0.2	0.6	0.0	1.8	1.8	18.6	17.0	285.0	50.2	8.8	3.8	21.2	32.8	86.4	488.2	429.9			
21:00	22:00	0.6	0.6	0.0	0.0	0.0	0.0	0.0	1.2	1.2	8.0	3.6	0.2	1.0	0.0	0.2	1.2	14.2	14.5	306.2	45.0	6.6	4.0	17.4	31.2	77.4	487.8	433.1			
22:00	23:00	2.0	0.6	0.4	0.0	0.0	0.0	0.0	3.0	3.2	6.8	1.6	0.4	1.2	0.0	0.4	0.4	10.8	12.0	306.8	45.0	8.8	3.4	16.8	25.4	52.6	458.8	427.1			
23:00	00:00	2.0	1.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	11.2	3.2	0.4	2.2	0.0	0.0	0.0	17.0	20.1	254.4	42.6	9.6	4.8	16.2	17.4	35.2	380.2	368.8			
Total		14.6	12.0	1.6	0.2	0.0	1.2	0.0	29.6	30.3	274.0	41.4	36.0	28.4	0.0	30.8	54.4	465.0	461.4	5812.0	975.2	484.6	188.4	471.0	1046.6	2646.0	11623.8	9998.4			

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	<b>Client:</b> Transport for London  <b>Project:</b> 3378-LON-JB Farringdon <b>Site:</b> 2. Farringdon Street/ West Smithfield/ Snow Hill <b>Date:</b> 5 weekday Average	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th colspan="7">PCU Values</th> </tr> <tr> <th>Car/ Lgv</th> <th>Ldn taxi</th> <th>Rigid 2 axle</th> <th>HGV</th> <th>PSV</th> <th>MC</th> <th>PC</th> </tr> <tr> <td>1.0</td> <td>1.0</td> <td>1.5</td> <td>2.3</td> <td>2.0</td> <td>0.4</td> <td>0.2</td> </tr> </table>	PCU Values							Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	1.0	1.0	1.5	2.3	2.0	0.4	0.2
PCU Values																							
Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC																	
1.0	1.0	1.5	2.3	2.0	0.4	0.2																	

Entry : Arm B

Destination : Arm A										PCU Total
Time from	Time To	Car/ Lgv	Rigid 2 Ldn taxi	axle	HGV	PSV	MC	PC	Total	
00:00	01:00	43.2	16.2	2.2	3.4	0.8	0.6	0.8	67.2	72.5
01:00	02:00	30.2	9.8	4.0	5.8	0.2	0.4	0.0	50.4	59.9
02:00	03:00	38.4	5.2	3.4	6.0	0.0	0.0	0.2	53.2	62.5
03:00	04:00	39.2	3.2	6.4	5.8	0.0	0.2	0.0	54.8	65.4
04:00	05:00	38.6	1.6	8.4	3.0	0.0	0.4	0.6	52.6	60.0
05:00	06:00	42.6	1.8	9.2	3.8	0.0	2.2	0.4	60.0	67.9
06:00	07:00	74.6	3.4	17.2	3.0	0.0	2.0	1.8	102.0	111.9
07:00	08:00	79.6	12.2	12.8	2.8	0.2	3.4	9.0	120.0	121.0
08:00	09:00	63.2	16.0	14.2	2.2	0.4	6.6	10.0	112.6	111.0
09:00	10:00	56.6	25.4	10.4	2.0	0.6	5.2	9.2	109.4	107.3
10:00	11:00	64.6	25.2	11.4	1.2	1.2	7.8	4.8	116.2	116.1
11:00	12:00	74.6	28.0	11.6	1.2	0.0	6.4	4.0	125.8	126.1
12:00	13:00	66.2	39.6	9.8	1.6	0.2	13.6	7.4	138.4	131.5
13:00	14:00	60.4	36.6	6.4	1.4	0.6	12.0	4.2	121.6	116.7
14:00	15:00	71.0	40.8	7.2	1.6	1.4	11.0	6.6	139.6	134.8
15:00	16:00	66.2	44.8	6.0	1.8	1.4	9.0	5.8	135.0	131.7
16:00	17:00	67.4	44.6	4.0	1.0	0.0	11.4	8.4	136.8	126.5
17:00	18:00	67.0	43.4	2.0	2.0	0.0	17.2	18.2	149.8	128.5
18:00	19:00	81.0	46.4	1.4	1.0	0.2	25.4	22.0	177.4	146.8
19:00	20:00	83.4	39.6	2.4	1.0	0.4	17.2	10.4	154.4	138.7
20:00	21:00	78.8	40.0	3.4	0.8	0.8	8.4	6.0	138.2	131.9
21:00	22:00	83.0	44.8	1.4	1.8	1.0	6.6	3.2	141.8	139.3
22:00	23:00	84.0	49.4	1.4	1.4	1.4	4.8	3.2	145.6	144.1
23:00	00:00	73.6	41.6	2.6	3.2	0.2	3.2	1.0	125.4	128.3
Total		1527.4	659.6	159.2	58.8	11.0	175.0	137.2	2728.2	2680.5

Destination : Arm B										PCU Total
Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	Total			
0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.5		
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.4	0.7		
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4		
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.3		
0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.4	0.5		
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2		
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2		
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6		
0.2	0.2	0.0	0.0	0.0	0.2	0.0	0.6	0.5		
0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.4	0.2		
0.0	0.2	0.2	0.0	0.0	0.0	0.2	0.6	0.5		
0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.4	0.5		
0.4	0.2	0.0	0.0	0.0	0.2	0.0	0.8	0.7		
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2		
0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.5		
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2		
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4		
0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.4	0.4		
0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.6	0.6		
Total		3.8	1.4	0.8	0.6	0.0	0.4	0.4	7.4	8.0

Destination : Arm C										PCU Total
Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	Total			
86.8	29.8	3.0	1.6	0.0	2.2	2.4	125.8	126.1		
57.2	12.6	2.6	2.0	0.0	1.8	0.8	77.0	79.2		
56.0	6.4	5.6	1.0	0.0	1.0	0.4	70.4	73.6		
71.6	4.0	4.6	3.4	0.0	0.8	0.4	84.8	90.7		
68.8	1.2	5.8	2.8	0.0	0.6	0.6	79.8	85.5		
92.6	1.0	9.8	2.2	0.0	1.2	2.8	109.6	114.4		
154.0	6.6	19.8	3.8	0.2	6.4	14.4	205.2	204.9		
182.6	18.4	22.2	5.6	0.6	15.0	61.6	306.0	266.7		
183.8	29.4	19.8	3.6	0.2	29.8	142.8	409.4	292.1		
171.2	34.8	25.4	5.2	0.6	20.0	110.8	368.0	287.4		
162.0	38.8	22.2	3.6	0.6	16.6	28.4	272.2	255.9		
163.2	37.2	23.6	4.4	0.4	16.4	13.2	258.4	255.9		
145.8	40.4	22.0	4.2	0.2	22.2	19.4	254.2	242.0		
143.0	43.2	13.8	1.6	0.0	23.4	24.0	249.0	224.7		
141.4	44.8	12.6	1.8	0.2	27.2	27.8	255.8	226.1		
148.4	46.4	12.6	2.4	0.0	27.6	30.0	267.4	236.3		
140.4	40.8	10.0	1.6	0.0	46.2	75.4	314.4	233.4		
139.8	51.4	5.8	0.6	0.0	78.6	255.4	531.6	283.8		
161.2	40.0	3.6	0.8	0.6	82.0	297.4	585.6	301.9		
117.6	39.8	5.4	1.2	0.6	43.6	107.0	315.2	208.3		
113.6	46.0	4.6	1.4	0.4	25.2	49.6	240.8	190.5		
112.8	60.0	2.0	1.4	0.2	20.6	29.2	226.2	193.5		
114.6	43.0	4.8	0.6	0.0	6.8	17.4	187.2	172.4		
100.6	43.8	6.2	1.0	0.0	6.2	8.8	166.6	160.2		
Total		3029.0	759.8	267.8	57.8	4.8	521.4	1320.0	5960.6	4805.6



	<b>Client:</b> Transport for London  <b>Project:</b> 3378-LON-JB Farringdon <b>Site:</b> 2. Farringdon Street/ West Smithfield/ Snow Hill <b>Date:</b> 5 weekday Average	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th colspan="7">PCU Values</th> </tr> <tr> <th>Car/ Lgv</th> <th>Ldn taxi</th> <th>Rigid 2 axle</th> <th>HGV</th> <th>PSV</th> <th>MC</th> <th>PC</th> </tr> <tr> <td>1.0</td> <td>1.0</td> <td>1.5</td> <td>2.3</td> <td>2.0</td> <td>0.4</td> <td>0.2</td> </tr> </table>	PCU Values							Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	1.0	1.0	1.5	2.3	2.0	0.4	0.2
PCU Values																							
Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC																	
1.0	1.0	1.5	2.3	2.0	0.4	0.2																	

Entry : Arm C

Destination : Arm A										PCU Total
Time from	Time To	Car/ Lgv	Rigid 2 axle	HGV	PSV	MC	PC	Total		
00:00	01:00	211.0	28.0	6.0	3.8	16.0	6.0	10.8	281.6	293.3
01:00	02:00	142.0	15.8	4.6	4.4	3.4	3.8	3.8	177.8	183.9
02:00	03:00	112.4	7.2	6.2	3.8	2.6	3.8	3.8	139.8	145.1
03:00	04:00	96.0	7.2	11.0	6.8	2.2	3.2	3.0	129.4	141.6
04:00	05:00	121.4	4.6	14.0	8.4	4.2	10.6	2.6	165.8	179.5
05:00	06:00	176.4	5.4	22.6	8.4	13.4	12.8	6.0	245.0	268.1
06:00	07:00	288.8	10.4	28.8	10.4	21.0	30.8	46.0	436.2	429.8
07:00	08:00	235.0	16.2	32.6	10.0	32.8	61.4	172.0	560.0	447.7
08:00	09:00	196.8	30.2	33.0	10.6	26.0	114.0	565.6	976.2	511.6
09:00	10:00	218.2	44.0	33.6	11.0	27.6	86.2	432.0	852.6	514.0
10:00	11:00	211.6	31.4	31.8	14.8	24.8	41.2	88.6	444.2	408.5
11:00	12:00	214.6	43.2	36.6	10.8	25.0	40.0	61.8	432.0	415.9
12:00	13:00	200.6	40.2	30.8	12.6	25.0	37.2	72.6	419.0	395.4
13:00	14:00	212.6	45.0	28.6	10.4	26.0	41.8	56.6	421.0	404.5
14:00	15:00	205.6	44.2	23.6	9.2	24.6	34.2	65.0	406.4	382.2
15:00	16:00	194.2	59.6	22.0	10.8	26.8	50.2	76.2	439.8	400.6
16:00	17:00	228.4	54.4	23.6	8.8	26.8	65.8	145.8	553.6	447.5
17:00	18:00	226.2	57.2	14.8	5.2	27.6	101.8	357.0	789.8	484.9
18:00	19:00	259.6	46.4	13.0	4.4	23.4	98.0	436.6	881.4	508.9
19:00	20:00	254.0	45.8	15.2	3.4	26.0	49.8	215.4	609.6	445.4
20:00	21:00	272.8	49.4	9.6	7.4	20.2	28.8	101.4	489.6	425.8
21:00	22:00	288.8	50.2	9.4	8.0	17.0	20.2	72.6	466.2	428.1
22:00	23:00	297.8	53.8	10.2	2.4	17.2	17.0	52.4	450.8	424.1
23:00	00:00	272.0	45.0	6.0	3.4	16.6	11.4	30.6	385.0	377.7
Total		5136.8	834.8	467.6	189.2	476.2	970.0	3078.2	11152.8	9064.2

Destination : Arm B										PCU Total
Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	Total			
51.4	13.8	4.0	2.2	0.0	1.8	1.6	74.8			77.3
53.4	5.6	2.8	1.2	0.0	0.6	0.2	63.8			66.2
46.8	1.6	1.4	1.6	0.0	1.6	0.4	53.4			54.9
44.6	0.6	3.2	0.8	0.0	0.8	0.6	50.6			52.3
54.4	0.4	3.4	0.6	0.0	1.2	0.0	60.0			61.8
72.0	1.0	7.0	0.8	0.0	3.2	7.6	91.6			88.1
67.6	0.8	8.0	2.2	0.0	7.2	23.8	109.6			93.1
75.4	7.6	10.2	3.2	0.0	42.0	115.0	253.4			145.5
90.6	18.4	11.6	2.2	0.0	68.6	352.4	543.8			229.4
82.4	18.8	13.4	1.6	0.2	55.8	210.0	382.2			189.7
81.0	16.4	11.2	2.8	0.0	23.8	36.2	171.4			137.4
74.6	18.6	10.6	3.6	0.2	18.2	22.4	148.2			129.5
71.6	19.8	8.2	1.6	0.0	21.0	17.6	139.8			119.3
73.8	20.4	9.2	1.8	0.0	23.2	18.8	147.2			125.2
73.8	24.4	15.8	2.6	0.4	17.0	17.2	151.2			138.9
82.2	22.4	11.4	1.4	0.2	19.6	18.2	155.4			136.8
93.0	18.4	10.6	1.6	0.2	23.8	32.4	180.0			147.4
95.0	24.8	4.2	1.8	0.2	30.0	94.6	250.6			161.6
108.8	23.2	2.0	0.4	0.4	30.8	117.6	283.2			172.6
74.0	27.6	2.2	1.6	0.2	14.4	57.8	177.8			126.3
73.0	26.2	2.6	1.4	0.2	10.8	23.6	137.8			115.8
72.8	24.4	1.0	0.6	0.0	8.6	13.2	120.6			106.2
77.4	21.4	1.2	1.0	0.4	4.8	10.0	116.2			107.6
66.2	18.6	2.8	1.2	0.0	4.6	9.6	103.0			95.5
Total		1755.8	375.2	158.0	39.8	2.6	433.4	1200.8	3965.6	2878.3

Destination : Arm C										PCU Total
Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	Total			
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6			0.6
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6			0.6
0.2	0.0	0.4	0.0	0.0	0.0	0.0	0.6			0.8
0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.6			0.9
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6			0.6
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2			0.2
0.8	0.0	0.2	0.0	0.0	0.0	0.0	1.0			1.1
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2			0.2
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2			0.2
0.0	0.2	0.0	0.0	0.0	0.4	0.0	0.6			0.4
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6			0.6
0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2			0.2
0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.6			0.7
0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.6			0.7
0.6	0.0	0.2	0.0	0.0	0.2	0.0	1.0			1.0
0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2			0.5
0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.4			0.2
0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2			0.3
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2			0.2
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.8			0.8
0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.6			0.6
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6			0.6
Total		7.4	0.8	2.0	0.2	0.0	0.6	0.2	11.2	11.9



	<b>Client:</b> Transport for London  <b>Project:</b> 3378-LON-JB Farringdon <b>Site:</b> 2. Farringdon Street/ West Smithfield/ Snow Hill <b>Date:</b> 5 weekday Average	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th colspan="7">PCU Values</th> </tr> <tr> <th>Car/ Lgv</th> <th>Ldn taxi</th> <th>Rigid 2 axle</th> <th>HGV</th> <th>PSV</th> <th>MC</th> <th>PC</th> </tr> <tr> <td>1.0</td> <td>1.0</td> <td>1.5</td> <td>2.3</td> <td>2.0</td> <td>0.4</td> <td>0.2</td> </tr> </table>	PCU Values							Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	1.0	1.0	1.5	2.3	2.0	0.4	0.2
PCU Values																							
Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC																	
1.0	1.0	1.5	2.3	2.0	0.4	0.2																	

## ORIGIN SUMMARY

Origin :		Arm A								PCU Total
Time from	Time To	Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	Total	
00:00	01:00	217.0	40.8	8.0	6.0	16.6	5.6	11.6	305.6	321.4
01:00	02:00	190.0	26.4	9.4	10.0	6.0	4.2	4.0	250.0	268.0
02:00	03:00	141.0	11.8	9.8	10.0	2.2	3.4	3.0	181.2	196.9
03:00	04:00	133.4	6.0	12.6	6.8	2.2	1.6	0.4	163.0	179.1
04:00	05:00	149.0	6.4	13.4	10.0	4.0	7.4	4.2	194.4	210.3
05:00	06:00	233.2	7.6	21.0	14.0	9.2	6.8	11.2	303.0	327.9
06:00	07:00	329.8	11.0	43.2	11.0	21.2	37.0	48.8	502.0	497.9
07:00	08:00	285.6	26.2	40.4	16.6	24.4	78.2	203.6	675.0	531.4
08:00	09:00	246.0	55.4	47.0	13.2	25.4	113.8	475.6	976.4	593.7
09:00	10:00	250.4	68.6	34.2	12.8	26.2	75.2	261.6	729.0	534.5
10:00	11:00	241.0	61.2	39.8	13.2	30.0	41.8	57.0	484.0	480.4
11:00	12:00	235.2	55.4	37.8	12.2	25.2	43.2	45.2	454.2	452.1
12:00	13:00	220.6	51.2	33.0	11.6	25.0	43.2	48.6	433.2	425.0
13:00	14:00	251.6	61.6	32.8	15.0	26.6	45.2	60.2	493.0	480.2
14:00	15:00	268.6	65.8	28.8	9.8	24.2	49.4	50.8	497.4	478.5
15:00	16:00	284.0	60.8	28.6	8.4	26.2	58.8	65.6	532.4	496.1
16:00	17:00	310.4	58.4	16.2	5.0	24.8	80.8	125.4	621.0	511.6
17:00	18:00	312.2	63.0	13.4	2.6	26.4	124.4	349.4	891.4	573.7
18:00	19:00	308.4	47.6	10.4	4.4	25.2	96.2	450.0	942.2	560.6
19:00	20:00	298.0	45.4	7.0	3.4	28.4	53.2	169.2	604.6	473.6
20:00	21:00	297.2	54.8	9.0	4.4	21.2	34.6	88.2	509.4	449.5
21:00	22:00	314.8	49.2	6.8	5.0	17.4	31.4	78.6	503.2	448.8
22:00	23:00	315.6	47.2	9.6	4.6	16.8	25.8	53.0	472.6	442.3
23:00	00:00	267.6	46.8	10.0	7.0	16.2	17.4	35.2	400.2	391.9

Origin :		Arm B								PCU Total
Time from	Time To	Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	Total	
00:00	01:00	130.0	46.0	5.2	5.2	0.8	2.8	3.2	193.2	199.1
01:00	02:00	87.4	22.4	6.6	7.8	0.2	2.2	0.8	127.4	139.1
02:00	03:00	94.6	11.6	9.0	7.2	0.0	1.0	0.6	124.0	136.8
03:00	04:00	110.8	7.2	11.0	9.2	0.0	1.0	0.4	139.6	156.1
04:00	05:00	107.8	2.8	14.2	5.8	0.0	1.0	1.2	132.8	145.9
05:00	06:00	135.2	2.8	19.0	6.0	0.0	3.4	3.2	169.6	182.3
06:00	07:00	228.6	10.0	37.2	6.8	0.2	8.4	16.2	307.4	317.0
07:00	08:00	262.2	30.8	35.2	8.4	0.8	18.4	70.6	426.4	388.2
08:00	09:00	247.2	45.4	34.0	5.8	0.6	36.4	152.8	522.2	403.3
09:00	10:00	228.0	60.2	35.8	7.2	1.2	25.2	120.0	477.6	394.9
10:00	11:00	227.2	64.0	33.6	4.8	1.8	24.4	33.2	389.0	372.6
11:00	12:00	238.0	65.4	35.2	5.6	0.4	23.0	17.2	384.8	382.5
12:00	13:00	212.0	80.2	31.8	5.8	0.4	35.8	27.0	393.0	373.8
13:00	14:00	203.4	80.0	20.4	3.0	0.6	35.4	28.4	371.2	341.9
14:00	15:00	212.6	85.6	20.0	3.4	1.6	38.2	34.4	395.8	361.4
15:00	16:00	215.0	91.4	18.6	4.2	1.4	36.8	35.8	403.2	368.6
16:00	17:00	208.0	85.4	14.0	2.6	0.0	57.6	83.8	451.4	360.2
17:00	18:00	206.8	94.8	7.8	2.8	0.0	95.8	273.6	681.6	412.8
18:00	19:00	242.2	86.4	5.0	1.8	0.8	107.4	319.4	763.0	448.7
19:00	20:00	201.2	79.4	7.8	2.2	1.0	60.8	117.4	469.8	347.2
20:00	21:00	192.4	86.0	8.0	2.2	1.2	33.6	55.6	379.0	322.4
21:00	22:00	196.2	104.8	3.4	3.2	1.2	27.2	32.4	368.4	333.2
22:00	23:00	198.8	92.6	6.2	2.0	1.4	11.6	20.6	333.2	316.9
23:00	00:00	174.6	85.6	8.8	4.2	0.2	9.4	9.8	292.6	289.2

Origin :		Arm C								PCU Total
Time from	Time To	Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	Total	
00:00	01:00	263.0	41.8	10.0	6.0	16.0	7.8	12.4	357.0	371.2
01:00	02:00	196.0	21.4	7.4	5.6	3.4	4.4	4.0	242.2	250.7
02:00	03:00	159.4	8.8	8.0	5.4	2.6	5.4	4.2	193.8	200.8
03:00	04:00	140.6	7.8	14.8	7.6	2.2	4.0	3.6	180.6	194.8
04:00	05:00	176.4	5.0	17.4	9.0	4.2	11.8	2.6	226.4	241.8
05:00	06:00	248.6	6.4	29.6	9.2	13.4	16.0	13.6	336.8	356.5
06:00	07:00	357.2	11.2	37.0	12.6	21.0	38.0	69.8	546.8	524.0
07:00	08:00	310.6	23.8	42.8	13.2	32.8	103.4	287.0	813.6	593.3
08:00	09:00	287.6	48.6	44.6	12.8	26.0	182.6	918.0	1520.2	741.2
09:00	10:00	300.6	63.0	47.0	12.6	27.8	142.4	642.0	1235.4	704.0
10:00	11:00	293.2	47.8	43.0	17.6	24.8	65.0	124.8	616.2	546.5
11:00	12:00	289.2	62.0	47.2	14.4	25.2	58.2	84.2	580.4	545.6
12:00	13:00	272.4	60.2	39.2	14.2	25.0	58.2	90.2	559.4	515.4
13:00	14:00	286.8	65.4	38.0	12.2	26.0	65.0	75.4	568.8	530.3
14:00	15:00	280.0	68.6	39.6	11.8	25.0	51.4	82.2	558.6	522.1
15:00	16:00	276.4	82.0	33.4	12.4	27.0	69.8	94.4	595.4	537.8
16:00	17:00	321.6	72.8	34.2	10.4	27.0	89.6	178.4	734.0	595.1
17:00	18:00	321.2	82.0	19.2	7.0	27.8	131.8	451.6	1040.6	646.7
18:00	19:00	368.4	69.6	15.0	4.8	23.8	128.8	554.2	1164.6	681.5
19:00	20:00	328.2	73.4	17.4	5.0	26.2	64.2	273.2	787.6	571.9
20:00	21:00	345.8	75.6	12.2	8.8	20.4	39.6	125.0	627.4	541.6
21:00	22:00	362.4	74.6	10.4	8.6	17.0	28.8	85.8	587.6	535.1
22:00	23:00	375.6	75.4	11.4	3.4	17.6	21.8	62.4	567.6	532.3
23:00	00:00	338.8	63.6	8.8	4.6	16.6	16.0	40.2	488.6	473.8

Total	6100.6	1028.6	522.2	217.0	471.0	1078.6	2700.4	12118.4	10325.1	4560.2	1420.8	427.8	117.2	15.8	696.8	1457.6	8696.2	7494.1	6900.0	1210.8	627.6	229.2	478.8	1404.0	4279.2	15129.6	11954.4
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	<p><b>Client:</b> Transport for London</p> <p><b>Project:</b> 3378-LON-JB Farringdon</p> <p><b>Site:</b> 2. Farringdon Street/ West Smithfield/ Snow Hill</p> <p><b>Date:</b> 5 weekday Average</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="7">PCU Values</th> </tr> <tr> <th>Car/ Lgv</th> <th>Ldn taxi</th> <th>Rigid 2 axle</th> <th>HGV</th> <th>PSV</th> <th>MC</th> <th>PC</th> </tr> <tr> <td>1.0</td> <td>1.0</td> <td>1.5</td> <td>2.3</td> <td>2.0</td> <td>0.4</td> <td>0.2</td> </tr> </table>	PCU Values							Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC	1.0	1.0	1.5	2.3	2.0	0.4	0.2
PCU Values																							
Car/ Lgv	Ldn taxi	Rigid 2 axle	HGV	PSV	MC	PC																	
1.0	1.0	1.5	2.3	2.0	0.4	0.2																	

## DESTINATION SUMMARY

Destination : Arm A													Destination : Arm B													Destination : Arm C												
Time from	Time To	Car/ Lgv		Rigid 2 axle		HGV	PSV	MC	PC	Total	PCU Total	Car/ Lgv	Ldn taxi	Rigid 2 axle		HGV	PSV	MC	PC	Total	PCU Total	Car/ Lgv	Ldn taxi	Rigid 2 axle		HGV	PSV	MC	PC	Total	PCU Total							
00:00	01:00	254.4	44.6	8.2	7.2	16.8	6.6	11.6	349.4	366.4		60.4	15.0	5.0	5.6	0.0	2.0	1.8	89.8	96.9		295.2	69.0	10.0	4.4	16.6	7.6	13.8	416.6	428.3								
01:00	02:00	172.4	25.6	8.6	10.2	3.6	4.2	3.8	228.4	244.0		70.8	6.4	3.6	4.4	0.0	0.8	0.2	86.2	93.1		230.2	38.2	11.2	8.8	6.0	5.8	4.8	305.0	320.7								
02:00	03:00	151.0	12.4	9.6	9.8	2.6	3.8	4.0	193.2	207.9		67.6	2.0	2.4	3.8	0.0	1.8	0.4	78.0	82.7		176.4	17.8	14.8	9.0	2.2	4.2	3.4	227.8	243.9								
03:00	04:00	135.2	10.4	17.6	12.6	2.2	3.4	3.0	184.4	207.3		65.8	0.8	4.2	2.8	0.0	0.8	0.6	75.0	79.8		183.8	9.8	16.6	8.2	2.2	2.4	0.8	223.8	242.9								
04:00	05:00	160.4	6.2	22.4	11.4	4.2	11.0	3.2	218.8	239.9		78.2	0.6	5.0	1.0	0.0	2.2	0.0	87.0	89.5		194.6	7.4	17.6	12.4	4.0	7.0	4.8	247.8	268.7								
05:00	06:00	219.2	7.2	32.0	12.2	13.4	15.0	6.4	305.4	336.5		100.2	1.2	9.2	2.0	0.0	3.4	7.6	123.6	122.7		297.6	8.4	28.4	15.0	9.2	7.8	14.0	380.4	407.4								
06:00	07:00	363.6	13.8	46.0	13.4	21.0	32.8	47.8	538.4	541.9		84.8	1.0	12.2	3.8	0.0	12.2	25.6	139.6	122.8		467.2	17.4	59.2	13.2	21.4	38.4	61.4	678.2	674.2								
07:00	08:00	314.6	28.4	45.6	12.8	33.0	64.8	181.0	680.2	569.0		87.4	8.0	14.4	5.4	0.0	42.6	123.2	281.0	171.1		456.4	44.4	58.4	20.0	25.0	92.6	257.0	953.8	772.8								
08:00	09:00	261.0	46.4	47.4	12.8	26.4	120.6	575.6	1090.2	624.1		102.6	20.4	13.8	4.2	0.0	70.8	365.0	576.8	254.7		417.2	82.6	64.4	14.8	25.6	141.4	605.8	1351.8	859.4								
09:00	10:00	275.2	69.8	44.0	13.0	28.2	91.4	441.2	962.8	622.1		89.4	20.0	15.8	3.0	0.2	58.2	215.0	401.6	206.7		414.4	102.0	57.2	16.6	26.8	93.2	367.4	1077.6	804.7								
10:00	11:00	276.8	57.2	43.2	16.0	26.0	49.2	93.4	561.8	526.0		88.6	19.8	14.6	4.2	0.0	25.0	37.4	189.6	157.4		396.0	96.0	58.6	15.4	30.6	57.0	84.2	737.8	716.2								
11:00	12:00	289.2	72.0	48.2	12.0	25.0	46.6	65.8	558.8	542.9		81.6	20.6	12.8	3.8	0.2	18.8	23.8	161.6	142.8		391.6	90.2	59.2	16.4	25.6	59.0	57.0	699.0	694.5								
12:00	13:00	267.6	80.2	41.0	14.2	25.2	50.8	80.0	559.0	528.7		79.0	21.4	10.6	1.8	0.0	23.4	19.8	156.0	133.8		358.4	90.0	52.4	15.6	25.2	63.0	66.0	670.6	651.7								
13:00	14:00	273.4	83.0	35.0	11.8	26.6	54.6	60.8	545.2	523.2		80.0	22.6	10.6	2.0	0.0	25.0	21.0	161.2	137.3		388.4	101.4	45.6	16.4	26.6	66.0	82.2	726.6	692.0								
14:00	15:00	277.2	86.0	30.8	11.0	26.0	45.2	71.6	547.8	519.1		81.8	26.6	17.6	3.6	0.4	18.6	18.8	167.4	155.1		402.2	107.4	40.0	10.4	24.4	75.2	77.0	736.6	687.8								
15:00	16:00	261.4	105.0	28.0	12.6	28.2	59.2	82.0	576.4	533.9		89.2	25.4	11.8	1.8	0.2	22.2	21.4	172.0	150.0		424.8	103.8	40.8	10.6	26.2	84.0	92.4	782.6	718.7								
16:00	17:00	296.0	100.0	27.6	9.8	26.8	77.2	154.2	691.6	575.3		99.2	20.4	12.4	1.8	0.2	25.4	34.6	194.0	159.8		444.8	96.2	24.4	6.4	24.8	125.4	198.8	920.8	731.8								
17:00	18:00	293.2	101.4	16.8	7.2	27.6	119.0	375.2	940.4	614.2		100.2	28.0	5.2	2.0	0.2	31.6	98.0	265.2	173.2		446.8	110.4	18.4	3.2	26.4	201.4	601.4	1408.0	845.8								
18:00	19:00	341.0	93.4	14.4	5.4	23.6	123.4	458.6	1059.8	656.7		116.0	25.6	2.4	0.6	0.4	32.8	121.0	298.8	184.7		462.0	84.6	13.6	5.0	25.8	176.2	744.0	1511.2	849.4								
19:00	20:00	338.8	86.2	17.6	4.4	26.4	67.0	225.8	766.2	586.3		84.0	29.0	2.4	2.0	0.2	15.8	60.6	194.0	140.0		404.6	83.0	12.2	4.2	29.0	95.4	273.4	901.8	666.4								
20:00	21:00	353.4	90.2	13.0	8.2	21.0	37.2	107.4	630.4	560.3		83.4	30.0	2.8	2.0	0.2	12.6	25.4	156.4	132.7		398.6	96.2	13.4	5.2	21.6	58.0	136.0	729.0	620.5								
21:00	22:00	372.4	95.6	10.8	9.8	18.0	26.8	75.8	609.2	568.6		81.2	28.0	1.2	1.6	0.0	8.8	14.4	135.2	121.1		419.8	105.0	8.6	5.4	17.6	51.8	106.6	714.8	627.4								
22:00	23:00	383.8	103.8	12.0	3.8	18.6	21.8	55.6	599.4	571.4		84.4	23.2	1.6	2.2	0.4	5.2	10.4	127.4	120.0		421.8	88.2	13.6	4.0	16.8	32.2	70.0	646.6	600.1								
23:00	00:00	347.6	87.6	8.6	6.6	16.8	14.6	31.6	513.4	509.0		77.8	22.0	3.2	3.4	0.0	4.6	9.6	120.6	116.2		355.6	86.4	15.8	5.8	16.2	23.6	44.0	547.4	529.7								
Total		6678.8	1506.4	628.4	248.2	487.2	1146.2	3215.4	13910.6	11774.6		2033.6	418.0	194.8	68.8	2.6	464.6	1255.6	4438.0	3344.2		8848.4	1735.8	754.4	246.4	475.8	1568.6	3966.2	17595.6	14654.8								



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