Transport for London

CS North-South Cycle Route (Phase 2)

Concept Design (Rev 2A.1)

Stage 1 Road Safety Audit

Ref: 2462/VAR/A201/TLRN/2016

Prepared for:

Sponsorship, TfL Road Space Management Directorate

By:

Road Safety Audit, TfL Asset Management Directorate

Prepared by:	Andrew Coventry, Audit Team Leader
Checked by:	Shane Martin, Audit Team Member
Approved by:	Chris Gooch

Version	Status	Date
A	Audit report issued to Client	12/01/2016

1.0 INTRODUCTION

1.1 Commission

1.1.1 This report results from a Stage 1 Road Safety Audit carried out on the CS North-South Cycle Route (Phase 2), Concept Design (Rev 2A.1) 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 4th January 2016. It took place at the Palestra offices of TfL on 8th January 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 8th January 2016. During the site visit the weather was raining and the existing road surface was wet.

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:	Stephanie Groot – TfL Sponsorship

1.3.2 Design Organisation

Design contact details:	TfL Outcomes Design Engineering

1.3.3 Audit Team

Audit Team Leader:	Andrew Coventry – TfL Road Safety Audit
Audit Team Member:	Shane Martin – 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

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 CYCLE FACILITIES

3.1.1 PROBLEM

Location: General to scheme, multiple locations

Summary: Insufficient provision for cyclists to join the cycle track from the signalised side roads

The Audit Team is concerned that no measures are provided to assist cyclists to join the cycle track from the signalised side roads. Cyclists are likely to attempt to join the cycle track from within the junction, potentially performing manoeuvres unlikely to be anticipated by other road users. This is of particular concern where a significant left-turn flow by general traffic is required to be crossed by cyclists travelling ahead. A lack of priority for cyclists may result in an increased potential for left-hook type conflicts.

RECOMMENDATION
Modify the traffic signals to enable cyclists to access the cycle track safely. This may require the provision of an early-release type facility for cyclists or the provision of separately signalled traffic stages for cyclists.

Design Organisation Response	Accepted

Accepted: There are two junctions where cyclists can join the cycle track via a signalised side road. These are at the Charterhouse Street junction and the Clerkenwell Road junction. The side roads at the Ray Street junction allow cycles only to join Farringdon Road so there is no conflict with motor traffic.

Cyclists at all signalised side roads will have early release signals for cyclists and 7.5m deep advanced stop lines (ASLs) to reduce the risk of left turn hook collisions.

At Clerkenwell Road there is insufficient road space to separately signal cyclists while at Charterhouse St the low cycle flows (approx. 100-150/peak hr/arm) do not justify the additional signal stage and delays to other road users. In addition, a separate stage for cyclists approaching from the side road would receive a low green time owing to the low flow which may discourage use.

The early release signals are not intended to benefit cyclists turning right into the cycle track. Those wishing to turn right must wait and gap accept as normal if there is no two-stage right turn facility. Generally there is no two-stage right turn facility where the approach is a single lane because the right turn is relatively simple to perform with cyclists just having to adjust their lane position rather than change lanes. Adding the facility would require pedestrian crossing setbacks, increased intergreen times, and increased infrastructure. In addition, the staging sequence is such that the all-red pedestrian stage is after the side roads, which means that cyclists would be required to wait a long time to complete their second stage of the turn. Many would be tempted to cross during the all-red instead, increasing the risk of pedestrian-cyclist conflict.

At the Clerkenwell Road junction, the right turn movements are prohibited for general traffic and two very busy cycle routes meet. There the two stage turns proposed to allow cyclists to perform all right turn movements. This improves the permeability of

the cycle network.

Client Organisation Comments

Accepted. Agree with designer's response.

At Charterhouse Street, early release signals and 7.5m ASLs are provided for cyclists joining from the signalised side roads. Two stage right turns are also provided for cyclists turning from Farringdon Road NB and SB right onto Charterhouse Street.

At Clerkenwell Road, two stage right turn facilities are provided on all arms as well as early release signals and 7.5m ASLs.

3.1.2 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 50mm 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 two wheeled vehicles particularly may fail to appreciate the presence of the kerb upstand, with an exacerbated potential to become unseated with an associated potential for injury as a result.

RECOMMENDATION
Ensure the hybrid track is adequately visible to all road users. This may require the provision of additional road markings to define the edge of the carriageway and perhaps the use of a different surface material and/or colour.

Design Organisation Response	Accepted

Accepted: 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 confusion has not been raised as an issue. Cycle logos will be provided at 50m intervals along the cycle track and the kerb will have a colour contrast with the cycle track material.

The potential point of confusion is at the start of the hybrid (or stepped) cycle track. It is proposed that a triangular ramp marking (diag1062), a cycle logo, and a retroreflective yellow wand will highlight the presence of the track and level change. In addition, taper markings are provided to align vehicles other than cyclists away from the track starting point.

(See Rev2A.2 drawings)

Client Organisation Comments

Accepted. Agree with the designer's response. Double red lines will be present along the edge of the carriageway parallel to the cycle track. This will provide a visual indication of where the edge of the carriageway is. Cycle logos in the track will provide additional visual indication that the there is a cycle track beyond the double red lines.

Additional features have also been proposed at the start of the cycle track to ensure that the track is adequately visible to all road users.

3.1.3 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 / riders may fail 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 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

Part Accepted: There are two start points of the 300mm wide segregation, the northbound start point at the Charterhouse St junction and the southbound start point at the Greville St crossing. The latter is a crossing with no turning vehicles and the alignment of the carriageway means that vehicles would not normally be heading for the segregation strip but it is still important that it is visible. The start point at the southern end (Charterhouse St junction) is a higher risk because of vehicles turning onto Farringdon Rd northbound may not expect to see the segregation. Cycle logos, double red line no stopping restrictions, white lining, and the retro-reflective wands (similar to the photo below) highlight the segregation strip.

Maintaining a wide cycle facility is vital to the success of the scheme and narrowing the track at the most critical point, the start, would reduce usage at busy times. The cycle tracks are approximately 2m wide and to narrow them any further would mean cyclists would not be able 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 operationally possible. For these reasons, the segregation strip is consistently narrow. The resulting situation is similar to where standalone wands are provided as semi-segregation and zero lateral clearance is required.

Also, any increase in the lateral clearance between the wand and the vehicles either side would reduce the physical space for those vehicles. A 0.8m wide length of segregation would be required to provide the lateral clearance specified in guidance and this would reduce the cycle track to 1.5m width. To mitigate against striking by handlebars and wing mirrors, the wands will be limited to 1m height above carriageway level. It should be noted that the wands are self-correcting.

It will be recommended to the detailed designers to add further visibility of the segregation start point by painting the vertical edge of the kerb with retro-reflective white paint.

Client Organisation Comments
Part accepted. 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 facility. The vertical wands are proposed to be self-correcting to reduce the impact of any strikes.

3.1.4 PROBLEM

Location: A – Farringdon Road junction with Greville Street

Summary: Alignment of segregated facility may promote non-compliance with the pedestrian crossing facility

The Audit Team is concerned that the alignment of the segregated facility at the junction with Greville Street may encourage cyclists to ignore or fail to appreciate the pedestrian crossing facilities. The layout through the crossing facility is at a similar level and a straight alignment, therefore no measures are provided to encourage cyclists to curtail their speed and stop when required. Hence cyclists may fail to appreciate the necessity to stop at these locations either accidentally or deliberately. A potential for conflict with pedestrians may exist as a result.

RECOMMENDATION
Provide measures to assist with compliance by cyclists. This may require the provision of a change in surface levels in advance of the crossing point where cyclists are required to stop or give-way to pedestrians.

Design Organisation Response	**Accepted**
Accepted: The proposals omitted the zig-zag markings in the northbound cycle track. This is a drafting error and has been corrected. The signalised crossing now includes all the standard features. (See Rev2A.2 drawings)	

The pedestrian crossing at Greville St is a signalised crossing with associated stopline and signal head visible to northbound cyclists. The proposal also shows that the pedestrian crossing area is raised to footway level to highlight the crossing and improve the pedestrian level of service. A ramp road marking (diag 1062) helps to reinforce this. The pedestrian crossing area will also be surface dressed in a buff colour.

Client Organisation Comments
Accepted. Agree with the designer's response. The design of the crossing has been amended to include all standard features required on approach to a crossing and is proposed to be raised to footway level.

3.1.5 PROBLEM

Location: B – Farringdon Road junction with Greville Street

Summary: Alignment of segregated facility may exacerbate a potential for conflict with other road users on the exit from the segregated facility

The Audit Team is concerned that the alignment of the carriageway at the exit from the segregated cycle facility may exacerbate a potential for conflict with cyclists. As soon as the cycle segregation terminates, buses and other road users are likely to try and enter the bus lane. Drivers performing this manoeuvre may be unaware of the presence of cyclists approaching on the nearside, particularly when congested and the approach speed of cyclists exceeds that of the general traffic lane. An exacerbated potential for cyclists to be squeezed against the kerb, with an associated potential for injury may exist as a result.

RECOMMENDATION
Modify the layout of the cycle track to provide protection for cyclists at the end of the segregated facility. This may require the provision of an island on the north side of the crossing point together with an extended length of mandatory cycle lane to enable cyclists to re-integrate with general traffic.

Design Organisation Response	Part Accepted
Part Accepted: Continuing the physical protection for cyclists is not recommended because there is only space for a short and narrow length of segregation which may encourage pedestrians waiting at the crossing to cross part-way (the cycle track) and seek refuge in a narrow strip of segregation (300m). This could put those choosing to wait at the island in a vulnerable position with no clearance from the narrow traffic lane. The nearside lane is marked as a bus lane Mon-Sat 7am to 10am and 4pm to 7pm, therefore during the peaks when traffic is at is heaviest general traffic (except buses) will be forced to use the offside lane, reducing any potential conflicts with northbound cyclists. As both adjoining side roads 'Greville Street' and 'Cowcross Street' are closed to motor traffic, the only traffic travelling northbound will have done so directly adjacent to the cycle track since Charterhouse Street (at least) if not for the duration of Farringdon Road. Therefore northbound general traffic should be aware of the likelihood of nearside northbound cyclists, even after the segregation has curtailed and as aforementioned the presence of the bus lane should discourage traffic from entering the nearside lane after the crossing. In addition an extra set of (offside) zigzag markings and cycle logo have been added	

to northbound crossing exit to visually continue the cycle facilities through to the northbound bus lane . (See Rev2A.2 drawings)

Client Organisation Comments
Part accepted. Agree with designer's response. At Greville Street, cyclists will be directed to turn off Farringdon Road to continue north rather than continuing north on Farringdon Road. However for any cyclists who do choose to continue north on Farringdon Road, additional cycle logos and zigzag markings have been provided for additional visibility of cyclists north of the crossing.

3.1.6 PROBLEM

Location: C – Farringdon Road outside number 20

Summary: Cycle lane and bus stop layout may pose a hazard to cyclists

The Audit Team is concerned that the alignment of the carriageway at the exit from the cycle segregation requires cyclists to transition around buses over a very short distance. As soon as the cycle segregation terminates, buses are likely to try and access the bus stop. Drivers performing this manoeuvre may be unaware of the presence of cyclists approaching on the nearside, particularly when congested and the approach speed of cyclists exceeds that of the general traffic lane. An exacerbated potential for cyclists to be squeezed against the kerb, with an associated potential for injury may exist as a result.

Furthermore, southbound cyclists may attempt to re-join the general traffic lane from the hybrid track to pass a stationary bus, unaware of the change in surface levels. An exacerbated potential for riders to become unseated with an associated potential for injury may exist as a result.

RECOMMENDATION
Modify the layout of the cycle track to provide protection for cyclists at the end of the segregated facility. This may require the provision of an extended length of mandatory cycle lane to enable cyclists to re-integrate with general traffic and choose an appropriate point to join the general traffic lane to pass a stationary bus.

Design Organisation Response	Accepted
Accepted: The current proposals include a 12m mandatory cycle lane before the 36m bus cage begins. The designs have been altered so that the mandatory cycle lane is now 23m long and the bus cage is 25m long so that there is a longer length of re-integration space.	

Client Organisation Comments
Accepted. Agree with designer's response. An extended length of mandatory cycle lane has been provided to enable cyclists to re-integrate with general traffic.

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	Accepted

Accepted: The current proposals show an angled 150mm wide kerb but given the concern noted, the new proposed angled kerb is 300mm wide with the same 50mm upstand. (See Rev2A.2 drawings)

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.

Client Organisation Comments
Accepted. 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

Rejected: 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.

Two-stage right turn facilities will be monitored as part of the Cycle Superhighways Monitoring Strategy. If this reveals that alterations need to be made to their operation and/or layout then locations along CSNS will be updated to reflect this.

Client Organisation Comments
Agree with the designer's response.

3.4 PARKING AND LOADING FACILITIES

3.4.1 PROBLEM

Location: D – Farringdon Street opposite West Smithfield

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

The Audit Team is concerned that the 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 forward visibility 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 a 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	Accepted

Accepted: An overrunable area adjacent to the loading bay and pedestrian crossing refuge has been incorporated in the design. This encourages northbound vehicles to align themselves with the centre of the carriageway as opposed to the nearside. Through use of this area, visibility is improved for cyclists and pedestrians wishing to cross the carriageway as they can see around any vehicle in the bay. (See Rev2A.2 drawings)

A full buildout with extended kerb upstands is not recommended as this may encourage vehicles to park closer to the traffic lane thus removing the benefits of the improved visibility. The full buildout would also create problems for large vehicles turning right out of Snow Hill.

Client Organisation Comments
Accepted. Agree with designer's response.

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, with 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 visibly of the pedestrian island.

Design Organisation Response	Accepted
Accepted: Keep left bollards are proposed on the pedestrian refuge island to maximise its visibility with diag1004 hazard markings guiding them around the island (See Rev2A.2 drawings). The informal crossing is on a desire line and cannot be relocated owing to the right turn pocket to the south and the bus stop to the north. The refuge is of benefit to the crossing pedestrians and removing it would create a greater collision risk in comparison.	

Client Organisation Comments
Accepted. Agree with designer's response.

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

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: 1 - Farringdon Street junction with Stonecutter Street

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

It is proposed to provide a pedestrian crossing at the junction with Stonecutter Street together with a crossing for cyclists to tie into the end of the bi-directional cycle track. Cyclists using the cycle track and pedestrians crossing west-east are likely to reach the central island at broadly comparable times if they proceed concurrently. This may lead to pedestrians attempting to crossing into the path of cyclists. It may be beneficial to allow cyclists a number of seconds head-start so they clear the junction and the pedestrian crossing point before pedestrians reach the central island.

Design Organisation Response	Part Accepted

Part accepted: The majority of southbound cyclists will have passed the uncontrolled pedestrian crossing before the westbound pedestrians reach it. The distance for cyclists is 26m and at a slow speed of 12km/h this would take them 7.9s. The crossing pedestrians have to cover 19m but at a slower speed of 1.2m/s this would take them 15.8s. In addition, the shorter intergreens to the cycle crossing mean that cyclists do get a green signal one second before the pedestrians.

This uncontrolled section of the crossing will be constructed with ducts to enable a conversion to signal control should the issue be realised. Monitoring will take place once all of the developments in the area are complete and pedestrian and cycle flows are established.

Client Organisation Comments

Agree with designer's response. When released from the southbound stop line, cyclists will clear the crossing area much quicker that pedestrians crossing from the eastbound side in the same phase.

4.2 ISSUE

Location: 2 – 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	Accepted

Accepted – Adequate clearance of 250mm is provided between the kerb edge and the back of the shelter.

Client Organisation Comments
Accepted. Agree with designer's response

4.3 ISSUE

Location: 3 – Farringdon Street junction with Charterhouse Street

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

It is proposed to provide a segregated island with a wand at the commencement point of the northbound segregation on Farringdon Street. This island and wand appears to be within the swept path for vehicles turning left from Charterhouse Street. It may be beneficial to relocate the island after the pedestrian crossing to reduce the potential for the island to be struck by turning vehicles.

Design Organisation Response	Accepted
Accepted: Short section of segregation to the south of the crossing has been removed, the 1010 marking has been extended. (See Rev2A.2 drawings)	

Client Organisation Comments
Agree with designer's response.

4.4 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 speed 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
Part Accepted: Cyclists have priority at the crossing but will be slowed down with ramps and very tight geometry to reduce the severity of any collision with a pedestrian. Another element of mitigation is that there are more and higher quality pedestrian crossings to the south to encourage footfall on the opposite side of Farringdon Road. In addition the eastern footway will be open once Crossrail is completed which will help to disperse pedestrians. Given the large number of uncertainties regarding the future of this area and the impacts of the developments and transport upgrades, TfL will monitor this location and will adapt the layout and operation if the proposed design proves to be unsuitable.	

Client Organisation Comments
Accepted. Agree with the designer's response. The provision of additional pedestrian crossings at Charterhouse Street and wider footways in the area, including on Greville Street where the road is proposed to be closed, will provide more space for pedestrians to distribute leading to fewer people crossing the cycle track on Greville Street.

5.0 SIGNATURES AND SIGN-OFF

5.1 AUDIT TEAM STATEMENT

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

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

AUDIT TEAM LEADER:

Name:	Andrew Coventry BEng (Hons), MCIHT MSoRSA	Signed: [redacted]
Position:	Road Safety Audit Manager	Date: 12/01/2016
Organisation:	Transport for London, Road Safety Audit Asset Management Directorate	
Address:	4th Floor Palestra, 197 Blackfriars Road, London, SE1 8NJ	
Contact:	andrewcoventry@tfl.gov.uk (020 3054 2237)	

AUDIT TEAM MEMBER:

Name:	Shane Martin MCIHT, MSoRSA	Signed: [redacted]
Position:	Principal Road Safety Auditor	Date: 12/01/2016
Organisation:	Transport for London, Road Safety Audit Asset Management Directorate	
Address:	4th Floor Palestra, 197 Blackfriars Road, London, SE1 8NJ	
Contact:	shane.martin@tfl.gov.uk (020 3054 2590)	

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: Joel Cockhill

Position: Lead Design Engineer

Organisation: Outcomes Design Engineering, Road Space Management, TfL

Signed: [redacted] **Dated: 5/2/16**

5.3 CLIENT ORGANISATION STATEMENT

I accept these proposals by the Design Organisation.

Name: Stephanie Groot

Position: Senior Sponsor

Organisation: RSM - Sponsorship

Signed: [redacted] **Dated: 13/04/2016**

5.4 SECONDARY CLIENT ORGANISATION STATEMENT (where appropriate)

I accept these proposals by the Design Organisation.

Name: Lucy Godfrey

Position: Portfolio Sponsor

Organisation: TfL

Signed: [redacted] **Dated: 13/04/2016**

APPENDIX A

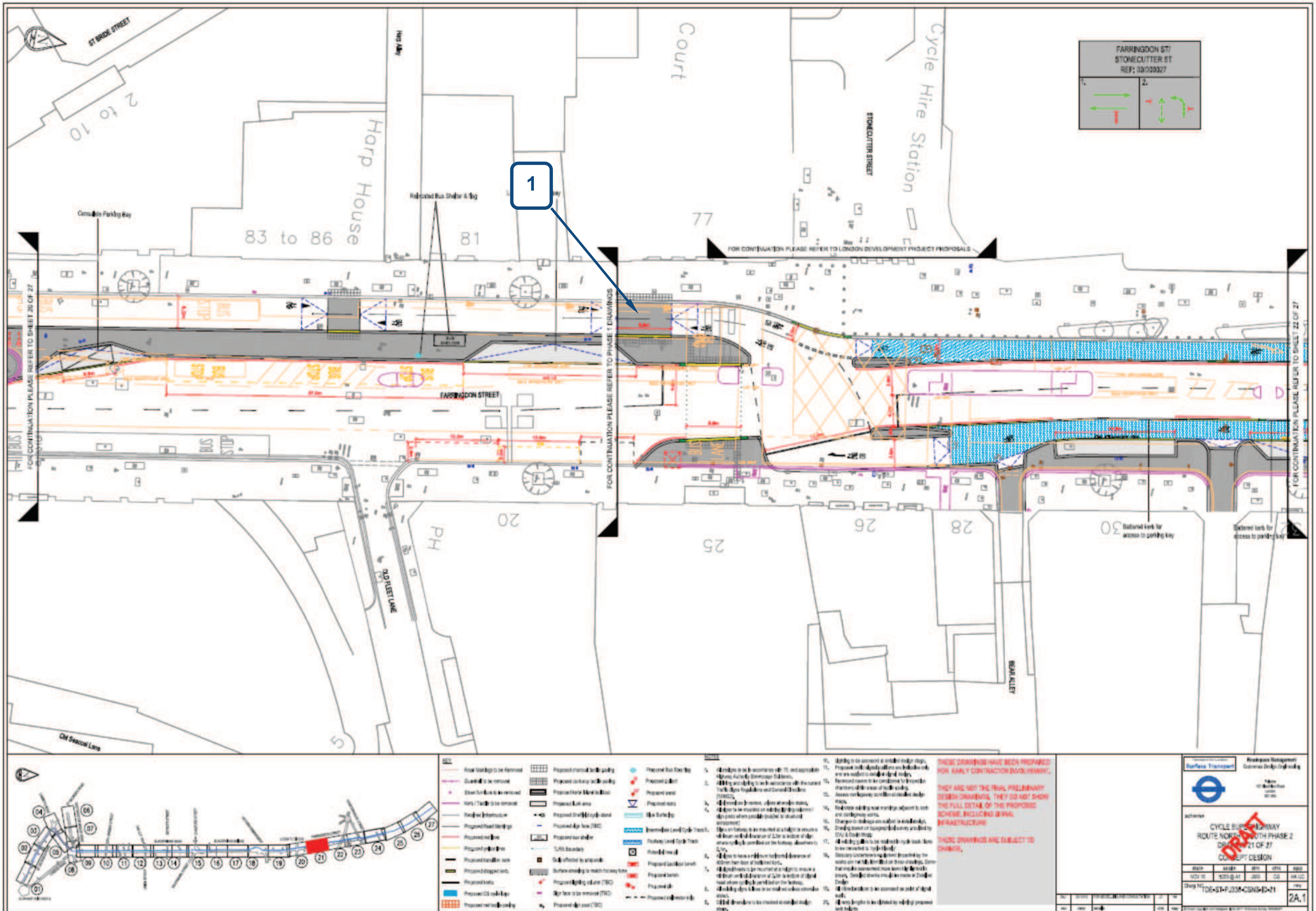
Documents Forming the Audit Brief

DRAWING NUMBER	DRAWING TITLE
TDE-ST-PJ338-CSNS-ID-21	Drawing 21 of 27
TDE-ST-PJ338-CSNS-ID-22	Drawing 22 of 27
TDE-ST-PJ338-CSNS-ID-23	Drawing 23 of 27
TDE-ST-PJ338-CSNS-ID-24	Drawing 24 of 27
TDE-ST-PJ338-CSNS-ID-25	Drawing 25 of 27
TDE-ST-PJ338-CSNS-ID-26	Drawing 26 of 27
TDE-ST-PJ338-CSNS-ID-27	Drawing 27 of 27

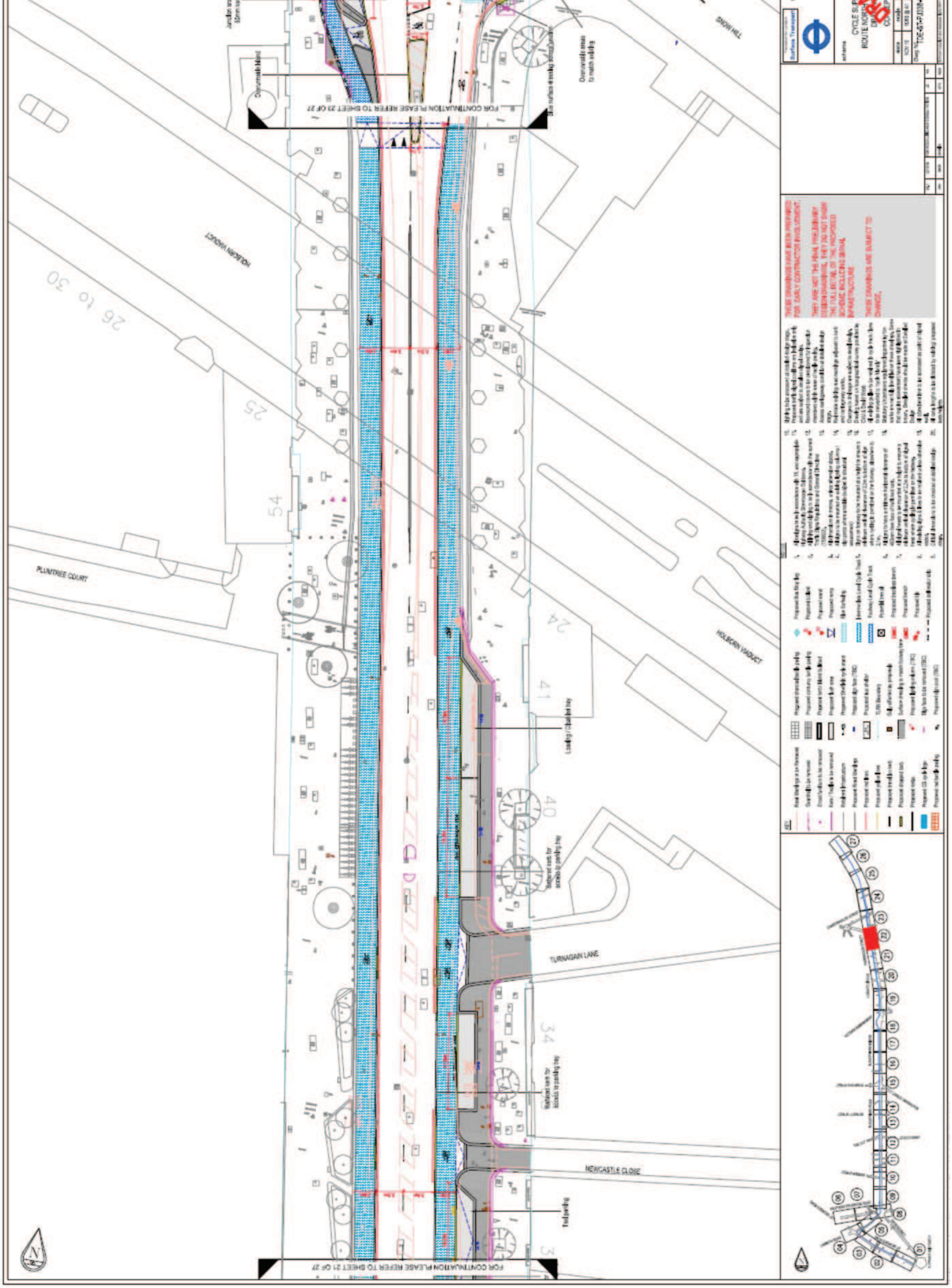
DOCUMENTS	DETAILS (where appropriate)
☐ Safety Audit Brief	
☐ Site Location Plan	
☐ Traffic signal details	
☐ TfL signal safety checklist	
☐ Departures from standard	
☐ Previous Road Safety Audits	
☐ Previous Designer Responses	
☐ Collision data	
☐ Collision plot	
☐ Traffic flow / modelling data	
☐ Pedestrian flow / modelling data	
☐ Speed survey data	
☐ Other documents	

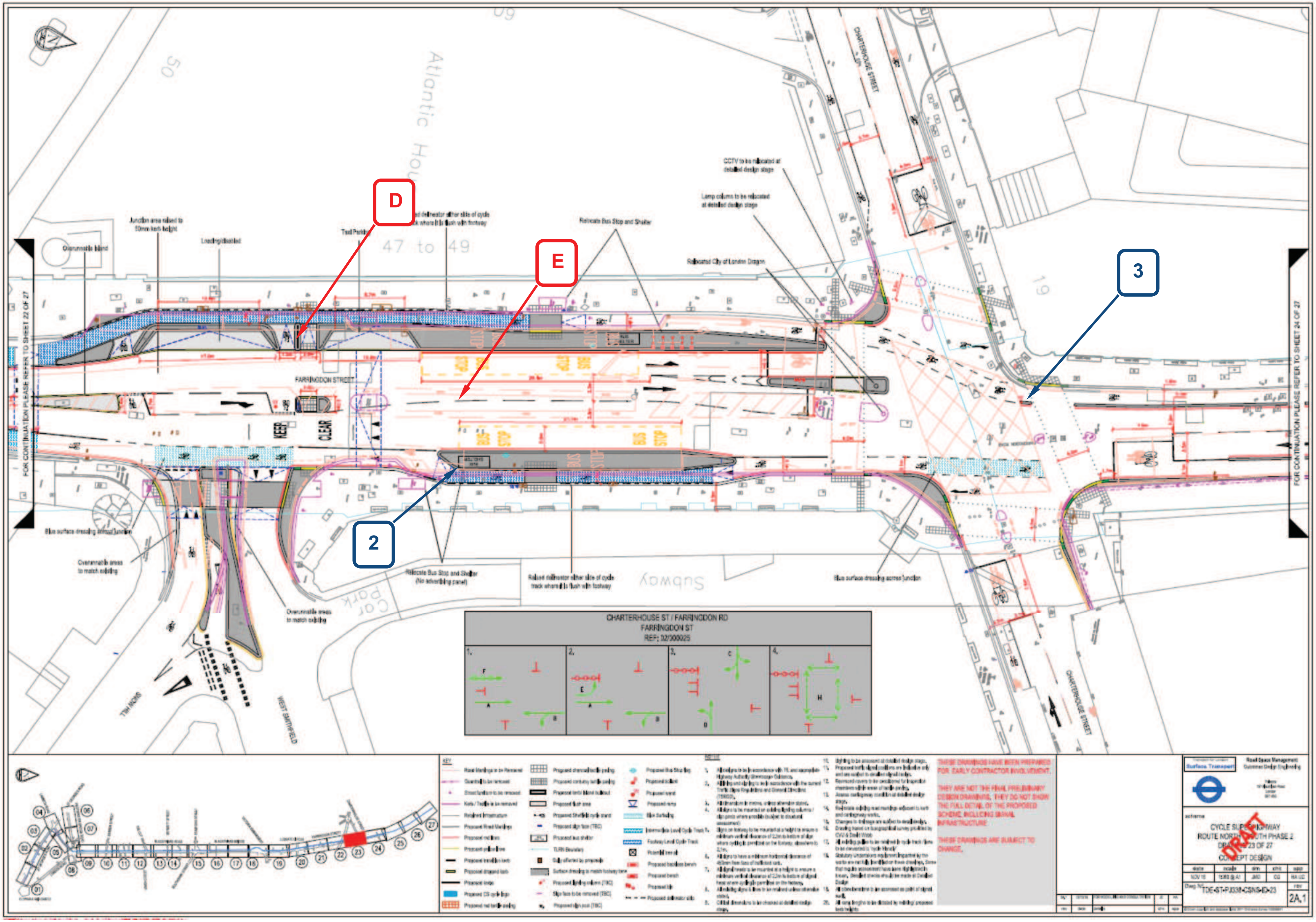
APPENDIX B

Problem Locations

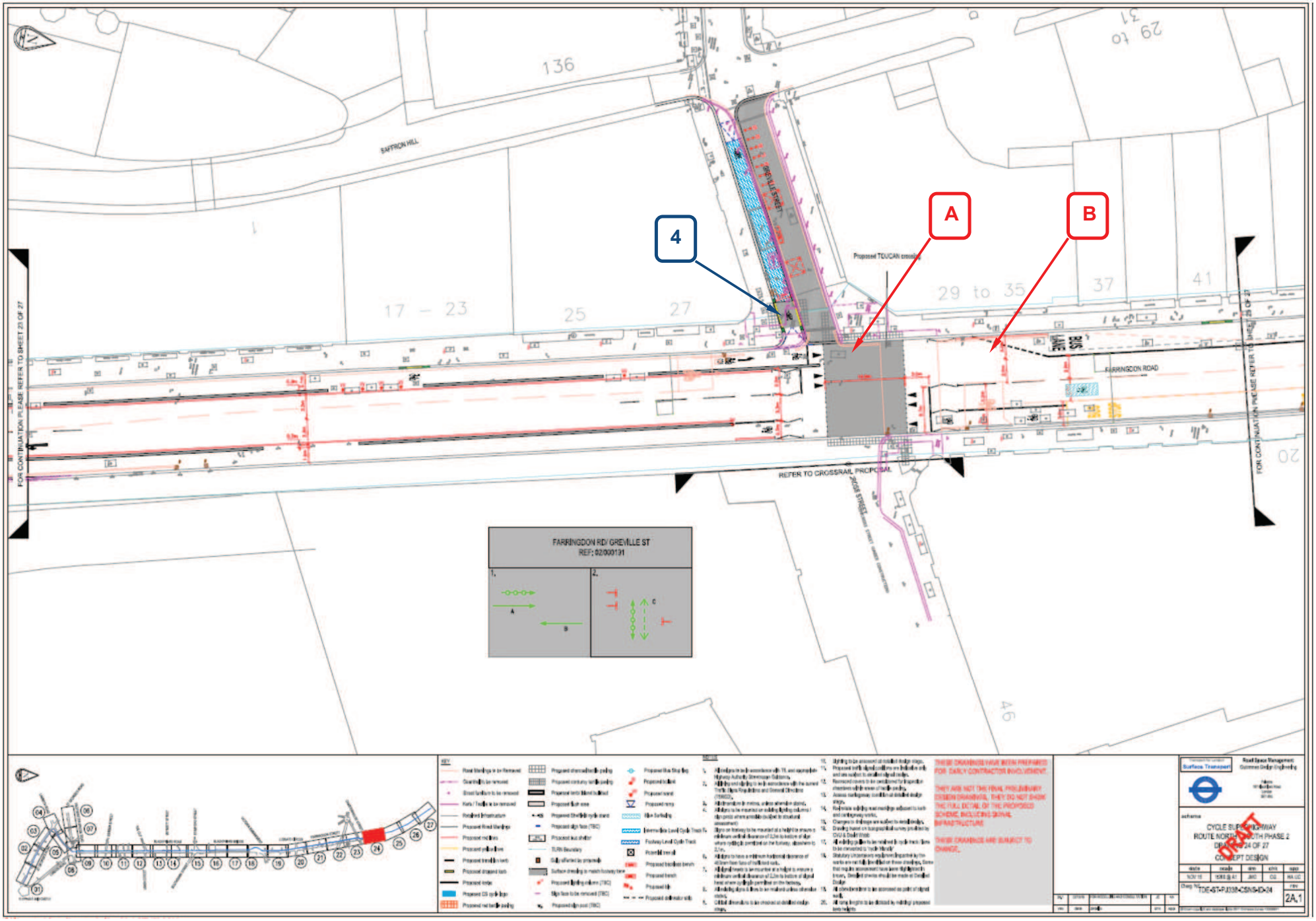


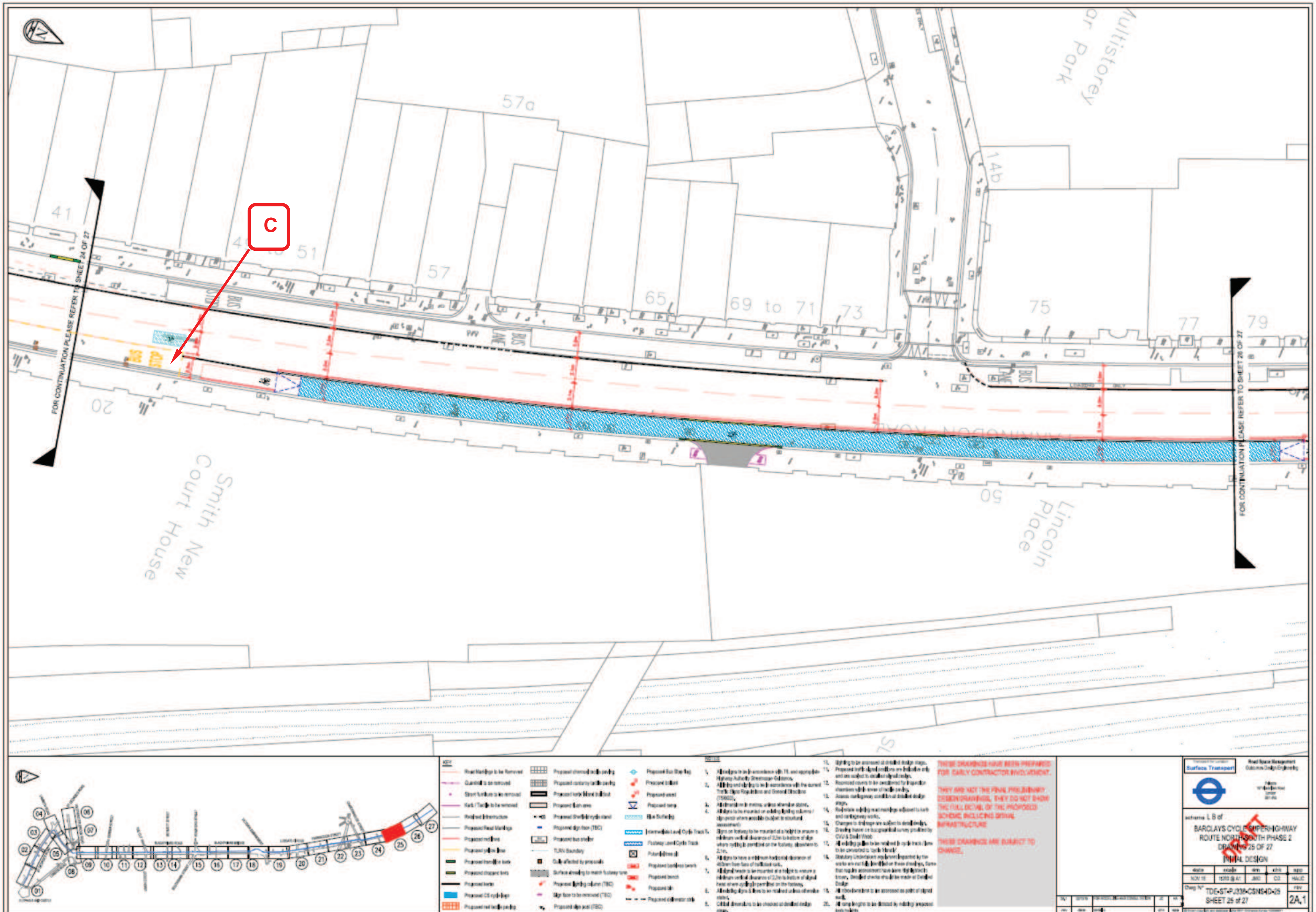
FARRINGDON ST/
STONECUTTER ST
1.
2.
Harp House
83 to 86
81
77
Court
Cycle Hire Station
2 to 10
ST BRIDE STREET
STONECUTTER STREET
FOR CONTINUATION PLEASE REFER TO LONDON DEVELOPMENT PROJECT PROPOSALS
FOR CONTINUATION PLEASE REFER TO PHASE 1 DRAWINGS
FOR CONTINUATION PLEASE REFER TO SHEET 20 OF 27
FOR CONTINUATION PLEASE REFER TO SHEET 22 OF 27
FARRINGDON STREET
BUS STOP
OLD FLEET LANE
PH
20
25
26
28
30
BEAR ALLEY
Old Seacoal Lane
1
THESE DRAWINGS HAVE BEEN PREPARED FOR EARLY CONTRACTOR INVOLVEMENT.
THEY ARE NOT THE FINAL PRELIMINARY DESIGN DRAWINGS, THEY DO NOT SHOW THE FULL DETAIL OF THE PROPOSED SCHEME, INCLUDING SIGNAL INFRASTRUCTURE.
THESE DRAWINGS ARE SUBJECT TO CHANGE.
Surface Transport
CYCLE SUPERHIGHWAY
ROUTE NORTH-SOUTH PHASE 2
21 OF 27
CONCEPT DESIGN
DRAFT
2A.1

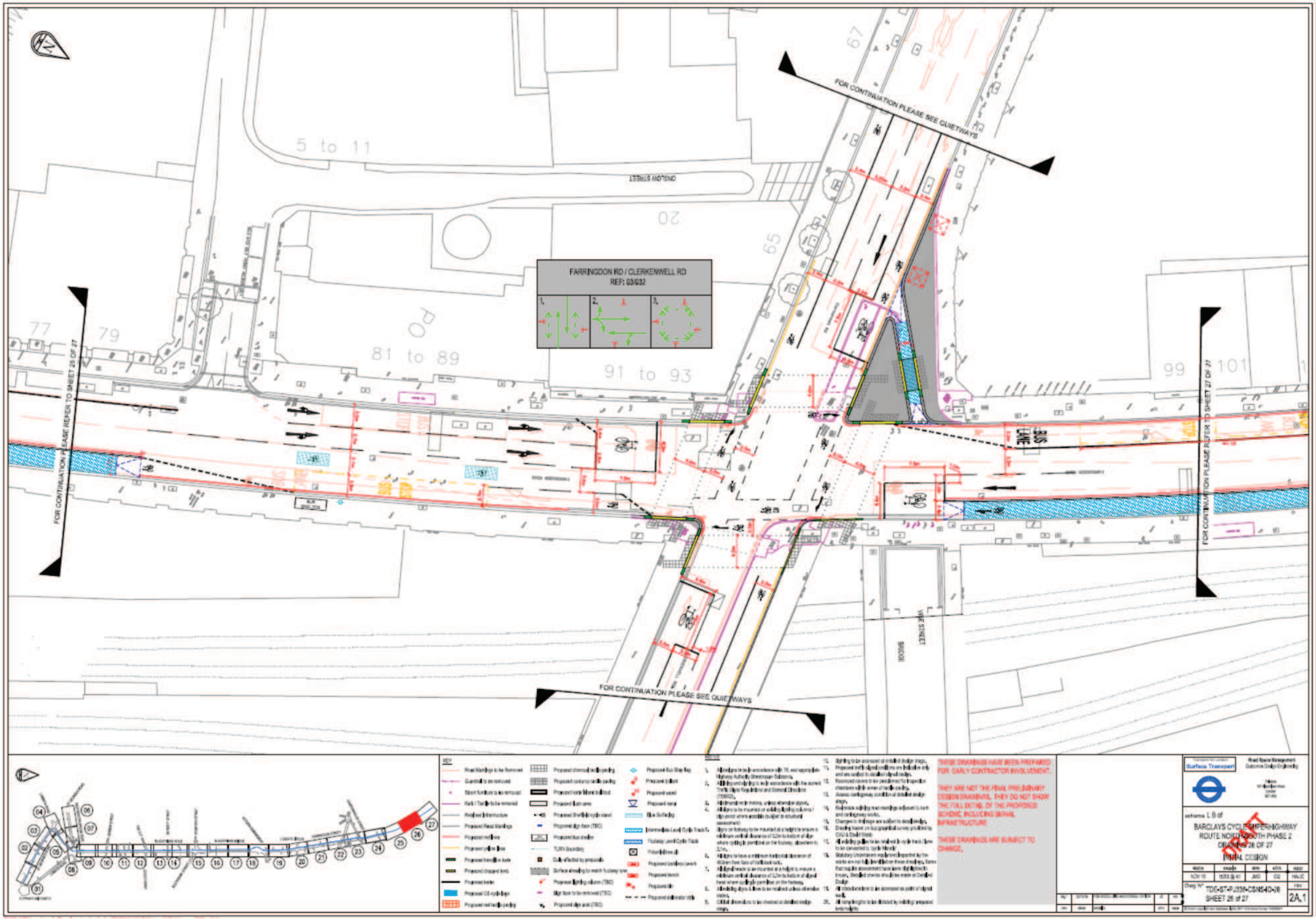

HOLBORN VIADUCT
HOLBORN VIADUCT
SNOW HILL
PLUMTREE COURT
TURNAGAIN LANE
NEWCASTLE CLOSE
26 to 30
25
54
24
41
40
34
FOR CONTINUATION PLEASE REFER TO SHEET 23 OF 27
FOR CONTINUATION PLEASE REFER TO SHEET 21 OF 27
THESE DRAWINGS HAVE BEEN PREPARED FOR EARLY CONTRACTOR INVOLVEMENT.
THEY ARE NOT THE FINAL PRELIMINARY DESIGN DRAWINGS. THEY DO NOT SHOW THE FULL DETAIL OF THE PROPOSED SCHEME, INCLUDING SIGNAL INFRASTRUCTURE.
THESE DRAWINGS ARE SUBJECT TO CHANGE.

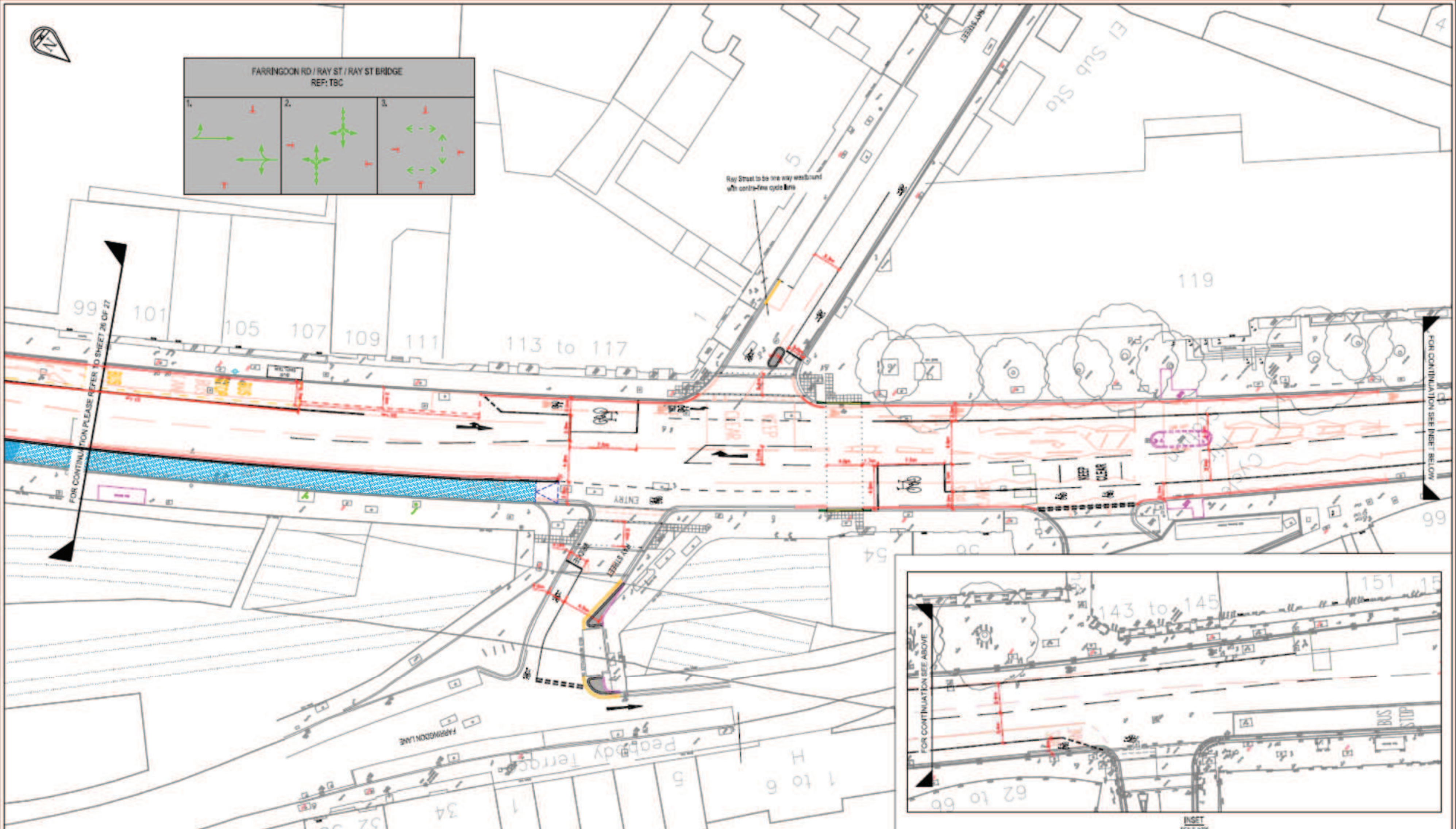


D
E
2
3
Atlantic House
47 to 49
50
19
CHARTERHOUSE STREET
FARRINGDON STREET
KEEP CLEAR
BUS STOP
Subway
Car Park
WEST SMITHFIELD
Overrunnable island
Junction area raised to 50mm kerb height
Loading/disabled
Taxi Parking
Relocate Bus Stop and Shelter
CCTV to be relocated at detailed design stage
Lamp column to be relocated at detailed design stage
Relocated City of London Dragon
Blue surface dressing across junction
Overrunnable areas to match existing
Relocate Bus Stop and Shelter (No advertising panel)
Raised delineator either side of cycle track where it is flush with footway
FOR CONTINUATION PLEASE REFER TO SHEET 22 OF 27
FOR CONTINUATION PLEASE REFER TO SHEET 24 OF 27
CHARTERHOUSE ST / FARRINGDON RD
FARRINGDON ST
REF: 32/300025
KEY
NOTES
THESE DRAWINGS HAVE BEEN PREPARED FOR EARLY CONTRACTOR INVOLVEMENT.
THEY ARE NOT THE FINAL PRELIMINARY DESIGN DRAWINGS. THEY DO NOT SHOW THE FULL DETAIL OF THE PROPOSED SCHEME, INCLUDING SIGNAL INFRASTRUCTURE
THESE DRAWINGS ARE SUBJECT TO CHANGE.
Surface Transport
CYCLE SUPERHIGHWAY
ROUTE NORTH-SOUTH PHASE 2
23 OF 27
CONCEPT DESIGN
DRAFT
TDE-ST-PJ338-CSNS-ID-23

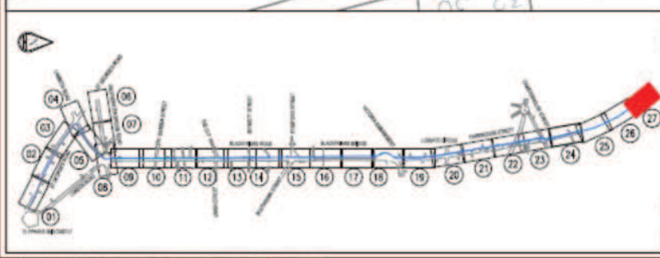

4
A
B
FARRINGDON RD/ GREVILLE ST
REF: 02/000131
REFER TO CROSSRAIL PROPOSAL
FARRINGDON ROAD
BUS LANE
SAFFRON HILL
GREVILLE STREET
Proposed TOUCAN crossing
FOR CONTINUATION PLEASE REFER TO SHEET 23 OF 27
FOR CONTINUATION PLEASE REFER TO SHEET 25 OF 27
THESE DRAWINGS HAVE BEEN PREPARED FOR EARLY CONTRACTOR INVOLVEMENT.
THEY ARE NOT THE FINAL PRELIMINARY DESIGN DRAWINGS, THEY DO NOT SHOW THE FULL DETAIL OF THE PROPOSED SCHEME, INCLUDING SIGNAL INFRASTRUCTURE.
THESE DRAWINGS ARE SUBJECT TO CHANGE.
DRAFT
CYCLE SUPERHIGHWAY
ROUTE NORTH-SOUTH PHASE 2
DRAWING 24 OF 27
CONCEPT DESIGN
TDE-ST-PJ338-CSNS-DR-24
2A.1


C
41
51
57
57a
65
69 to 71
73
75
77
79
14b
20
50
Multistorey Car Park
Smith New Court House
Lincoln Place
FOR CONTINUATION PLEASE REFER TO SHEET 24 OF 27
FOR CONTINUATION PLEASE REFER TO SHEET 26 OF 27
THESE DRAWINGS HAVE BEEN PREPARED FOR EARLY CONTRACTOR INVOLVEMENT.
THEY ARE NOT THE FINAL PRELIMINARY DESIGN DRAWINGS. THEY DO NOT SHOW THE FULL DETAIL OF THE PROPOSED SCHEME INCLUDING SIGNAL INFRASTRUCTURE
THESE DRAWINGS ARE SUBJECT TO CHANGE.
Surface Transport
Road Space Management
BARCLAYS CYCLE SUPERHIGHWAY
ROUTE NORTH-SOUTH PHASE 2
DRAWING 25 OF 27
INITIAL DESIGN
DRAFT
TDE-ST-PJ338-CSNS4D-25
SHEET 25 of 27
2A,1


FOR CONTINUATION PLEASE SEE QUIETWAYS
FOR CONTINUATION PLEASE REFER TO SHEET 25 OF 27
FOR CONTINUATION PLEASE REFER TO SHEET 27 OF 27
FOR CONTINUATION PLEASE SEE QUIETWAYS
5 to 11
ONSLOW STREET
20
65
67
77
79
PO
81 to 89
91 to 93
99
101
FARRINGDON RD / CLERKENWELL RD
REF: 03/032
BUS LANE
VINE STREET
BRIDGE
KEY
NOTES
THESE DRAWINGS HAVE BEEN PREPARED FOR EARLY CONTRACTOR INVOLVEMENT.
THEY ARE NOT THE FINAL PRELIMINARY DESIGN DRAWINGS. THEY DO NOT SHOW THE FULL DETAIL OF THE PROPOSED SCHEME, INCLUDING SIGNAL INFRASTRUCTURE.
THESE DRAWINGS ARE SUBJECT TO CHANGE.
Surface Transport
Road Space Management
Outcomes Design Engineering
BARCLAYS CYCLE SUPERHIGHWAY
ROUTE NORTH-SOUTH PHASE 2
DRAWING 26 OF 27
INITIAL DESIGN
DRAFT
NOV 15
TDE-ST-PJ338-CSNS-D-26
SHEET 26 of 27
2A,1



INSET
SCALE 1:200



THESE DRAWINGS HAVE BEEN PREPARED FOR EARLY CONTRACTOR INVOLVEMENT.

THEY ARE NOT THE FINAL PRELIMINARY DESIGN DRAWINGS, THEY DO NOT SHOW THE FULL DETAIL OF THE PROPOSED SCHEME INCLUDING SIGNAL INFRASTRUCTURE.

THESE DRAWINGS ARE SUBJECT TO CHANGE.

Surface Transport

Road Space Management
Outcomes Design Engineering

scheme L B of

BARCLAYS CYCLE SUPERHIGHWAY
ROUTE NORTH-SOUTH PHASE 2
DRAWING 27 OF 27
INITIAL DESIGN

DRAFT

date	scale	drn	chk	app
NOV 15	1:200 @ A1	JMO	CG	HAJC

Dwg Nº TDE-ST-PJ338-CSNS-ID-27
SHEET 27 of 27

rev 2A.1