Transport for London

London Borough of Enfield

Cycle Enfield – A1010 South Corridor

Stage 1 Road Safety Audit

Ref: 2643/032/A1010/BOR/2016

Prepared for:

London Borough of Enfield

By:

Road Safety Audit, TfL Asset Management Directorate

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Version	Status	Date
A	Audit report issued to Client	19/08/2016
B	Audit report issued to Client with Designers Response	29/09/2016

1.0 INTRODUCTION

1.1 Commission

1.1.1 This report results from a Stage 1 Road Safety Audit carried out on the Cycle Enfield – A1010 South Corridor, London Borough of Enfield cycle route proposals.

1.1.2 The Audit was undertaken by TfL Road Safety Audit in accordance with an email instruction issued by the Client Organisation on 23 June 2016. It took place at the Palestra offices of TfL on 11 July 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 Tuesday 12 July 2016. During the site visit the weather was showery and the road surface was damp.

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: Alex Stebbings - Jacobs

1.3.3 Audit Team

Audit Team Leader: John Worley – TfL Road Safety Audit.

Audit Team Member: Samuel Barnes – TfL Road Safety Audit.

1.3.4 Other Specialist Advisors

None.

1.4 Purpose of the Scheme

1.4.1 The purpose of the scheme is to implement high quality cycle route facilities along the A1010 South Corridor in the London Borough of Enfield.

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 CYCLING FACILITIES

3.1.1 PROBLEM

Location: A - General to the scheme, multiple locations

Summary: The bus boarder arrangements require boarding and alighting bus passengers to cross a cycle track, potentially with little warning for cyclists.

The bus boarder arrangements provided throughout the scheme will require passengers boarding or alighting a bus to cross the cycle track between the footway and bus, potentially with little warning given to cyclists that they may be about to do so. This could result in an increased risk of collisions between cyclists travelling along the cycle track and bus passengers crossing to and from a waiting bus.

RECOMMENDATION
Ensure that cyclists are made aware that they are entering an area where bus passengers may be expected to cross the cycle track between the footway. Alternatively, provide an area on the carriageway side of the cycle track of suitable width that bus passengers can wait in prior to boarding, or after alighting from, the bus.

Design Organisation Response	**Part Accepted**
Bus boarders have been introduced 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 will be undertaken post-implementation in Enfield and other mini-Holland boroughs, where these are being implemented, to review the safety implications of the proposed design but at other sites where this has been implemented such as Royal College Street in Camden there has been no record of incidents between pedestrians and cyclists.	
Client Organisation Comments	
Designer's response accepted. The final design of the bus boarders will also incorporate signage to make it clear that cyclists should slow down and give way to pedestrians boarding and alighting buses. Wherever possible a 0.5m wide buffer strip will also be incorporated so that the first step of someone stepping off a bus would not be onto the cycle lane. The use of bus boarders will be monitored and adjustments made in the light of operational experience, if necessary.	

3.1.2 PROBLEM

Location: B - A1010 junctions with Fairfield Road, Brettenham Road, Sebastopol Road, Osman Road and Plevna Road.

Summary: Unclear priority where the off-carriageway cycle track crosses side road entry treatments.

At a number of locations it is proposed to continue the southbound off-carriageway cycle track across side roads via a raised junction entry treatment. At these locations conflicting information is provided as to which mode has priority.

The proposed arrangements show that vehicles exiting the side roads onto the A1010 would be required to give-way to cyclists on the cycle track. This is not replicated for vehicles turning from the A1010 into the side roads, which could result in both motorists and cyclists thinking that they have priority. This could increase the likelihood of collisions between cyclists and vehicles at these locations.

RECOMMENDATION
Provide consistent information to road users at side roads regarding prioritisation of movement through and across the junction.

Design Organisation Response	Part Accepted
At the locations mentioned above, measures have been implemented to make it clearer to left turning traffic that they are crossing a cycle movement. Elephant's feet have been introduced at these locations and the give way lines for vehicles accessing the A1010 have been offset 2.5m from the cycle lane to allow for safer pedestrian movements along the desired line. For vehicles exiting the A1010, the ramp of the entry treatment begins 1.5m behind the cycle lane, to slow left turning traffic down, when entering the shared environment.	
Client Organisation Comments	
Designer's response accepted. The operation of the junctions will be kept under review and additional markings could be introduced if necessary.	

3.1.3 PROBLEM

Location: C - General to the scheme, multiple locations

Summary: Close proximity of parked/loading vehicles to the cycle track could result in dooring of cyclists.

The proposed cycle track runs between the footway and parking/loading bays for significant sections of its length. It is not clear from the drawings provided how wide the separation is between the track and the bays. The Audit Team are concerned that insufficient separation could result in drivers or passengers opening a vehicle door across the path of cyclists, causing them to fall.

RECOMMENDATION
Provide sufficient width of separation between the parking/loading bays and cycle lane to reduce the likelihood of doors being opened across the path of cyclists.

Design Organisation Response	Accepted
Where the cycle track passes any parking or loading a 0.5m buffer strip has been provided between the cycle track and parking/loading bay.	

Client Organisation Comments
Designer's response accepted. In addition, cyclists are also at risk of being 'doored' if the cycle lane were on the outside of the parked cars/loading bays, with a greater likelihood of serious injury.

3.1.4 PROBLEM

Location: D - General to the scheme, multiple locations

Summary: Goods being loaded or unloaded may be temporarily stored in the cycle lane, introducing an unexpected hazard for cyclists.

The proposed cycle track runs between the footway and loading bays for significant sections of its length. It is not clear from the drawings provided how wide the separation is between the track and the bays. Insufficient width of segregation could result in traders temporarily storing goods in the cycle lane prior to being moved into their vehicles/onto the footway, thus introducing an unexpected hazard into the cycle lane. As a result, cyclists could collide with the obstruction, causing them to fall onto the carriageway.

RECOMMENDATION
Provide sufficient width of segregation between the loading bays and cycle lane to allow the temporary storage of goods being loaded or unloaded.

Design Organisation Response	Accepted
Where the cycle track passes any parking or loading a 0.5m buffer strip has been provided between the cycle track and parking/loading bay.	

Client Organisation Comments
Designer's response accepted.

3.1.5 PROBLEM

Location: E - General to the scheme, multiple locations

Summary: Low-rise cycle lane delineators provided along the route may not be visible to approaching cyclists and motorcyclists.

The Audit Team are concerned that the low-rise delineators along the edge of some sections of the cycle lane to provide physical segregation between it and the general traffic running lane may not be visible to approaching road users.

As a result they could be struck by cyclist travelling in the cycle lane or motorcyclists travelling in the general traffic lane, destabilising them and causing them to fall onto the carriageway.

RECOMMENDATION
Provide appropriate means of warning road users that the delineators may be present in the carriageway. This could be through the provision of a traffic island and/or bollard at the start of each section of cycle lane that comprises the delineators.

Design Organisation Response	Part Accepted
The delineators will be a consistent feature of the corridor and will located inside the	

mandatory cycle lane, so they are offset from vehicles, including motorcyclists in the general traffic lane. Where a new section of delineators starts then wands will be considered as appropriate to provide additional warning for road users.
Client Organisation Comments
Designer's response accepted.

3.1.6 PROBLEM

Location: F - A1010/Angel Place

Summary: Unclear priority for cyclists and motorists crossing Angel Place.

The Audit Team are concerned that where the northbound off-carriageway cycle lane crosses Angel Place and reverts to carriageway level, it is not clear whether vehicles or cyclists have priority. This could result in cyclists riding into the carriageway and being struck by vehicles turning into or out of Angel Place.

RECOMMENDATION
Ensure that appropriate information regarding priority at the junction is given to cyclists and motorists.

Design Organisation Response	**Accepted**
A similar measure to the one provided for problem 3.1.2 has been proposed. Elephant's feet have been introduced at this location and the give way lines for vehicles accessing the A1010 have been offset 2.9m from the cycle lane to allow for safer pedestrian movements along the desired line. For vehicles exiting the A1010, the ramp of the entry treatment begins 1.9m before the cycle lane.	
Client Organisation Comments	
Designer's response accepted. The operation of the junction will be kept under review and additional markings could be introduced if necessary.	

3.1.7 PROBLEM

Location: G - Northbound off-carriageway cycle track, north of Angel Place

Summary: Wall on eastern side of cycle track could result in pedal strikes by cyclists, causing them to become destabilized.

The 2.0m-wide northbound, off-carriageway cycle track between Angel Place and the service road is directly abutted by an existing wall that surrounds a planting area between the existing footway and carriageway. No details are shown for the cut back or removal of the wall, therefore it has been assumed it will be cut back to the edge of the cycle lane. The wall will reduce the effective width of the cycle lane, potentially increasing the likelihood of pedal strikes by cyclists. This could destabilise cyclists, causing them to fall onto the footway.

RECOMMENDATION
Provide an appropriate cycle track edge treatment to position cyclists away from the wall so that the likelihood of pedal strikes by cyclists is reduced.

Design Organisation Response	Accepted
The footway along this section has been re-designed to be 2.5m wide and the northbound off-carriageway cycle track now has an effective width of 2.0m. This means that the planting area adjacent to the cycle lane will have to be reduced in width by 1.1m along 40m approximately.	
Client Organisation Comments	
Designer's response accepted.	

3.1.8 PROBLEM

Location: H - Northbound off-carriageway cycle track, 30m north of Angel Place.

Summary: Existing public utility cabinets in cycle track reduce the effective width and introduce a collision hazard.

Three public utility cabinets located in the proposed cycle track 30m north of Angel Close will locally reduce the effective width of the cycle track and could require cyclists overtaking at this location to cross into the footway, potentially increasing the risk of collisions with pedestrians.

The cabinets will also create a potential hazard for cyclist travelling along the cycle track who may not be expecting their presence at that location.

RECOMMENDATION

Ensure that the effective width of the cycle track around the utility cabinets is sufficient so that overtaking cyclists can do so without entering the footway and that appropriate measures are introduced to warn cyclists of the presence of the cabinets at this location. Alternatively the cabinets could be moved to an alternative location free from obstruction of all road users.

Design Organisation Response	Accepted
Alternative locations for the utility cabinets will be considered at detailed design stage to remove obstructions within the cycle lane.	
Client Organisation Comments	
Designer's response accepted.	

3.1.9 PROBLEM

Location: I - Northbound off-carriageway cycle track at junction with service road south of Park Avenue.

Summary: Substandard intervisibility between motorists and cyclists entering service road.

Cyclists travelling northbound from Angel Place along the off-carriageway cycle track join a service road immediately adjacent to the location where motorists will turn into the service road from the A1010.

At this location, the two points of entry to the service road are separated by a high wall that surrounds a planted area between the cycle track and carriageway, which significantly reduces intervisibility between cyclists and motorists. This increases the

potential for cyclists entering the service road to be struck by vehicles turning left from the A1010.

RECOMMENDATION
Ensure that appropriate intervisibility is provided between motorists turning left into the service road from the A1010 and cyclists proceeding into the service road from the cycle track.

Design Organisation Response	Accepted
Give way lines have been introduced for northbound cyclist before they access the service road. This measure indicates to cyclists that they must give way to motorist turning left into the service road from the A1010 in order to avoid conflicts.	
Client Organisation Comments	
Designer's response accepted. In addition, the planter wall is not particularly high and the auditor's comment about its significant impact on inter-visibility is not accepted.	

3.1.10 PROBLEM

Location: J - Northbound cycle lane across Church Street at junction with A1010 (Option 2).

Summary: Cyclists required to weave through queuing traffic that could move off without warning.

Cyclists travelling northbound in the cycle lane across Church Street may be required to weave through traffic queuing from the signalised pedestrian crossing below the rail bridge. The vehicles could then move off when the drivers receive a green aspect, resulting in collisions with cyclists in the cycle lane.

RECOMMENDATION
Ensure that vehicles queuing from the signalised pedestrian crossing do not block the northbound cycle lane across Church Street.

Design Organisation Response	Accepted
Under the proposed scheme the Church Street crossing will be linked to the Edmonton Green roundabout signals to managing the exit queues blocking back into the junction, to mitigate this conflict.	
Client Organisation Comments	
Designer's response accepted.	

3.1.11 PROBLEM

Location: K - A1010 Bus Stop 20m north of King Edwards Road.

Summary: Close proximity of bus stop shelter to cycle track.

The introduction of the bus stop boarder arrangement to the north of King Edwards Road may result in the bus shelter being located close to the cycle track. Cyclists travelling through the bus boarder may become unstable and fall if their handlebars strike the bus shelter.

The Audit Team are also concerned that moving the shelter further away from the cycle track may narrow the footway, requiring pedestrians, particularly those with buggies, to walk into the cycle track to pass the shelter. This could increase the potential for conflict between pedestrians and cyclists.

RECOMMENDATION
Ensure that sufficient clearance between the bus stop shelter and cycle track is provided through the bus boarder, and that any relocated bus shelter does not unduly narrow footway widths.

Design Organisation Response	**Rejected**
A 1.8m cycle track is provided at this location, which is considered sufficient width for cyclists to safely pass the shelter, with a further 0.5m between the cycle track and kerb edge.	
Client Organisation Comments	
Designer's response accepted.	

3.1.12 PROBLEM

Location: L - A1010 junction with Galliard Road.

Summary: Unclear priority for vehicles and cyclists on northbound approach.

The proposals show the northbound segregated cycle track providing uncontrolled access into a cycle reservoir from the side for cyclists. Cyclists turning right onto Nightingale Road from the segregated track may enter the cycle reservoir injudiciously and be struck by vehicles travelling in the same direction.

RECOMMENDATION
Ensure that an appropriate method of control is provided to allow cyclists to enter the cycle reservoir without conflicting with other vehicles on the A1010.

Design Organisation Response	**Part Accepted**
It is not proposed to introduce a cycle reservoir on the northbound approach. The break in the island is for the pedestrian crossing. The northbound ahead cyclists are to remain in the cycle track, which will be separately signalled. An ASL has been provided for northbound right turning cyclists.	
Client Organisation Comments	
Designer's response accepted	

3.1.13 PROBLEM

Location: M - Service road at A1010 junction with Galliard Road.

Summary: Blocked service road may result in cyclists remaining in general traffic lane.

The Audit Team noted on site that the service road on the eastern side of the A1010/Galliard Road junction was heavily trafficked, with vehicles frequently double-parked for several minutes at a time. Cyclists frequently encountering double-parked vehicles may become frustrated with their lack of progression through the junction

and revert to the main carriageway in order to bypass the blocked route. Cyclists would then be required to ride with general traffic in an environment where facilities had not been provided for them and where motorists may not be expecting to encounter cyclists. Alternatively cyclists may mount the footway to bypass the obstruction. This may lead to an increased risk of conflict between cyclists and pedestrians or vehicles travelling southbound on the A1010.

RECOMMENDATION
Provide appropriate levels of enforcement to ensure that the proposed cycle route along the service road is kept clear to enable satisfactory progression for cyclists.

Design Organisation Response	**Accepted**
Parking enforcement will be increased along the corridor to ensure turnover in parking and to prevent the blocking of service roads.	
Client Organisation Comments	
Designer's response accepted – waiting and loading restrictions will be introduced to enable appropriate parking enforcement.	

3.2 PEDESTRIANS

3.2.1 PROBLEM

Location: N - A1010 junction with Park Road

Summary: Insufficient footway width to allow safe passage of pedestrians along A1010.

The Audit Team are concerned that insufficient footway width is provided where the parallel Zebra crossing arrangement with off-carriageway cycle tracks on the approaches intersects with the footways on the southwestern side of the junction. The Audit Team noted on site that a number of A-boards were located on the footway, reducing further the effective clear footway width.

This could require pedestrians to walk along the proposed cycle tracks, increasing the potential for collisions with cyclists on the approaches to the parallel Zebra crossing.

RECOMMENDATION
Ensure that sufficient footway width is provided around the junction to enable pedestrians and cyclists to pass each other without conflict. Local businesses should be consulted, ensuring the footways and cycle lanes remain free from obstruction by all street furniture.

Design Organisation Response	Accepted
The space has been re-designed in this location to provide greater footway width on the southwestern side of the junction. Traffic and bus lane have been re-designed to a minimum of 3.25m. Re-designing the lane widths and re-aligning the bus and traffic lanes allowed the possibility to gain footway space on the southwestern side of the junction. The minimum footway width in this section is now 3.85m.	
Client Organisation Comments	
Designer's response accepted. In addition, enforcement action will be taken where A boards are obstructing the footway.	

3.2.2 PROBLEM

Location: O - Bus stop bypass on northbound A1010, south of Church Street.

Summary: Lack of crossing provision across cycle track between footway and bus stop bypass island.

No pedestrian crossing facilities are provided across the cycle lane between the footway and the bus stop bypass island. This could lead to pedestrians, particularly those with visual or mobility impairment being unsure where to cross the cycle track and doing so injudiciously, increasing the potential for conflict with cyclists.

RECOMMENDATION
Provide appropriate means for pedestrians to cross the cycle track, particularly for those with mobility and visual impairments.

Design Organisation Response	Accepted
Informal pedestrian crossing facilities are now provided at the bus stop.	
Client Organisation Comments	

Designer's response accepted.

3.2.3 PROBLEM

Location: P - A1010, between Church Street and Balham Road (Option 1)

Summary: Narrow footway may require pedestrians to walk in cycle lane.

The provision of a cycle track along the eastern side of the A1010 will reduce the footway width available to pedestrians. If high footfalls occur at this location, pedestrians may be required to walk into the cycle track, increasing the potential for conflict between cyclists and pedestrians.

RECOMMENDATION
Ensure that sufficient footway width is provided on the A1010 to enable pedestrians and cyclists to pass each other without conflict.

Design Organisation Response	**Accepted / Part Accepted / Rejected**
Option not being progressed	
Client Organisation Comments	
Designer's response accepted.	

3.2.4 PROBLEM

Location: Q - A1010 junction with Balham Road (Option 1)

Summary: Break in staggered pedestrian crossing introduces conflict between pedestrians and cyclists.

The layout of the staggered pedestrian crossing, with a break half way across to accommodate a cycle lane, may increase the likelihood of collisions between pedestrians and cyclists. This is a particular issue for visually impaired pedestrians who may not be expecting the crossing island to be broken.

RECOMMENDATION
Provide a crossing facility that allows pedestrians to cross the A1010 without conflicting with cyclists travelling southbound through the junction.

Design Organisation Response	**Accepted / Part Accepted / Rejected**
Option not being progressed	
Client Organisation Comments	
Designer's response accepted.	

3.2.5 PROBLEM

Location: R - A1010 junction with Balham Road (Option 2)

Summary: Narrow footway may result in pedestrians walking in cycle track.

The provision of the cycle track on the northern side of the roundabout reduces the footway width. If high pedestrian footfall is experienced at this location, pedestrians may be required to walk in the cycle track, increasing the potential for collisions with cyclists.

RECOMMENDATION
Provide sufficient footway width that does not require pedestrians to walk in cycle track.

Design Organisation Response	Accepted
The space on the north side of the roundabout has been re-designed to minimise the footway space reduction which could create conflict between cyclists and pedestrians. The minimum footway width is equal to 2.8m along a small section of approximately 8.0m by the junction with Balham Road. The rest of footway width along this segment is greater than 3m. The guard railing will also be removed to increase the effective space for pedestrians and cyclists.	

Client Organisation Comments
Designer's response accepted.

3.2.6 PROBLEM

Location: S - Dorman Place interface with two-way cycle track.

Summary: Substandard intervisibility between pedestrians and cyclists.

Foliage at the intersection of Dorman Place and the two-way cycle track along the northern side of the A1010 reduces intervisibility between cyclists and pedestrians. This could increase the potential for collisions between pedestrians heading southbound along Dorman Place and cyclists heading eastbound on the track.

RECOMMENDATION
Ensure that sufficient intervisbility is provided between pedestrians and cyclists at the intersection of Dorman Place and the two-way cycle track.

Design Organisation Response	Accepted
Foliage will be cut back and maintained by Enfield Council following implementation.	

Client Organisation Comments
Designer's response accepted.

3.2.7 PROBLEM

Location: T - Newdales Close interface with two-way cycle track.

Summary: Substandard intervisibility between pedestrians and cyclists.

Foliage at the intersection of Newdales Close and the two-way cycle track along the northern side of the A1010 reduces intervisibility between cyclists and pedestrians. This could increase the potential for collisions between pedestrians heading southbound along Newdales Close and cyclists heading eastbound on the track.

RECOMMENDATION
Ensure that appropriate intervisibility is provided between pedestrians and cyclists at the intersection of Newdales Close and the two-way cycle track.

Design Organisation Response	**Accepted**
Foliage will be cut back and maintained by Enfield Council following implementation.	
Client Organisation Comments	
Designer's response accepted.	

3.2.8 PROBLEM

Location: U - Multiple locations along two-way cycle track on western side of A1010, infront of Dorman Place and Newdales Close.

Summary: Unclear priority at 'courtesy crossings' across two-way cycle track.

The 'courtesy crossings' across the two-way cycle track along the western side of A1010, in front of Dorman Place and Newdales Close, will lead to uncertainty between pedestrians and cyclists as to who has priority. The crossings are marked similarly to Zebra crossings, but the absence of belisha beacons implies no legal priority for pedestrians, and cyclists are not legally required to give way to pedestrians. This could result in collisions between pedestrians crossing the cycle track and cyclists travelling north-south.

RECOMMENDATION
Ensure that appropriate crossings are provided across the two-way cycle tracks that give unambiguous priority to either pedestrians or cyclists.

Design Organisation Response	**Rejected**
Schedule 14, Part 1, para. 25 of the TSRGD permits zebra crossing marking across a cycle track without zig-zag markings or belisha beacons. Monitoring will be undertaken post-implementation in Enfield and other mini-Holland boroughs, where these are being implemented, to review the safety implications of the proposed design.	
Client Organisation Comments	
Designer's response accepted.	

3.2.9 PROBLEM

Location: V - A1010, 20m south of junction with Bury Street

Summary: Removal of pedestrian refuge.

The proposed removal of the pedestrian refuge on the A1010, to the south of the junction with Bury Street, may result in pedestrians choosing to cross at unsuitable locations and being struck by vehicles travelling along the A1010.

RECOMMENDATION
Ensure that appropriate pedestrian crossing facilities are provided around the junction to enable pedestrians to cross safely.

Design Organisation Response	Accepted
The island located on the south approach of the junction has been extended north by 6m, with an informal crossing introduced. This is to replace the existing informal crossing located on the same approach (approx. 32m south of the existing give-way lines).	
Client Organisation Comments	
Designer's response accepted.	

3.3 ALIGNMENT

3.3.1 PROBLEM

Location: W - Side roads, multiple locations

Summary: Substandard intervisibility between motorists on A1010 and those turning out of side roads.

At a number of locations along the route, loading and parking bays have been relocated further towards the centre of the A1010 carriageway to accommodate the cycle track adjacent to the footway. Furthermore, the give way markings for numerous side roads have been setback to accommodate the cycle track. This has led to a number of locations where the intervisibility between motorists turning from a side road and those already on the 1010 being significantly reduced, increasing the potential for conflict between traffic exiting/entering side roads.

RECOMMENDATION
Ensure that appropriate intervisibility is provided between motorists turning from the side roads and those already on A1010.

Design Organisation Response	Part Accepted
Parking has been retained as much as possible, where possible, to minimise the loss of parking in the high street areas. Carriageway widths have been reduced, which will in turn reduce average vehicle speeds on the A1010. All side roads, where parking is on the junction approach have side road entry treatments, which will further reduce speeds of turning vehicles, except where there is a bus stop on the approach or exit (Houndsfield Road and Shrubbery Road) We would also expect to see a behavioural change for all road users given the introduction of the transformational cycle facilities along the length of the corridor. For a short period after implementation signage will be provided to warn drivers of layout changes, for a short term.	
Client Organisation Comments	

Designer's response accepted.

3.3.2 PROBLEM

Location: X - A1010 junction with Church Street (Option 1)

Summary: Junction geometry may result in long vehicles overrunning the footways.

At several locations around the junction, large vehicles turning from the A1010 may overrun the footway, potentially colliding with pedestrians. This is particularly a concern for northbound vehicles turning left into Church Street and right into the bus station.

RECOMMENDATION
Undertake vehicle swept path analysis, ensuring that the junction geometry can accommodate the longest vehicles that are expected to pass through the junction within the confines of the proposed carriageway.

Design Organisation Response	**Accepted / Part Accepted / Rejected**
Option not being progressed	
Client Organisation Comments	
Designer's response accepted.	

3.3.3 PROBLEM

Location: Y - A1010 junction with Church Street (Option 1)

Summary: Road markings on approach to pedestrian island may result in motorists driving into opposing traffic lane.

The road markings to the south of the pedestrian crossing island on the southern side of the junction suggest to northbound motorists that they can pass on either side of the island, potentially directing them into the opposing traffic stream. This could lead to head-on collisions with vehicles travelling southbound on the A1010.

RECOMMENDATION
Provide appropriate road markings to ensure that motorists remain on the correct side of the pedestrian island.

Design Organisation Response	**Accepted / Part Accepted / Rejected**
Option not being progressed	
Client Organisation Comments	
Designer's response accepted.	

3.3.4 PROBLEM

Location: Z - A1010 junction with Church Street (Option 2)

Summary: Substandard lane widths around roundabout.

The lane widths on the roundabout directly in front of the war memorial are narrow, which may result in the increased risk of side swipe collisions between vehicles travelling towards Church Street.

RECOMMENDATION
Undertake vehicle swept path analysis, ensuring that appropriate lane widths are provided around the roundabout.

Design Organisation Response	Accepted
The circulating lanes have been re-aligned. Making use of swept path analysis, the traffic lanes have been re-designed and increased in width to mitigate side swipe collisions between vehicles travelling towards Church Street and circulating traffic.	

Client Organisation Comments
Designer's response accepted.

3.3.5 PROBLEM

Location: AA - A1010 junction with Croyland Road

Summary: Substandard lane widths on northbound junction approach.

The lane widths on the northbound junction approach are narrow, which may result in side swipe collisions between vehicles travelling through the junction.

RECOMMENDATION
Ensure that appropriate lane widths are provided on the approaches to the junction.

Design Organisation Response	Accepted
The lane widths have been amended so they are equal to, or greater than existing, at the stop line.	

Client Organisation Comments
Designer's response accepted.

3.3.6 PROBLEM

Location: AB - A1010 junction with St Joseph's Road

Summary: Proximity of the A1010 cycle crossing to the side road.

The proposed cycle crossing is located such that drivers turning out of St Joseph's Road may not be aware that cyclists are on the crossing. This may result in collisions between the turning vehicles and crossing cyclists.

RECOMMENDATION
Ensure that the cycle crossing is located such that drivers turning out of St Josephs Road have adequate intervisibility to the crossing.

Design Organisation Response	Accepted
A 1.3m build-out is proposed on the south side of St. Joseph's Road so vehicles entering the A1010 from St Joseph's road are further from the cycle crossing. Narrowing the carriageway on St Joseph's Road will also reduce the speed of vehicles entering and exiting the junction.	

Client Organisation Comments
Designer's response accepted.

3.3.7 PROBLEM

Location: AC - A1010 junction with ASDA Car Park Access

Summary: Removal of right turn pockets into ASDA car park.

The proposed removal of the right turn pockets at the entrance to the ASDA car park will result in vehicles turning right blocking the northbound ahead traffic stream. This may result in rear end shunt collisions as motorists travelling northbound on the A1010 encounter stationary traffic unexpectedly.

RECOMMENDATION
Ensure that sufficient provision is made to enable vehicles turning right from the A1010 to do so without impeding northbound ahead traffic.

Design Organisation Response	Accepted
The layout has been amended and a 2.0m wide right turn pocket has been introduced.	

Client Organisation Comments
Designer's response accepted.

3.4 TRAFFIC SIGNALS

3.4.1 PROBLEM

Location: AD - A1010 junction with Smythe Close

Summary: Proposed method of control allows conflicting movements to operate in same stage.

The proposed method of control at the junction allows cyclists turning right from Smyth Close to proceed in the same stage as cyclists travelling northbound on A1010. This would increase the risk of collisions between northbound cyclists where right turning cyclists join the segregated track.

The method of control also shows northbound vehicles turning right from the A1010 into Smythe Close under an indicative green arrow at the same time as southbound vehicles receive an ahead aspect. This would lead to a higher propensity of right turning collisions at the junction.

RECOMMENDATION
Provide an appropriate method of control that does not permit conflicting movements to operate in the same stage.

Design Organisation Response	**Accepted**
A give-way marking has been introduced on the northbound approach to remove the conflict. There is a cycle route through the shopping centre which links to the crossing south of Bridge Road, so the volume of cyclists exiting Smythe Close is anticipated to be low.	
Client Organisation Comments	
Designer's response accepted.	

3.4.2 PROBLEM

Location: AE - A1010 junction with Church Street (Option 1)

Summary: Proposed method of control for the northbound approach may result in pedestrians crossing in conflict with traffic phases.

The proposed method of control requires the three A1010 northbound traffic phases to operate separately across three stages, while the adjacent phases are held. Pedestrians may decide to cross between the footway and central island assuming that, as one northbound stream is being held, the adjacent streams will also held. This could result them being struck by northbound vehicles proceeding legitimately with their own traffic phase.

RECOMMENDATION
Provide a method of control that will not encourage pedestrians to cross in conflict with other opposing traffic phases.

Design Organisation Response	**Accepted / Part Accepted / Rejected**
Option not being progressed	
Client Organisation Comments	
Designer's response accepted.	

3.4.3 PROBLEM

Location: AF - A1010 junction with Church Street (Option 2)

Summary: Substandard forward visibility to traffic signal aspects for motorists travelling around the roundabout into Church Street.

The Audit Team are concerned that the war memorial in the centre of the roundabout will significantly reduce forward visibility to the traffic signal aspects at the southwest corner for road users travelling around the roundabout from the A1010 southbound approach. This could result in the increased risk of rear-end shunt collisions at this location.

RECOMMENDATION
Ensure that appropriate forward visibility is provided to traffic signal aspects for road users on the roundabout circulatory.

Design Organisation Response	**Rejected**
Signal heads have been located on central islands away from War Memorial, to ensure optimum visibility. A signal layout audit of the junction has been undertaken by TI Signals team as part of MAP submission.	
Client Organisation Comments	
Designer's response accepted.	

3.4.4 PROBLEM

Location: AG - A1010, 30m south of Croyland Road

Summary: Unclear type of cycle crossing.

The proposed crossing layout appears to suggest that the crossing is signalised, whereas the annotation on the drawing suggests it is a Zebra crossing. The Audit Team are concerned that this could lead to uncertainty for motorists and cyclists as to who has priority, resulting in collisions between the two modes.

RECOMMENDATION
Ensure that an appropriate crossing type is provided to provide clear prioritisation for motorists and cyclists.

Design Organisation Response	**Accepted**
Drawing amended to reflect signalised crossing.	
Client Organisation Comments	
Designer's response accepted.	

3.4.5 PROBLEM

Location: AH - Cycle Gate on A1010 to north of Croyland Road

Summary: Obstructed visibility to traffic signal aspects.

The Audit Team are concerned that buses stationary within the proposed bus stop may reduce forward visibility to the traffic signal heads for motorists travelling southbound on the A1010, particularly given that the cycle gate requires the signal aspects to be located further from the junction than the motorists may be expecting. This could result in rear end shunt collisions as motorists are required to break unexpectedly.

RECOMMENDATION
Ensure that appropriate forward visibility to the traffic signal aspects is provided on the approaches to the junction.

Design Organisation Response	**Rejected**
Stop line is located 25m in front of bus stop, with signal head positioned on central island, so not considered to be a visibility issue.	
Client Organisation Comments	
Designer's response accepted.	

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 - Multiple locations

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

The Audit Team notes the intention to provide off-carriageway cycle tracks across footways on the approaches to several junctions. This results in small areas of footway at some pedestrian crossings, some of which appear to be too small in area to accommodate the required traffic signal infrastructure. A review should be undertaken at the next stage of design to ensure that all required traffic signal infrastructure can be accommodated within the footway areas shown.

Design Organisation Response	**Accepted**
This review will take place as part of the TI signals audit of the scheme as part of the TMAN process.	
Client Organisation Comments	
Designer's response accepted.	

4.2 ISSUE

Location: 2 - A1010 junction with Houndsfield Road

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

The Audit Team noted that a side road entry treatment exists at the junction, with the cycle track shown running across the entry treatment ramp. A review should be undertaken at the next stage of design to understand how the cycle track would operate at this location.

Design Organisation Response	**Accepted / Part Accepted / Rejected**
The raised entry treatment has been removed at this location to reduce impact on cyclists.	
Client Organisation Comments	
Designer's response accepted.	

4.3 ISSUE

Location: 3 - A1010 junction with Galliard Road

Reason considered to be outside the Terms of Reference: Operational

The yellow box junction at this location is possibly to be removed, given that the cycle lane markings continue across the bellmouth. Removing the yellow box junction may lead to queuing back across the junction by northbound A1010 traffic, resulting in longer queuing on Galliard Road and motorists potentially seeking rat-running opportunities in adjacent residential roads.

Design Organisation Response	**Accepted**
The yellow box has been reinstated. However with the introduction of the northbound cycle lane, it had to be reduced in size to cover only the northbound traffic lane.	
Client Organisation Comments	
Designer's response accepted.	

4.4 ISSUE

Location: 4 – Multiple locations

Reason considered to be outside the Terms of Reference: Buildability

At several locations along the route, the proposals remove build-outs at side roads to enable the cycle lane to continue across the front of the junction may require the adjacent footway to be reprofiled. This could result in the existing highway drainage gullies being located incorrectly, leading to footway flooding and requiring pedestrians to walk in the carriageway to avoid the flooded areas.

Design Organisation Response	**Accepted**
Drainage will be looked at, as part of the detailed design phase.	
Client Organisation Comments	
Designer's response accepted.	

4.5 ISSUE

Location: 5 – Dorman Place and Newdales Close

Reason considered to be outside the Terms of Reference: Buildability

The proposed two-way cycle track that runs in front of residences on Dorman Place and Newdales Close appears to require land that may not be within the existing highway boundary. A review should be undertaken of the highway boundary extents to ensure that the proposed facilities can be provided within the existing constraints.

Design Organisation Response	**Accepted**
This review will take place at the next stage and where necessary land will be reallocated to other council departments.	
Client Organisation Comments	

Designer's response accepted. Lane in question is within the control of the Council.

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: John Worley BEng, CEng, MCIHT, MSoRSA, HE CoC

Signed: 

Position: Design Manager Date: 3rd August 2016

Organisation: Transport for London, Road Space Management Directorate

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

Contact: johnworley@tfl.gov.uk (020 3054 4217)

AUDIT TEAM MEMBER:

Name: Samuel Barnes, BA (Hons), CMILT, MCIHT, MSoRSA, HE CoC

Signed: 

Position: Design Manager Date: 3rd August 2016

Organisation: Transport for London, Road Space Management Directorate

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

Contact: samuelbarnes@tfl.gov.uk (020 3054 5833).

5.2 DESIGN TEAM STATEMENT

In accordance with SQA-0170 dated May 2014, I certify that I have reviewed the items raised in this Stage 1 Safety Audit report. I have given due consideration to each issue raised and have stated my proposed course of action for each in this report. I seek the Client Organisations endorsement of my proposals.

Name: Alex Stebbings

Position: Project Manager

Organisation: Jacobs

Signed:  **Dated: 29/09/2016**

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: 19/10/2016**

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

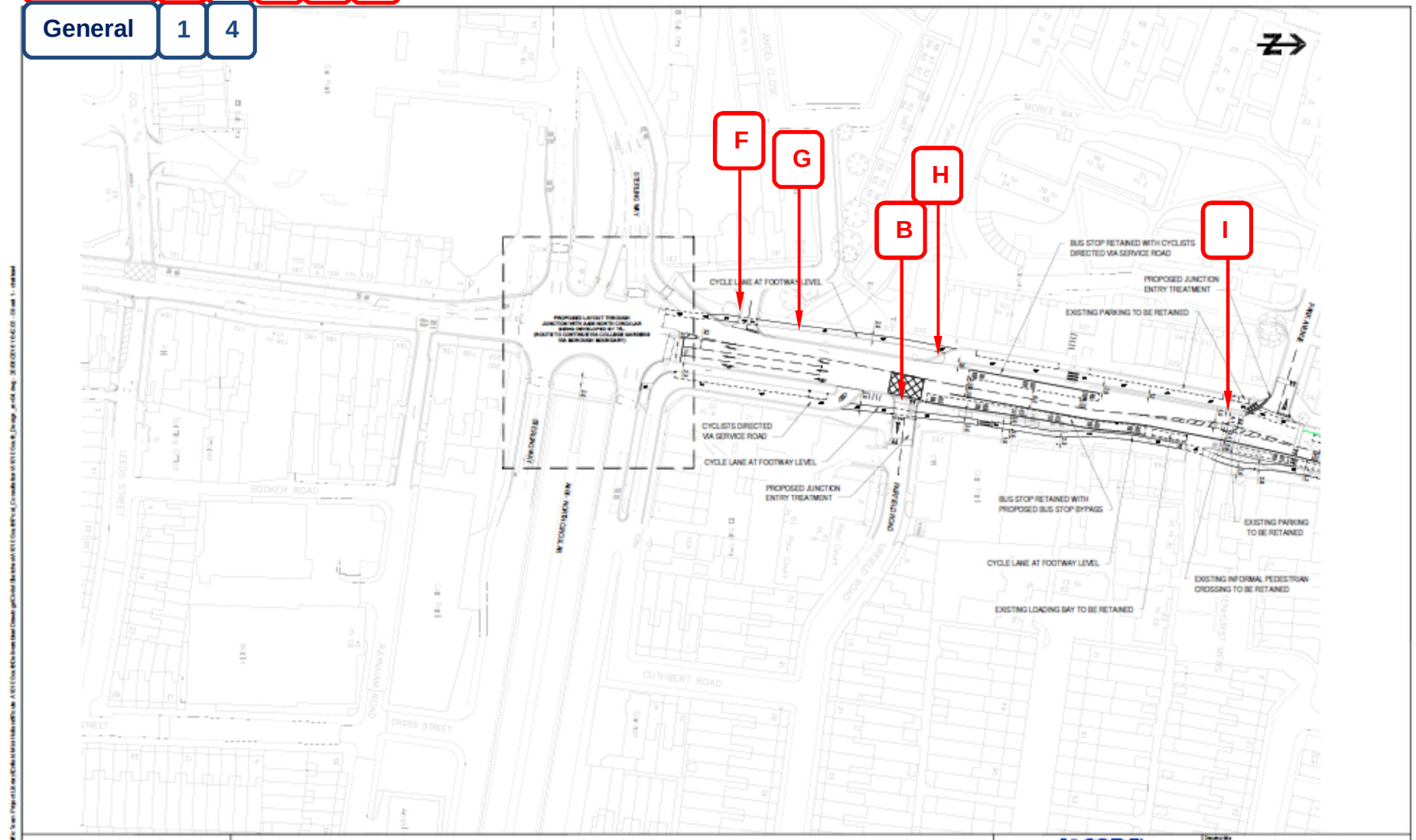
DRAWING NUMBER	DRAWING TITLE
B240G001-A1010S-SK-001 to 009	PRELIMINARY DESIGN (Sheet 1 to 9)
B240G001-A1010S-SK-004A	ROUNDABOUT (OPTION 1)
B240G001-A1010S-SK-004B	ROUNDABOUT (OPTION 2)

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

General	A	C	D	E	W
General	1	4			



JACOBS

LONDON BOROUGH OF ENFIELD

CYCLE ENFIELD
A1010 SOUTH CORRIDOR

SHEET 1 of 9
FAIRFIELD ROAD TO PARK AVENUE
PRELIMINARY DESIGN

ISSUE FOR APPROVAL

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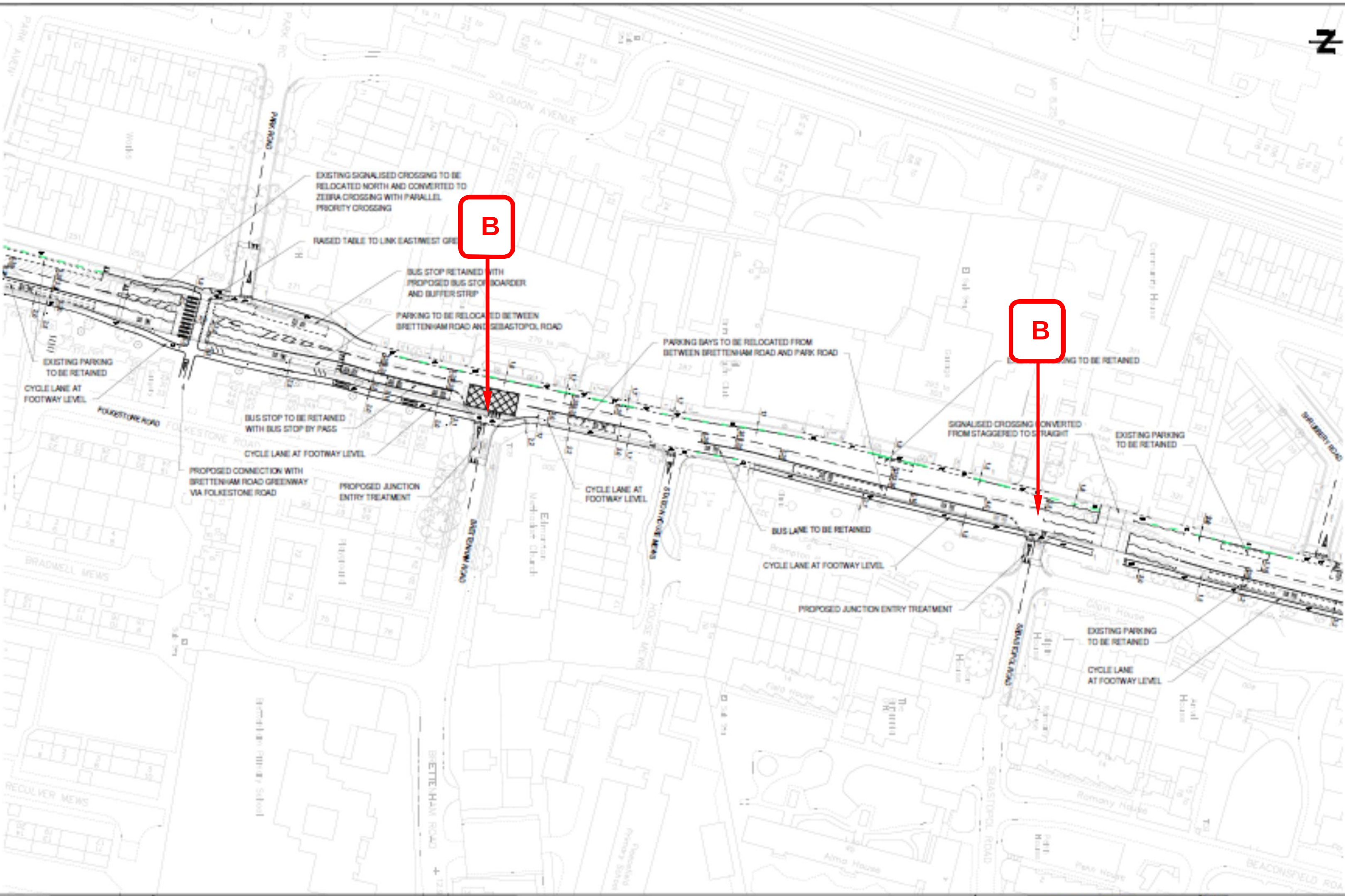
Client No.		
Drawing number	B240G001-A1010S-SK-001	Rev. 01


EXISTING SIGNALISED CROSSING TO BE RELOCATED NORTH AND CONVERTED TO ZEBRA CROSSING WITH PARALLEL PRIORITY CROSSING
RAISED TABLE TO LINK EAST/WEST GRE
B
BUS STOP RETAINED WITH PROPOSED BUS STOP BOARDER AND BUFFER STRIP
PARKING TO BE RELOCATED BETWEEN BRETTENHAM ROAD AND SEBASTOPOL ROAD
EXISTING PARKING TO BE RETAINED
CYCLE LANE AT FOOTWAY LEVEL
FOLKESTONE ROAD
BUS STOP TO BE RETAINED WITH BUS STOP BY PASS
CYCLE LANE AT FOOTWAY LEVEL
PROPOSED CONNECTION WITH BRETTENHAM ROAD GREENWAY VIA FOLKESTONE ROAD
PROPOSED JUNCTION ENTRY TREATMENT
CYCLE LANE AT FOOTWAY LEVEL
PARKING BAYS TO BE RELOCATED FROM BETWEEN BRETTENHAM ROAD AND PARK ROAD
B
ING TO BE RETAINED
SIGNALISED CROSSING CONVERTED FROM STAGGERED TO STRAIGHT
EXISTING PARKING TO BE RETAINED
BUS LANE TO BE RETAINED
CYCLE LANE AT FOOTWAY LEVEL
PROPOSED JUNCTION ENTRY TREATMENT
EXISTING PARKING TO BE RETAINED
CYCLE LANE AT FOOTWAY LEVEL
SOLOMON AVENUE
PARK ROAD
BRETTENHAM ROAD
SEBASTOPOL ROAD
BEACONSFIELD ROAD

JACOBS

LONDON BOROUGH OF ENFIELD

CYCLE ENFIELD
A1010 SOUTH CORRIDOR

SHEET 2 of 9
PARK AVENUE TO
SEBASTOPOOL ROAD
PRELIMINARY DESIGN

ISSUE FOR APPROVAL

N.T.S. | DO NOT SCALE

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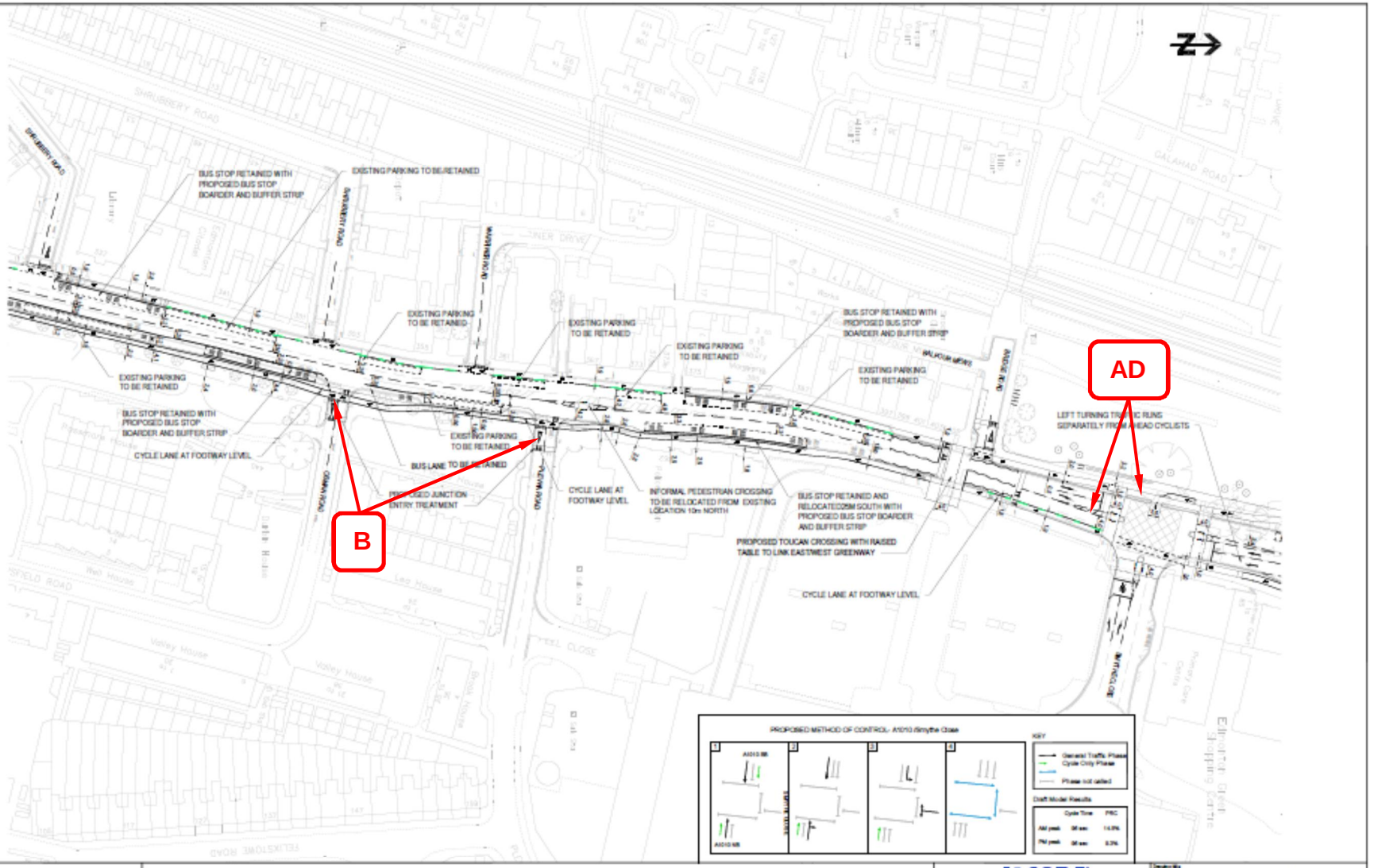

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LONDON BOROUGH OF ENFIELD

CYCLE ENFIELD
A1010 SOUTH CORRIDOR

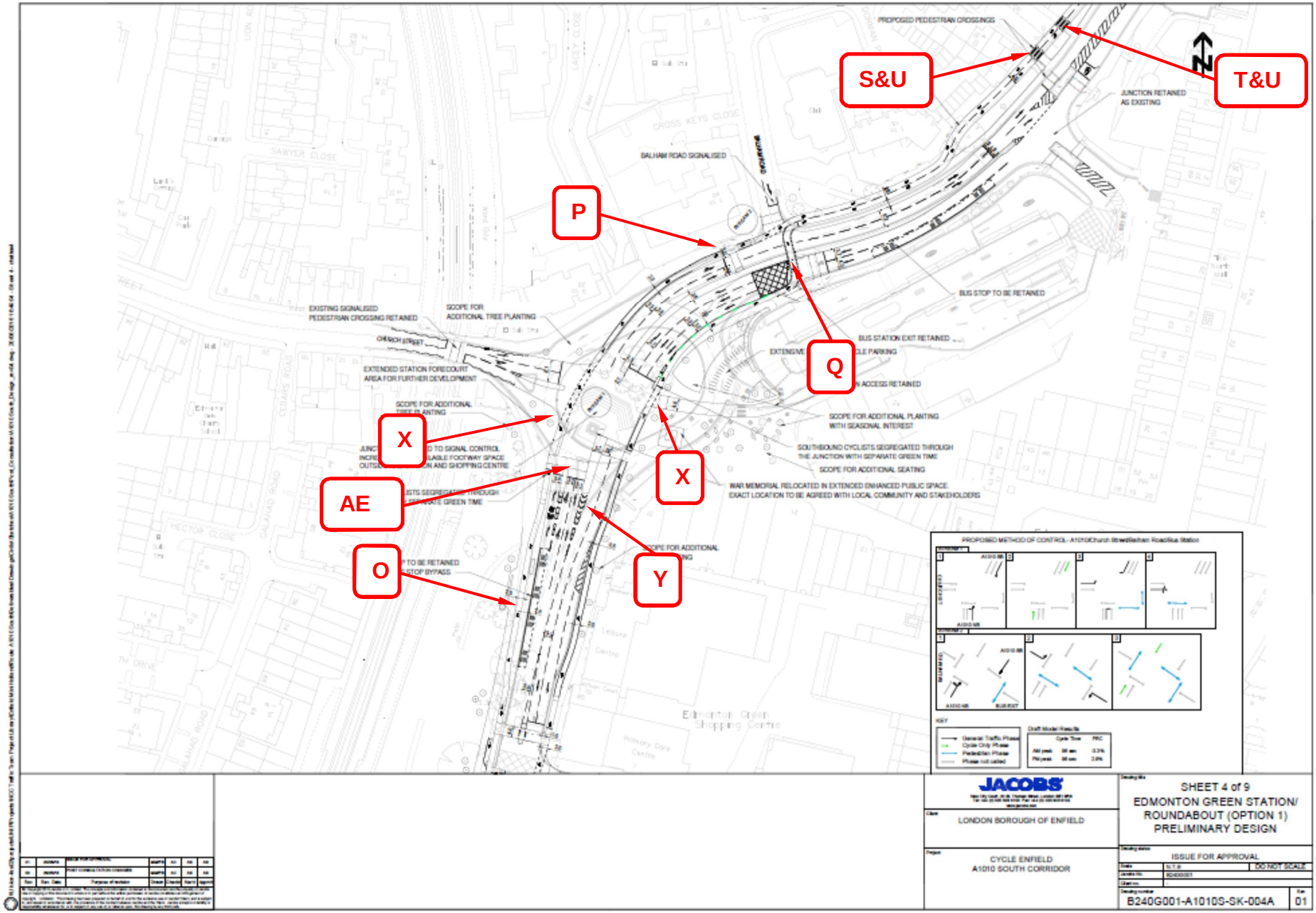
SHEET 3 of 9
SHRUBERRY ROAD TO SMYTH CLOSE
PRELIMINARY DESIGN

ISSUE FOR APPROVAL

DO NOT SCALE

B240G001-A1010S-SK-003

01



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LONDON BOROUGH OF ENFIELD

CYCLE ENFIELD
A1010 SOUTH CORRIDOR

SHEET 4 of 9
EDMONTON GREEN STATION/ ROUNDABOUT (OPTION 1)
PRELIMINARY DESIGN

ISSUE FOR APPROVAL

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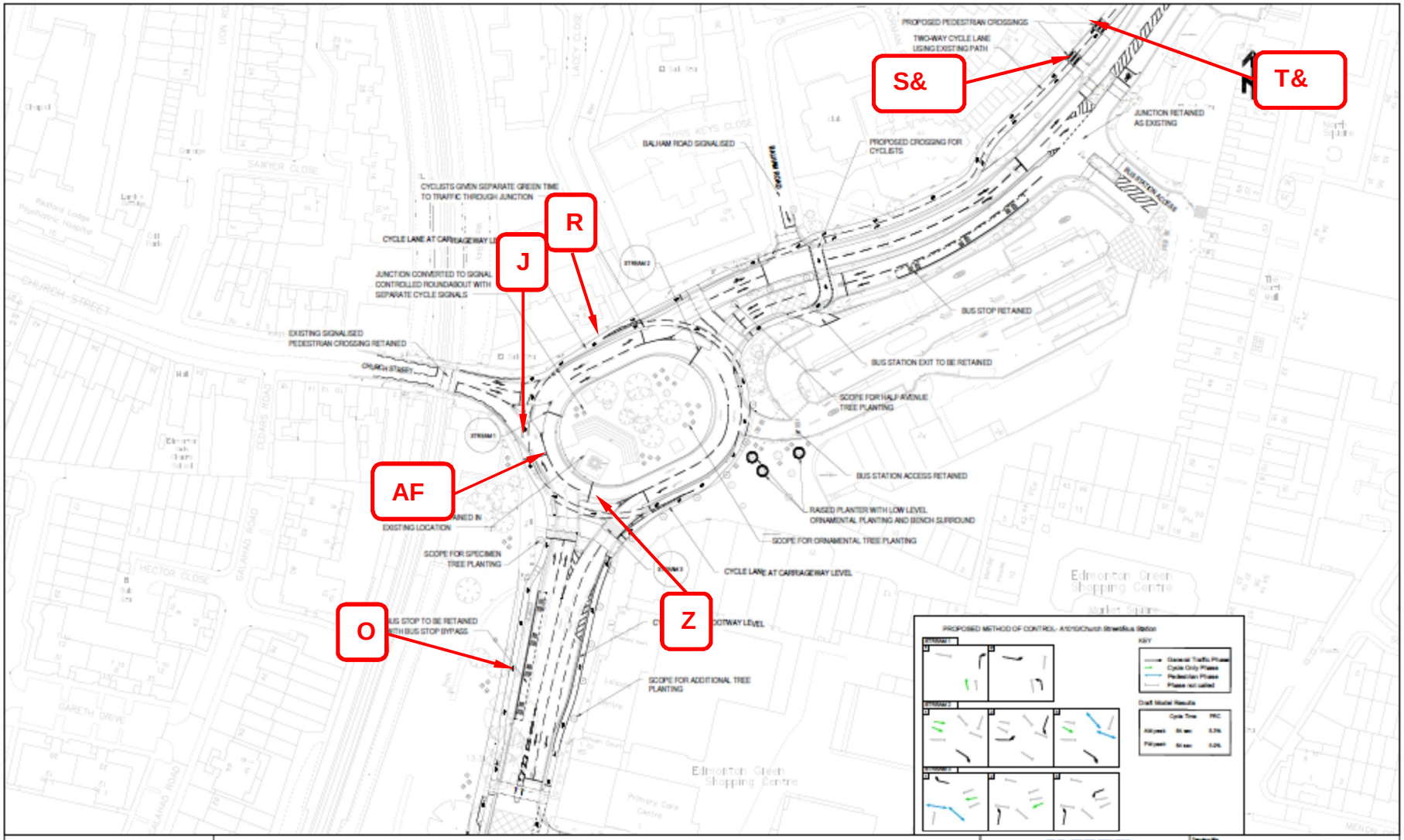

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LONDON BOROUGH OF ENFIELD

CYCLE ENFIELD
A1010 SOUTH CORRIDOR

SHEET 4 of 9
EDMONTON GREEN STATION/ ROUNDABOUT (OPTION 2)
PRELIMINARY DESIGN

ISSUE FOR APPROVAL

DO NOT SCALE

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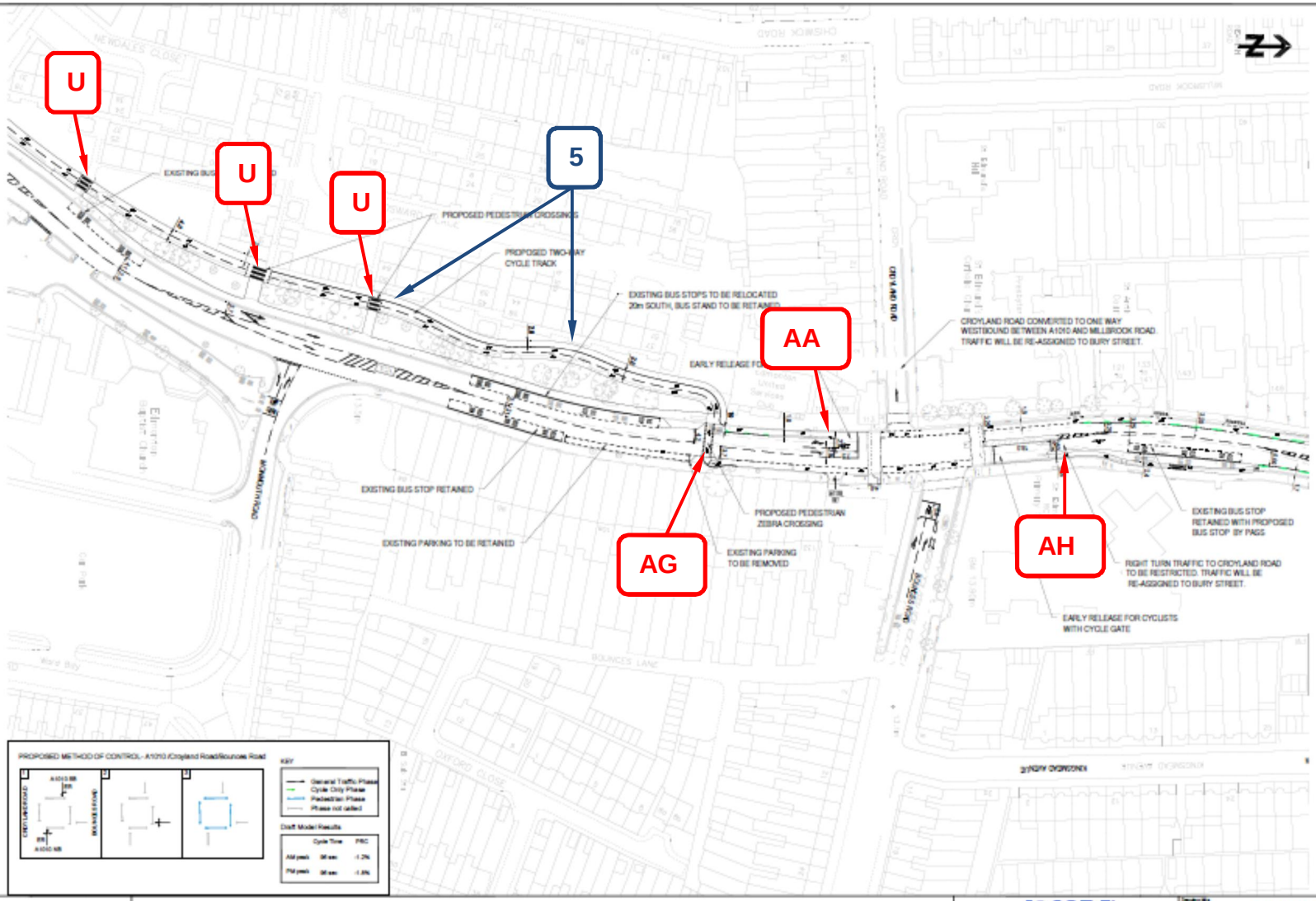

JACOBS

CLIENT: LONDON BOROUGH OF ENFIELD

PROJECT: CYCLE ENFIELD
A1010 SOUTH CORRIDOR

SHEET 5 of 9
MONMOUTH ROAD TO BOUNCES ROAD
PRELIMINARY DESIGN

ISSUE FOR APPROVAL

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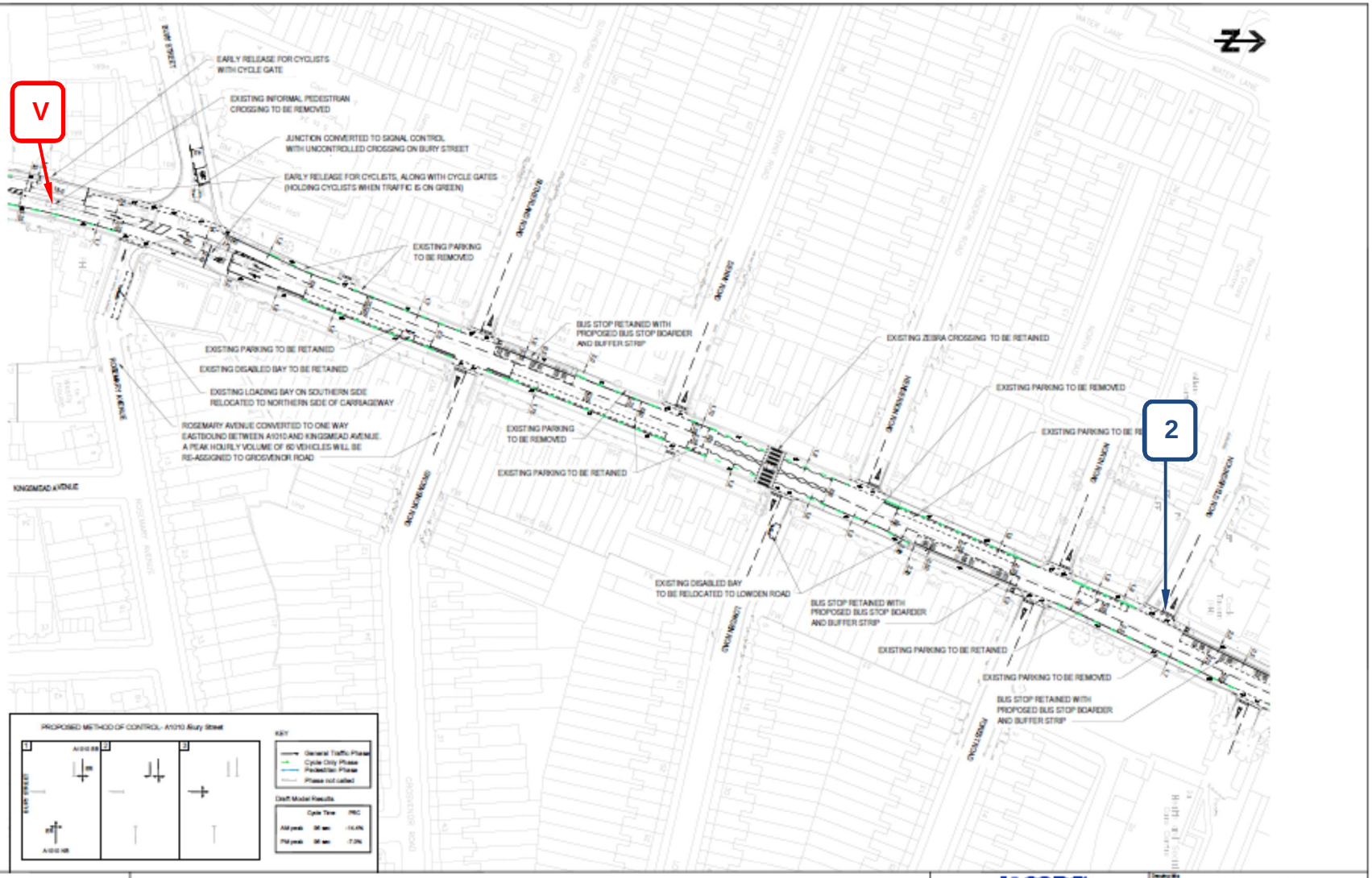
Rev: 01



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LONDON BOROUGH OF ENFIELD

CYCLE ENFIELD
A1010 SOUTH CORRIDOR

SHEET 6 of 9
ROSEMARY AVENUE TO HOUNDSFIELD ROAD
PRELIMINARY DESIGN

ISSUE FOR APPROVAL

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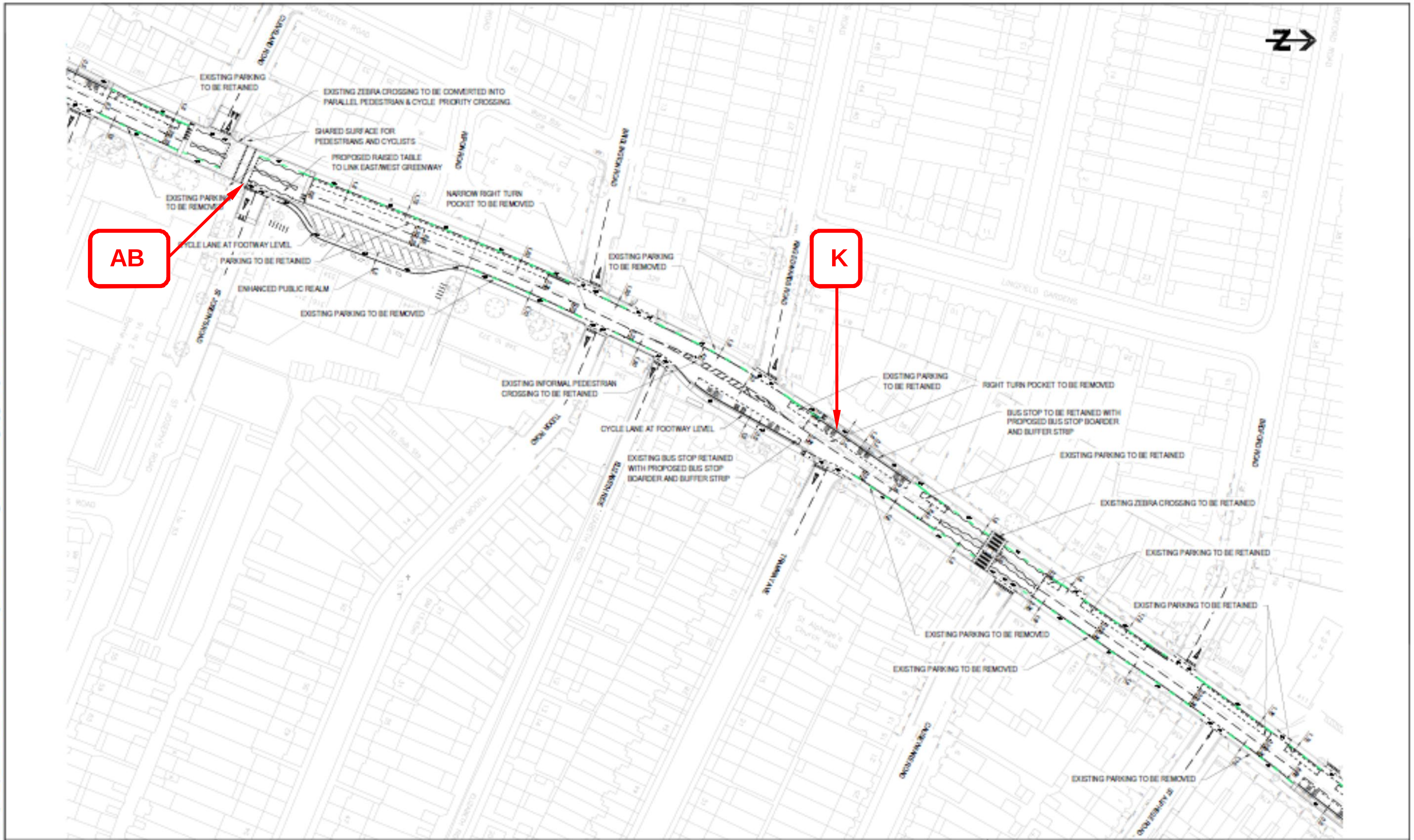
Rev.	01



JACOBS

Client: LONDON BOROUGH OF ENFIELD

Project: CYCLE ENFIELD
A1010 SOUTH CORRIDOR

SHEET 7 of 9
CLEVELAND ROAD TO
CUCKOO HALL ROAD
PRELIMINARY DESIGN

ISSUE FOR APPROVAL

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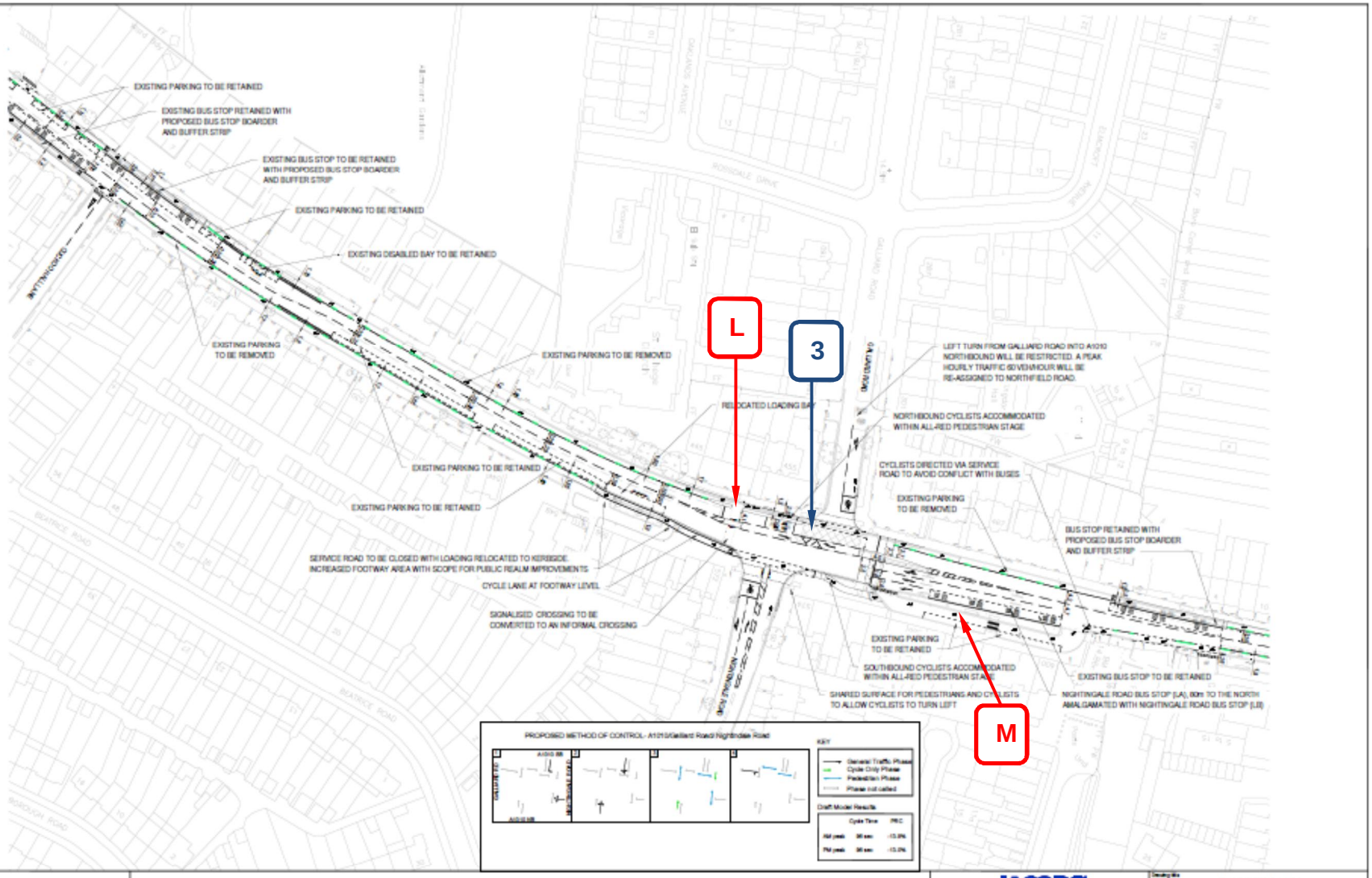

JACOBS

LONDON BOROUGH OF ENFIELD

CYCLE ENFIELD
A1010 SOUTH CORRIDOR

SHEET 8 of 9
CUCKOO HALL LANE TO SOUTHFIELD ROAD
PRELIMINARY DESIGN

ISSUE FOR APPROVAL

N.T.S. DO NOT SCALE

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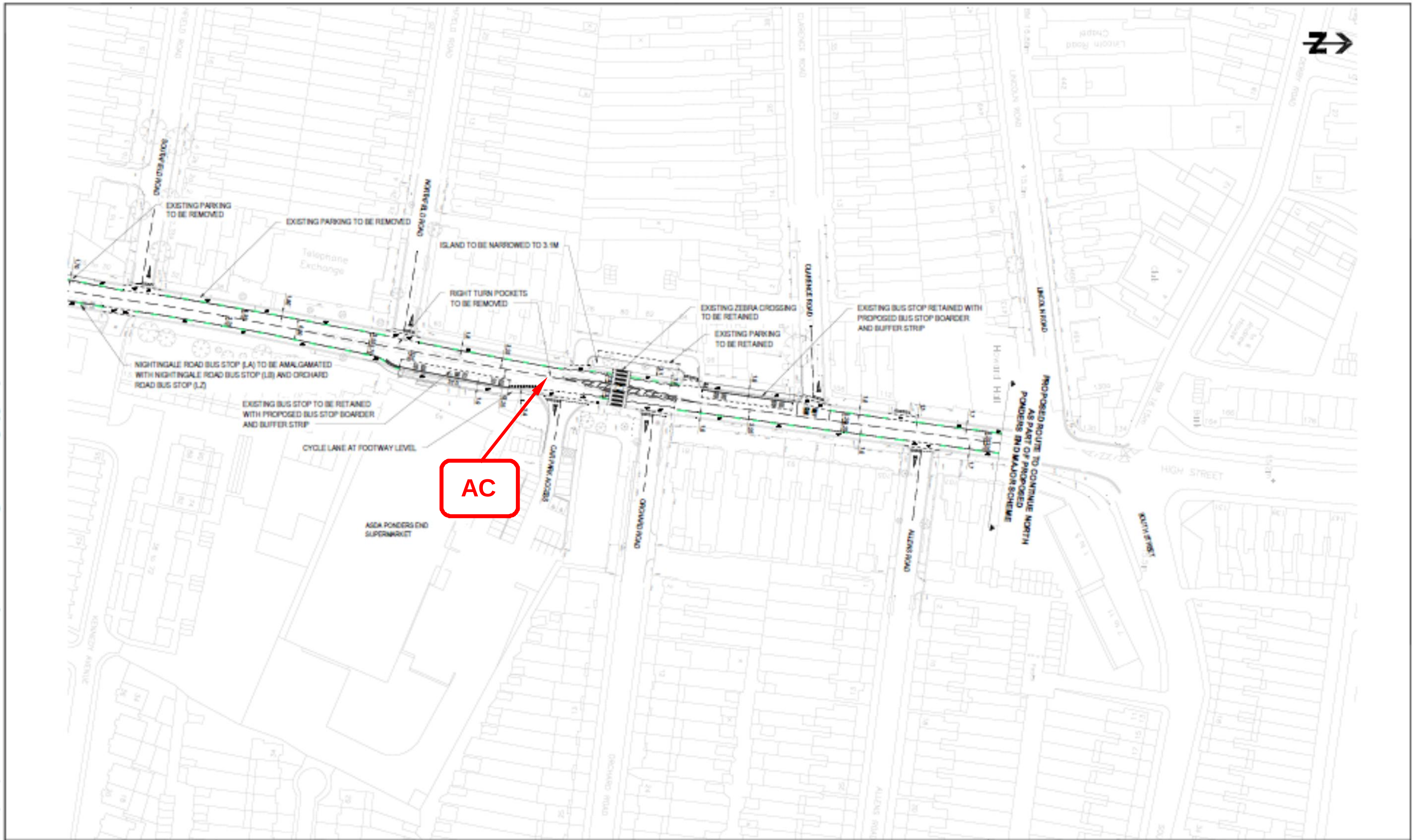
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EXISTING PARKING TO BE REMOVED
ISLAND TO BE NARROWED TO 3.1M
RIGHT TURN POCKETS TO BE REMOVED
EXISTING ZEBRA CROSSING TO BE RETAINED
EXISTING PARKING TO BE RETAINED
EXISTING BUS STOP RETAINED WITH PROPOSED BUS STOP BOARDER AND BUFFER STRIP
NIGHTINGALE ROAD BUS STOP (LA) TO BE AMALGAMATED WITH NIGHTINGALE ROAD BUS STOP (LB) AND ORCHARD ROAD BUS STOP (LZ)
EXISTING BUS STOP TO BE RETAINED WITH PROPOSED BUS STOP BOARDER AND BUFFER STRIP
CYCLE LANE AT FOOTWAY LEVEL
AC
ASDA PONDERS END SUPERMARKET
PROPOSED ROUTE TO CONTINUE NORTH AS PART OF PROPOSED PONDERS END MAJOR SCHEME
HIGH STREET

JACOBS

LONDON BOROUGH OF ENFIELD

CYCLE ENFIELD
A1010 SOUTH CORRIDOR

SHEET 9 of 9
SOUTHFIELD ROAD TO LINCOLN ROAD
PRELIMINARY DESIGN

ISSUE FOR APPROVAL

N.T.S. | DO NOT SCALE

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