Transport for London

Cycle Enfield - Section 1

A105 South of Ecclesbourne Gardens to Oakthorpe Road

Stage 2 Road Safety Audit

Ref: 2759.03.01/032/A105/BOR/2016

Prepared for:

London Borough of Enfield

By:

Road Safety Audit, TfL Asset Management Directorate

Prepared by:	Shane Martin, Audit Team Leader
Checked by:	Kevin Seymour, Audit Team Member
Approved by:	Andrew Coventry

Version	Status	Date
A	Audit report issued to Client	21/12/2016

1.0 INTRODUCTION

1.1 Commission

1.1.1 This report results from a Stage 2 Road Safety Audit carried out on the Cycle Enfield - Section 1, A105 South of Ecclesbourne Gardens to Oakthorpe Road proposals.

1.1.2 The Audit was undertaken by TfL Road Safety Audit in accordance with the Audit Brief issued by the Client Organisation on 25th November 2016. It took place at the Palestra offices of TfL on 16th December 2016 and comprised an examination of the documents provided as listed in Appendix A, plus a visit to the site of the proposed scheme.

1.1.3 The visit to the site of the proposed scheme was made on 16th December 2016. During the site visit the weather was sunny and the existing road surface was dry.

1.2 Terms of Reference

1.2.1 The Terms of Reference of this Audit are as described in TfL Procedure SQA-0170 dated May 2014. The Audit Team has examined and reported only on the road safety implications of the scheme as presented and how it impacts on all road users and has not examined or verified the compliance of the designs to any other criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem the Audit Team may, on occasion, have referred to a design standard without touching on technical audit. An absence of comment relating to specific road users / modes in Section 3 of this report does not imply that they have not been considered; instead the Audit Team feels they are not adversely affected by the proposed changes.

1.2.2 This Safety Audit is not intended to identify pre-existing hazards which remain unchanged due to the proposals; hence they will not be raised in Section 3 of this report as they fall outside the remit of Road Safety Audit in general as specified in the procedure SQA-0170 dated May 2014. Safety issues identified during the Audit and site visit that are considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Client Organisation, are set out in Section 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: Paul Rogers – London Borough of Enfield

1.3.2 Design Organisation

Design contact details: Deepak Sharma - Jacobs

1.3.3 Audit Team

Audit Team Leader: Shane Martin – TfL Road Safety Audit

Audit Team Member: Kevin Seymour – TfL Road Safety Audit

Audit Team Observer: None present

1.3.4 Other Specialist Advisors

Specialist Advisor Details: None present

1.4 Purpose of the Scheme

The purpose of the scheme is to provide 5.5km of two-way segregated cycle route with public realm improvements at town centres*.

*Taken directly from the Audit Brief.

1.5 Special Considerations

1.5.1 This Audit Report covers Section 1 (Sheets 1 & 2) of this route only, along the A105 South of the junction with Ecclesbourne Gardens to the junction with Oakthorpe Road / Broomfield Lane.

1.5.2 Full details of the traffic signal staging / timings have not yet been provided and therefore the Audit Team could not fully comment on this element of the proposals.

2.0 ITEMS RAISED IN PREVIOUS ROAD SAFETY AUDITS

The proposals were subject to a Stage 1 Road Safety Audit carried out in March 2016 by TfL Road Safety Audit, Asset Management Directorate (Ref 2524/032/A105/BOR/2016. This report covered the whole route and therefore many of the issues raised are not specific to this (Section 1) part of the proposals. Items raised in the previous Audit Report deemed relevant to this section can be summarised as follows:

Problem 3.1.1	General to the scheme - Proposed Zebra and cycle crossing layouts may result in drivers failing to give-way to cyclists This problem remains in the detailed design proposals and is therefore raised again within this report as Problem 3.2.1.
Problem 3.1.3	Cycle lanes past junction locations - Segregated cycle lanes terminating just before side road junctions may increase left turning collisions between vehicles and cyclists A very similar problem remains but in relation to busy vehicular accesses and is therefore raised as 3.1.7 within this Audit Report.
Problem 3.1.4	Side road cycle crossovers at raised junction tables - Drivers turning from main roads to side roads may brake late due to cyclists crossing side roads, leading to nose to tail collisions, or cycle to vehicle conflict. A very similar problem remains but in relation to busy vehicular accesses in the detailed design proposals and therefore this is raised again as 3.1.7 in this Audit Report.
Problem 3.1.4	Palmerston Crescent - Northbound cycle facility returns cyclists from footway to carriageway at the junction and this may lead to failure to give-way type collisions. This problem is no longer present in the detailed design proposals and is therefore not raised again within this Audit report.

Items raised in the Stage 1 Road Safety Audit report that are outside the Terms of Reference:

Issue 4.1	The revised kerb lines at side roads may alter vehicle swept paths and it is not clear if these have been assessed or may result in conflicts between turning vehicles. This issue is considered to remain in part and will therefore be raised again as part of 3.1.2 in this Audit report.
Issue 4.2	Bus borders separated from the footways by cycle lanes may result in difficulties for some users to access the bus stop and may lead to low level cycle / pedestrian conflicts. This issue is considered to remain in part and will therefore be raised again as part of 3.1.3 in this Audit report.
Issue 4.13	The cycle lane is provided on footway for a short section north of the junction it is unclear why this is not retained as an on carriageway facility.

	This issue remains in the detailed design but as the layout on the approach to this junction is off carriageway and returning cyclists to the carriageway / soft segregated facility after the junction /conflict point seems suitable, this issue is not raised again within this Audit report.
Issue 4.14	The scheme tie in south of Palmerston Crescent is unclear and should be clarified. This issue is considered to be resolved and will therefore not be raised again within this Audit report.
Issue 4.15	The southbound bus lane markings indicate a re-start of the bus lane and the markings may need to be altered to reflect the new arrangement. This issue is considered to be resolved as the start of this section of bus lane now includes a taper at the commencement. This will therefore not be raised again within this Audit report.

3.0 ITEMS RAISED AT THIS STAGE 2 ROAD SAFETY AUDIT

This section should be read in conjunction with Paragraphs 1.2.1, 1.2.2 and 1.2.3 of this report.

3.1 CYCLING FACILITIES

3.1.1 PROBLEM

Location: General to scheme, multiple locations

Summary: The use of 'Orcas' as a segregation measure may lead to trips / falls for cyclists and pedestrians

The proposals include 'Orcas' as a semi / soft segregation measure alongside the cycle tracks. The Audit Team are concerned that the 'Orcas' may not be adequately visible to road users, particularly pedestrians, cyclists and powered-two-wheelers.

Pedestrians crossing the carriageway may fail to appreciate the raised nature of the 'Orcas', with a potential for trips and falls within the carriageway.

Riders of two wheeled vehicles may fail to appreciate that the 'Orcas' are raised, particularly in inclement weather. Riders may become destabilised as they over-run the features, leading to an increased potential to become unseated, with a resultant potential for personal injury.

The potential for injury is exacerbated as the features are situated in positions where they are encouraged to be traversed, such as outside residential accesses.

RECOMMENDATION
It is recommended that any potential trip hazards are removed; this may require the use of an alternative type of segregation measure.

Design Organisation Response	**~~Accepted / Part Accepted~~ / Rejected**
The use of light segregation Orcas has been a proposed element of the scheme since initial development. The Orcas will be set inside the mandatory cycle lane marking (diag 1049B) and are white/black marked to stand out. In addition, the start and finish of an Orca line will be marked by a wand to further highlight the Orca line as it is approached. Orcas placed alongside vehicular access will be of a lower profile to allow vehicular over run. Orcas will be sited away from pedestrian crossing points to minimise the risk of trips. Post construction monitoring is recommended at a number of agreed locations to determine if there are any issues and to allow for modifications if necessary.	
Client Organisation Comments	
Designer's response accepted – post implementation monitoring will be carried out.	

3.1.2 PROBLEM

Location: General to scheme, multiple locations

Summary: Bus passengers boarding or alighting may result in collisions with cyclists on the track

The Audit Team are concerned that proposed cycle tracks run immediately adjacent to proposed bus stop boarders. Therefore bus passengers would board / alight a bus from / onto the cycle tracks. This may result in cyclists diverting away from the cycle track whilst their path is obscured, which may result in increased collisions with pedestrians or vehicles who may not expect cyclists diverting from the track. In addition, bus passengers alighting may not anticipate or be able to see approaching cyclists immediately adjacent to the bus, which may result in cycle to pedestrian type collisions. Visually impaired pedestrians, particularly those alighting from a bus may follow the kerb line and inadvertently enter the carriageway. Visually impaired pedestrian unknowingly within the carriageway are at an increased potential for collisions with motorists.

RECOMMENDATION
It is recommended that the layout of the bus stop boarders / cycle tracks are altered to mitigate the potential interactions with bus passengers. This may include, but is not limited to, providing tramline tactile paving prior to the ramps down to carriageway level and an increased separation between the boarding / alighting area and the cycle track.

Design Organisation Response	~~**Accepted / Part Accepted**~~ **/ Rejected**
Bus boarders have been introduced with a 0.5m buffer at locations where there is not scope to introduce a bus stop by-pass, to deliver an acceptable level of route continuity particularly at conflict points such as bus stops, where buses will be pulling into the kerb, through the desire line of a cyclist. The proposed bus stop boarders will use different material/tones to clearly show a change in environment from a segregated facility to a shared space. This is not dissimilar to a shared space environment adjacent to a toucan crossing, where pedestrian and cycles mix. Monitoring can be undertaken post-implementation to review the safe operation of the proposed design.	

Client Organisation Comments
Designer's response accepted – operation of the bus stop boarders will be monitored post-implementation.

3.1.3 PROBLEM

Location: General – various footway level sections of cycle track

Summary: Potential lack of delineator may lead to collisions with visually impaired pedestrians

The Audit Team are concerned that the proposed measures do not appear to indicate a delineator between the footway and cycle tracks provided at footway level. This could lead to visually impaired pedestrians inadvertently entering these sections of cycle lanes or potentially entering the carriageway via the ramp between the two facilities. Cyclists on the cycle track or motorists on the carriageway are unlikely to anticipate a visually impaired pedestrian and this may therefore result in increased collisions between these users.

RECOMMENDATION
It is recommended that as well as a good visual differentiation between the footway and cycle tracks, a detectable delineator should be provided to ensure that all users are aware of the edge of footway.

Design Organisation Response	**~~Accepted / Part Accepted~~ / Rejected**
The cycle lane edging will comprise of 3 x 100x100mm cropped silver grey setts. The texture and differing contrast will indicate to visually impaired pedestrians that they should not enter the cycle lane. In addition, the cycle track will be surfaced in a suitable colour, to provide tonal difference with the surrounding footway.	

Client Organisation Comments
Designer's response accepted

3.1.4 PROBLEM

Location: A – A105 Green Lanes junction with Ecclesbourne Gardens

Summary: Lack of cycle facilities past this junction may lead to an increased potential for collisions with cyclists

The Audit Team are concerned that southbound cyclists do not appear to have any onward provision beyond the shared cycle / Zebra crossing to the north of Ecclesbourne Road. It is therefore not clear what cyclists will do if they continue southbound, this may lead to cyclists making various manoeuvres which may be less obvious for motorists to anticipate. The Audit Team are concerned for example, that motorists entering or exiting Ecclesbourne Gardens may see southbound vehicles stopped at the Zebra crossing and start to turn across the southbound lanes and are unlikely to anticipate a cyclist re-entering the carriageway to continue southbound via the shared use cycle / Zebra crossing. This may lead to an increased potential for vehicles to turn across the path of cyclists continuing southbound on the carriageway.

RECOMMENDATION
It is recommended that additional features are provided across the mouth of this junction to highlight the potential presence of cyclists. This may include but is not limited to cycle logo road markings and coloured surfacing?.

Design Organisation Response	**~~Accepted / Part Accepted~~ / Rejected**

The cycle scheme has ended at this point. Southbound cyclists are directed towards the parallel crossing so that they can continue travelling south.
Client Organisation Comments
Designer's response accepted

3.1.5 PROBLEM

Location: B – A105 Green Lanes, cycle lane across petrol station access

Summary: Cycle track width may be insufficient

The proposed cycle track appears to narrow as it crosses the petrol station access. As the horizontal and vertical alignment changes at this location, a narrowed facility in combination with changing direction and elevation may result in difficulties for some cyclists to stay within the facility. If cyclists struggle to stay within the cycle track they may slow down across the petrol station access which might not be anticipated by vehicles following and attempting to enter the petrol station or they may swerve into the path of another user or be destabilised.

RECOMMENDATION
It is recommended that the width of the cycle track is increased to ensure that it is sufficient to enable cyclists to safely enter this section of the cycle track.

Design Organisation Response	**~~Accepted / Part Accepted~~ / Rejected**
The cycle track at this point has a width of 1.4m. This is due to the brick wall at the petrol station boundary which creates a pinch point. To maintain a footway width of 1.8m for pedestrians it is not possible to further widen the cycle track. The minimum recommended width for a one-way cycle track is 1.5m. However, this minimum allows for a cyclist to overtake another cyclist. As this section is approaching the end of the route and southbound cyclists must cross at the parallel crossing, cyclist speeds will be at a minimum and no overtaking should occur as this is also a short section. Therefore, 1.4m cycle track width at this section is acceptable.	
Client Organisation Comments	
Designer's response accepted	

3.1.6 PROBLEM

Location: C – A105 Green Lanes, cycle lane across petrol station access

Summary: Semi segregated cycle lane terminates just before this busy vehicular access which may increase left turning collisions between vehicles and cyclists

The proposed semi segregated cycle lane terminates just before this busy access. At such locations it may be difficult for both sets of road users to understand who has priority and this may lead to turning collisions involving cyclists. Cyclists may not anticipate a vehicle turning across their path and may find it difficult to avoid such vehicles in close proximity. This may lead to an increased risk of left hook / failure to give-way type collisions between southbound cyclists and vehicles crossing the track to use the access.

RECOMMENDATION
It is recommended that the priority is clearly defined. Furthermore, research from TRL (PPR703 – Trials of segregation set-back at side roads) indicates that setting

back cycle lanes by at least 20m from side roads may improve cyclist safety at junctions.

Design Organisation Response	~~**Accepted / Part Accepted**~~ **/ Rejected**
TRL (PPR703 – Trials of segregation set-back at side roads) states that bringing segregation very close to the turning manoeuvre (<5m) combines both the merging conflict and the turning conflict into a single manoeuvre, requiring only one decision for the driver: whether or not to turn. Vehicle speeds are also likely to be slower due to the shaper angle required to turn into the junction, giving the driver more time to make the decision, and the approach angle closer to the perpendicular, placing approaching cyclists more directly in the driver's line of vision. The semi segregation ends 4.5m from the junction.	
Client Organisation Comments	
Designer's response accepted.	

3.1.7 PROBLEM

Location: D – A105 Green Lanes south of junction with Broomfield Lane

Summary: Proposed cycle lane may be obstructed as drivers enter this development which may result in cycle collisions

The proposals include a break in the mandatory semi-segregated cycle track to facilitate access to this residential development. The Audit Team are concerned that as the development is gated vehicles waiting for the gates to open are likely to obstruct the cycle track. Cyclists wishing to maintain progress may therefore swerve around the waiting vehicle into the carriageway where they may not suitable sight or be sighted by northbound motorists, particularly due to the crest in the vertical alignment and potential for the bus stop shelter / a waiting bus to reduce intervisibility. This may therefore result in an increased potential for collisions between northbound cyclists and vehicles whilst motorists use this access.

RECOMMENDATION
It is recommended to alter the layout, to minimise the potential for vehicles waiting to enter this development to obstruct the cycle track. Whilst it is appreciated that this mitigation measures extends beyond the highway boundary and may therefore require discussion with the development owner one solution may be to relocate the gates or alter the method of operation so that the gates minimise the delay encountered as vehicles enter.

Design Organisation Response	**~~Accepted / Part Accepted~~ / Rejected**
The edge of the cycle lane is approximately 5-6m setback from the gate which is sufficient for a large vehicle to wait without obstructing the cycle lane.	

Client Organisation Comments
Designer's response accepted.

3.1.8 PROBLEM

Location: E – commencements of full height kerbs south of Broomfield Lane

Summary: Motorists may not notice and collide with the commencement of a full height kerb

The Audit Team are concerned that motorists may not appreciate that the edge of the cycle track includes a full height kerb at this location. This kerbed physical segregation commences within the carriageway running lane and it may not provide suitable features to highlight this physical feature or guide users alongside it. It may therefore, not be clear or conspicuous. Motorists may collide with the kerb or swerve to avoid the features if they are noticed within close proximity, which may result in loss of control type collisions / injury to those on or within the vehicle.

RECOMMENDATION
It is recommended to alter the layout to suitably guide vehicles alongside the kerbs. This may include but is not limited to providing a vertical illuminated feature such as an Illuminated Guide Post (IGP) to provide suitable guidance alongside the feature.

Design Organisation Response	**~~Accepted / Part Accepted~~ / Rejected**
On the approach to the location the cycle lane is marked with line of Orcas, so motorists should already be in the correct alignment. Line marking to diagram no. 1010 has been used to delineate the edge of carriageway. This line marking will also	

be offset 150mm from the edge of the kerb to ensure vehicles don't travel too closely to the kerb.

Client Organisation Comments
Designer's response accepted

3.2 CROSSING FACILITIES

3.2.1 PROBLEM

Location: F – A105 Green Lanes between Ecclesbourne Gardens and Palmerston Crescent

Summary: Proposed Zebra and cycle crossing layouts may result in drivers failing to give-way to cyclists

The Audit Team are concerned that the proposed Zebra and cycle crossing may not be understood by motorists particularly as the layout is new to drivers. The following issues may result in an increased potential for collisions:

- Zebra crossings are well established and the conspicuousness of the thick black and white striped road markings help to clearly indicate that a pedestrian has priority over vehicular traffic in this area. The lack of these markings within the proposed cycle section of the crossing may lead to ambiguity over who has priority and motorists may fail to give-way to cyclists.
- Slow approach speeds by pedestrians enable an approaching motorist to notice they intend to cross, slow down and stop. Cyclists are likely to approach faster than pedestrians and may therefore fail to be noticed by approaching motorists.

These issues may lead to an increased potential for collisions between motorists and cyclists or shunt type collisions as motorists brake hard as they unexpectedly encounter a cyclist attempting to assert priority.

RECOMMENDATION
Provide measures which will allow cyclists to assert priority over motorists. This could include an alternative crossing type, or provide appropriate temporary signing to inform drivers of the intended usage until this layout becomes more commonplace.

Design Organisation Response	**~~Accepted~~ / Part Accepted ~~/ Rejected~~**
This type of crossing appears in the new TSRGD which came into force on the 22nd of April 2016. We refer to page 476 Sign table Item 53, Schedule 14, Part 2 in the new TSRGD document. The crossings are proposed for the A105 as well as other major corridors as part of Cycle Enfield so will be common within the borough of Enfield within the next few years. The crossings have been sited at locations where a Greenway is intersecting with the A105 corridor and crossing facilities are required to safely link the routes. Signage will be introduced following implementation, so that all road users will be aware of the proposed crossings.	

Client Organisation Comments
Designer's response accepted.

3.2.2 PROBLEM

Location: G – A105 Green Lanes proposed Zebra crossing between junctions with Palmerston Crescent & Ecclesbourne Gardens

Summary: Proposed Zebra crossing facility may result in an increased potential for collisions

The southbound carriageway effectively widens to two lanes on approach to the proposed Zebra crossing facility. The Audit Team are concerned that southbound motorists entering the offside lane, effectively overtake vehicles in the nearside lane. These motorists may not clearly see the crossing and may suddenly encounter it as they accelerate past another vehicle. Particularly given that the two lane section quickly returns to a single general traffic lane whilst the bus lane is in operation. The potential for motorists to not notice the Zebra crossing may be exacerbated as the belisha beacons on either side of the carriageway could be obscured by queuing vehicles. If users do not suitably observe the crossing facility they are unlikely to give-way to users in the crossing, particularly cyclists as this part of the crossing is encountered first and less conspicuous than the established Zebra crossing.

The Audit Team are concerned that this layout may result in an increased potential for collisions between southbound motorists, particularly in lane 2 and cyclists or pedestrians on the crossing.

RECOMMENDATION
It is recommended that this layout is altered to ensure that the Zebra crossing is conspicuous to all motorists. This may include, but is not limited to, reducing the southbound carriageway to one lane and / or providing a central reservation to house additional belisha beacons. This recommendation is in addition to those raised in 3.2.1.

Design Organisation Response	~~**Accepted / Part Accepted**~~ **/ Rejected**
The double lane opens up on the approach to a ramped Table, which will act as a visual warning to slow down. A lack of carriageway space prohibits inclusion of a central island to accommodate an additional belisha beacon.	
Client Organisation Comments	
Designer's response accepted – operation of the crossing will be monitored post-implementation.	

3.2.3 PROBLEM

Location: H – A105 Green Lanes junction with Broomfield Lane

Summary: Proposed layout may result in conflicts between pedestrians and cyclists

The northbound cycle route transitions to a segregated on-footway facility on the approach to Broomfield Lane. As this facility reaches the crossing point for eastbound or westbound pedestrians on the southern side of Green Lanes, it appears to become a shared use facility. The Audit Team are concerned that cyclists attempting to make it past the stop-line before the end of an indicated green phase may be reluctant to slow down and this may not be expected for pedestrians who cross within the same phase.

Additionally, cyclists given a green signal may not be aware that they are intended to undertake this manoeuvre in two stages. If cyclists turn right under the initial green light they may conflict with pedestrians crossing under a green signal during the same phase.

The Audit Team are concerned that pedestrian cyclist conflicts may arise. Particularly at the off carriageway south-western corner of this junction, due to the close proximity of the conflicting desire lines.

RECOMMENDATION
It is recommended that increased separation should be provided between the pedestrian and cycle desire lines / likely routes and that two stage right turn (2srt) signs are provided to inform cyclists of their intended manouvre.

Design Organisation Response	**~~Accepted~~ / Part Accepted ~~/ Rejected~~**
The area in question is shared space and, as such, cyclists have a duty to give way to pedestrians. Rearranging the crossings is not a viable option due to space limitations and it would also disturb the cycle routes continuity. The cycle track is offset from the east west pedestrian crossing and pedestrians and cyclists have good forward visibility of each other. The cycle phase is an 'ahead only'. However, should cyclists decide to turn right they will sit in the pocket on the north side of the crossing until Broomfield Lane gets a green signal. Line markings to highlight the 2SRT have been clearly marked on the carriageway. Consideration could be given to introducing a 2 stage sign to reinforce this (as used by TfL on CSH).	
Client Organisation Comments	
Designer's response accepted – operation of the bus stop boarders will be monitored post-implementation.	

3.3 JUNCTIONS

3.3.1 PROBLEM

Location: General to scheme, multiple locations

Summary: The altered kerb lines may result in increased collisions as turning vehicles increasingly encroach into the path of another user

The proposals include various kerb-line alterations which may increase the potential for turning vehicles to encroach into another user's path. This could lead to an increased potential for head on or side impact type collisions as a user turning into or out of the side roads or accesses is encountered by a vehicle travelling in the opposing direction.

RECOMMENDATION
It is recommended to undertake / check swept path analysis and make alterations if necessary to ensure that the vehicles likely to use these roads can undertake typical manoeuvres with minimal intrusion into the path of another vehicle.

Design Organisation Response	**Accepted / ~~Part Accepted / Rejected~~**
All vehicle swept path manoeuvers have been checked.	
Client Organisation Comments	
Designer's response accepted	

End of list of problems identified and recommendations offered in this Stage 2 Road Safety Audit

4.0 ISSUES IDENTIFIED DURING THE STAGE 2 ROAD SAFETY AUDIT THAT ARE OUTSIDE THE TERMS OF REFERENCE

Safety issues identified during the audit and site inspection that are considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Client Organisation, are set out in this section. It is to be understood that, in raising these issues, the Audit Team in no way warrants that a full review of the highway environment has been undertaken beyond that necessary to undertake the Audit as commissioned.

4.1 ISSUE

Location: Various – shared use cycle / footway

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

It is not clear what the extents of the shared use surfaces are as none of the shared use extents appear to be defined. Additionally, at some locations such as either side of Palmerston Crescent, it is not clear what the intended cyclist route is.

In order to avoid cyclists continuing on the footway and the potential for low level cycle / pedestrian conflicts / unexpected cycle manoeuvres, it may be beneficial to clearly determine what the intended cycle routes are. This may include but is not limited to appropriate tactile paving and road markings / signs to indicate the intended routes / manoeuvres.

Design Organisation Response	**~~Accepted~~ / Part Accepted ~~/ Rejected~~**
Drawings have been updated to define shared space and intended cyclist routes.	
Client Organisation Comments	
Designer's response accepted	

4.2 ISSUE

Location: 1 – A105 Green Lanes junction with Ecclesbourne Gardens (Sheet 1/47)

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

The proposals include retention of the existing bus lane signs to the south of this junction. Technically, as the bus lane re-starts at this location this should have altered signing on the approach and at the commencement point to warn and notify users of its presence.

It is recommended that the signs are altered to ensure they correctly relate to the proposed layout / bus lane road markings.

Design Organisation Response	**Accepted ~~/ Part Accepted / Rejected~~**
Signage has been altered to correctly relate to the proposed layout/bus lane road markings.	
Client Organisation Comments	
Designer's response accepted	

4.3 ISSUE

Location: 2 – A105 Green Lanes junction with Oakthorpe Road (Sheet 2/47)

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

The proposals include alterations to the kerb line and location of the traffic signal pole which may result in a narrow effective footway width on the southern footway of Oakthorpe Road.

It may be beneficial to relocate the traffic signal pole closer to the edge of the footway and provide a cranked pole or similar to ensure the signal is visible and has sufficient lateral clearance to the edge of carriageway.

Design Organisation Response	**~~Accepted / Part Accepted /~~ Rejected**
At the traffic signal pole there is an effective footway width of 1.5m which complies with the minimum acceptable width due to physical constraints.	
Client Organisation Comments	
Designer's response accepted	

5.0 SIGNATURES AND SIGN-OFF

5.1 AUDIT TEAM STATEMENT

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

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

AUDIT TEAM LEADER:

Name: Shane Martin MCIHT, MSoRSA Signed: SKMartin

Position: Principal Road Safety Auditor Date: 21/12/2016

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)

AUDIT TEAM MEMBER:

Name: Kevin Seymour
B Sc, PG Dip TS, MCIHT, MSoRSA Signed: KSeymour

Position: Principal Road Safety Auditor Date: 21/12/2016

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

Address: 4th Floor Palestra, 197 Blackfriars Road, London, SE1 8NJ

Contact: kevinseymour@tfl.gov.uk (020 3054 1037)

5.2 DESIGN TEAM STATEMENT

In accordance with SQA-0170 dated May 2014, I certify that I have reviewed the items raised in this Stage 2 Safety Audit report. I have given due consideration to each issue raised and have stated my proposed course of action for each in this report. I seek the Client Organisation's endorsement of my proposals.

Name: Colin Aarons

Position: Project Manager

Organisation: Jacobs

Signed: Colin Aarons **Dated: 03.02.17**

5.3 CLIENT ORGANISATION STATEMENT

I accept these proposals by the Design Organisation.

Name: David Taylor

Position: Head of Traffic & Transportation

Organisation: LB Enfield

Signed:  **Dated:** 24.03.2017

5.4 SECONDARY CLIENT ORGANISATION STATEMENT (where appropriate)

I accept these proposals by the Design Organisation.

Name:

Position:

Organisation:

Signed: **Dated:**

APPENDIX A

Documents Forming the Audit Brief

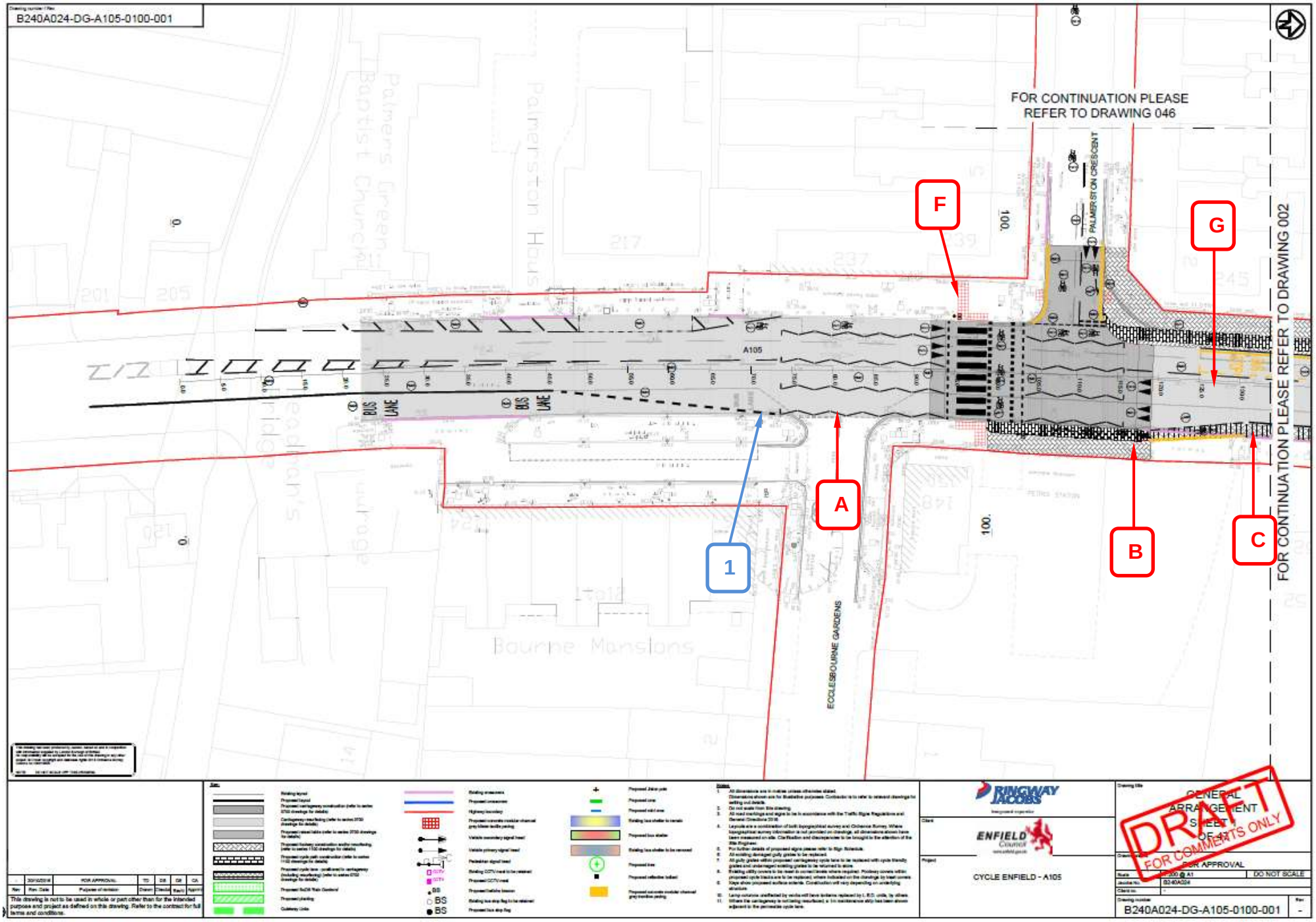
DRAWING NUMBER	DRAWING TITLE
B240A024-DG-A105-0100-001 Rev -	Cycle Enfield A105 - General Arrangement Sheet 1 of 47
B240A024-DG-A105-0100-002 Rev -	Cycle Enfield A105 - General Arrangement Sheet 2 of 47
B240A024-DG-A105-0200-001 Rev -	Cycle Enfield A105 - Site Clearance Sheet 1 of 47
B240A024-DG-A105-0200-002 Rev –	Cycle Enfield A105 - Site Clearance Sheet 2 of 47
B240A024-DG-A105-0500-001 Rev -	Cycle Enfield A105- Proposed drainage plan Sheet 1 of 47
B240A024-DG-A105-0500-002 Rev -	Cycle Enfield A105- Proposed drainage plan Sheet 2 of 47
B240A024-DG-A105-0700-001 Rev -	Cycle Enfield A105 – Road Pavements General Sheet 1 of 47
B240A024-DG-A105-0700-002 Rev –	Cycle Enfield A105 – Road Pavements General Sheet 2 of 47
B240A024-DG-A105-1100-001 Rev -	Cycle Enfield A105 - Kerbs footways and paved areas Sheet 1 of 47
B240A024-DG-A105-1100-002 Rev -	Cycle Enfield A105 - Kerbs footways and paved areas Sheet 2 of 47
B240A024-DG-A105-1200-001 Rev B	Cycle Enfield A105 - Traffic signs and road markings Sheet 1 of 47
B240A024-DG-A105-1200-002 Rev B	Cycle Enfield A105 - Traffic signs and road markings Sheet 2 of 47
B240A024-DG-A105-1300-001 Rev A	Cycle Enfield A105 – MCHW Series 1300 Road Lighting Column & Bracket Mainline Layout Plan Sheet 1 of 47
B240A024-DG-A105-1300-002 Rev A	Cycle Enfield A105 – MCHW Series 1300 Road Lighting Column & Bracket Mainline Layout Plan Sheet 2 of 47

DOCUMENTS	DETAILS (where appropriate)
☒ Safety Audit Brief	
☐ Site Location Plan	
☐ Traffic signal details	
☐ TfL signal safety checklist	
☐ Departures from standard	

☒ Previous Road Safety Audits	2524/032/A105/BOR/2016
☐ Previous Designer Responses	
☐ Collision data	
☐ Collision plot	
☐ Traffic flow / modelling data	
☐ Pedestrian flow / modelling data	
☐ Speed survey data	
☒ Other documents	A105 Enfield - Proposed Road Marking Schedule A105 Enfield - Sign Schedule - Section 1

APPENDIX B

Problem Locations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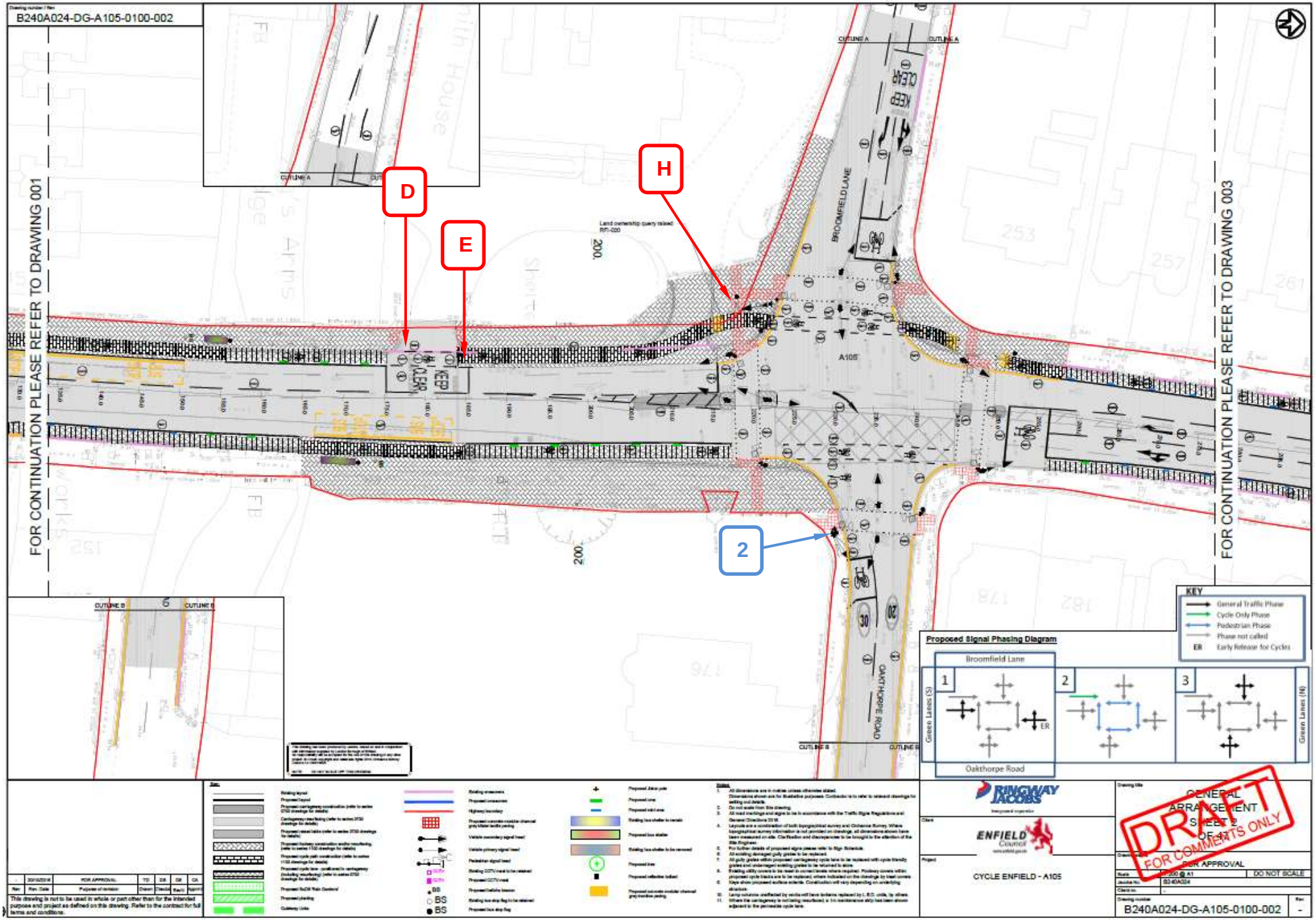
FOR CONTINUATION PLEASE
REFER TO DRAWING 046
FOR CONTINUATION PLEASE REFER TO DRAWING 002
F
G
A
B
C
1
A105
BUS LANE
BUS LANE
PALMERSTON CRESCENT
ECCLESBOURNE GARDENS
Bourne Mansions
RINGWAY JACOBS
ENFIELD Council
CYCLE ENFIELD - A105
GENERAL ARRANGEMENT SHEET 1 OF 47
DRAFT
FOR COMMENTS ONLY
FOR APPROVAL
DO NOT SCALE
B240A024-DG-A105-0100-001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FOR CONTINUATION PLEASE REFER TO DRAWING 001
FOR CONTINUATION PLEASE REFER TO DRAWING 003
D
E
H
2
BROOMFIELD LANE
OAKTHORPE ROAD
A105
KEEP CLEAR
Land ownership query raised RFI-020
KEY
General Traffic Phase
Cycle Only Phase
Pedestrian Phase
Phase not called
ER Early Release for Cycles
Proposed Signal Phasing Diagram
Broomfield Lane
Oakthorpe Road
Green Lanes (S)
Green Lanes (N)
RINGWAY JACOBS
ENFIELD Council
CYCLE ENFIELD - A105
GENERAL ARRANGEMENT SHEET 2 OF 4
DRAFT
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DO NOT SCALE
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