

London Borough of Southwark



East Dulwich Grove / Townley Road / Green Dale Junction Improvement Scheme

Consultation Summary

January 2015

London Borough of Southwark

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Public Consultation Summary Contents

List of Figures	2
List of Tables	3
1.0 Introduction	4
1.1 Background	4
1.2 Project and Background	4
1.3 Consultation Procedure	5
2.0 Consultation Responses	6
2.1 Response Rate and Distribution	6
2.2 Questionnaire and Online Response Analysis	6
2.2 Total Response Analysis	7
2.3 Analysis of Responses within the Defined Consultation Area	8
2.4 Analysis of Responses within the Defined Consultation Area	11
2.5 Additional Comments	12
2.6 Levels of Consensus	24
2.7 Statutory Consultee Replies	24
3.0 Recommendations	26
Appendices	27
Appendix A: Initial Scheme Proposals	28
Appendix B: Consultation Documents	29
Appendix C: Location Plan and Extents of Consultation	30
Appendix D: List of Addresses within the Distribution Area	31
Appendix E: Summary of Total Consultation Response	33
Appendix F: Traffic Displacement Study	34
Appendix G: Junction Pedestrian Movement Survey	35
Appendix H: Traffic Modelling Technical Note	36
Appendix I: Junction Autotrack Analysis	37

List of Figures

Figure 1:	Location of traffic management scheme	4
Figure 2:	Consultation questionnaire results for question 2	8
Figure 3:	Distribution of consultation responses from roads within the defined consultation area	9
Figure 4:	Consultation response rate for roads within the consultation area	10
Figure 5:	Consultation responses for question 2 for roads within the defined consultation area	11
Figure 6:	Consultation result for each road within the defined consultation area	12

List of Tables

Table 1:	Returned questionnaire results for question 1	7
Table 2:	Returned questionnaire results for question 2	7
Table 3:	Returned questionnaire results for question 2 for roads within the defined consultation area	10
Table 4:	Returned questionnaire results for question 2 for roads outside the defined consultation area	11

1.0 Introduction

1.1 Background

- 1.1.1 This document report has been produced by the London Borough of Southwark Public Realm Projects Group to provide a summary of the consultation exercise for the proposed improvement scheme at the East Dulwich Grove / Townley Road / Green Dale junction. The measures are being drafted by the Public Realm Projects Team, with the project manager for this scheme being Chris Mascord, London Borough of Southwark, Council Offices, 160 Tooley Street, SE1P 5LX.
- 1.1.2 The area under consideration is located within the SE22 district of Southwark (Village Ward), in the south of the borough. See figure 1 below.



Figure 1: Location of proposed junction scheme

1.2 Project and Background

- 1.2.1 The measures proposed in this consultation are part of the Council's on-going commitment to make Southwark's streets safer and more accessible for all. The proposed measures will enhance safety for vulnerable road users, especially cyclists and improve pedestrian accessibility.
- 1.2.2 Local stakeholders have raised concerns regarding the safety of pedestrians and cyclists at this junction, particularly during morning and evening peak hours. Pedestrians have been observed to cross the junction diagonally (not using the staggered crossing facilities due to excessive waiting times) and conflict has

been experienced between cyclists using the junction and traffic turning right out of Townley Road. The key aim of the proposals is to significantly improve safety for cyclists and pedestrians at the junction, whilst ensuring that there is no adverse delay to traffic on East Dulwich Grove.

1.2.3 The following measures were consulted upon to improve safety and accessibility for pedestrians and cyclists at the junction of East Dulwich Grove / Townley Road and Green Dale:

- Removal of existing staggered pedestrian crossings with the implementation of shorter, single movement facilities.
- Introduction of a diagonal pedestrian crossing to link footways adjacent to both schools and cater for an existing pedestrian desire line.
- All pedestrian facilities to operate at the same time to reduce waiting time for pedestrians and improve the efficiency of the junction.
- Cycle pre-signal on Townley Road and Green Dale to allow cycles to enter the junction and undertake turning movements before general traffic.
- Recessed bays for less confident cyclists to wait for pre-signal operation (Townley Road and Green Dale).
- Banned right turn out of Townley Road into East Dulwich Grove to remove potential conflict with cycle movements and improve efficiency of junction operation.
- Proposed cycle lane and advanced cycle waiting area on East Dulwich Grove (westbound) to allow cyclists to bypass waiting vehicles and gain priority at the junction.
- Footway buildouts to reduce crossing distances for pedestrians allow room for possible tree planting and to visually improve the streetscape.

(See Appendix A for Preliminary Scheme Measures)

1.3 Consultation Procedure

- 1.3.1 The views of the local community and those of statutory and stakeholder consultees have been sought as part of this consultation exercise. Active community participation was encouraged through the use of a consultation document that was delivered to addresses within the consultation area.
- 1.3.2 The consultation document included a covering letter with an A3 size consultation plan illustrating the proposals and an A4 size comment form that could be sent to the Public Realm Projects Group with a pre-paid address reply envelope. (See Appendix A – Consultation Documents).
- 1.3.3 The consultation document was delivered to a geographical area centred on the junction of East Dulwich Grove / Townley Road and Green Dale, using strategic roads and pedestrian desire lines as defined cut off points. (See Appendix B – Location Plan and Extents of Consultation).

- 1.3.4 The consultation area was agreed with ward councillors prior to finalising the consultation mailing list.
- 1.3.5 The distribution area was large enough to gain views from the wider community that may be considered to be affected by the proposed measures. A mailing list was established for the area by way of the Council's GIS database. In addition, the consultation documents and plans were supplied to the Council's established list of statutory and stakeholder consultees including London Buses, cycle groups and the Metropolitan Police. Please see Appendix C of list of addresses within the distribution area.
- 1.3.6 The scheme proposals were also loaded onto the Southwark Council consultation webpage where respondents could view information regarding the scheme and formally reply using an e-form. There is no geographical restriction on submitting responses on-line.
- 1.3.7 The consultation documents were delivered by Royal Mail to 1311 addresses detailed within the distribution list on the 12th November 2014, with a return deadline of the 12th December 2014, allowing 4 weeks for the consultation period. However the consultation deadline was extended for an additional week to the 19th December 2014 following requests by local residents and ward councillors.

2.0 Consultation Responses

2.1 Response Rate and Distribution

- 2.1.1 A total of 722 responses were received during the consultation period. 293 responses were paper questionnaires, 392 responses were via the online form and 37 formal responses were received via email. 58 responses were classed as anonymous.

2.2 Questionnaire and Online Response Analysis

- 2.2.1 The questionnaire element and online form of the consultation contained the following key questions and associated tick box options:
 - Q1.** Are you a resident or business?
 - Q2.** What do you think of the proposals?
- 2.2.2 Both consultation formats also had a section for respondents to leave comments relating to the scheme. All comments were reviewed and where appropriate discussed further in section 2.6 below.
- 2.2.3 For clarity the following analysis has been presented in three separate sections. The first section relates to the overall response and percentages for and against, with the second section focusing on responses from roads within the defined consultation area. The third section analyses the level of support for the scheme from respondents that were located outside the defined consultation area.

- 2.2.4 It must be noted that where emails were received directly, only emails that categorically stated that they were a formal response to the consultation, highlighting either support or objection to the scheme, were included as part of this analysis.

2.3 Total Response Analysis

- 2.3.1 As detailed above, a total of 722 responses were received.
- 2.3.2 Responses were received from 230 different roads, 27 of which were located within the consultation area. Please refer to Appendix E for a tabulated summary of responses received by location. Please note that for simplicity the responses for the walkways and access roads within the East Dulwich Estate have been grouped together titled 'East Dulwich Estate SE22'. This incorporates responses from Arnhem Way, Delft Way, Deventer Crescent, Isel Way, Kempis Way, Nimegen Way, Steen Way, Terboch Way and Velde Way.
- 2.3.3 The following is a summary of replies received in relation to the two key questions detailed on the questionnaire and feedback form on the website:

Question 1 - Are you a resident or business?

	Resident	Business
Replies	691	31
Total	95.7%	4.3%

Table 1: Returned questionnaire and online feedback results for question 1

- 2.3.4 The majority of returned consultation responses were from residential households, with only 4% of respondents being a business.

Question 2 – What do you think of the proposals?

	Support	Opposed	No Opinion
Replies	313	403	6
Total	43.35%	55.82%	0.83%

Table 2: Returned questionnaire and online feedback results for question 2

Results for Question 2 - Total Consultation Response

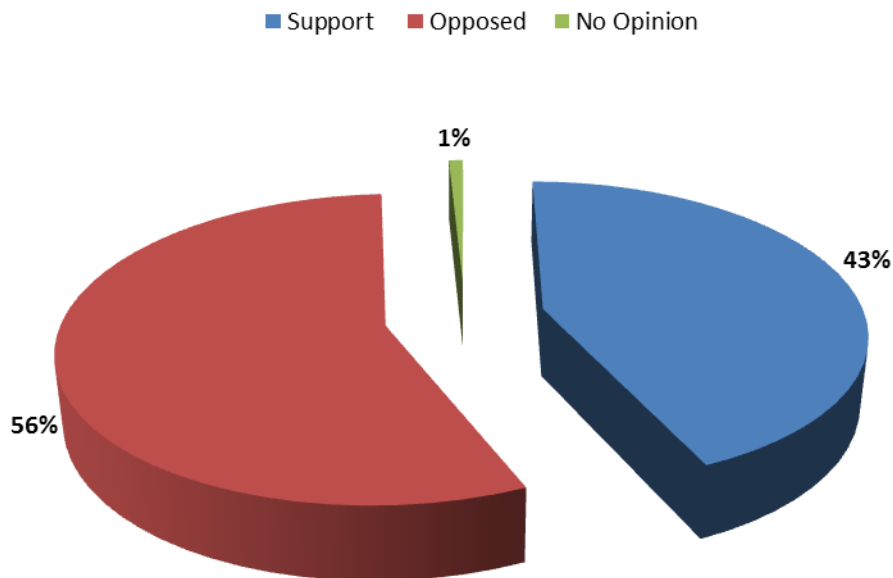


Figure 2: Consultation questionnaire results for question 2

2.3.5 The above graph and table 2 illustrate that overall, 56% of respondents to the consultation exercise do not support the proposed improvement scheme at the junction, with 43% welcoming the measures.

2.4 Analysis of Responses solely within the Defined Consultation Area

2.4.1 This section provides a comprehensive summary of responses received from local residents and businesses located within the defined consultation area.

2.4.2 A total of 377 responses were received - 297 hard copy, 64 via the online form and 16 formal replies were received via email.

2.4.3 The response rate for the area, taking into account the delivery of 1311 consultation documents is 28.76%.

2.4.4 Figure 3 below provides a summary of the roads within the defined consultation area and the number of responses received. The most responses received during the consultation period were from Woodward Road and Dovercourt Road. A high number of responses were also received from Calton Avenue and Beauval Road.

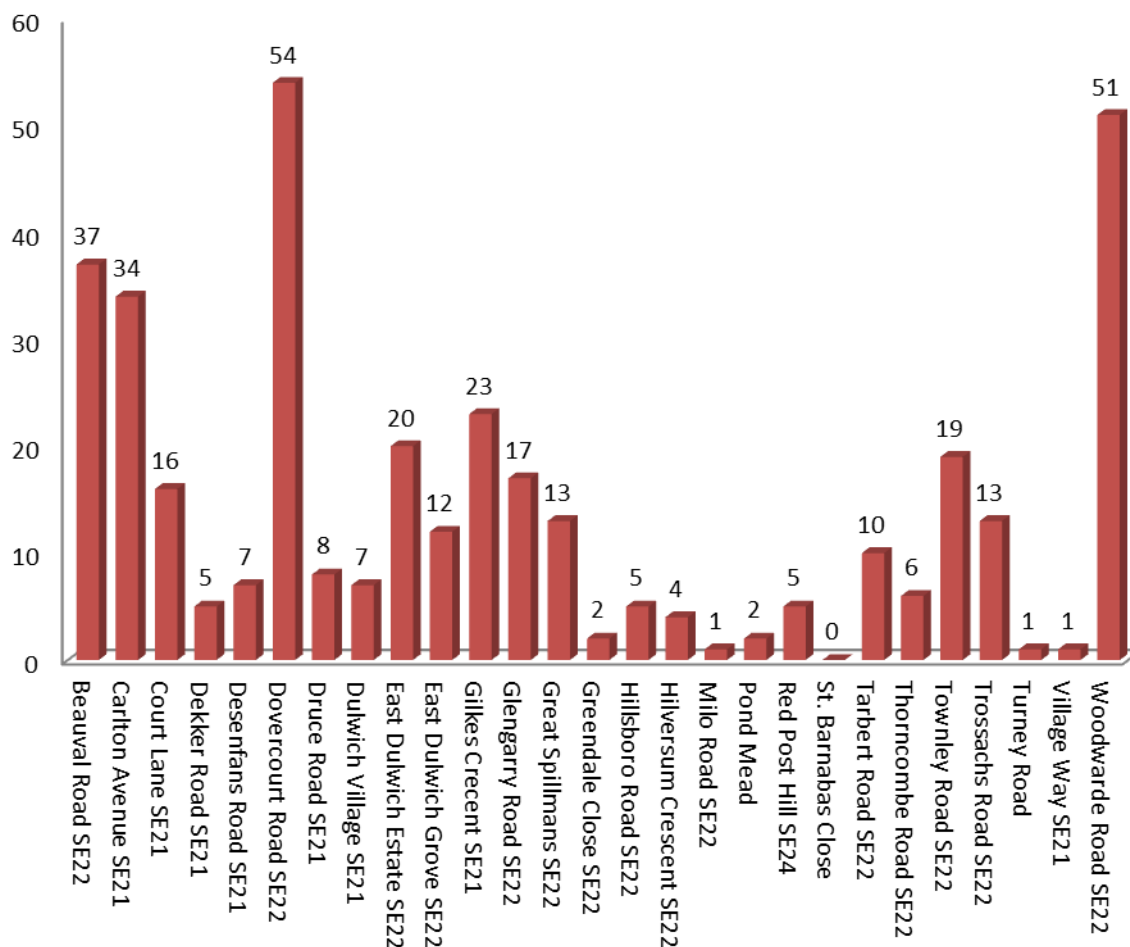


Figure 3: Distribution of consultation responses from roads within the defined consultation area

- 2.4.5 Figure 4 illustrates the consultation response rate for each road within the defined consultation area. The chart indicates that both Pond Mead and Turney Road had a 100% response rate. However it must be noted that both roads had a low number of addresses included in the mail-out due to only a small section of the road being included in the consultation area. Therefore it can be assumed that the views expressed by the low number responses from these roads may not necessarily be representative of the entire road.
- 2.4.6 Roads that had a high response rate include Great Spillmans, Gilkes Crescent, Dovercourt Road and Red Post Hill, each recording a 50% or greater response rate. Woodward Road, Townley Road and Calton Avenue also had high response rates, with over 40% of residents and businesses from these roads formally replying to the consultation exercise.
- 2.4.7 The lowest response rate was from St. Barnabas Close, with no replies received and Dekker Road with only 9% of residents formally responding.

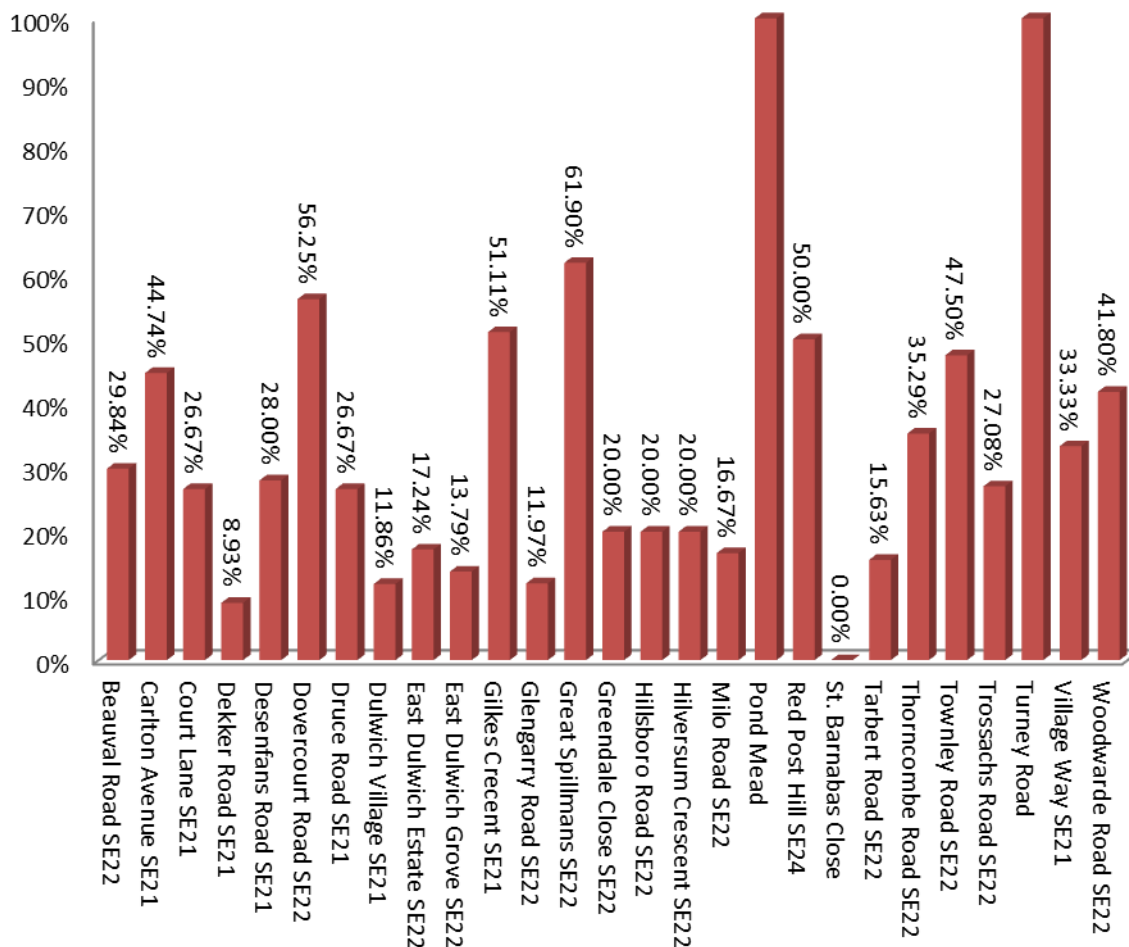


Figure 4: Consultation response rate for roads within the consultation area

2.4.8 Table 3 below and figure 5 illustrates that 76% of responses from the defined consultation area opposed the scheme, with 23% in support of the proposed measures at the junction.

	Support	Opposed	No Opinion
Replies	87	286	4
Total	23.08%	75.86%	1.06%

**Table 3: Returned questionnaire results for question 2
for roads within the defined consultation area**

Results for Question 2 - Defined Consultation Area

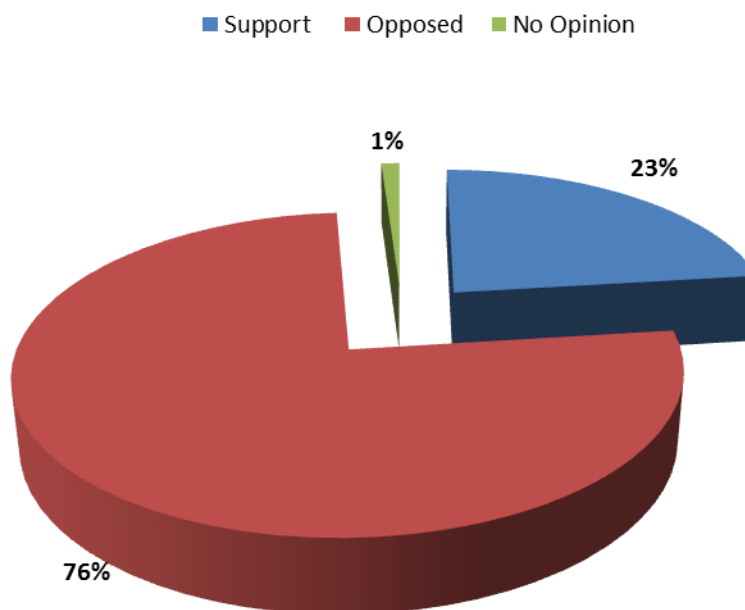


Figure 5: Consultation responses for question 2 for roads within the defined consultation area

2.4.9 Figure 6 breaks down the consultation results for each road within the defined consultation area. The results indicate that the majority of roads in the consultation area had more respondents opposed to the scheme than in favour, particularly Calton Avenue, Beauval Road, Woodward Road and Gilkes Crescent. Stronger support for the scheme was evident in Dekker Road, Glengarry Road, Thorncombe Road, Hilversum Crescent and Dulwich Village.

2.5 Analysis of Responses from outside the Defined Consultation Area

2.4.1 A total of 345 responses were received from addresses outside the defined consultation area, potentially representing users of the junction that live or work outside the immediate area. The total responses from this category make up 47.78% of the total responses received during the consultation period.

2.4.2 Table 4 illustrates that 226 replies were in favour of the proposed measures, equating to 65.51% support, with 34% of respondents opposed to the scheme.

	Support	Opposed	No Opinion
Replies	226	117	2
Total	65.51%	33.91%	0.58%

Table 4: Returned questionnaire results for question 2 for responses received from outside the defined consultation area

Consultation Result for each road within the Consultation Area

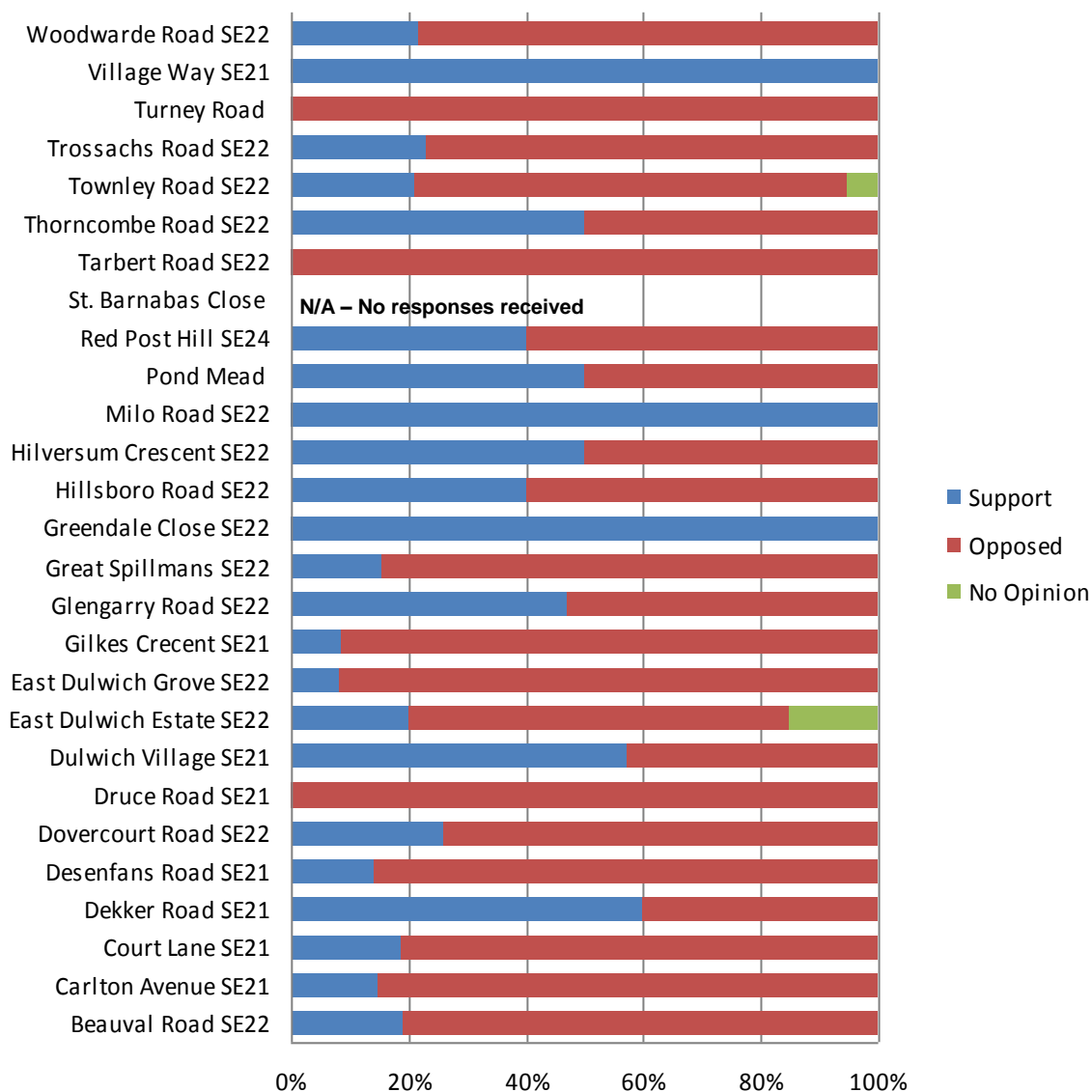


Figure 6: Consultation result for each road within the defined consultation area

2.6 Additional Comments

- 2.6.1 The questionnaire element of the consultation document invited consultees to attach any additional comments they may have on the proposals when returning the reply-paid questionnaire or completing the online form on the consultation website.
- 2.6.2 Analysis of the additional comments from respondents that objected to the scheme highlighted the following concerns which are summarised below:

The majority of objections received during the consultation exercise were in relation to the proposed right turn ban at Townley Road and potential displacement of traffic into other residential streets in the area, including Dovercourt Road, Dulwich Village and Gilkes Crescent and that there has been no research done on where the traffic will be forced to go.*

* In response, whilst it is difficult to precisely predict driver behaviour, it is not anticipated that all right turning traffic from Townley Road in peak periods will be displaced on to one particular route or street, due to drivers having different destinations in the northern and eastern parts of the borough.

A Traffic Displacement Study was undertaken. The full detail of the report can be viewed in Appendix F. The report details the potential use of three main routes that could be used as an alternative in order to access destinations to the north and east of the Townley Road / East Dulwich Grove junction. These include:

- i) Dulwich Village / East Dulwich Grove
- ii) Dulwich Village / Gilkes Place / Gilkes Crescent / East Dulwich Grove
- iii) Court Lane / Dovercourt Road / Townley Road / Lordship Lane / Melbourne Grove **Or** Calton Avenue / Woodward Road / Dovercourt Road / Townley Road / Lordship Lane / Melbourne Grove

In all cases, whilst it is recognised that traffic will be potentially displaced onto these roads, the volume of total vehicles displaced (117 in peak hour) and the anticipated percentage displaced onto these alternative routes will not result in any noticeable adverse effects on congestion or road safety. It must be noted that outside of peak traffic flow periods, the main traffic distributor routes in the area operate without delay. Therefore outside peak times there will not be noticeable change to existing traffic volumes on residential streets in the area.

Numerous objections were received stating that the proposals will force more traffic into Gilkes Crescent, which will result in an unacceptable increase in traffic in what is essentially a quiet residential road.*

* In response, Gilkes Crescent would potentially receive increased traffic volumes in peak periods as a result of the right turn ban. However, in line with the displacement analysis in Appendix F, it is anticipated that not all traffic will be displaced on this route and that only approximately 35 additional vehicles would use this route to by-pass Dulwich Village in the morning peak hour. This equates to a vehicle every 100 seconds which would not result in noticeable adverse effects on either the character of the road, environment for local residents or safety of road users. It must also be noted that Gilkes Crescent is already traffic calmed which assists with curtailing traffic speeds. As a result, it is evident that the traffic levels in Gilkes Crescent will be an acceptable level for a residential street.

A number of objections indicated that the conflict between cyclists and vehicles at the Townley Road junction is overstated as there are no accidents, the majority of cyclists in the morning peak are travelling northbound with the right turn flow and in the afternoon peak there are fewer vehicles turning right and therefore there is less risk from right turning vehicles. *

* In response, whilst thankfully there have been no serious accidents involving vulnerable road users, including cyclists traversing the junction from Green Dale into Townley Road, the council has received many reports of near misses with right turning vehicles out of Townley Road. Many cyclists have reported that they feel intimidated using this junction and that many younger cyclists avoid the junction all together.

The funding from Transport for London has provided the council with the opportunity to significantly improve safety and reduce the potential severity of collisions before they happen rather than being reactionary after they happened. This is particularly pertinent, as the majority of road users at peak times are children.

The junction is proposed form part of a major cycle route in accordance with the council's Quietway programme that will provide one of the main north/south cycle routes through the borough. It is anticipated that once the Quietway programme is implemented, a significant increase in cycling volumes will traverse this junction and therefore the proposals to improve safety and priority at the junction for cyclists is particularly important. It must also be noted that the measures are designed to encourage more children to cycle to nearby schools, which is a key objective of school travel plans and helps reduce reliance on the private car. Current layout and operation of the junction is prohibitive to this objective being realised.

Traffic counts at the junction indicate that the there is still a heavy demand for the right turn out of Townley Road in the afternoon peak. Therefore the risk presented by right tuning traffic to cyclists at the junction is still a major concern during this time period.

Numerous objections stated that the proposals will make the congestion in Dulwich Village worse at the expense of the three state schools and the area is already gridlocked in peak periods. *

* In response, it must be noted that Dulwich Village is the main north/south distributor road through Dulwich and is not classified as a residential street such as Calton Avenue. Therefore Dulwich Village should cater for through traffic as opposed to local residential roads.

In accordance with the Traffic Displacement Study, it is anticipated that up to 60% of displaced vehicles will traverse Dulwich Village and turn right into East Dulwich Grove. Whilst there is congestion experienced in peak periods, the junction is being upgraded by Transport for London in March 2015 that will improve operational efficiency. Road layout changes on Dulwich Village approach to the Red Post Hill junction are also being considered, including the provision of a dedicated right turn lane to double the stacking area for waiting vehicles, which will reduce queue lengths on approach to the junction. The council has also requested TfL to investigate if it is feasible to install a right turn

filter on the Dulwich Village arm or early cut off on Red Post Hill to allow more right turning vehicles from Dulwich Village to clear the junction per cycle. A combination of the above measures would significantly increase capacity and reduce congestion in Dulwich Village in peak periods, allowing the junction to cater for displaced traffic, as well as reducing the potential for vehicles to bypass the junction using Gilkes Place and Gilkes Crescent.

A number of respondents commented that the real problem of turning right into Townley Road from East Dulwich Grove has not been addressed. This poses a greater risk to cyclists than riding across from Green Dale. *

* In response, one of the options explored by the council was removing the dedicated right turn lane and installing a dedicated cycle lane that lead directly to an enlarged advanced cycle stop line to give cyclists priority at the junction, thereby assisting the right turn movement into Townley Road. However upon modelling this option, it was evident that due to the reduced junction stacking capacity, the eastbound arm of East Dulwich Grove would become significantly over capacity, leading to queuing back to Red Post Hill in peak periods.

However as part of the scheme detailed design process, the council will investigate the feasibility of installing a two stage right turn for cyclists from East Dulwich Grove into Townley Road and from East Dulwich Grove into Green Dale. This would allow less confident cyclists to undertake the right turn manoeuvre in two stages by accessing a marked section of sheltered carriageway at either the Green Dale or Townley Road junction headway and then wait for the protection of proposed cycle pre-signal to cross East Dulwich Grove. It must be noted that such a proposal would be subject to approval by Transport for London, as this would be one of the first junctions in London to utilise this concept. However, the two stage right turn would significantly address the right turn conflict risk for cyclists from East Dulwich Grove.

Objections were received stating that the existing staggered pedestrian crossings are relatively recent and should remain and there is no proof provided that the proposed layout is safer. The diagonal crossing will create more danger to pedestrians who will collide with cyclists who jump the lights. *

* In response, a pedestrian survey was undertaken at the junction to quantify the number and classification of pedestrians crossing the junction, as well as identification of key desire lines that illustrate typical pedestrian behaviour. This can be viewed in Appendix G.

The survey identified some concerning crossing behaviour, with many unaccompanied children crossing the junction diagonally or either side of the existing pedestrian refuge islands on East Dulwich Grove and Townley Road. These were not isolated cases, but a continual movement of children during peak periods. It was clear from the survey that the existing staggered crossing facilities are inadequate, as the children were not prepared to wait to cross the carriageway in two phases.

In addition, the volume of pedestrians crossing the arms of the junction is extremely high with over 700 pedestrians recorded traversing the junction in the morning peak.

It is paramount that an all green pedestrian phase is introduced, with single movement facilities that operate simultaneously. This allows for the introduction of a diagonal crossing facility that caters for the significant desire line from the north-western corner of the junction to the south-eastern corner of the junction. In addition, the introduction of pedestrian countdown timers will also provide pedestrians with exactly the length of time left to cross the carriageway, which will also improve safety and the operation of the junction.

Many respondents highlighted that Dovercourt Road and Beauval Road would be gridlocked with additional traffic and the roads are simply not wide enough, which will lead to bottlenecks, road rage and standoffs. *

* In response, taking into account that a percentage drivers currently turning right out of Townley Road will be accessing destinations to the east, it is assumed that Dovercourt Road will experience a small increase in additional traffic. As detailed in the Traffic Displacement Study, this equates to approximately 35 additional vehicles traversing northbound along Dovercourt Road in the morning peak, which is not a significant number over the duration of a 1 hour period.

As Dovercourt Road is the most direct route to access the eastern section of Townley Road and Lordship Lane from Calton Avenue, Court Lane and Woodward Road, it is unlikely that Beauval Road will experience any noticeable increase in traffic volumes over and above the current situation.

An objection detailed that there has been no regard for emergency services vehicles and ambulances that currently turn right at Townley Road to access the Dulwich Hospital. *

* In response, emergency vehicles will still be able to undertake this manoeuvre in emergency situations. In fact it can be argued that the significant reduction of traffic in Townley Road and Calton Avenue as a result of the right turn ban will actually assist emergency vehicles traversing this route, potentially improving response times.

A number of objections received stated that there will be a lot of disruption to the no. 37 bus route. *

* In response, the modelling results for option 7 that can be reviewed in Appendix H indicate that the junction will operate within capacity and acceptable saturation levels, which will not result in delays to the no. 37 bus route or excessive queuing for general traffic. The most congested arm is the westbound approach of East Dulwich Grove and the proposals will result in an 91.8% level of saturation in the morning peak, which means that all waiting traffic at the junction on a red signal is cleared every green phase of the cycle. Likewise the eastbound approach of East Dulwich Grove is also well within junction capacity constraints.

Numerous comments were received stating the real problem at the junction is traffic caused by the two schools. *

* In response, the Calton Avenue and Townley Road route is traversed by a significant amount of non-local traffic accessing the area from the South Circular and Turney Road. This traffic makes up a significant percentage of vehicles turning right at the junction. Removing this element of traffic flow will not only reduce congestion on Townley Road, but also potentially improve safety and the operation of the junction.

It is also anticipated that by making the junction safer for vulnerable road users, congestion will be potentially reduced in peak periods, as more children that are currently dropped at school by car may walk and cycle to school instead.

It is recognised that whilst there is also a significant amount of traffic accessing the schools, including coaches, there is not a short term solution to this problem. The council will continue working closely with the schools to address these issues which includes improving alternative modes such as walking and cycling.

Numerous objections detailed that residents were not given adequate time to study the proposals or to discuss the information with fellow residents, local businesses and community groups. *

* In response, the scheme had an initial four week consultation period. This is longer than the standard consultation duration for highway schemes in the borough and provides ample time for consultees to adequately study the proposals and to formally respond. It must be noted that the consultation duration was extended by one week at the request of residents and councillors.

In addition to using the questionnaire and pre-paid envelope in the consultation packs that were delivered within the defined consultation area, consultees could also respond online using the e-form on the consultation webpage or by email (if stating that the email was a formal response). It must also be noted that the majority of responses were received in the first two weeks of the consultation period indicating that consultees had sufficient time to reply to the consultation.

A number of objections were received highlighting that vehicles will cross from Townley Road into Green Dale to perform a U-turn if the right turn is banned, endangering pedestrians and causing further congestion. *

* In response, there would be little advantage for divers to undertake this manoeuvre as it will not provide any journey time saving. If the scheme is implemented then there will be a fully segregated cycle lane will extend for up to 70m from the junction stop line, followed by marked resident and disabled parking bays. This narrows the carriageway width down to 6m, which is too tight to turn a motor vehicle. Taking into account that there will also be a queue of vehicles waiting to exit Green Dale in peak periods, vehicle accessing Green Dale from Townley Road will be forced to traverse to the end of Green Dale in order to perform a three point turn.

The time this manoeuvre would take in addition to having to wait for an additional 90 seconds on a red signal on Green Dale in order to turn left into East Dulwich Grove, makes this option for 'by-passing' the banned right turn prohibition extremely unlikely.

A number of objections were received stating that Great Spilmans will experience more rat running traffic and be used by drivers to perform u-turns in order to by-pass the right turn ban, accessing the street from turning left in Townley Road. *

* In response, it is extremely unlikely that a vehicle will turn left at Townley Road into East Dulwich Grove, traverse up to Great Spilmans, turn around, wait to exit into East Dulwich Grove and then wait at the signals for up to 90 seconds in order to traverse across the junction. It must be noted that in peak times, the queuing on the eastbound approach to the junction will result in further delay to vehicles turning right out of Great Spilmans, as there will be no regular gaps in the traffic to allow vehicles to access the eastbound offside lane on approach to the signals.

A respondent objected stating that the modelling for the scheme is flawed, as additional displaced traffic on the eastern approach of East Dulwich Grove has not been taken into consideration. *

* In response, when reviewing the existing saturation levels of the junction, the arms of most concern are the westbound approach on East Dulwich Grove and Townley Road. Townley Road is of particular concern due to the amount of pedestrian crossing movements in the peak periods to the adjacent school. The eastbound approach of East Dulwich Grove and Green Dale are under-saturated, with spare capacity to take on additional vehicles without resulting in additional journey time delay.

Therefore the primary focus of the LINSIG model was to ascertain the effect of installing early start signals for cyclists and omission / retention of the right turn from Townley Road on the most congested arms of the junction, as the saturation levels of these arms will be the determining factor in the overall viability and acceptability of the scheme options with regards to traffic flow. East Dulwich Grove is of particular importance due to it being the main east / west arterial traffic route, as well as being a bus route. Proposing an option that significantly over-saturates East Dulwich Grove would result in excessive queuing, delays to buses, leading to objections from Transport for London and may potentially result in vehicles using local residential streets to avoid East Dulwich Grove. Therefore as no displaced traffic from the right turn ban results in additional westbound vehicles in peak periods and the spare capacity on the eastbound approach on East Dulwich Grove, there was no reason to include this as part of the LINSIG option assessment models.

Taking into account the proposed displacement of traffic from both Dulwich Village and Gilkes crescent as illustrated in Appendix F, this arm is likely to experience at worst a 20% increase in traffic volume. However the level of saturation for this arm for option 7 indicates a low level of saturation of only 66% in the morning peak. A 20% increase in traffic levels would only take this level of saturation up to 80% and therefore is well within the acceptable levels.

An objection was received stating that the Aecom report supplied does not model or consider the impact of diverted traffic on the surrounding network. *

* In response, as stated above, this has little or no relevance to the effect on the operation of the junction under the proposed layout, as there is spare capacity to

accommodate the potential number of additional vehicles accessing the eastbound arm of East Dulwich Grove, whether they access East Dulwich Grove from Dulwich Village or Gilkes Crescent. The Aecom report simply assesses the impact of different options on the most saturated arms of the junction in peak periods, based on the baseline data collated.

An objection was received discussing that there has been no justification provided for the right turn ban. *

* In response, the consultation document and information on the website stated that the banned right turn out of Townley Road into East Dulwich Grove is being proposed to remove potential conflict with southbound cycle movements and improve efficiency of the junction operation.

An objection was received stating that the Aecom report did not evaluate the JMP recommended option 4 and therefore it is an incomplete evaluation. *

* In response, the Aecom report was specifically commissioned to evaluate the design options drafted by the council and not previous options already evaluated and considered by the council which the council does not consider to be acceptable options for implementation.

There have been a number of key developments since the JMP options were drafted that were not taken into account at the time and have now been considered as part of the latest design options developed by the council. These include;

- The Mayor of London's Vision for Cycling, which outlines the drive and focus on both improving cycling safety and creation of new cycling routes and priority to significantly increase the modal share in London.
- Significant capital investment from the Mayor of London and Transport for London for London boroughs over a ten year period to improve cycling safety and priority.
- The drafting of the council's new Cycling Strategy that sets out the borough's objectives to become the number one cycling borough in London and the expectations and principles that are to be applied to the development of highway schemes.
- Development and approval of new highway cycling infrastructure features, such as pre-signals, parallel priority crossings and independent cycle phases to improve cycling safety

In accordance with the above, the previous design options provided by consultants from 2007 and 2012 fall short of current design expectations and as a result, whilst using previous studies to assist with scheme development, the council has designed a more comprehensive package of measures to address the current issues faced by vulnerable road users at the junction.

A number of respondents objected stating that there was no recommendation for option seven in the Aecom report. *

* In response, the report clearly indicates that Option 7 is the preferred option in terms of traffic flow and operation. As discussed previously, the technical note

produced by Aecom was to identify the best option in terms of junction capacity and signal operation and was not commissioned to provide commentary or analysis of each option in terms of traffic engineering, road safety or highway layout design. The note primarily focused on the two main options 7 and 7a which have cycle pre-signals and either allowed right turning traffic out of Townley Road or banned this movement. The report clearly shows that banning the right turn, which is the best option for preventing potential cycle collisions at the junction, is also the best option for ensuring that the junction operates within acceptable levels of saturation during peak periods. Conversely, allowing right turning traffic out of Townley Road in combination with the cycle pre-signal results in oversaturation to both arms of East Dulwich Grove and Townley Road.

An objection was received stating that the ASL boxes should be moved forward as far as possible to minimise the distance to be crossed on the junction that would reduce the signal timing and be used for right turning traffic. *

* In response, the forward stop line of the ASLs have been positioned as close to the junction headways as possible without resulting in vehicle overrun from turning traffic. There are many large coaches that turn right from East Dulwich Grove into Townley Road and left from Townley Road into East Dulwich Grove. The turning movements of these coaches have been modelled and the ASL boxes positioned accordingly to ensure a turning vehicle does not overrun the ASL area. If the ASLs were positioned closer to the junction headway, then there would be significant risk that larger vehicles would collide with cyclists waiting in these areas. Please refer to Appendix I for the autotrack paths of coaches at the junction in relation to the proposed position of the ASLs.

A number of concerns were received highlighting that removing the right turn lane on the East Dulwich Grove westbound approach could lead to conflict with cyclists going in the same direction, as cars will swerve around vehicles turning right into Green Dale. *

* In response, as Green Dale is a no-through road and on average, only 7 vehicles an hour turn right from East Dulwich Grove, there is no requirement to retain a dedicated right turn lane. The removal of the right turn lane has allowed for a reallocation of road space to footway buildouts and the introduction of a westbound cycle lane that provides access to the advanced cycle stop line at the junction, thereby assisting cyclists to position themselves ahead of traffic on a red signal.

It must be noted that a vehicle turning right into Green Dale can safely wait in the middle of the junction and there is ample room for vehicles and cyclists heading westbound to traverse past without conflict.

In addition, removing the right turn lane does not negatively impact on junction capacity or the operation of the signals.

A number of objections were received stating that a separate cycle phase should be introduced at the junction to allow cyclists to cross the junction without any traffic. This would allow the right turn to remain. *

* In response, whilst this is a sensible suggestion, this option was already investigated during the scheme development stage and discounted due to the

excessive junction cycle time required to accommodate this phase in addition to the pedestrian phase. This ultimately resulted in excessive waiting times for pedestrians as the cycle time of the junction was significantly increased and considerable congestion in East Dulwich Grove and Townley Road, with all three arms oversaturated in peak periods.

There is also not enough carriageway space, particularly in Green Dale, to install an appropriately sized cycle waiting reservoir that is segregated and operates independently from the general traffic lanes.

Objections were received highlighting that with the advanced cycle start for cyclists the right turn prohibition is not needed. *

* In response, statistically the majority of collisions involving cyclists take place at signalised junctions, with left hook conflicts being most common type of collision. The introduction of an early start cycle pre-signal allows cyclists to traverse across the junction or undertake turning manoeuvres before general traffic, which significantly reduces the risk of left hook collisions.

The aim of this scheme (which is being funded by TfL's Cycle to Schools Partnership) is to remove potential conflicts to cyclists crossing the junction into Green Dale and Townley Road. The option to create separate stage for cyclists or having Green Dale and Townley Road arms operating independently is discounted due to the negative effects on the junction cycle time, which results in both East Dulwich Grove and Townley Road becoming significantly oversaturated in peak periods. Therefore the remaining option to remove conflict with cyclists traversing across from Green Dale is to ban the right turn out of Townley Road.

Numerous objections were received stating that the right turn will prevent access to Sainsbury's Supermarket for residents. *

* In response, access to a local supermarket cannot be prioritised over and above the safety of pedestrians and cyclists at a busy road junction.

A number of respondents objected stating that they don't want cyclists to dominate the road and that the scheme was not needed as there are very few cyclists that use the junction. *

* In response, there are a significant number of cyclists already using this junction, particularly in peak periods. When analysing the volume of traffic movement from Townley into Green Dale and from Green Dale into Townley Road (along the proposed Quietway route), a total of 46 vehicles on average access Green Dale from Townley Road, but 113 cyclists also traverse across the junction to Green Dale in the morning peak (from 7am – 10am). Therefore there are almost three times as many cyclists accessing Green Dale than motor vehicles over this period. There is also an equal number vehicles and cyclists accessing Townley Road from Green Dale during this period. In the afternoon peak there is also higher numbers of cyclists accessing Townley Road from Green Dale than motor vehicles making this movement.

It must be noted that potential cyclists are liable to be put off from using this junction under the current layout, which is unlikely to persuade anyone who doesn't currently cycle to do so. This is of particular concern, as the adjacent schools would like more pupils to walk and cycle to school (which not only has health benefits for the children but will also potentially reduce congestion levels at school drop off and pick up times).

In addition, with the recent upgrades to Green Dale path for cyclists and the borough's intention to make this junction part of a north / south cycle quietway route through the borough, these cycling numbers are expected to increase significantly which makes the proposed measures to improve safety and remove the potential for conflict even more significant.

Numerous objections to the scheme highlighting that the footway buildouts will make turning movements more difficult and do not take into account the school coaches. *

* In response, as stated previously and as illustrated in Appendix I, the movement of large vehicles, particularly school coaches, has been modelled to ensure that they can still undertake key turning movements without conflict.

Numerous objections stated that the scheme was a total waste of money and that there are higher priorities elsewhere. *

* In response, the existing junction layout is a key barrier to cycling and walking and it totally dominated by vehicle traffic. The large number of pedestrians and cyclists using this junction on a daily basis and its location directed adjacent to two large schools, clearly justifies the capital expenditure to create a step change in safety, cycle priority and visual amenity.

The proposed measures align with the council's Cycling Strategy, Mayor's Vision for Cycling and prescribed road user hierarchy. The Mayor has commitment to invest total of £913m over the next 10 years in cycling safety and infrastructure development to significantly increase the modal share in cycling as a safe, healthy and sustainable form of transport in London.

The council welcomes significant investment from Transport for London to improve the junction and it must be noted that the funding can only be spent on improvements at this location.

A number of respondents highlighted that the scheme will result in more traffic in Lordship Lane which is already congested and will adversely affect bus routes. Melbourne Grove will also experience unacceptable increases in traffic volumes *

* In response, taking into account the traffic model in Appendix F, it is anticipated that a maximum of 65 additional vehicles will access Lordship Lane via Townley Road in the morning peak. The amount of additional vehicles using Lordship Lane is a small percentage of the overall existing northbound traffic volume on Lordship Lane and therefore it is expected that there will be no noticeable increase in congestion or queue lengths .

It is noted that there is a morning peak time northbound bus lane on Lordship Lane through the retail area up to Goose Green, which allows buses to bypass

any congestion in the general traffic lane. Therefore the proposal will have no impact on northbound bus journey times in peak periods.

It is recognised that Melbourne Grove may potentially have up to an additional 60 vehicles traversing northbound during the morning peak period. However this equates to only an additional vehicle per minutes and is therefore within acceptable parameters for traffic volume on a residential road.

A number of respondents objected that the council is simply improving one junction whilst making another junction, namely the Red Post Hill / Dulwich Village / East Dulwich Grove junction more dangerous. *

* In response, as previously mentioned, the East Dulwich Grove / Red Post Hill / Dulwich Village junction is shortly to be upgraded by Transport for London to improve operational efficiency, with potential modifications to the Dulwich Village approach to improve stacking capacity and measures to assist right turning vehicles into East Dulwich Grove. This will potentially reduce congestion in Dulwich Village and create additional capacity to accommodate displaced traffic from Townley Road.

A number of objections stated that the side roads should operate independently so the right turn out of Townley can be kept. *

* In response, this option was considered previously and discounted due to the resulting saturation levels in East Dulwich Grove during peak traffic flow periods. Whilst it is recognised that this option would remove potential conflicts between right turning vehicles and cyclists and retain the right turn movement out of Townley Road, the oversaturated arms of East Dulwich Grove are unacceptable in terms of capacity which would lead to excessive queuing, potential rat running and delays to local bus services.

2.6.3 28% of respondents did not submit a further comment.

2.6.4 A petition was received from local residents with signatories objecting to the junction changes.

2.6.5 The petition contained the following text:

'We the undersigned cannot support the current Public Consultation proposal Option 7 for changes to the junction of Townley Road/East Dulwich Grove/Green Dale, which includes a banned right turn from Townley Road. The documentation and impact analysis supporting this proposal on the Southwark Website are confused and incomplete.'

'However, as a local community, we all want better safety for pedestrians and cyclists at this junction. To achieve this within Southwark's deadline of December 19, we offer support for the recommended 'Quick Win' Option 5 on the 2012 Junction Safety Review(4/12/2014), JMP Consultants), also on your website, which removes guardrails, renews road markings and adds cycle safety mirrors'.

2.6.6 The petition had 330 signatures from addresses within the defined consultation area and was forwarded to the clerk to the Dulwich Community Council (as per the council's petition receipt protocol), so that the petition originator could be

contacted and given the opportunity to present at the forthcoming Dulwich Community Council meeting.

- 2.6.7 It is noted whilst the petition has been considered as part of the consultation review, each signature has not been included as an individual response or official reply to the consultation.

2.7 Levels of Consensus

- 2.7.1 The following majority level of agreement has been given in relation to the questions contained within the consultation document:

a) Total Response

- 43% of consultees support the junction improvement measures;
- 56% of consultees were opposed to the implementation of the proposed measures ; and
- 1% of consultees have no opinion.

b) Response from consultees within the defined consultation area

- 23% of consultees support the junction improvement measures;
- 76% of consultees were opposed to the implementation of the proposed measures ; and
- 1% of consultees have no opinion.

c) Response from consultees outside the defined the defined consultation area

- 65.5% of consultees support the junction improvement measures;
- 34% of consultees were opposed to the implementation of the proposed measures ; and
- 0.5% of consultees have no opinion.

2.8 Statutory Consultee and Key Stakeholder Replies

- 2.8.1 A number of statutory consultees and key stakeholders replied to the consultation exercise. These responses are summarised below;

- a) **JAPS Pre-Prep School** located on Dulwich Village replied registering their support for the scheme. The response highlighted that the current configuration of the junction favours motor vehicles and that there is potential for conflict. The school welcomes plans to prioritise the safety of all road users at the junction, including pedestrians and cyclists.
- b) **JAPS Preparatory School** located on East Dulwich Grove replied in strong support for the junction improvements, stating that they were long overdue. They stated that whilst the scheme might not please some motorists, they believe that the safety of pedestrians and cyclists at this junction is vital. The school encourages parents and children to walk, cycle or scoot to school, but many parents currently feel it is too dangerous to do so.

- c) **JAGS** on East Dulwich Grove replied in support of the scheme stating that the proposed changes will make the junction safer for their pupils who cross there in large numbers each day.
- d) **Allyen's School** in Townley Road replied stating that the school supports the scheme in principal and that the changes are a step in the right direction.
- e) **Dulwich Village C of E Infants School** replied stating that they are in full support of the change to the junction. They also highlighted that they had received some concerns about the proposed no right turn at the junction.
- f) **The Charter School** located on Red Post Hill replied noting the concerns of both the Safer Routes to School Group as well as the parental body of the school and confirmed that the safety and well being of students and the wider community is paramount. The reply detailed support for the diagonal pedestrian crossing and extension of the pavement corners which will increase pedestrian and cycle safety. It was highlighted that local residents / parents had raised concerns about the no right turn into Townley Road and that the council should consider those objections when making a final decision on this matter.
- g) **Southwark Cyclists** replied stating that following a meeting on the 10th December, members unanimously agreed to respond formally in support of the council's proposals for the junction.
- h) **Dulwich and Herne Hill Safer Routes to School** replied stating their full support for the scheme. The new design is a step forward for safe, active, independent journeys to school, making the roads more friendly and giving space and time to cross without feeling threatened.
- i) **The Dulwich Society** replied confirming full support for the scheme and the proposed improvements for pedestrians and cyclists at the junction.
- j) **Dulwich Young Cyclists** replied stating they wholeheartedly support Southwark on improving the junction and are keen to work with the council on the detail.
- k) **Southwark Living Streets** replied in strong support of the scheme which will make the junction safer and easier to use for pedestrians and cyclists. They were particularly supportive of the removal of the staggered pedestrian crossings, tightening up the junction to reduce the crossing distances for pedestrians and removal of the right turn movement out of Townley Road to facilitate the removal of potential conflicts with cyclists. It was also detailed that these changes fit closely with the Mayor of London's Vision for Cycling and the Southwark Council Cycling Strategy.
- l) **Bessemer Grange TRA** replied highlighting their support for the alterations to the junction. They highlighted the importance of the Green Dale path as a key route for local residents to schools and the improvements to the junction will not only improve safety but also compliment the recent work the council has done on the Green Dale path. Removal of the staggered crossings will remove the existing frustration pedestrians have relating to crossing the road in two movements. The reply also highlighted that Carlton Avenue and

Townley Road are both residential roads that serve as short cuts for traffic and that alternative routes were available.

m) **Wells for Wellbeing** replied stating that the final scheme design needs to pay attention to the following points to improve this junction for inclusive cycling:

- Ensure generous width of cycle lane for the whole length of the segregated pathways to accommodate all types of cycles.
- Remove waiting bays - these introduce a confusing additional decision-making stage for young cyclists, and suggest to drivers that cycles should be waiting in the gutter rather than treated as moving traffic. We need space for cycling, not space for waiting!
- Avoiding left hooks from Townley Road, most cycle traffic will be going straight on, most cars turning left. Combined with the waiting bay / feeder lane arrangement, this gives huge potential for left hooks.
- The angle of left turns look really awkward particularly for non-standard bikes.

n) **Gilkes Crescent Residents Association** replied in objection to the scheme based on the amount of displaced traffic that would traverse Gilkes Place and Gilkes Crescent as a result of the right turn ban at Townley Road.

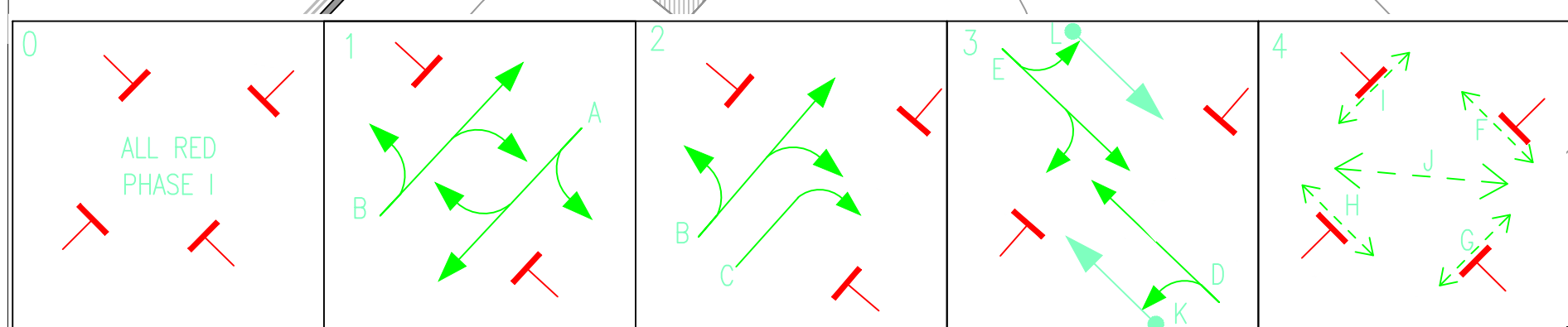
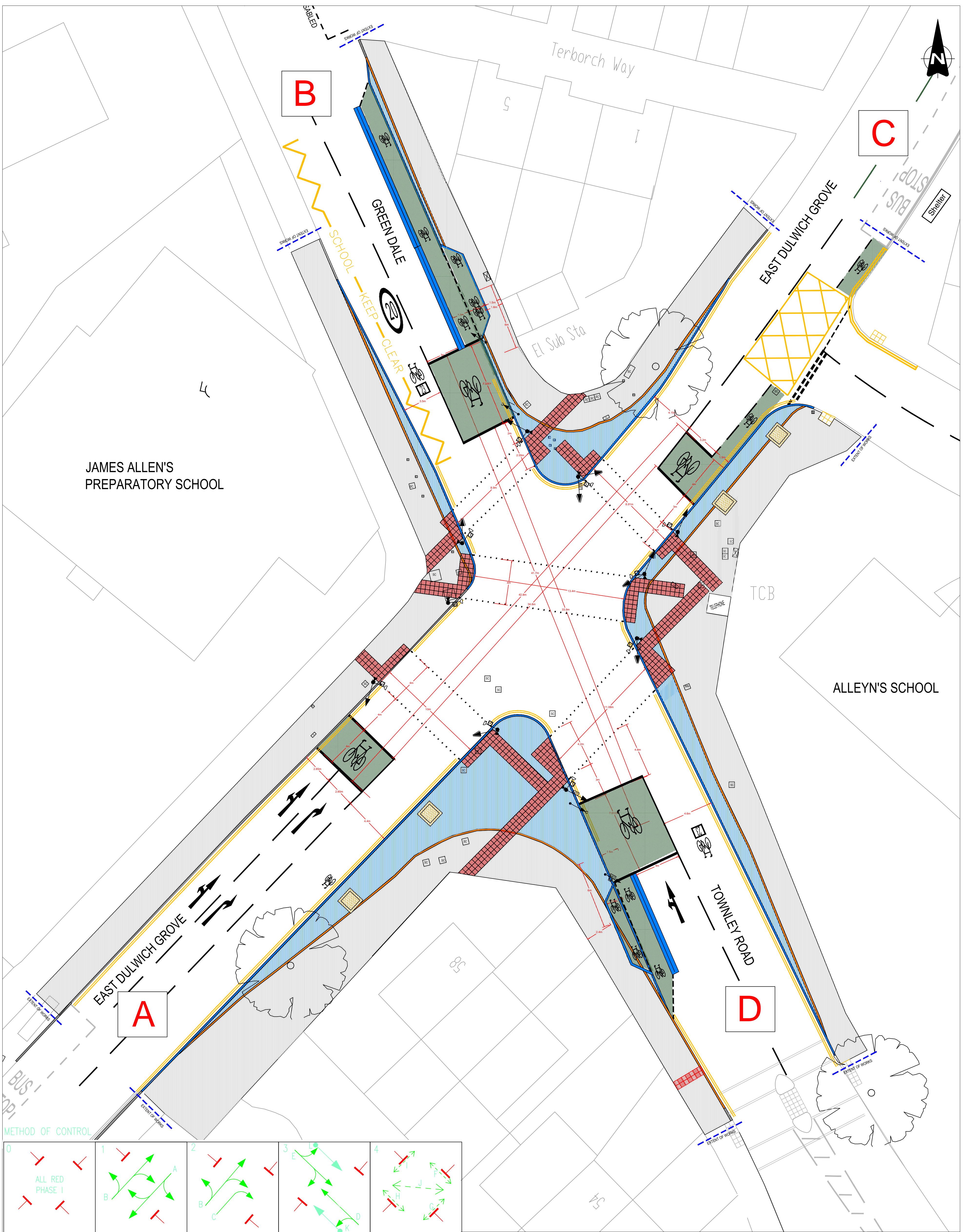
3.0 Recommendations

- 3.1 Although a majority of respondents to the consultation exercise were opposed to the scheme, with the major point of objection relating to displacement of traffic onto other junctions and residential streets in the area during peak traffic flow periods, officers feel that this has been overstated and that the actual volume of potential traffic displacement onto other routes will not adversely impact these roads or junctions.
- 3.2 Whilst it is recognised that there is potentially some inconvenience to local residents who regularly turn right out of Townley Road to access destinations in the east and north of the borough, the benefits of safety to vulnerable road users and priority to sustainable modes of travel outweigh this inconvenience.
- 3.3 The proposed measures are also closely aligned with council policy including the borough's Transport Plan, Road User Hierarchy and Cycling Strategy.
- 3.4 Nonetheless, it is recognised that for proposals to be successful, they require support and consensus locally. In this instance, the proposal to ban the right turn has clearly prevented this and therefore further investigation should be undertaken to find an alternative solution that delivers pedestrian and cycle benefits without removing that right turn.

Appendices

Appendix A:	Initial Scheme Design
Appendix B:	Consultation Documents
Appendix C:	Location Plan and Extents of Consultation
Appendix D:	List of Addresses within the Distribution Area
Appendix E:	Summary of Total Consultation Response
Appendix F:	Traffic Displacement Study
Appendix G:	Junction Pedestrian Movement Survey
Appendix H:	Scheme Option Traffic Modelling Technical Note
Appendix I:	Junction Vehicle Autotrack Analysis

Appendix A: Initial Scheme Design



- | | | |
|--------------------------------------|-----------------------------------|--------------------------------------|
| Existing kerbline to be removed | 3 Aspect Signal with Cycle Filter | Proposed ladder paving |
| Proposed kerb | Existing kerbline to remain | Existing ladder paving to be removed |
| Tactile Paving (red) | Proposed lining | Proposed cycle facility |
| Tactile Paving (buff) | Existing lining | Proposed Pedestrian Countdown Unit |
| 3 Aspect Signal on Pole | Proposed footway extension | Proposed pedestrian countdown unit |
| 3 Aspect Signal with Secondary Hoods | Existing footway | |
| 2 Aspect Pedestrian Signal | Proposed tree pit | |
| Pedestrian Pushbutton | Proposed dropped kerb | |
| C Low Level Cycle Aspect | | |



REGENERATION & ENVIRONMENT
COUNCIL OFFICES, CHILTERN
HOUSE, PORTLAND STREET,
LONDON SE17 2ES

No.	Date	Revision
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Project
East Dulwich Grove / Townley Road

Title
Proposed Junction Layout -
OPTION 7 Cycle Advanced Start,
Waiting Area,
No Right Turn from Townley

Contract No.	Drawn	CM
Scale	Designed	CM
NTS	Checked	
D/EDG/CM/13/001/O7	Approved	Rev.
Date Drawn	02/14	Date Issued

Appendix B: Consultation Documents

We want your views

It is important for all consultees to respond to the consultation. We would be grateful if you could take the time to review the proposals outlined in this document and provide a response using the pre-paid envelope and questionnaire provided by 12th December 2014.

Your views are essential for us to understand your requirements for the proposal and form a fundamental part of the scheme development process, whether you use public transport, cycle, walk or drive a private vehicle.



East Dulwich Grove / Townley Road / Green Dale Junction Improvement Scheme

What happens next?

As you will appreciate Southwark Council receives many comments from consultations and therefore is unable to respond personally to specific issues raised. However all comments and suggestions will be taken into consideration before a decision is made.

The responses to the questionnaire will be analysed and taken into account in the final design of the proposed works.

Should you require any further information regarding the proposed scheme please do not hesitate to contact Chris Mascord at chris.mascord@southwark.gov.uk

Further information on other schemes along the route in Southwark can also be found at: www.southwark.gov.uk/consultations

To arrange a translation of this leaflet and the other consultation documents, or for other assistance, please take it to:

One Stop Shop – 122 Peckham Hill Street, London SE15, or
One Stop Shop – 151 Walworth Road, London SE17, or
One Stop Shop – 17 Spa Road, London SE16, or
Southwark Town Hall – Peckham Road, London SE5.

للترتيب لترجمة هذه الكراسة خذها رجاءً إلى أحد العنوانين التاليين:

Para obtener una traducción de este folleto, llévelo a:

Bu broşürün tercüme edilmesini düzenlemek için lütfen onu aşağıdaki yerlerden birine götürün:

Đề có bản dịch tiếng Việt, hãy mang tờ rơi này đến cửa hàng:

Pour une traduction de ce dépliant, présentez-le à l'un des guichets uniques suivants :

এই প্রচারপুস্তিকাটির (লিফলেটের) একটি অনুবাদের আয়োজন করতে হলে দয়া করে এটি এখানে নিয়ে যান:

為獲取此單張的翻譯版本，請將單張帶到以下一站式辦事處：

Have your say

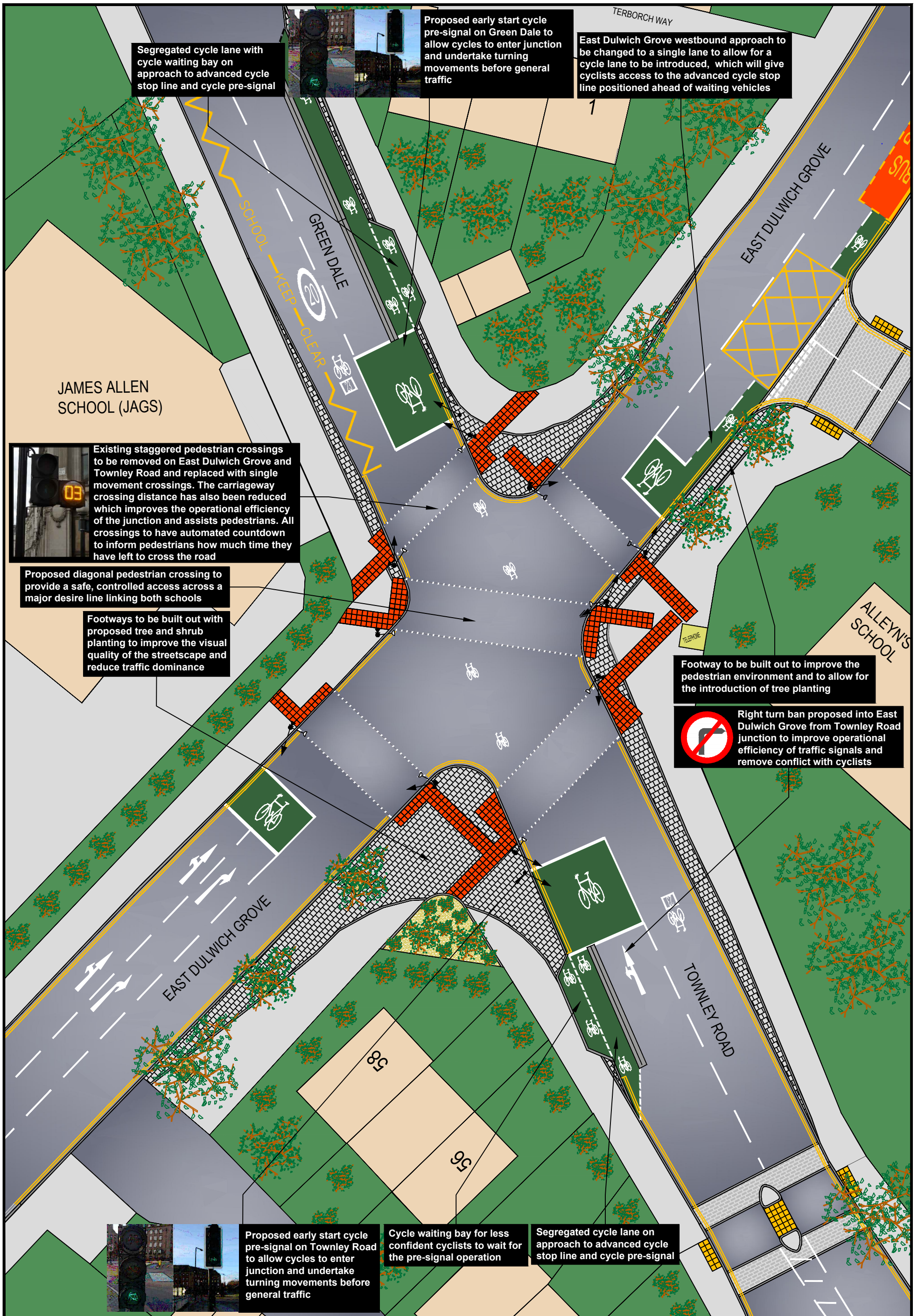
Southwark Council is holding a consultation to receive residents' and key stakeholders' comments regarding proposals to improve the East Dulwich Grove / Townley Road / Green Dale junction.

Background

Local stakeholders have raised concerns regarding the safety of pedestrians and cyclists at this junction, particularly during morning and evening peak hours. Pedestrians have been observed to cross the junction diagonally (not using the staggered crossing facilities due to excessive waiting times) and conflict has been experienced between cyclists using the junction and traffic turning right out of Townley Road. The key aim of the proposals is to significantly improve safety for cyclists and pedestrians at the junction, whilst ensuring that there is no adverse delay to traffic on East Dulwich Grove.

What are the proposed changes?

- Removal of existing staggered pedestrian crossings with the implementation of shorter, single movement facilities.
- Introduction of a diagonal pedestrian crossing to link footways adjacent to both schools and cater for an existing pedestrian desire line.
- All pedestrian facilities to operate at the same time to reduce waiting time for pedestrians and improve the efficiency of the junction.
- Cycle pre-signal on Townley Road and Green Dale to allow cycles to enter the junction and undertake turning movements before general traffic.
- Recessed bays for less confident cyclists to wait for pre-signal operation (Townley Road and Green Dale).
- Banned right turn out of Townley Road into East Dulwich Grove to remove potential conflict with southbound cycle movements and improve efficiency of junction operation.
- Proposed cycle lane and advanced cycle waiting area on East Dulwich Grove (westbound) to allow cyclists to bypass waiting vehicles and gain priority at the junction.
- Footway buildouts to reduce crossing distances for pedestrians and allow room for tree planting and to visually improve the streetscape.
- In accordance with the measures proposed above, the existing shared use cycle / pedestrian footway leading from Carlton Avenue into Townley Road will be removed.



EAST DULWICH GROVE / TOWNLEY ROAD JUNCTION IMPROVEMENTS

East Dulwich Grove / Townley Road / Green Dale Junction Improvement Scheme

Consultation questionnaire

The council would like to receive your views on the proposed junction improvement scheme at East Dulwich Grove / Townley Road / Green Dale

We would be grateful if you could answer some general questions so that we can find out what your views are towards the proposals. Please return completed questionnaires by the **12th December 2014**

Residents and Businesses:

1. Are you a resident or business? Resident ☐ Business ☐

2. What do you think of the proposals? Support ☐ Opposed ☐ No opinion ☐

Please use the space below for comments:

Continue overleaf if necessary.....

Please don't forget to fill in your personal details

Name

Address (essential)

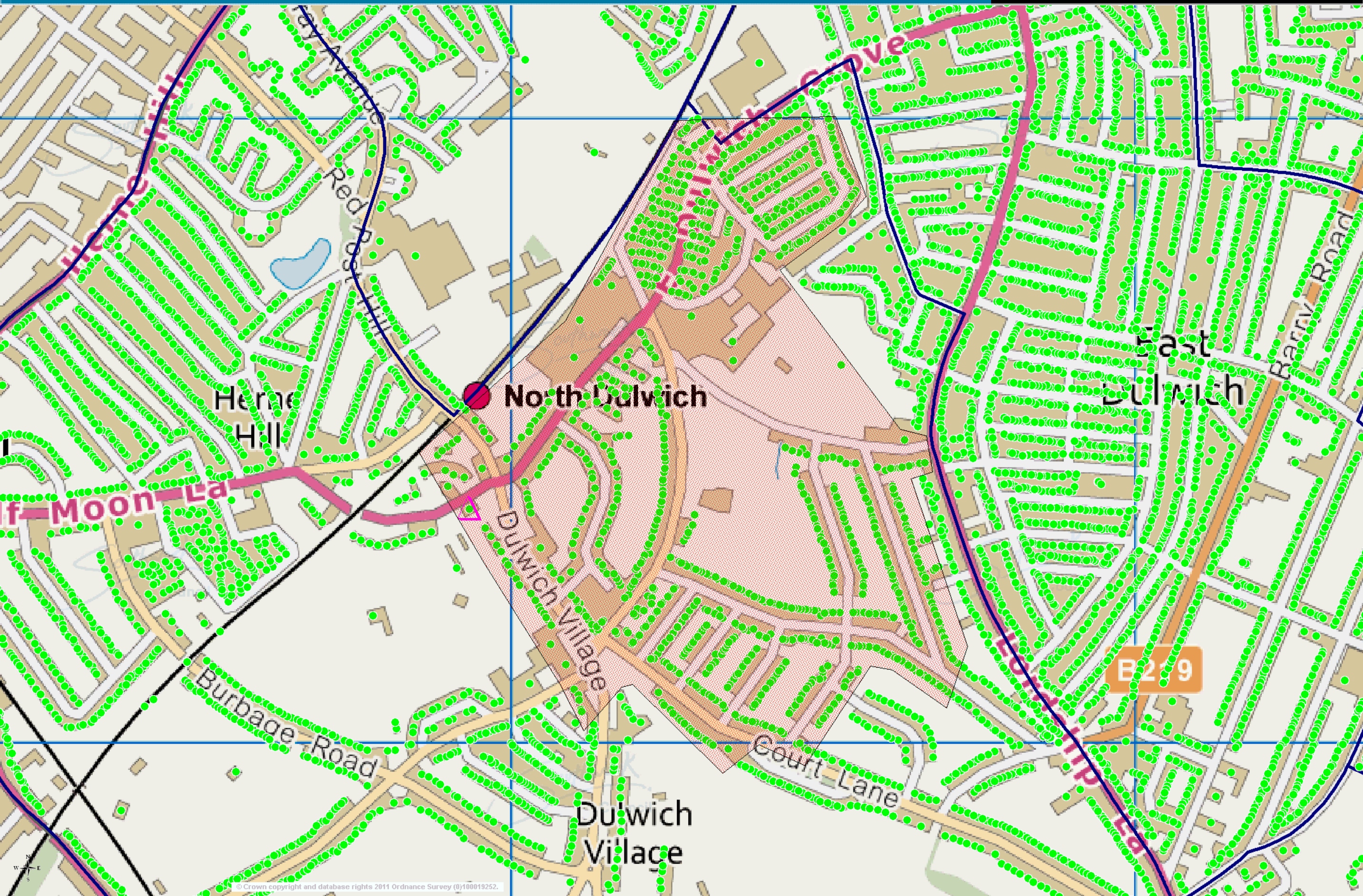
Postcode Date



Appendix C: Location Plan and Extents of Consultation

Revised consultation area - Townley Road junction

Date 4/11/2014



Scale 1/5762

Appendix D: List of Addresses within Distribution Area (Available on Request)

Appendix E: Summary of Total Consultation Response

EAST DULWICH GROVE / TOWNLEY ROAD CONSULTATION TOTAL RESPONSE DISTRIBUTION

Road Name	Support	Opposed	No Opinion
Advys Road		1	
Albemarle Road BR3		1	
Aldebert Terrace SW8	1		
Allison Grove SE21	1		
Allyen Road SE21	1		
Alscott Way SE1	1		
Anonymous	30	28	
Aquinas Street SE1	1		
Ashbourne Grove SE22	2	1	
Auckland Road SE19	2		
Aylesbury Road SE17	2		
Aysgarth Road SE21		2	
Bamber Road SE15	2		
Barry Road SE22		1	
Beauval Road SE22	7	30	
Beckwith Road SE24	3		
Bellenden Road SE15	1		
Benhill Road SE5	1		
Bermondsey Square SE1	1		
Bermondsey Street SE1	1		
Bermondsey Wall East SE1	1		
Bomar Road		1	
Brixton Road SW19	1		
Buchan Road SE15	1		
Burbage Road SE21/SE24	2	7	
Burgoyne Road SE25	1		
Buxted Road		1	
Canal Walk		1	
Carden Road SE15	1		
Carlton Avenue SE21	5	29	
Casella Road SE14	1		
Casino Avenue SE24	1		
Chadwick Road SE15	1		
Champion Grove SE5	1		
Champion Hill SE5	1	1	
Chartham Road SE25		1	
Chatsworth Way SE27	1		
Chesterfield Grove SE22	1		
Chournert Road	1		
Coburg Crescent SW2		1	
Coldharbour Lane SE5	1		
Colemain Road SE5	1		
Coleridge Close SW8	1		
College Road SE19	1		
Colwell Road SE22	3		
Colyton Road SE22	2		
Commercial Way SE15	1		
Conyers Road SW16	1		
Cooper Close SE1	1		
Sub total	89	106	0

Road Name	Support	Opposed	No Opinion
Coopers Cope Road BR3	1		
Copelstone Road		1	
Court Lane SE21	3	13	
Crebor Road SE22	1	1	
Crouchmans Close SE26	1		
Croxted Road SE24	2	1	
Crystal Palace Road SE22	1	1	
Danby Road SE15	1	1	
Danecroft Road		2	
Darrell Road		1	
Dekker Road SE21	3	2	
Denman Road SE15	2		
Denmark Hill SE5	1		
Derwent Grove		1	
Desenfans Road SE21	1	6	
Deverell Street SE1	2		
Dome Hill Park SE26	1		
Dorchester Court SE24	1		
Dorset Road SW19	1		
Dovercourt Road SE22	14	40	
Druce Road SE21		8	
Druid Street SE1	1		
Dudrich Mews SE22	1		
Dulwich Common SE21		1	
Dulwich Village SE21	4	3	
East Dulwich Estate SE22	4	13	3
East Dulwich Grove SE22	1	11	
Eastern Avenue		1	
Eastlands Crescent SE21	2		
Elfindale Road SE22	1		
Eynella Road SE21	1	3	
Fitzwilliam Road SW4		1	
Forest Hill Road SE22	1		
Frank Dixon Way		1	
Frankfurt Road		2	
Friern Road SE22	2	1	
Gilkes Crecent SE21	2	21	
Glengarry Road SE22	8	9	
Goodrich Road		1	
Goodrich Road		1	
Goldwell Road SE15	1		
Great Brownings		4	
Great Dover Street SE1	1		
Great Spillmans SE22	2	11	
Green Dale Close SE22	1		
Greendale Close SE22	2		
Grosvenor Park SE5	1		
Grove Hill Road SE5	1		
Grove Lane SE5	1		
Sub total	74	162	3

Road Name	Support	Opposed	No Opinion
Grove Park SE5	1	1	
Grove Vale SE22		1	
Half Moon Lane SE24	1		
Harlscott Road SE15	1		
Hayes Grove SE22	1		
Henslow Road		1	
Herber Road		1	
Herne Hill SE24	1		
Hichisson Road SE15	1		
Hillsboro Road SE22	2	3	
Hilversum Crescent SE22	2	2	
Hinckley Road		1	1
Holmdene Avenue SE24	1		
Homestall Road SE22	1		
Hopewell Street SE5	1		
Hull Close SE16	1		
Idmiston Road		1	
Ivanhoe Road		1	
Ivydale Road SE15	2	1	
Jennings Road		1	
John Maurice Close SE17	1		
John Russkin Street SE17	1		
Jowlett Street SE15	1		
Kemerton Road SE5	1		
Kempis Way		1	
Kendall Avenue BR3	1		
Kennington Lane SE11	2		
Keston Road SE15	1		
Kimberley Avenue SE15	1		
Knatchbull Road SE5	1	2	
Lakeside BR3		1	
Landcroft Road SE22	1	2	
Landells Road SE22	1	1	
Larcom Street SE17	2		
Lausanne Road SE15	1		
Lilford Road		1	
Linden Grove SE15	3		
Lomond Grove SE5	1		
London Road SE		1	
Lordship Lane SE22	2	3	
Lorimore Square SE17	1		
Lovelace Road		3	
Luna Road	1		
Lyham Close SW2	1		
Lyndhurst Way SE15		1	
Maidstone Mews SE1	1		
Mariner House SE16	1		
Marsden Road		1	
Matham Grove SE22	1		
Sub total	43	31	1

Road Name	Support	Opposed	No Opinion
Maxted Road SE15	2	1	
Maythaw Court //	1		
Meakin Estate SE1	1		
Medlar Street SE5	1		
Meeting House Lane SE15	1		
Melbourne Grove SE22	2	3	
Melford Road SE22	3		1
Merttins Road SE15	1		
Mills Street SE1	1		
Milo Road SE22	1		
Milton Road	1		
Moffat Road CR7	1		
Monclar Road SE5	1		
Morna Road SE5	1		
Neckinger Estate SE16	1		
Oakfield Gardens SE19	2		
Odessa Street SE16	1		
Oglander Road SE15		1	
Old Ford Road E3	1		
Old Kent Road SE1	1		
Orchard Road CR2	1		
Orsterley Gardens CR7		1	
Overhill Road SE22	1	1	
Peckarmans Wood SE26	1		
Peckham Rye SE15	2		
Pellat Road SE22	1		
Penton Place SE17	1		
Pickwick Road SE21	1	1	
Plough Lane SE22		1	
Priory Court ///	1		
Red Post Hill SE24	2	3	
Ringmore Rise	1		
Rodwell Road		1	
Rosendale Road		1	
Rotherhithe Street SE16	3		
Ruskin Walk SE24	1		
Rutland Court SE5	1		
Sansom Street SE5	1		
Scylla Road SE15	1		
Shad Thames SE1	1		
Shipwright Road SE16	1		
Shurbbery Road SW16	1		
Silvester Road SE22	1		
South Croxted Road SE21	1	1	
Southwark Park Road SE16	1		
Sradella Road		1	
Stanbury Road SE15	1		
Sternhall Lane		1	
Stratton Avenue SE6	1		
Sub total	51	17	1

Road Name	Support	Opposed	No Opinion
Stuart Road SE24	1		
Sumner Road SE15	1		
Sumner Street SE1	1		
Sutherland Square SE17	2		
Sylvan Road SE19	2		
Talfourd Road SE15	1	1	
Tarbert Road SE22		10	
Tewkesbury Avenue SE23		1	
Thorncombe Road SE22	3	3	
Townley Road SE22	4	14	1
Tresco Road SE15	2		
Trossachs Road SE22	3	10	
Tudor Road SE19	1		
Turkey Oak Close SE19	2		
Turney Road SE21		2	
Tynney Avenue SE19	1		
Ulverscroft Road SE22	1	1	
Underhill Road SE22	1		
Upland Road SE22		1	
Urtwin Street SE5	1		
Versailles Road SE20	1		
Village Way SE21	2	1	
Walworth Road SE17	2		
Wanley Road SE5	1		
Webber Row SE1	1		
Welsford Street SE5	1		
West Barnes Lane KT3	1		
Whateley Road SE19	1	1	
Winterbrook Road SE24	4	1	
Woodquest Aveune SE24	1		
Woodwarde Road SE22	11	40	
Wooler Street SE17	1		
Worlingham Road SE22	1	1	
Wroxton Road SE15	1		
Sub total	56	87	1
Total	313	403	6
Overall Response no.	722		
Percentage	43.35%	55.82%	0.83%

EAST DULWICH GROVE / TOWNLEY ROAD CONSULTATION AREA RESPONSE DISTRIBUTION

Road Name	Support	Opposed	No Opinion	Total rec.	Total Del.	Response Rate	Support	Opposed	No Opinion
Beauval Road SE22	7	30		37	124	29.84%	18.92%	81.08%	0.00%
Carlton Avenue SE21	5	29		34	76	44.74%	14.71%	85.29%	0.00%
Court Lane SE21	3	13		16	60	26.67%	18.75%	81.25%	0.00%
Dekker Road SE21	3	2		5	56	8.93%	60.00%	40.00%	0.00%
Desenfans Road SE21	1	6		7	25	28.00%	14.29%	85.71%	0.00%
Dovercourt Road SE22	14	40		54	96	56.25%	25.93%	74.07%	0.00%
Druce Road SE21		8		8	30	26.67%	0.00%	100.00%	0.00%
Dulwich Village SE21	4	3		7	59	11.86%	57.14%	42.86%	0.00%
East Dulwich Estate SE22	4	13	3	20	116	17.24%	20.00%	65.00%	15.00%
East Dulwich Grove SE22	1	11		12	87	13.79%	8.33%	91.67%	0.00%
Gilkes Crecent SE21	2	21		23	45	51.11%	8.70%	91.30%	0.00%
Glengarry Road SE22	8	9		17	142	11.97%	47.06%	52.94%	0.00%
Great Spillmans SE22	2	11		13	21	61.90%	15.38%	84.62%	0.00%
Greendale Close SE22	2			2	10	20.00%	100.00%	0.00%	0.00%
Hillsboro Road SE22	2	3		5	25	20.00%	40.00%	60.00%	0.00%
Hilversum Crescent SE22	2	2		4	20	20.00%	50.00%	50.00%	0.00%
Milo Road SE22	1			1	6	16.67%	100.00%	0.00%	0.00%
Pond Mead	1	1		2	2	100.00%	50.00%	50.00%	0.00%
Red Post Hill SE24	2	3		5	10	50.00%	40.00%	60.00%	0.00%
St. Barnabas Close	0	0	0	0	6	0.00%	0.00%	0.00%	0.00%
Tarbert Road SE22		10		10	64	15.63%	0.00%	100.00%	0.00%
Thorncombe Road SE22	3	3		6	17	35.29%	50.00%	50.00%	0.00%
Townley Road SE22	4	14	1	19	40	47.50%	21.05%	73.68%	5.26%
Trossachs Road SE22	3	10		13	48	27.08%	23.08%	76.92%	0.00%
Turney Road		1		1	1	100.00%	0.00%	100.00%	0.00%
Village Way SE21	1			1	3	33.33%	100.00%	0.00%	0.00%
Woodwarde Road SE22	11	40		51	122	41.80%	21.57%	78.43%	0.00%
Total	86	283	4	373	1311				
Overall Response No.	373								
Response Rate	28.76%								
Percentage	23.08%	75.86%	1.06%						

EAST DULWICH GROVE / TOWNLEY ROAD RESULTS EXTERNAL TO CONSULTATION AREA

Total	227	120	2
Overall Response No.	349		
Percentage	65.04%	34.38%	0.57%
Distribution percentage	CA	External	
	51.66%	48.34%	

Appendix F: Traffic Displacement Study

Townley Road / East Dulwich Grove Junction Improvement Scheme

Traffic Displacement Model

www.southwark.gov.uk

Many options were designed, tested, and modelled, including provision of a separate cycle phase, independent operation of the Townley Road and Green Dale arms, cycle early start facilities, shared use footways for pedestrians and cyclists and options that included both safely retaining and removing the right turn from Townley Road. Eleven design options were considered, including five based on an earlier safety review by JMP Consultants and six developed in house with support from Conway Aecom since the completion of the feasibility report.

The option chosen for consultation provides the greatest potential safety benefits for pedestrians and cyclists, as well as ensuring that both arms of East Dulwich Grove are not oversaturated with traffic in peak periods and the pedestrian waiting time to cross the junction is not disproportionate to the time allocated to traffic movements.

Banning Traffic Turning Right from Townley Road

The most controversial element of the scheme is the proposed right turn ban out of Townley Road into East Dulwich Grove. However, whilst this proposal may initially be seen as a disadvantage to car drivers and create anxiety of displacement of vehicles into other roads in the area, careful consideration and analysis has been undertaken to ascertain the potential benefits and disbenefits to the local area. Below are some key issues for consideration in relation to the right turn ban:

- On average a total of 147 vehicles turn right at the junction from Townley Road in the morning peak (8am – 9am). This compares with a total number of 220 vehicles entering Carlton Avenue from Dulwich Village (northbound right turn lane) and

Turney Road. Therefore around 80% of vehicles turning right out from Townley Road into East Dulwich Grove can be classed as 'non-local' traffic, traversing the most 'direct' route to key routes in the east such as Dog Kennel Hill and East Dulwich Road. It is therefore assumed that the majority of traffic uses this route as it is perceived to be more direct or quicker than using the Dulwich Village/East Dulwich Grove junction

- During interpeak periods, all junctions in the area are understaturated and there are no major delays at the Red Post Hill / Dulwich Village signalised junction. Right turning volumes from Townley Road during these times are minimal and therefore the effects on surrounding roads and junctions from banning the right turn during this time is negligible.
- Banning the right turn will not adversely impact existing traffic movements and vehicular accessibility to the adjacent schools. All turning movements are retained on East Dulwich Grove and Green Dale and parents will still be able to traverse up Carton Avenue to drop their children off at school and then turn left out of Townley into East Dulwich Grove if that is what they wish to do
- Transport for London is currently upgrading the method of control at the Red Post Hill / Dulwich Village / East Dulwich Grove junction that will improve operational efficiency. As part of this upgrade, TfL are investigating the feasibility of installing a right turn filter and changing the road layout on the Dulwich Village approach to create a dedicated right turn lane to reduce queue lengths and waiting times. As part of this upgrade the junction will be linked with the Townley Road junction to ensure the operation of both junctions are coordinated to improve traffic flow and reduce congestion and delay.
- Carlton Avenue, Townley Road and Green Dale are already part of the London Cycle Network and are proposed to become a cycling 'Quietway' from Elephant and Castle to Crystal Palace from 2016. As a result, the number of cyclists using this junction is expected to increase and therefore reducing or removing potential

conflicts is paramount. Currently the junction is traffic dominated and feedback from cyclists using the junction is that they do not feel safe, especially when traversing across from Green Dale into Townley Road due to 'near misses' with right turning motor vehicles from Townley Road. An explicit objective of the scheme is to make cycling as safe and attractive as possible to encourage cycling to schools in the area

- Banning the right turn allows the junction to operate more efficiently and makes provision for the cycle early start phase to be implemented without adversely impacting on traffic saturation levels on East Dulwich Grove. Retaining the right turn, with the addition of pre-signals for cyclists, increases the amount of time required to be allocated to the side road arms of the junction, which will increase delays on East Dulwich Grove and result in excessive waiting times for pedestrians.

Proposed Traffic Displacement

Whilst it is difficult to precisely predict driver behaviour, it is not anticipated that all right turning traffic from Townley Road in peak periods will be displaced on to one particular route or street, due to drivers having different destinations in the northern and eastern parts of the borough.

Definition of Peak AM Period

Analysis of traffic data for the area highlights the period of highest volume, particularly in residential streets, is between 8am and 9am. Therefore this period has been used to predict the worst case scenario for proposed traffic displacement as result of the right turn ban at Townley Road. Please refer to attached area plans illustrating the peak hour base traffic flow model and proposed peak hour traffic flow model.

Traffic Volume and Movement Out of Townley Road

An average 147 vehicles turn right out of Townley Road during the morning peak hour and access the junction either by turning left out to Calton Avenue or traversing north-westbound along Townley Road.

Calton Avenue

Site studies concluded that approximately 90% of vehicles exiting Calton Ave turn left into Townley Road to access the East Dulwich Grove junction during the morning peak. This equates to 138 vehicles, with 15 vehicles turning right (153 total). A further 15% of vehicles (21) accessing the Townley Road junction from Calton Avenue either turn left into East Dulwich Grove or traverse straight across into Green Dale. It is assumed that these vehicles are associated with parents dropping off their children to school. The remainder of vehicles (117) turn right out of Townley Road into East Dulwich Grove.

Therefore approximately 75% of vehicles traversing northbound along Calton Avenue in the morning peak is non-local traffic accessing Carlton Avenue from either Turney Road or Dulwich Village

Townley Road Link Between Dovercourt Road and Carlton Avenue

An average of 176 vehicles traverse north-westbound along Townley Road between Dovercourt Road and Calton Avenue in the morning peak period, having accessed the area from Lordship Lane.

An estimated 5% of vehicles turn left into Calton Avenue, with the remaining vehicles (167) accessing the East Dulwich Grove junction.

The majority of the vehicles (127) traversing north-westbound along Townley Road turn left at the East Dulwich Grove in order to access areas to the west including Herne Hill, Lambeth and Tulse Hill, with a small number (approximately 6%) traversing straight across into Green Dale. The remaining vehicles (30) turn right at the junction. It is presumed that these right turning vehicles are associated

with parents dropping their children off to the adjacent schools having accessed Townley Road via Lordship Lane and then turn right out of Townley Road into East Dulwich Grove to undertake the return journey home.

Displacement of Traffic from Carlton Avenue

In accordance with the above traffic movements and volume, the potential average number of vehicles that will be potentially displaced that currently traverse northbound along Carlton Avenue and turn right out of Townley Road in the morning peak is 127. It is presumed that the majority of these vehicles are on route to key destinations in the north and east of the borough, either by traversing East Dulwich Road towards Nunhead and Peckham or traversing Grove Vale and Dog Kennel Hill towards Camberwell (using the northern section of Melbourne Grove). In both instances, the vehicles will traverse through the East Dulwich Grove / Melbourne Grove junction.

Currently the shortest, most direct route for vehicles traversing westbound along Dulwich Village (accessing the area from the South Circular), or northbound along Turney Road is to use Carlton Avenue, turning left into Townley Road and then right into East Dulwich Grove. The distance of this route measured from the Dulwich Village / Turney Road / Carlton Avenue junction to the junction of East Dulwich Grove / Melbourne Grove is 1138m.

There are three potential alternative routes that displaced traffic could potentially traverse to access the Melbourne Grove / East Dulwich Grove junction. These include:

- i) Dulwich Village / East Dulwich Grove
- ii) Dulwich Village / Gilkes Place / Gilkes Crescent / East Dulwich Grove
- iii) Court Lane / Dovercourt Road / Townley Road / Lordship Lane / Melbourne Grove
Or Carlton Avenue / Woodward Road / Dovercourt Road / Townley Road / Lordship Lane / Melbourne Grove

Dulwich Village / East Dulwich Grove

This route is the shortest alternative route measuring a distance of 1219m. It is noted that during the morning peak period, traffic congestion is experienced northbound on approach to the Red Post Hill / Dulwich Village signalised junction. However, the signalised junction method of control is being upgraded by TfL before March 2015 that will improve operational efficiency. Provision of road layout changes in Dulwich Village are also being considered, including the provision of a dedicated right turn lane to double the stacking area for waiting vehicles, which will reduce queue lengths on approach to the junction.

The council has also requested TfL to investigate if it is feasible to install a right turn filter on the Dulwich Village arm or early cut off on Red Post Hill to allow more right turning vehicles to clear the junction per cycle.

It is estimated that a combination of using upgraded UTC with vehicle activation and potential right turn lane with filter of early cut off, will reduce queue lengths on the Dulwich Village approach to the junction by 30%.

As a result, the potential total number of vehicles that can clear the Dulwich Village arm in peak periods would increase from 260 to 338, which would offset up to 60% of the 117 displaced vehicles from Carlton Avenue.

However, taking into account driver behaviour and the availability of other alternative routes, this figure has been reduced to a more realistic 40% of displaced traffic from Carlton Avenue (estimated as 47 vehicles out of the 117).

Dulwich Village / Gilkes Place / Gilkes Crescent / East Dulwich Grove

This alternative route allows vehicles wishing to access East Dulwich Grove from either Dulwich Village or Turney Road to bypass the signalled junction at Red Post Hill. Gilkes Crescent currently experiences its highest northbound traffic flow in the morning peak equating to 63 vehicles in the hour. Whilst this route is longer than the Dulwich Village route, measuring 1298m and is convoluted with traffic calming, it is reasonable to assume that some traffic will be displaced onto this route.

It is probable that up to 30% of the displaced traffic could potentially use Gilkes Place and Gilkes Crescent. This equates to 35 additional northbound vehicles in the morning peak. Whilst this may seem a large increase in comparison to existing traffic volumes, this equates to an additional vehicle every 103 seconds, which would not result in any noticeable congestion or have any major road safety implications.

Whilst Gilkes Crescent potentially provides an alternative route and opportunity for vehicles to by-pass the Red Post Hill / East Dulwich Grove junction, the road is convoluted with traffic calming measures and vehicles are still potentially delayed when turning right into East Dulwich Grove. This junction is uncontrolled and heavy vehicle volumes on East Dulwich Grove during peak periods significantly reduces the advantage of using this route over Dulwich Village, as vehicles have to wait for gaps in traffic in order to turn right safely. Therefore the potential journey time savings by issuing this route are negligible.

Court Lane / Dovercourt Road / Townley Road / Lordship Lane / Melbourne Grove

This route may prove a more viable alternative for vehicles that currently access Carlton Avenue from Turney Road. Whilst this route is convoluted and almost 50% longer than the Dulwich Village / East Dulwich Grove route, measuring 1664m traversing Woodward Road and 1772m traversing Court Lane and the southern section of Dovercourt Road, it is probable that some of the displaced traffic will traverse this route to bypass the Red Post Hill signalised junction.

There are two potential routes that could be traversed in order for vehicles to access Townley Road and Lordship Lane from the Turney Road / Dulwich Village junction. It is likely that vehicles will either traverse the southern section of Carlton Avenue and turn right into Woodward Road to access the northern part of Dovercourt Road (to access Townley Road and Lordship Lane) or traverse eastbound along Court Lane and then left into the southern section of Dovercourt Road.

It must be noted that these routes are already established routes for through traffic accessing Dulwich Village from Lordship Lane, which is particularly evident by the traffic volumes recorded in the morning peak.

It would be reasonable to assume that the remaining 30% of displaced traffic would utilise these routes with a 40/60 split between Carlton Avenue / Woodward Road and Court Lane / Dovercourt Road. This equates to an additional 14 vehicles in Woodward Road eastbound and an additional 21 vehicles eastbound in Court Lane and northbound along the southern section of Dovercourt Road. This equates to an additional vehicle every four minutes in Woodward Road and an additional vehicle every three minutes in the southern section of Dovercourt Road.

The northern section of Dovercourt would have an additional 35 northbound vehicles in the morning peak, which equates to an additional vehicle every 103 seconds. This minimal increase in traffic volume would not result in any noticeable congestion or have any major road safety implications.

It is estimated that 30 right turning vehicles at the Townley Road junction in the morning peak access this junction by traversing north-westbound along Townley Road (accessing the area from Lordship Lane). This movement is likely to be primarily associated with parents dropping children off at the adjacent schools. It is likely that the majority of these vehicles will now enter Townley Road from the northern end by turning left into Townley road from East Dulwich Grove. These vehicles will then leave Townley Road from the southern end by turning left into Lordship Lane.

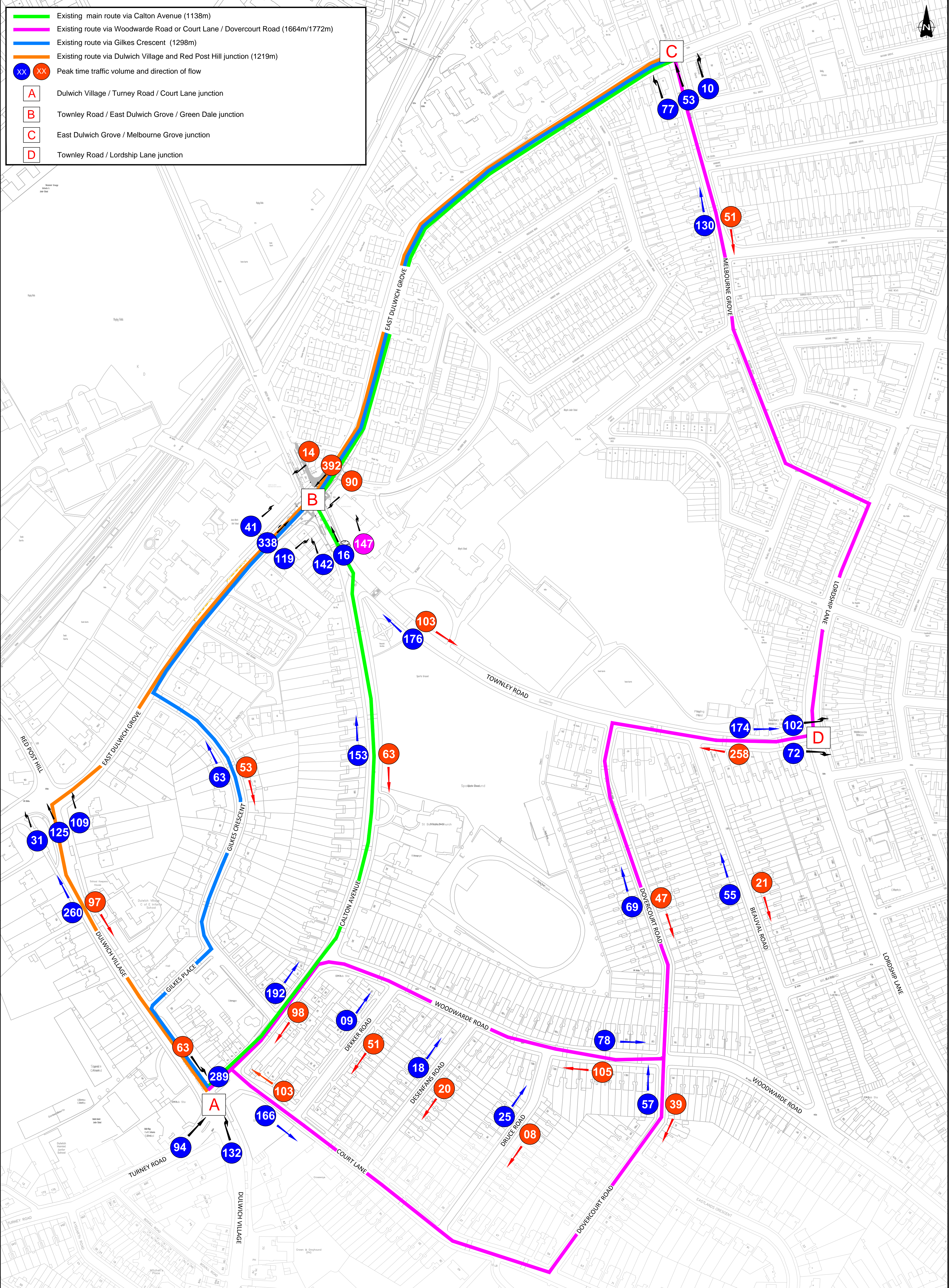
It must be noted that when surveying the turning movements and traffic volumes at the Townley Road junction in the morning peak, there was no delay to traffic exiting Townley Road onto Lordship Lane. The volume of displaced traffic accessing this junction in addition to the existing volumes equates to an additional 30 vehicles on Townley Road (that now access this road from East Dulwich Grove) and 35 vehicle from Dovercourt Road (65 in total). Whilst it equates to a 37% increase in potential left turn traffic at the junction, overall this only equates to an additional car per minute. As there is no congestion on Lordship Lane at this location, it is

anticipated that the increased demand on the junction will not result in any adverse impacts on traffic congestion, as vehicles are able to discharge from the junction without delay.

It is assumed as a worst case scenario, that all additional left turning traffic at the Townley Road / Lordship Lane junction will then access Melbourne Grove (even though it is likely that a proportion of these vehicles will either stay on Lordship Lane or have destinations to the east of Lordship Lane). Therefore potentially Melbourne Grove could have an additional 65 northbound vehicles in the morning peak, accessing the Melbourne Grove / East Dulwich Grove junction. This equates to approximately one additional vehicle every minute.

Post implementation Scheme Monitoring

Traffic volume data has been collated for all roads in the area and if the scheme is implemented, further traffic volume data will be collated as part of the scheme monitoring phase to ascertain if there have been any noticeable changes in traffic volumes on roads in the area.



Existing main route via Calton Avenue (1138m)

Existing route via Woodward Road or Court Lane / Dovercourt Road (1664m/1772m)

Existing route via Gilkes Crescent (1298m)

Existing route via Dulwich Village and Red Post Hill junction (1219m)

XX

XX

Peak time traffic volume and direction of flow

A

Dulwich Village / Turney Road / Court Lane junction

B

Townley Road / East Dulwich Grove / Green Dale junction

C

East Dulwich Grove / Melbourne Grove junction

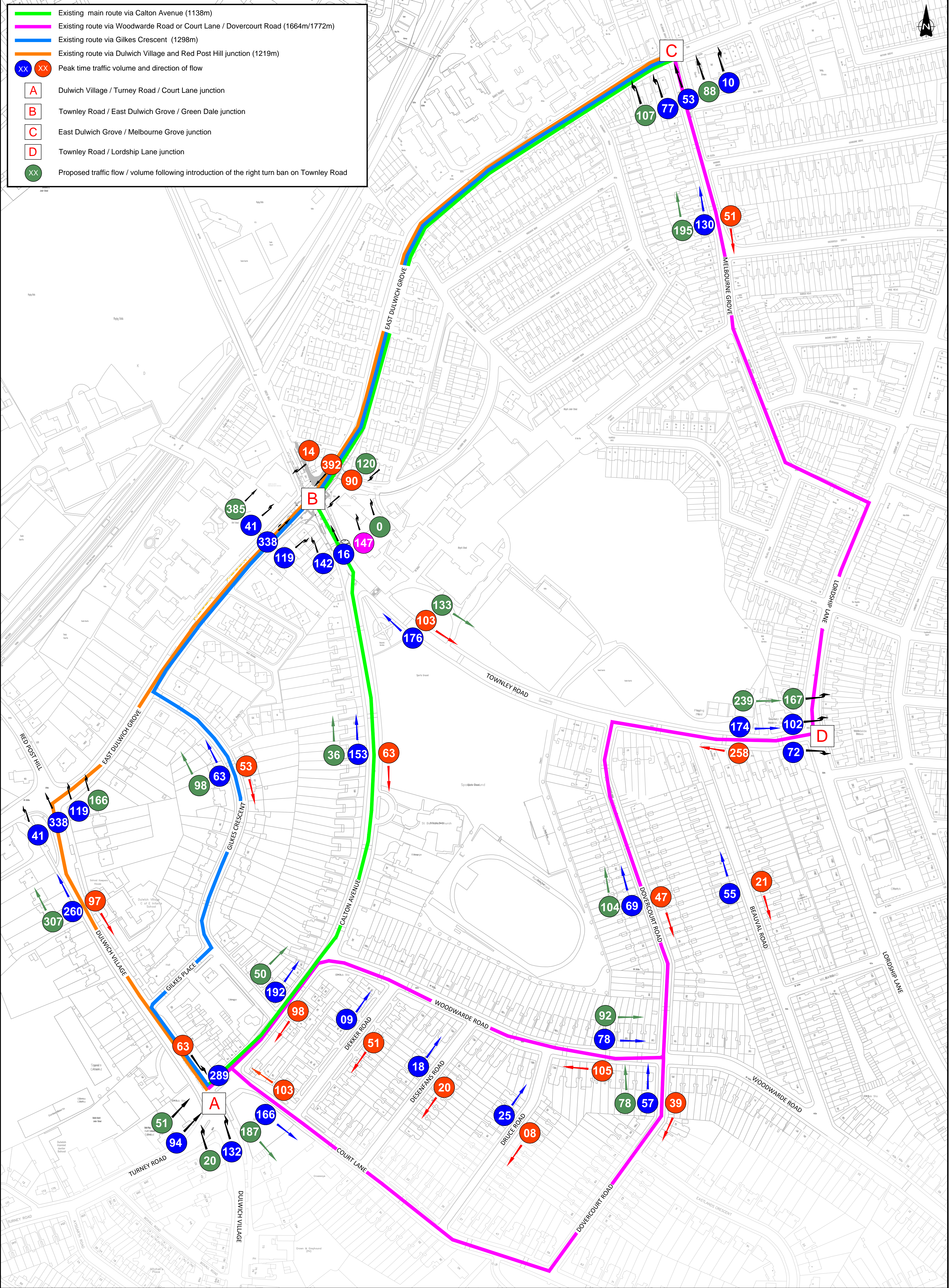
D

Townley Road / Lordship Lane junction

TOWNLEY ROAD / EAST DULWICH GROVE JUNCTION IMPROVEMENTS

BASE TRAFFIC FLOW MODEL FOR AN AVERAGE WEEKDAY MORNING PEAK PERIOD 8am - 9am

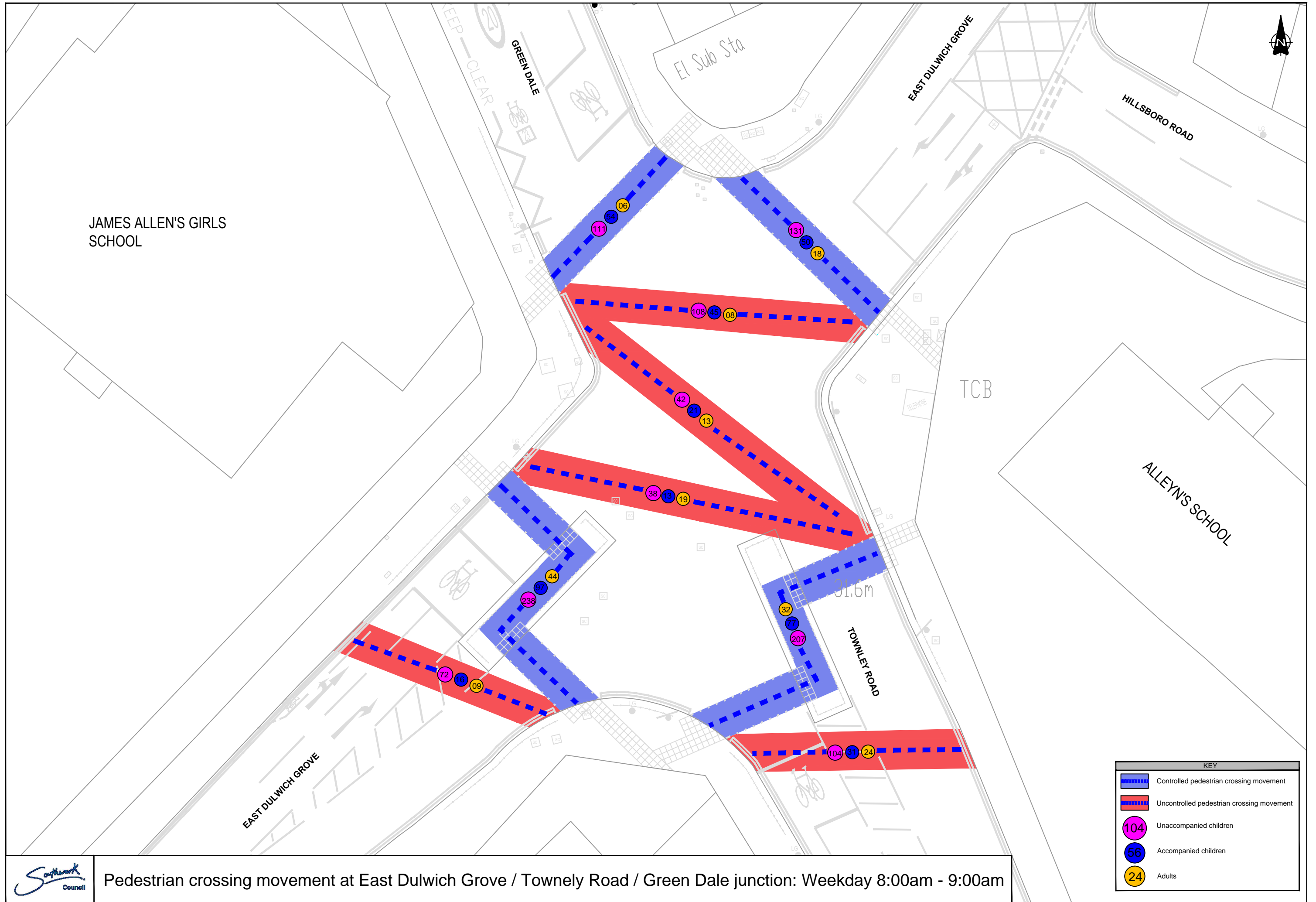




TOWNLEY ROAD / EAST DULWICH GROVE JUNCTION IMPROVEMENTS

PROPOSED TRAFFIC DISPLACEMENT ON AN AVERAGE WEEKDAY ASSOCIATED WITH THE RIGHT TURN BAN AT TOWNLEY ROAD DURING THE MORNING PEAK 8am - 9am

Appendix G: Pedestrian Movement Study



Appendix H: Junction Modelling Technical Note

Project:	East Dulwich Grove / Townley Road / Green Dale		
Subject:	Feasibility LinSig Modelling		
	Revision 2: Options 7 and 7A examined at the Client's request		
Prepared by:	Leire Balzategui Urrutia	Date:	25/02/2014
Checked by:	Hector Lee	Date:	26/02/2014
Approved by:	David Chiu	Date:	03/03/2014

1. Introduction

Southwark Council has requested Conway AECOM to undertake the feasibility study of a number of junction safety improvement proposals at the East Dulwich Grove / Townley Road / Green Dale junction (08/334).

This Technical Note outlines the scheme proposals and the AM, PM and Inter peak LinSig model results and recommends the most favourable option to be implemented.

Prior to the option testing, the LinSig base and proposed models prepared by JMP have been reviewed. The main findings are summarised in this Technical Note.

Two additional options (7 and 7A) were requested by Southwark Council, these have been included in the revised Technical note.

2. Existing LinSig Base Model Review

The existing LinSig base model prepared by JMP has been reviewed as requested and the following discrepancies have been highlighted:

- a) AM and PM models have been created, Base Inter peak model has not been provided, despite JMP's production of the Option 1 Inter peak model.
- b) Saturation flows of entry links, particularly of Townley Road, are slightly higher than the standard saturation flows defined by the lane width and turning radius.
- c) Intergreens were defined based on TfL Timing sheet (Issue 8. Site No. 08/000334/M), the values for some of the movements were found to be higher than the guidance in SQA-645 when measured with against TfL's Site Layout Drawing No. SLD/08/334/03 (Figure 1), we have assumed the intergreens have been increased to allow turning vehicles to clear on the intergreen.
- d) The cycle time for the AM and PM peak is 90secs. The maximum phase lengths in Vehicle Actuation (VA) and the interstage times defined in TfL Timing Sheet (Issue 8. Site No. 08/000334/M) have been used to determine the maximum cycle time for each time period, these have been calculated and exceed the 90 seconds of the existing base model. It is assumed that JMP used a cycle time of 90s because this is the maximum cycle time allowed when there is an 'all ped' stage.

These differences lead to slightly different outputs in terms of Degrees of Saturation (DoS) and Mean Maximum Queue (MMQ) between the base model prepared by JMP and the base model prepared by Conway AECOM.

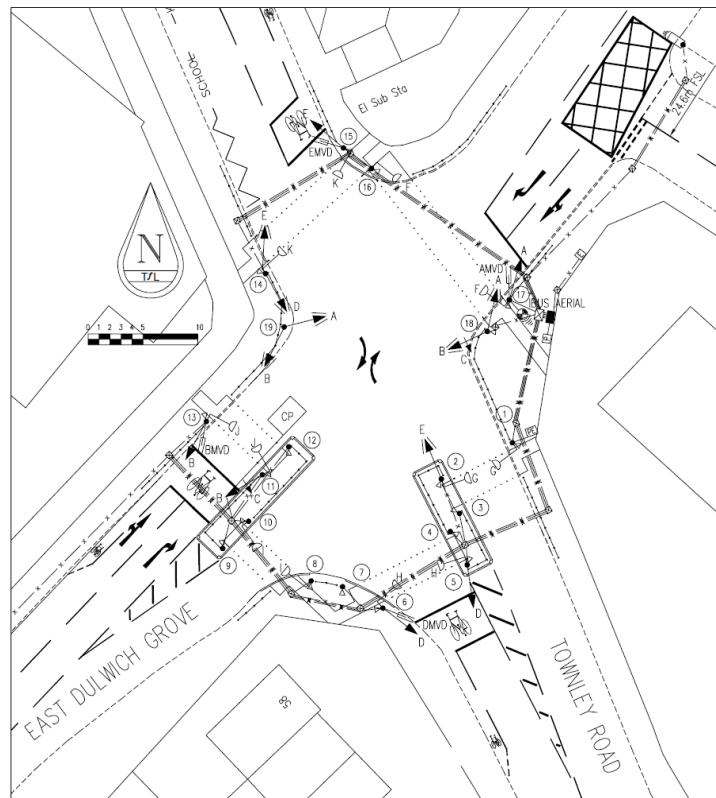
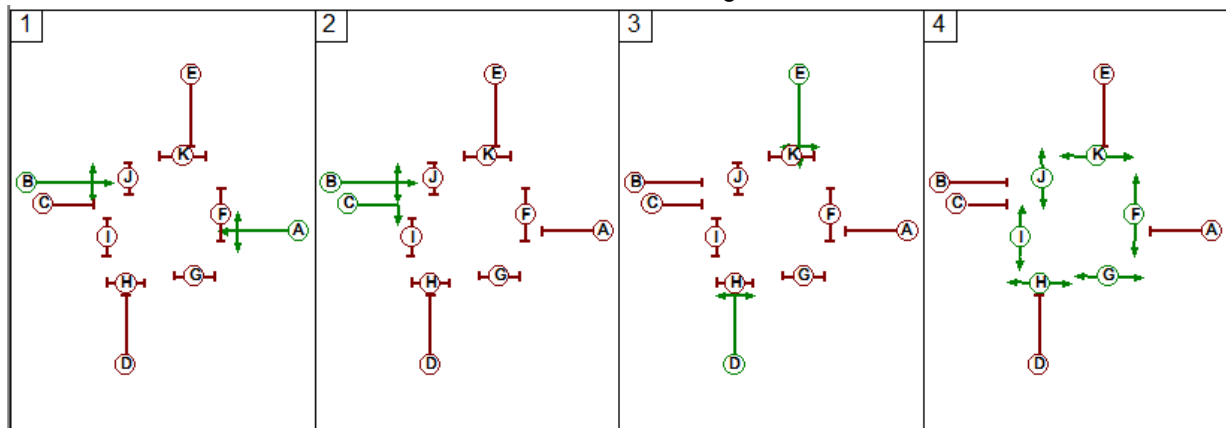


Figure 1 - TfL's Site Layout Drawing No. SLD/08/334/03

The method of control of the Base Model is defined in the diagram below.



The intergreen table defined based on the drawing No. SLD/08/334/03 is included in Appendix A.

3. JMP Option 1 Model Review

The proposed model prepared by JMP has been reviewed and a number of findings have been highlighted:

- The models for the three time periods to be analysed (AM Peak, PM Peak and Inter peak) have been created.
- The cycle times of the three time periods modelled are lower than those calculated with the maximum vehicle actuated phase lengths plus preceding interstage times as shown TfL Timing

Sheet (Issue 8. Site No. 08/000334/M). In order to undertake a consistent comparison between the proposals, it is advisable to use the same cycle times.

- c) The saturation flows have been checked with JMP's drawing No. ST13201-PO-04A supplied by Southwark Council. The left and right turning radii introduced in the model are higher than those measured in the drawing; therefore, the saturation flows should be lower. Furthermore, the nearside lane of East Dulwich Grove E/bound is 1.8m wide instead of the 2.7m of the model. The saturation flow of this lane should be reduced accordingly.
- d) The stop line of the Green Dale approach is not shown in the design drawing No. ST13201-PO-04A. In order to undertake the option testing, the location of the stop line has to be defined. This is assumed to be 3m + 4m of Advanced Stop Line (ASL) from the nearest side of the pedestrian crossing.
- e) The intergreen values have been calculated using the JMP drawing. The following A/F, A/I, C/H, D//F and E/I could have their Intergreens increased by 1 second.

4. Base Modelling

The AM, PM and Inter peak LinSig base models of the existing layout have been created. The following flow groups have been defined based on the traffic counts provided:

- Weekday AM 08:00-09:00
- Weekday PM 17:00-18:00
- Weekday Inter peak 12:00-13:00

The cycle time for each of the flow groups are defined by the maximum phase lengths as shown on the TfL Timing Sheet plus the preceding interstage:

- Weekday AM: 98 seconds
- Weekday PM: 96 seconds
- Weekday Inter peak: 86 seconds

4.1. Model Validation

The base model validation has been undertaken by comparing observed and modelled queue lengths in the AM, PM and Inter peak periods, as shown in Table 1. The start of green time queues, provided by Southwark Council, have been used for validation.

Table 1 – AM, PM and Inter peak observed and modelled queue length comparison (PCUs)

Arm	Lane	AM peak			PM peak			Inter peak		
		Site	Modelled	Diff	Site	Modelled	Diff	Site	Modelled	Diff
A - East Dulwich Grove southbound	1	6.9	3.1	-3.8	3.6	3.1	-0.5	4.1	3.2	-0.9
	2	1.7	0.2	-1.5	3.8	0.2	-3.6	0.2	0.0	-0.2
B – Townley Road	1	6.4	10.2	3.8	4.5	5.6	1.1	2.0	3.0	1.0
C – East Dulwich Grove northbound	1	3.0	6.0	3.0	2.3	5.2	2.9	1.8	5.2	3.4
	2	4.0	2.0	-2.0	3.4	3.2	-0.2	2.2	0.7	-1.5
D – Green Dale	1	3.0	1.8	-1.2	0.7	0.5	-0.2	0.4	0.3	-0.1

Table 1 shows that there is good correlation between observed and modelled start of green queue values, indicating that a reasonable level of validation has been achieved. The base models represent the current operation as best as possible.

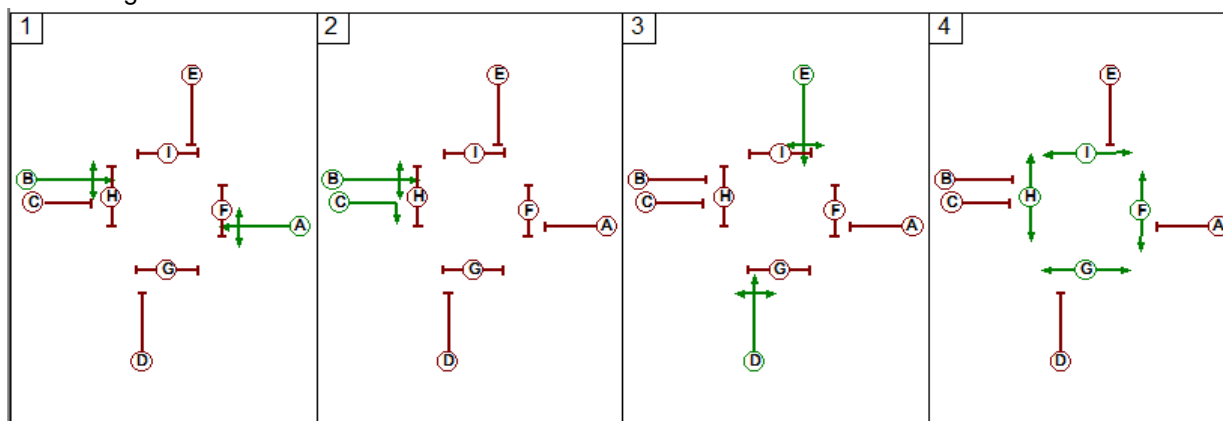
5. Option Modelling

In addition to the Option 1 prepared by JMP, five LinSig models have been created to examine junction performance in which the suggested proposals are implemented. These aim to increase safety by implementing improved pedestrian and cyclist facilities.

5.1. JMP Option 1

The kerb lines of this option remain as the existing layout, with the exception of Townley Road approach which has a right turning flare. The staggered crossings over Townley Road and East Dulwich Grove are converted to straight across crossings. The proposed detailed design drawing, No. ST13201-PO-04A is included in Appendix C for reference. The method of control includes an early cut off for East Dulwich Grove westbound.

Option 1 would operate with four stages as defined in the method of control diagram below, similar to the existing method of control.

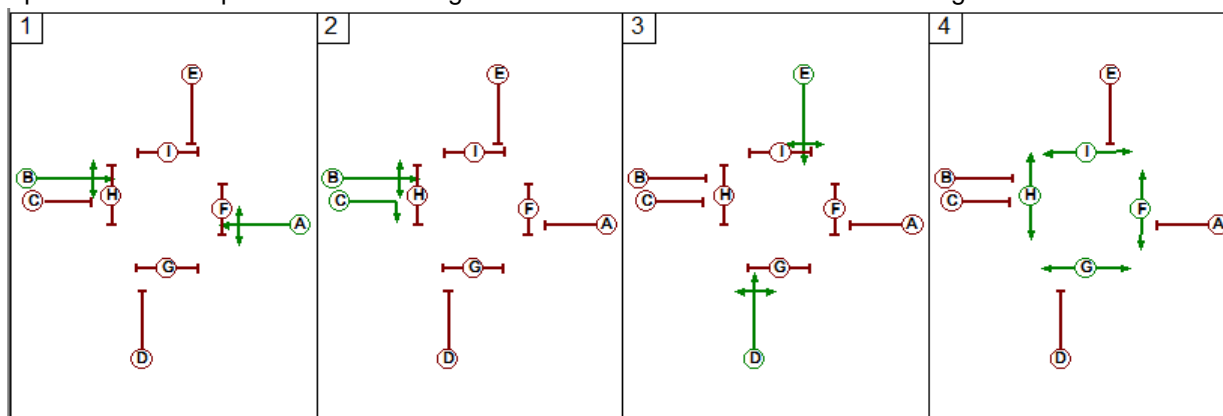


5.2. Option 2A

This option has had major kerb build outs on all approaches to allow for the removal of the dual pedestrian crossings on Townley Road and East Dulwich Grove north east side. Proposed pedestrian crossings will be straight across, all four approaches to have one lane entry. The proposed detailed design drawing, No. D/EDG/CM/13/001/O2a is included in Appendix C for reference.

- Stage 1 Runs East Dulwich Grove north east and south west bound together.
- Stage 2 Runs East Dulwich Grove north east bound and an early cut off Phase C.
- Stage 3 Runs Green Dale and Townley Road.
- Stage 4 Runs the All round pedestrian Stage.

Option 2A would operate with four stages as defined in the method of control diagram.

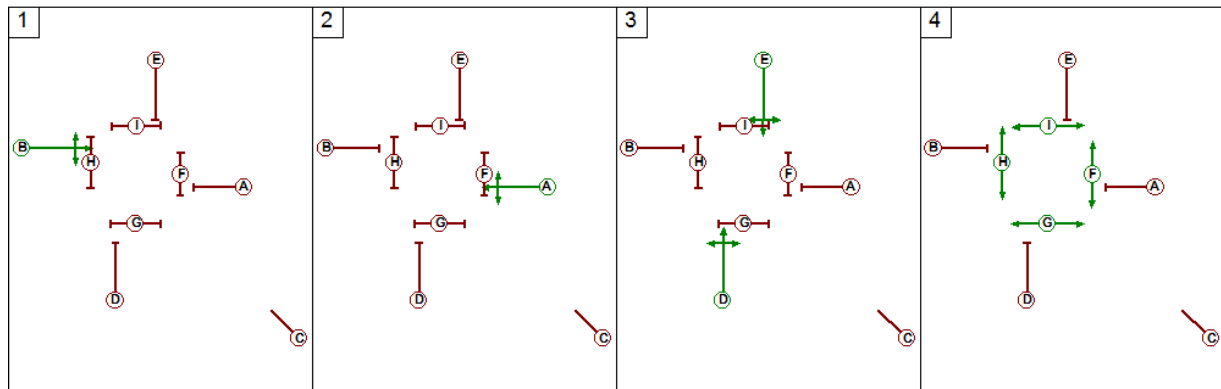


5.3. Option 2B

This option, which is as per Option 2A in terms of junction layout, splits the East Dulwich Grove Eastbound and Westbound movements to two separate stages. The proposed detailed design drawing, No. D/EDG/CM/13/001/O2b is included in Appendix C for reference.

- Stage 1 Runs East Dulwich Road Eastbound
- Stage 2 Runs East Dulwich Road Westbound
- Stage 3 Runs Townley Road and Green Dale
- Stage 4 Runs all red pedestrian Stage

Option 2B would operate with four stages as defined in the method of control diagram below.



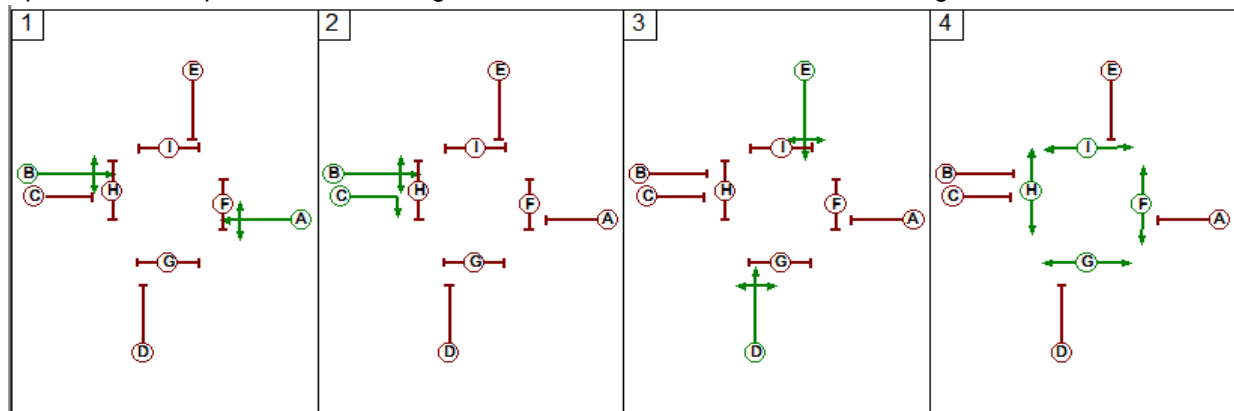
Phase C – Not in Use

5.4. Option 3

Option 3 is similar to Option 2A with the Kerb build out on East Dulwich Grove outside James Allen's Preparatory School removed, this allows for a 5.5m lane width which also includes a 2.0m cycle lane. The proposed detailed design drawing, No. D/EDG/CM/13/001/O3 is included in Appendix C for reference.

- Stage 1 Runs East Dulwich Grove north east and south west bound together.
- Stage 2 Runs East Dulwich Grove north east bound and an early cut off Phase C.
- Stage 3 Runs Green Dale and Townley Road.
- Stage 4 Runs the All round pedestrian Stage.

Option 3 would operate with four stages as defined in the method of control diagram.



5.5. Option 7 & 7A

Two additional options are tested which may significantly improve the conditions for cyclists. These proposals include the following changes from the previous options 2A, 2B and 3:

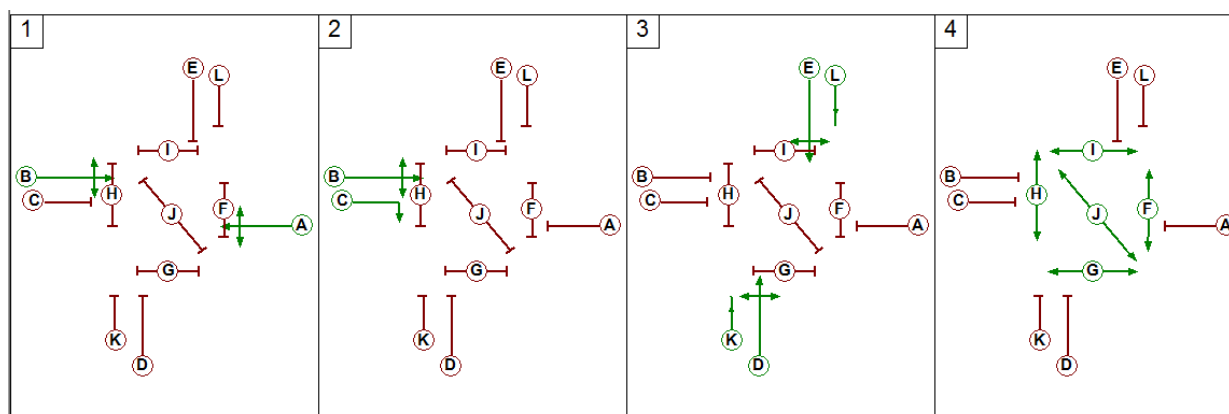
- Removal of the cycle feeder lane on the eastbound approach of East Dulwich Grove and reinstatement of the dedicated right turn lane;
- Removal of all footway segregated cycle lanes and share use areas, as well as accompanying tramline / ladder paving;

- Installation of a diagonal pedestrian crossing between the north-western corner (James Allen's Preparatory School) and the south-eastern corner (Alleyn's School);
- Advanced Stop Line on the Townley Road and Green Dale approaches are extended to 7.5 m;
- Low level traffic signal cycle heads to be installed on Green Dale and Townley Road approaches, these signals will allow cyclist an early start to clear the junction prior to the green for general traffic;
- Early start of 8 seconds for cyclists on both Townley Road and Green Dale; the length of the early start period will be discussed with stakeholders at the detailed design stage;
- Revised stop line in East Dulwich Grove eastbound set back an additional 1 meter from crossing studs i.e. 4.0 m from studs);
- Waiting bays – for less confident cyclists (particularly children) that miss the green signal and do not want to cross the junction with general traffic on 'green'. The bays will ensure that the segregated cycle lane will not be obstructed for more confident cyclists who wish to traverse the junction during the general green phase for all traffic. This has resulted in a slightly revised buildout / footway extension on the northeastern corner of the junction of approximately 0.5m and shorter distance for pedestrians;
- Cycle logos on the east / west crossing (Green Dale / Townley Road) as a further measure to highlight the LCN route and possible presence of cyclists at the junction;
- Extended segregation of cycle lane in Green Dale (up to existing disabled parking bays)
- Option 7 only: Right turn ban for traffic turning out of Townley Road into East Dulwich Grove.

It is important to mention that Option 7 has been modelled assuming that the existing right turn flow will stay off Townley Road and will find alternative routes (e.g. Lordship Lane) to access East Dulwich Grove. Therefore, the total flow along Townley Road will be significantly lower in Option 7 than other options, including Option 7A. The impact of the diverted traffic in the surrounding network is not examined in the LinSig modelling.

The proposed detailed design drawings, No. D/EDG/CM/13/001/O7 and No. D/EDG/CM/13/001/O7a, are included in Appendix C for reference.

Option 7 and 7A would operate with four stages including an early start of 8 seconds for cyclists in Stage 3 as defined in the method of control diagram below.



6. Pedestrian timings

It is proposed to use far sided pedestrian signal heads. This will allow pedestrian countdown facility to be added to the junction upgrade. There is no increase in any intergreen values if countdown is installed; therefore, the modelling results do not differ for both cases. The only difference between far sided and countdown pedestrian facilities is the blackout and all-red times, shown in Tables 2, 3 and 4.

Table 2 – Comparison of pedestrian timings to apply in Option 2A and 2B

Peds crossing	Width (m)	Intergreen		Far – sided			Countdown		
		Far-sided	Countdown	Blackout	All red	Amber	Blackout	All red	Amber
F – Over East Dulwich Grove W/bnd	8.9	10		4	4	2	5	3	2
G – Over Townley Rd	9.75	11		5	4	2	6	3	2
H – Over East Dulwich Grove E/bnd	9	10		4	4	2	5	3	2
I – Over Green Dale	9.52	10		4	4	2	5	3	2

Table 3 – Comparison of pedestrian timings to apply in Option 3

Peds crossing	Width (m)	Intergreen		Far – sided			Countdown		
		Far-sided	Countdown	Blackout	All red	Amber	Blackout	All red	Amber
F – Over East Dulwich Grove W/bnd	8.91	10		4	4	2	5	3	2
G – Over Townley Rd	9.8	11		5	4	2	6	3	2
H – Over East Dulwich Grove E/bnd	10	11		5	4	2	6	3	2
I – Over Green Dale	9.47	10		4	4	2	5	3	2

Table 4 – Comparison of pedestrian timings to apply in Option 7 and 7A

Peds crossing	Width (m)	Intergreen		Far – sided			Countdown		
		Far-sided	Countdown	Blackout	All red	Amber	Blackout	All red	Amber
F – Over East Dulwich Grove W/bnd	9.1	10		4	4	2	5	3	2
G – Over Townley Rd	11.2	12		5	5	2	7	3	2
H – Over East Dulwich Grove E/bnd	10	11		5	4	2	6	3	2
I – Over Green Dale	9	10		4	4	2	5	3	2
J – Diagonal crossing	14.9	15		7	6	2	10	3	2

The benefit of introducing pedestrian countdowns is the removal of the blackout period and a visual indication of the crossing time.

7. Modelling Results

The outputs include the predicted Degree of Saturation (DoS in %) and Mean Maximum Queue (MMQ in PCUs) for each scenario and for each modelled flow group. The results of each option have been compared to the base case in order to identify whether the junction performance is improved when implementing the suggested proposals.

The cycle times of Option 1 prepared by JMP are different from those applied in the base case and Options 2A, 2B, 3, 7 and 7A; therefore, in order to undertake the comparison between the proposed options, the AM, PM and inter peak cycle times of Option 1 are modified to ensure that the base case and the six options are compared in the same basis. Likewise, saturation flows of entry links have been adjusted in Option 1 according to the turning radius measured in the model review.

Appendix B includes the outputs of Option 1 with the cycle times implemented by JMP.

Table 5, 6 and 7 include the summary of the results for the AM, PM and Inter Peak, respectively.

In the AM Peak, the output table suggests that either Option 1 or Option 7 provide the most favourable results in terms of DoS and MMQ, with the DoS of all the approaches below 95%. Therefore, the existing situation will improve if any of these two options is implemented. On the contrary, the junction operates over capacity in Option 2A, 2B, 3 and 7A.

In the PM, Option 1 and Option 7 provide the most favourable results with the DoS of all approaches below 85%. The junction operates over capacity in case Option 2A, 2B and 7A are implemented. Option 3 provides an acceptable junction performance as the DoS of all approaches is below 100%.

With respect to the Inter peak, it is interesting to note that all the proposals improve the junction performance as the network DoS decreases with respect the base case. For this time period, Option 2A and Option 3 provide the best results with the lowest DoS.

A general comparison between the three time periods modelled indicate that the AM Peak is the busiest period with the highest traffic flows and therefore the highest DoS on all approaches while the Inter peak is the period with the lowest DoS.

Table 5 – AM Peak Base and Proposed Modelling Results (CT = 98secs)

Link	BASE		OPTION 1		OPTION 2A		OPTION 2B		OPTION 3		OPTION 7		OPTION 7A	
	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)
East Dulwich Grove E/bnd	9.0	58.9	10.7	66.0	43.7	109.2	82.1	129.6	23.3	97.5	9.0 4.6	54.7 66.9	10.2 5.3	64.7 78.2
Green Dale	2.3	42.0	2.1	34.4	2.1	32.8	2.2	35.9	2.0	31.8	3.2	71.2	2.2	36.0
East Dulwich Grove W/bnd	14.1	76.6	15.7	85.6	14.2	76.7	73.4	125.6	15.7	83.7	18.5	91.8	53.8	114.8
Townley Road	40.3	112.2	10.5	84.3	41.8	113.1	68.6	131.0	27.0	103.7	9.3	87.8	46.4	116.1
Network DoS (%)	112.2 %		85.6%		113.1%		131.0%		103.7%		91.8%		116.1%	
PRC (%)	-24.7 %		5.1%		-25.7%		-45.6%		-15.2%		-2.0%		-29.0%	
Delay (pcuHr)	44.53		20.01		75.86		205.07		40.73		22.93		94.10	

Table 6 – PM Peak Base and Proposed Modelling Results with (CT = 96secs)

Link	BASE		OPTION 1		OPTION 2A		OPTION 2B		OPTION 3		OPTION 7		OPTION 7A	
	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)
East Dulwich Grove E/bnd	7.1	68.6	7.5	60.3	36.1	104.6	77.8	124.4	21.0	94.2	6.8 7.3	41.5 80.0	7.5 20.8	46.7 111.6
Green Dale	0.5	8.2	0.5	8.6	0.5	7.7	0.5	8.2	0.5	7.1	0.6	13.8	0.5	9.2
East Dulwich Grove W/bnd	15.2	78.1	14.5	77.1	14.2	73.2	75.7	123.0	14.5	75.0	16.2	84.6	25.2	98.2
Townley Road	9.4	86.6	5.7	76.2	16.6	102.5	31.5	119.5	12.3	95.6	3.7	72.2	29.0	116.7
Network DoS (%)	86.6%		77.1%		102.5%		124.4%		95.6%		84.6%		116.7%	
PRC (%)	3.9%		16.7%		-16.2%		-38.3%		-6.2%		6.4%		-29.7%	
Delay (pcuHr)	16.43		14.49		43.75		165.77		24.53		15.96		60.93	

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Table 7 – Inter Peak Base and Proposed Modelling Results (CT = 86secs)

Link	BASE		OPTION 1		OPTION 2A		OPTION 2B		OPTION 3		OPTION 7		OPTION 7A	
	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)
East Dulwich Grove E/bnd	6.5	54.2	7.8	56.2	5.7	41.3	9.9	81.6	5.6	37.4	5.4 0.7	39.2 13.2	5.8 0.8	44.3 16.1
Green Dale	0.2	2.4	1.3	20.0	0.3	4.0	0.3	5.5	0.3	4.0	0.3	7.9	0.3	5.7
East Dulwich Grove W/bnd	20.5	101.1	10.6	73.8	8.2	58.6	11.1	82.5	8.2	58.6	9.3	69.4	10.9	82.0
Townley Road	3.3	30.0	4.9	70.3	4.4	56.8	6.5	85.2	4.4	56.8	1.2	28.4	5.3	75.3
Network DoS (%)	101.1%		73.8%		58.6%		85.2%		58.6%		69.4%		82.0%	
PRC (%)	-12.3%		21.9%		53.7%		5.7%		53.7%		29.7%		9.7%	
Delay (pcuHr)	19.35		11.90		7.35		15.07		7.28		6.97		11.33	

8. Summary and Recommendations

The LinSig modelling results for the AM, PM and Inter Peak periods suggest that the JMP Option 1 operates well within capacity, although the lane markings on the East Dulwich Grove eastbound approach are sub-standard lane widths. Furthermore, there is no ASL on Green Dale, which may cause disbenefits to cyclists.

Option 2A has major kerb build outs on all the four approaches, thus reducing the entry lane widths. The East Dulwich Grove eastbound approach reduces to one entry lane, which increases the DoS for this approach to over 100% for both the AM and PM peaks.

The Option 2B staging arrangement, with the East Dulwich Grove phases split, is the worst performing option, with only the Inter Peak results showing the junction operating within capacity.

The Option 3 LinSig results suggest that the junction will operate at capacity in the AM peak, with Townley Road over capacity at 103.7% DoS. The base model shows this arm is over capacity with DoS at 112.2%, this implies that junction performance is improved compared to the existing situation. Furthermore, although East Dulwich Grove is a single lane approach in Option 3, the lane width is 5.5m and so remains the same width as in JMP Option 1. Therefore, it is envisaged that vehicles will be able to pass any right turning vehicles.

Of the five options tested, Option 7 provides the best overall results; with the DoS of all approaches below 90% and the junction operating well within capacity. This can be explained by the right turning ban from Townley Road into East Dulwich Grove and the 8 seconds early start for cyclists on both Townley Road and Green Dale.

Option 7A is as per Option 7, with the exception of the right turning ban for vehicles coming from Townley Road. Consequently, both Townley Road and East Dulwich Grove westbound are over capacity in the AM and PM peak with DoS over 100%.

Whilst Option 7 gives the best results at the junction itself, the wider impact of the right turn ban has not yet been examined in the current study. Where the banned vehicles would go, whether the ban affects other junctions in the surrounding network, if there is a need to make additional changes to the network; has not been assessed within the scope of the current study. In case it is not possible to ban the right turning traffic, Option 7A should be chosen, assuming most of the benefits are intended to be provided to cyclists.

Additionally, the use of the low level cycle heads is a relatively new concept and currently there is no written guidance on the early start length for cyclists. Hence, in order to recommend Option 7, a further study should be undertaken to examine the impact of the right turn ban to the wider area and the early start timings should be discussed further with stakeholders.

Appendix A – Intergreen Table measured from the SLD No. SLD/08/334/03 following guidance given in SQA-0645

	A	B	C	D	E	F	G	H	I	J	K
A			5	6	5	5	8	–	9	–	8
B				5	6	8	9	–	–	6	9
C	5			5	5	–	9	–	–	6	–
D	8	6	5			11	–	6	8	–	9
E	6	5	5			7	9	–	11	–	6
F	16	16	–	16	16						
G	8	8	8	–	8						
H	–	–	–	10	–						
I	8	–	–	8	8						
J	–	8	8	–	–						
K	13	13	–	13	13						

Appendix B – JMP Option 1 Modelling Results before Review

JMP Option 1							
Link	STORAGE to upstream junction (PCUs)	AM Peak (CT = 88secs)		PM peak (CT = 88secs)		Inter peak (CT = 80secs)	
		MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)	MMQ (PCUs)	DoS (%)
East Dulwich Grove E/bnd	59	9.2	63.7	7.0	58.9	7.4	57.1
Green Dale	No upstream junction	2.2	45.7	0.5	9.3	1.2	20.5
East Dulwich Grove W/bnd	91	14.5	86.2	14.4	80.9	10.5	77.5
Townley Road	90	10.7	88.7	5.6	80.3	5.0	75.4
Network DoS (%)		88.7 %		80.9%		77.5%	
PRC (%)		1.5 %		11.2%		16.1%	
Delay (pcuHr)		20.23		14.94		12.34	

Appendix C – Proposed Designs (Not to scale)

1. JMP Option 1

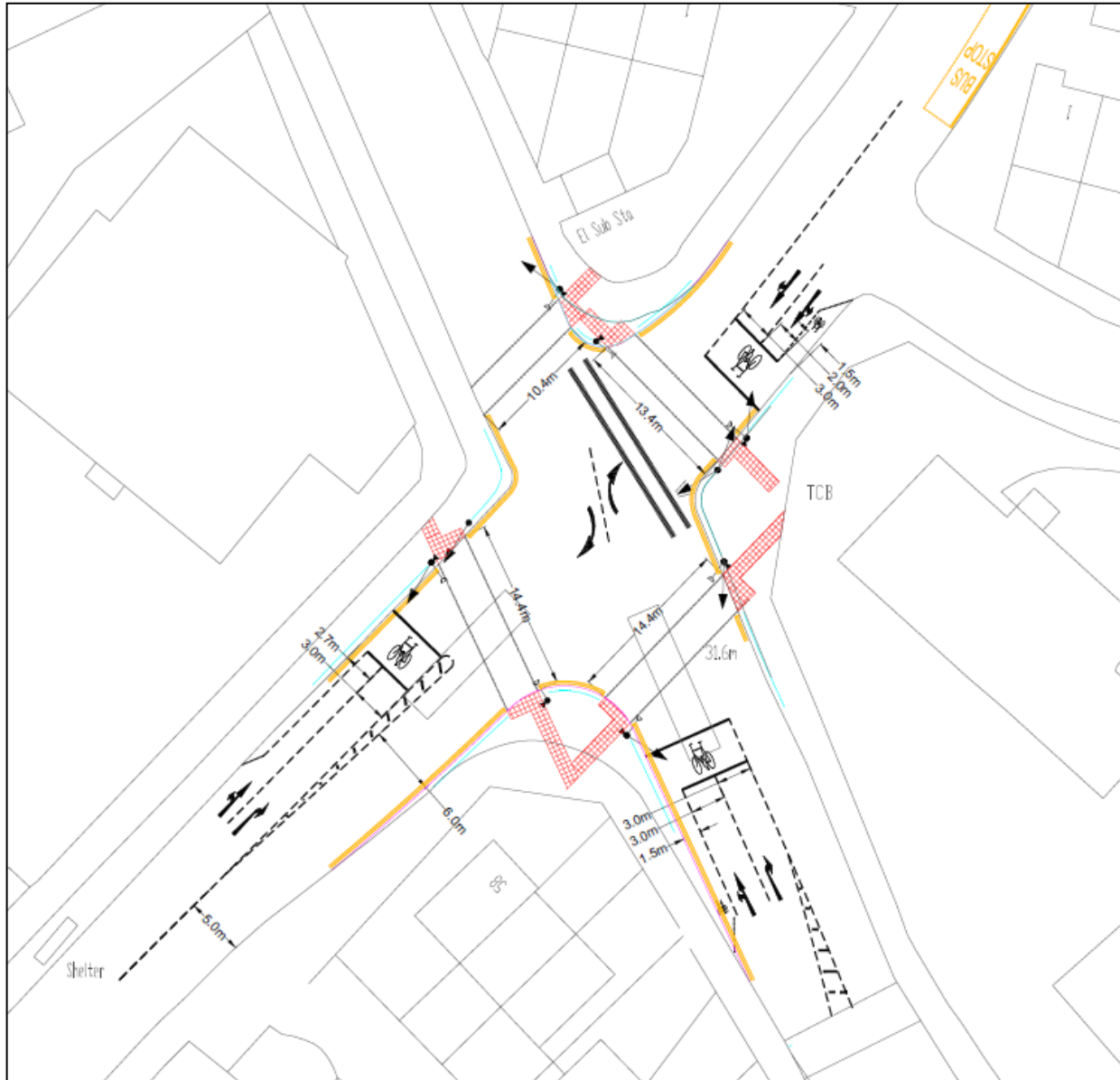


Figure A – Detailed Design Drawing of JMP Option 1 No. ST13201-PO-04A

2. Option 2A

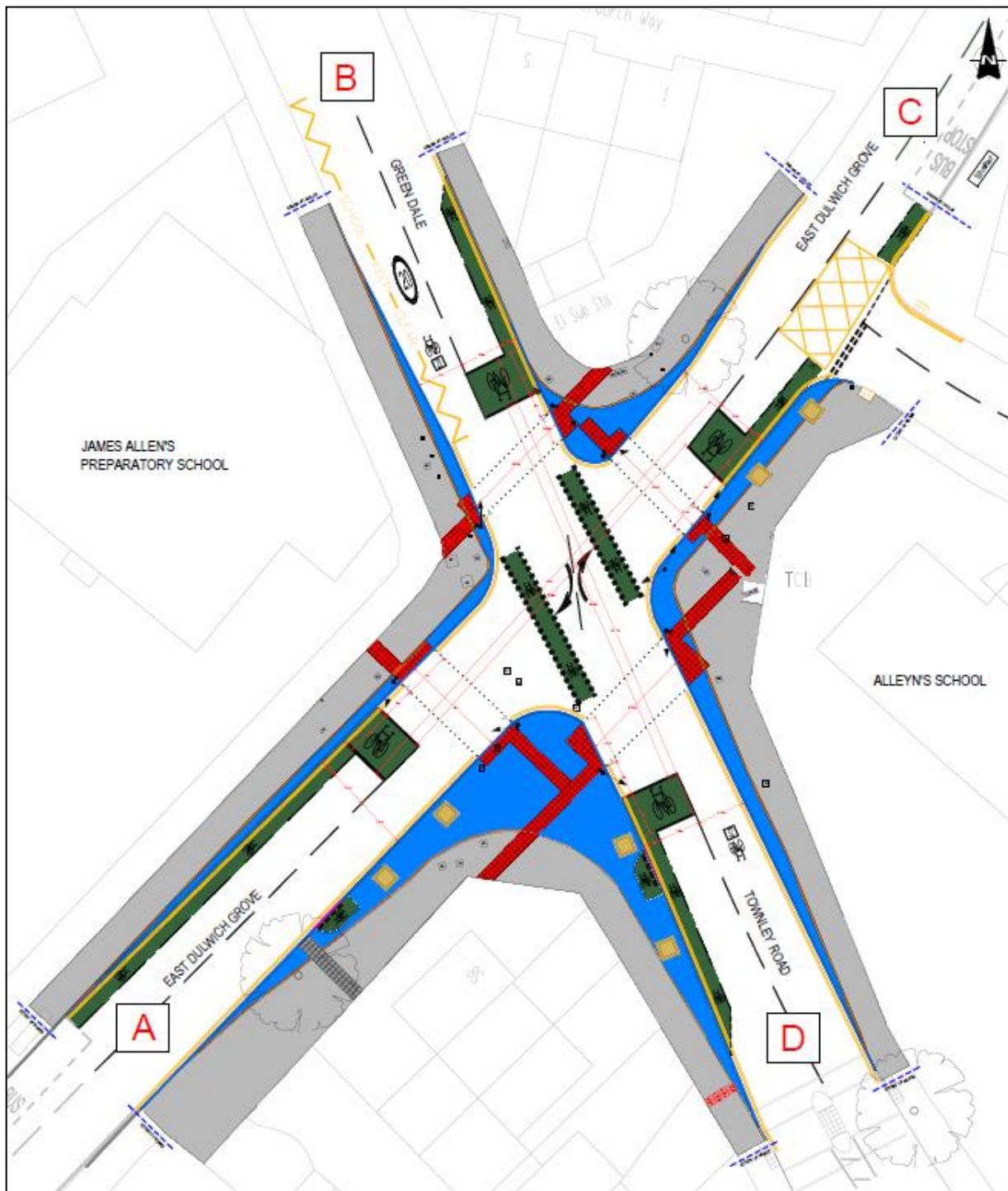


Figure B – Detailed Design Drawing of Option 2A No. D/EDG/CM/13/001/O2a

3. Option 2B

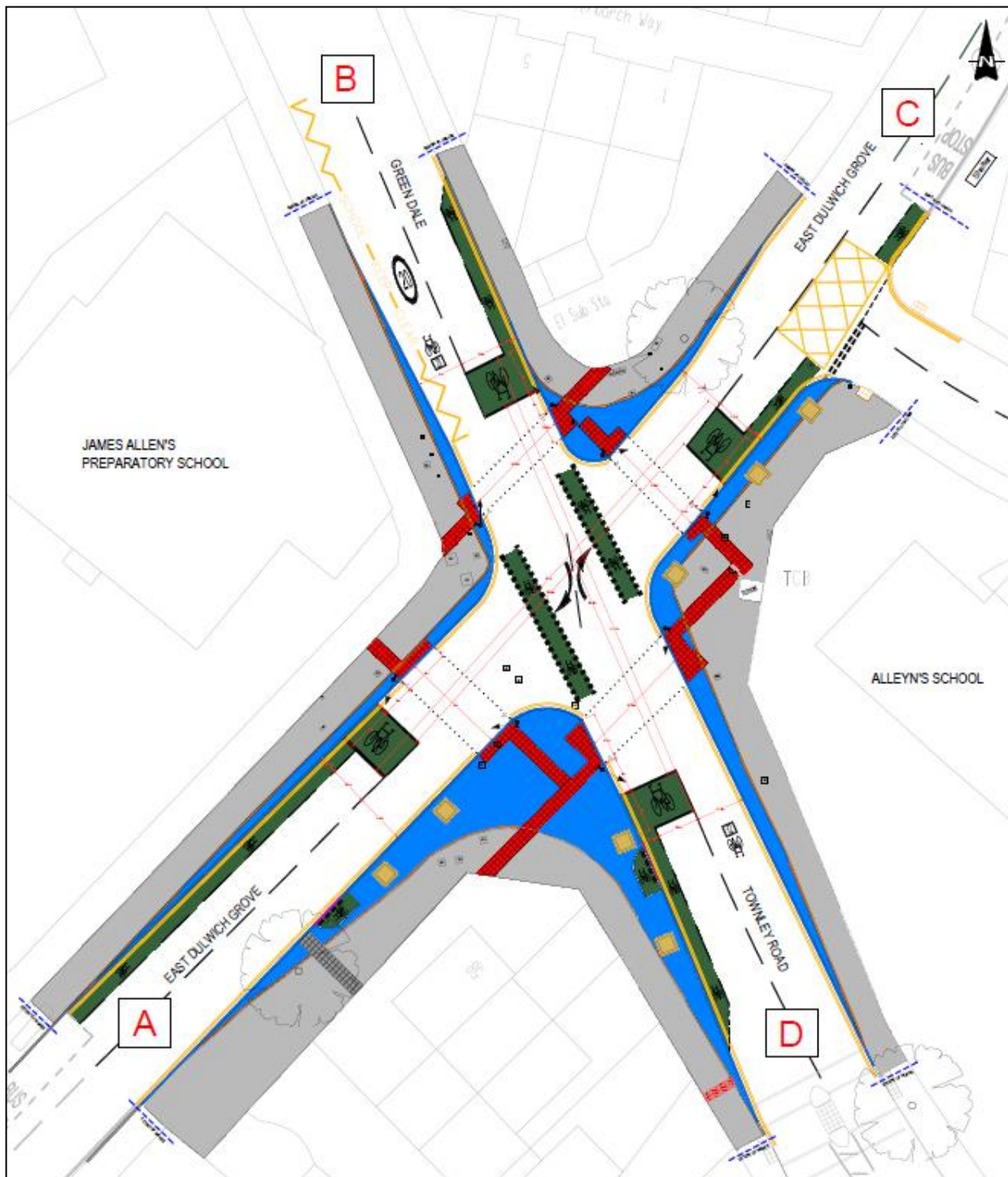


Figure C – Detailed Design Drawing of Option 2B No. D/EDG/CM/13/001/O2b

4. Option 3

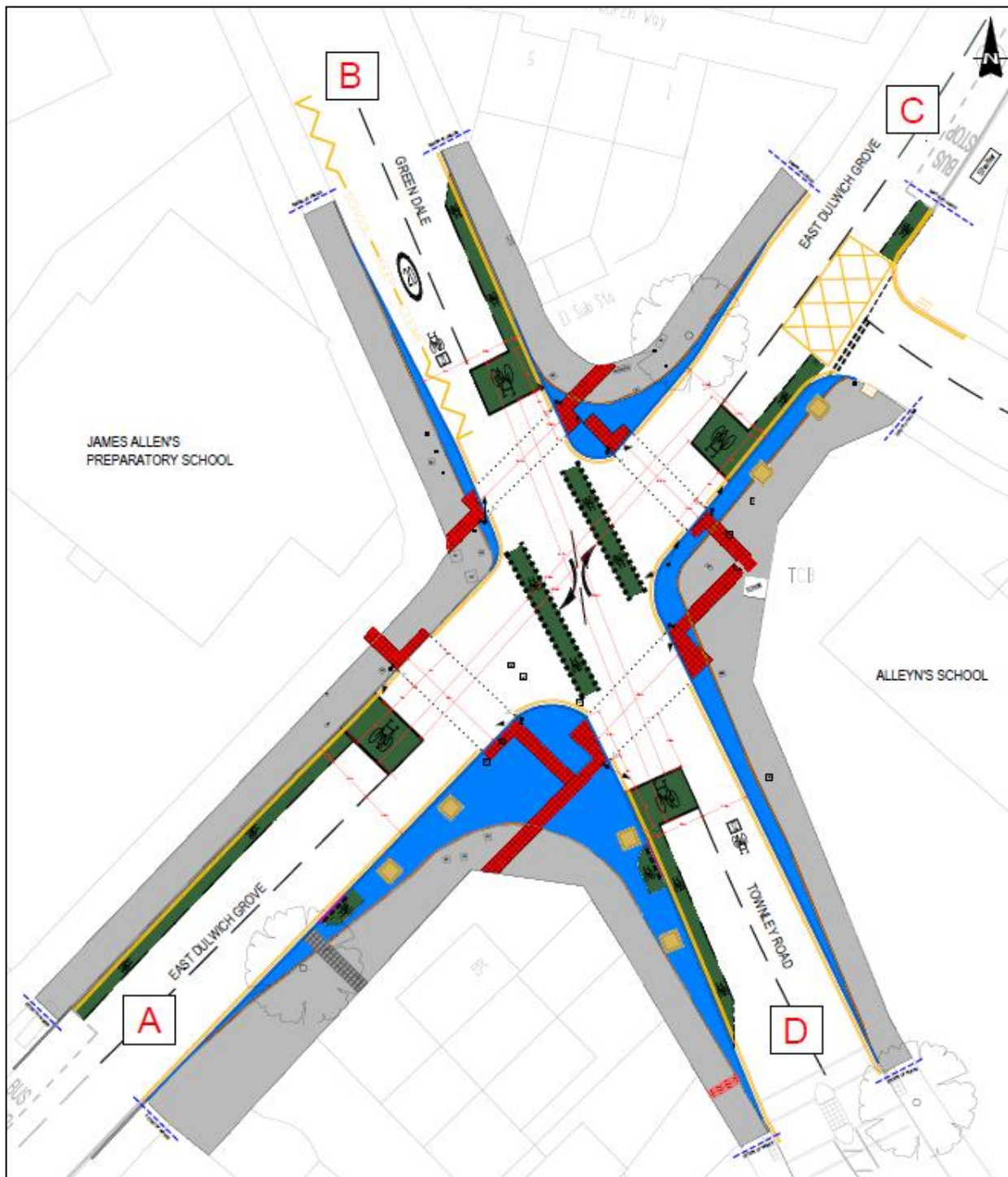


Figure D – Detailed Design Drawing of Option 2B No. D/EDG/CM/13/001/O3

5. Option 7

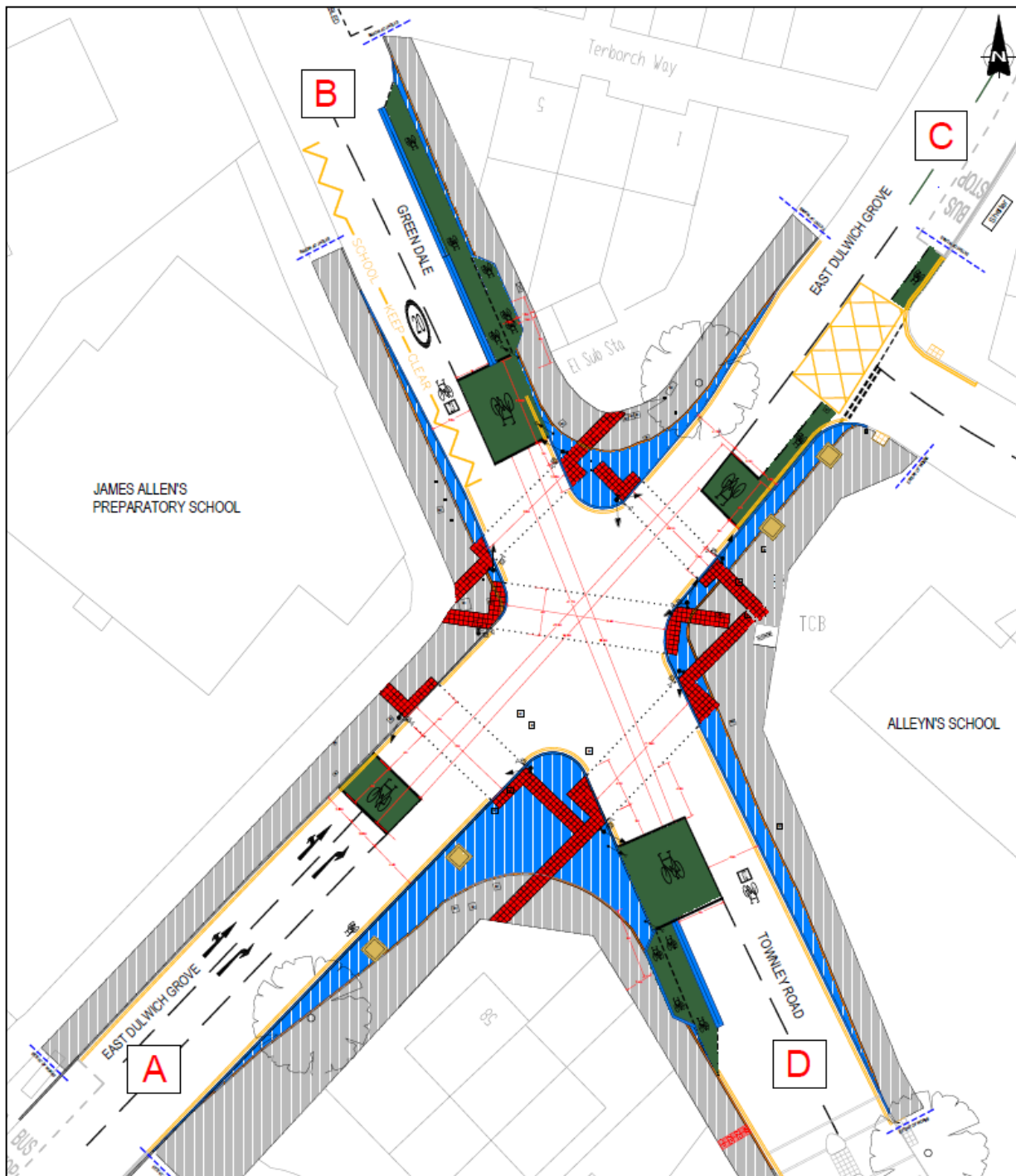


Figure E – Detailed Design Drawing of Option 7 No. D/EDG/CM/13/001/O7

6. Option 7A

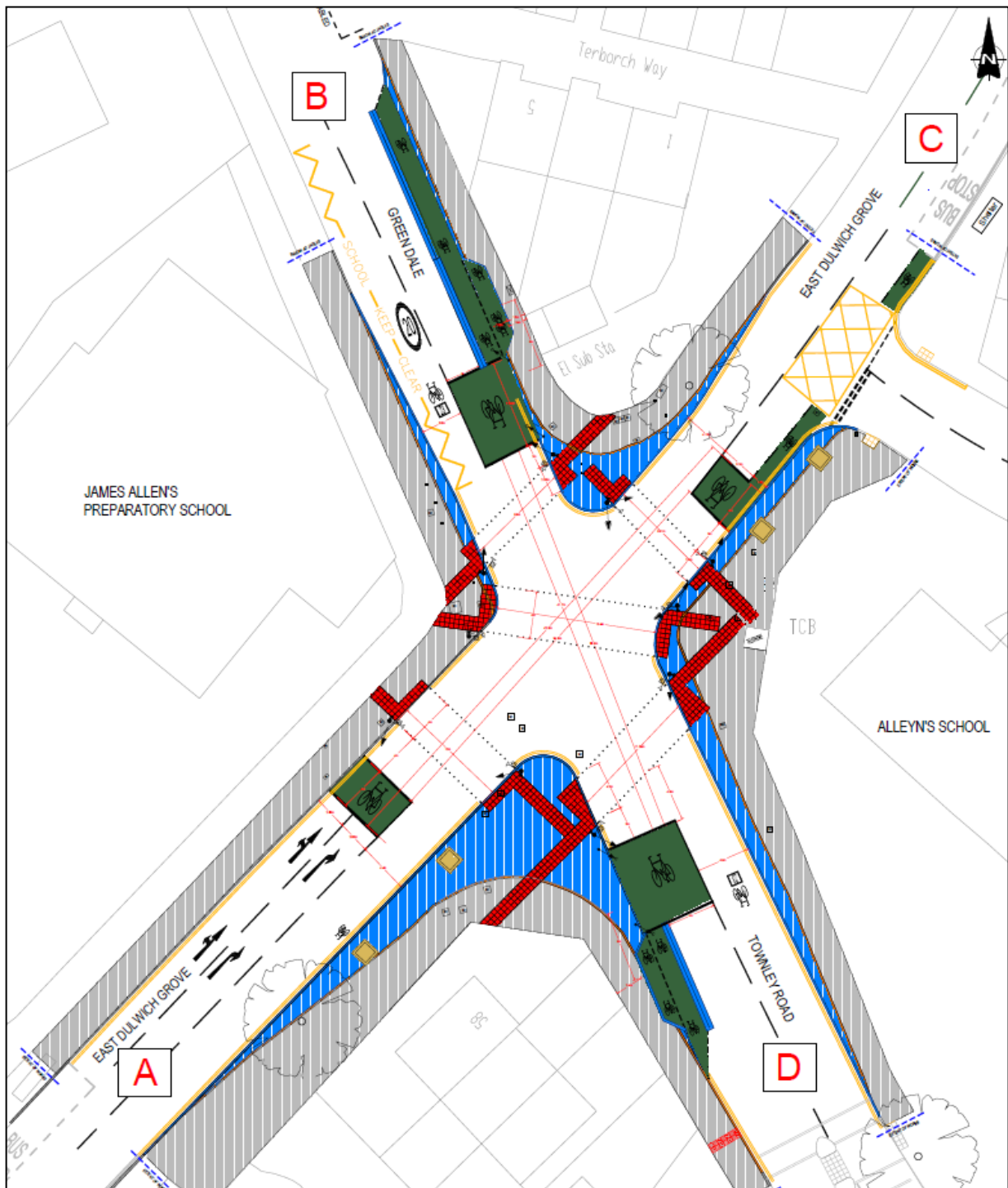
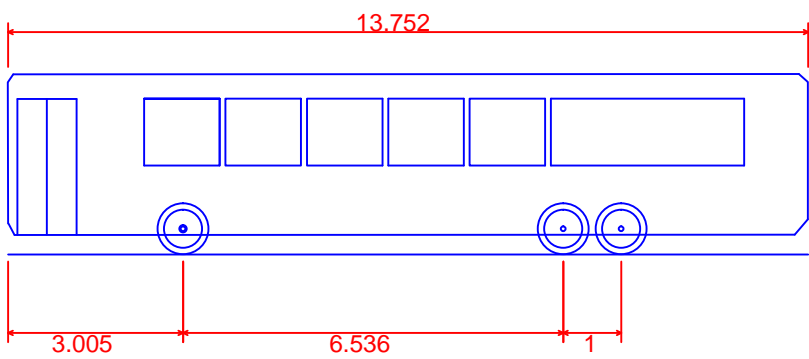
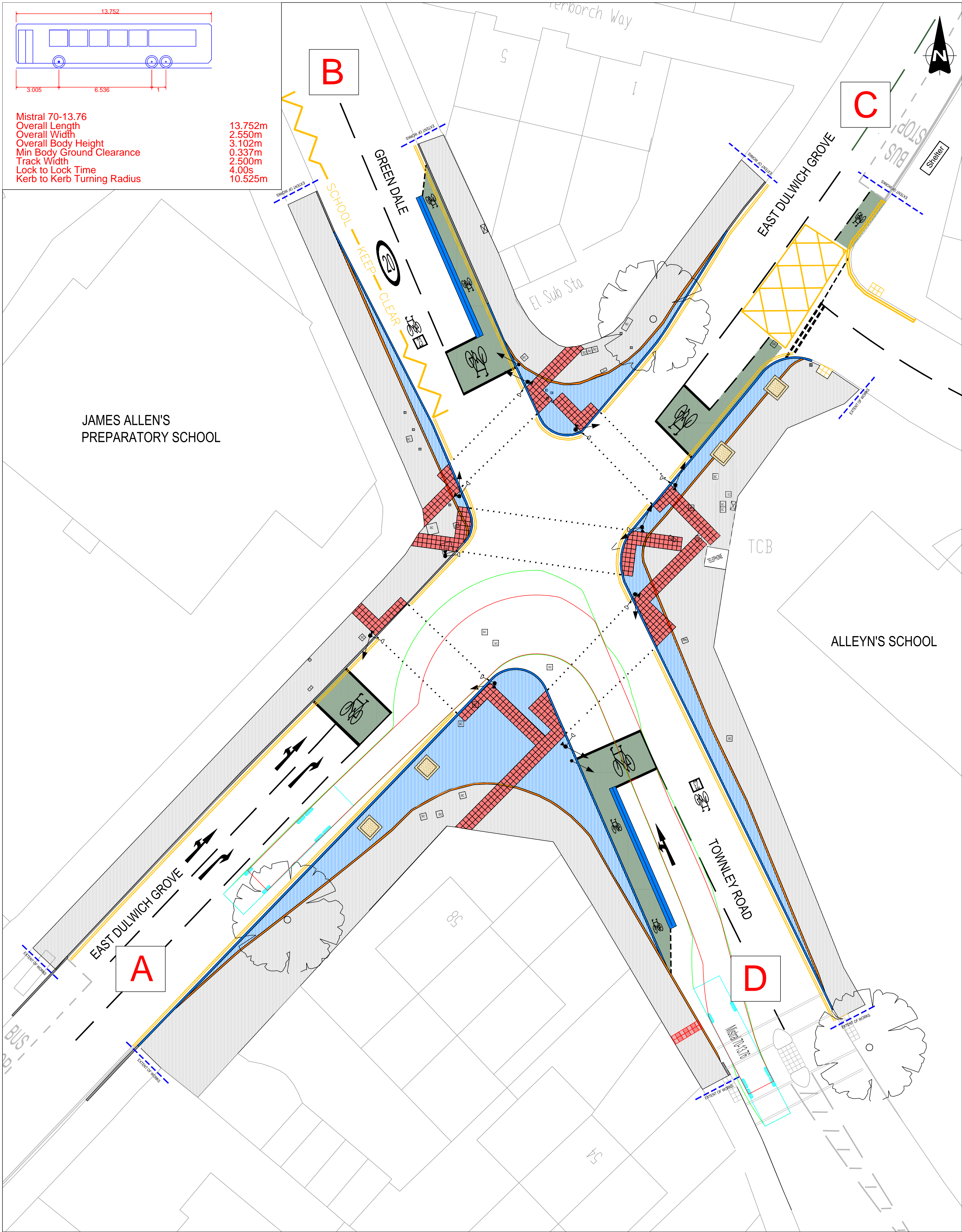


Figure F – Detailed Design Drawing of Option 7A No. D/EDG/CM/13/001/O7a

Appendix I: Junction Autotrack Analysis



Mistral 70-13.76
Overall Length 13.752m
Overall Width 2.550m
Overall Body Height 3.102m
Min Body Ground Clearance 0.337m
Track Width 2.500m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 10.525m

JAMES ALLEN'S
PREPARATORY SCHOOL

ALLEYN'S SCHOOL

- | | | |
|---|-----------------------------|--------------------------------------|
| Existing kerbline to be removed | Existing kerbline to remain | Proposed ladder paving |
| Proposed kerb | Proposed lining | Existing ladder paving to be removed |
| Tactile Paving (red) | Existing lining | Proposed cycle facility |
| Tactile Paving (buff) | Proposed footway extension | Existing footway |
| 3 Aspect Signal on Pole | Proposed tree pit | Proposed dropped kerb |
| 3 Aspect Signal with Secondary Hoods | | |
| 3 Aspect Signal with Green Arrow Unit - Filter Signal | | |
| Pedestrian Pushbutton | | |



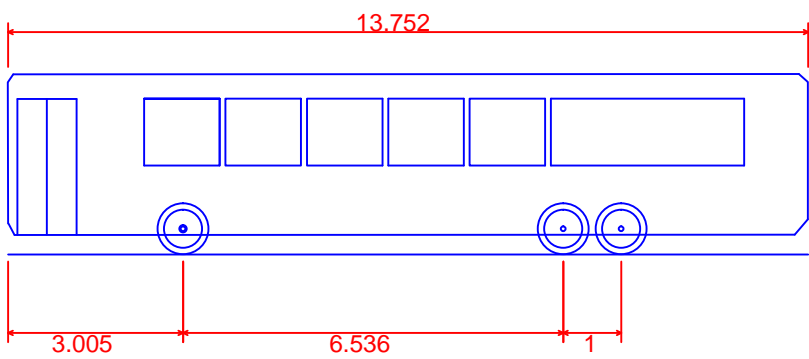
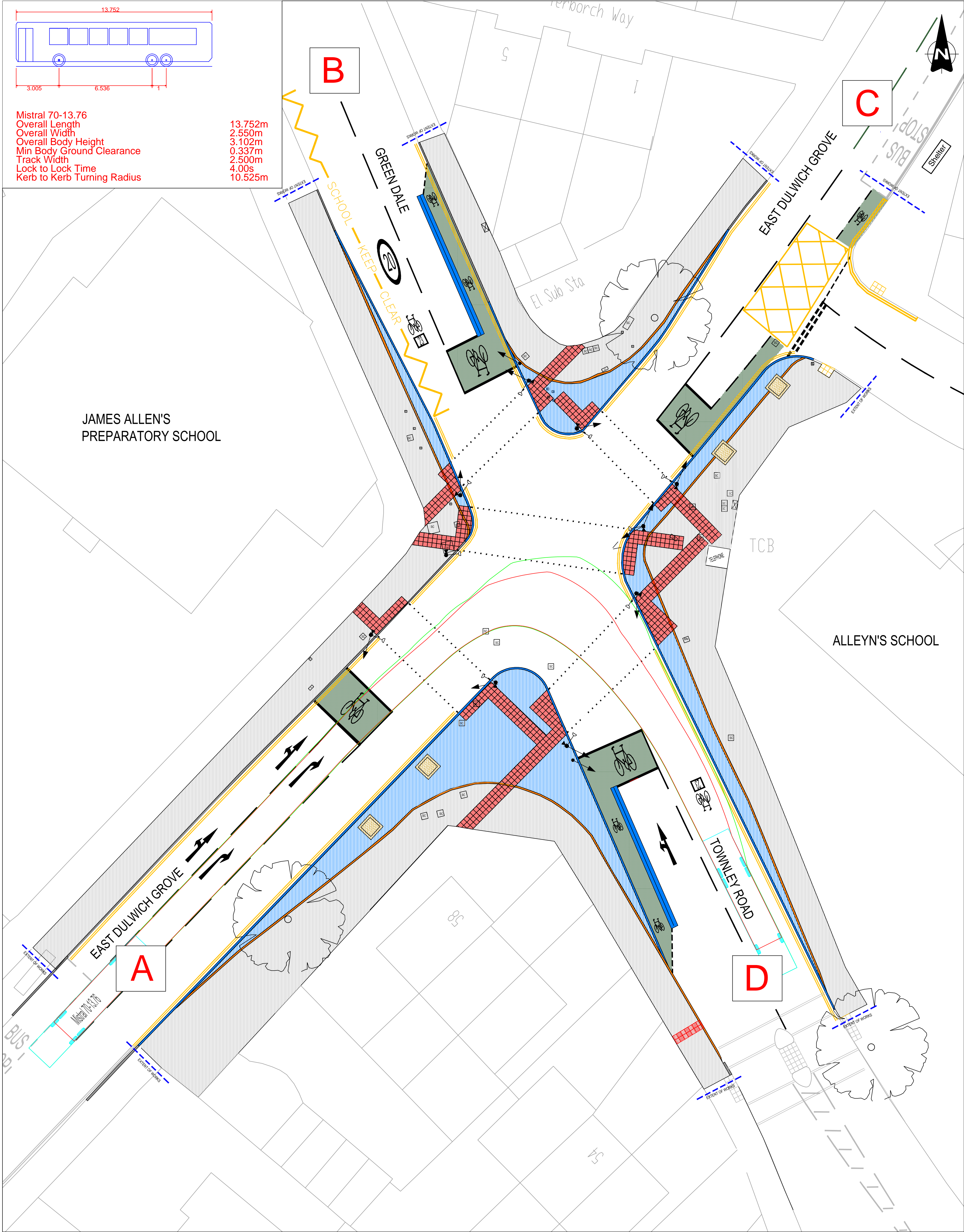
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COUNCIL OFFICES, CHILTERN
HOUSE, PORTLAND STREET,
LONDON SE17 2ES

No.	Date	Revision

Project
East Dulwich Grove / Townley Road

Title
AutoTrack - Mistral 70-13.76
LEFT TURN INTO EDG

Contract No.	Drawn	CM
Scale	Designed	CM
NTS	Checked	
Drawing No.	Approved	
D/EDG/CM/13/001/AT01	Rev.	A
Date Drawn	02/14	Date Issued



Mistral 70-13.76
Overall Length 13.752m
Overall Width 2.550m
Overall Body Height 3.102m
Min Body Ground Clearance 0.337m
Track Width 2.500m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 10.525m

JAMES ALLEN'S
PREPARATORY SCHOOL

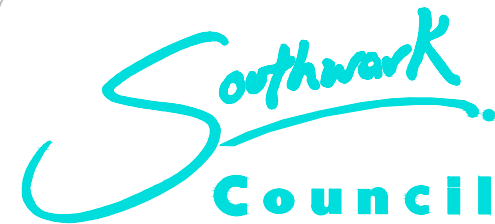
B

C

A

D

- | | | |
|---|-----------------------------|--------------------------------------|
| Existing kerbline to be removed | Existing kerbline to remain | Proposed ladder paving |
| Proposed kerb | Proposed lining | Existing ladder paving to be removed |
| Tactile Paving (red) | Existing lining | Proposed cycle facility |
| Tactile Paving (buff) | Proposed footway extension | Existing footway |
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| Pedestrian Pushbutton | | |



REGENERATION & ENVIRONMENT
COUNCIL OFFICES, CHILTERN
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No.	Date	Revision

Project
East Dulwich Grove / Townley Road

Title
AutoTrack - Mistral 70-13.76
RIGHT TURN INTO TOWNLEY

Contract No.	Drawn	CM
Scale	Designed	CM
NTS	Checked	
Drawing No.	Approved	
D/EDG/CM/13/001/AT02	Rev.	A
Date Drawn	02/14	Date Issued