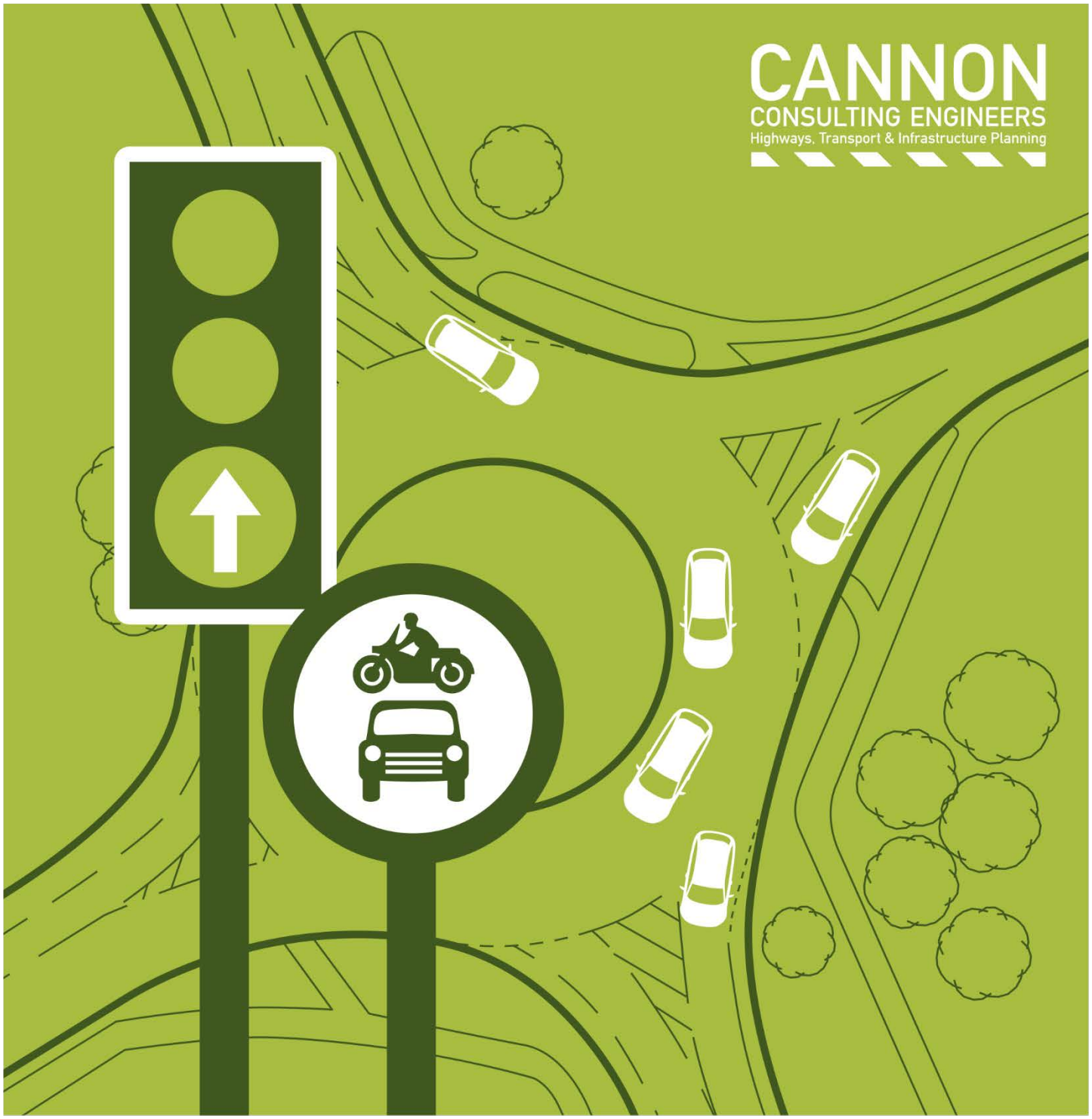


transport assessment

Boulton Moor District Centre and Residential Development

CCE/E702/DC/TA/01
Volume 1

October 2021

For JSC Farming and Central Land Holdings Ltd

Document Review Sheet

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Document status

Issue	Date	Author	Checked
01	October 2021	DCS	RE

Contents

1 INTRODUCTION 1
2 EXISTING CONDITIONS 6
3 POLICY REVIEW 26
4 DEVELOPMENT PROPOSALS 34
5 TRIP RATES AND TRAFFIC FLOW FORECASTS 46
6 JUNCTION CAPACITY 59
7 MICROSIMULATION MODEL (VISSIM) 71
8 FRAMEWORK TRAVEL PLAN 87
9 SUMMARY AND CONCLUSIONS 89

Diagrams

TFD001 – 2021 Observed Turning Counts – AM and PM peak
TFD002 – 2021 Observed Turning Counts – Weekend peak
TFD003 – Committed development trips AM and PM peak
TFD004 – Committed development trips Weekend peak
TFD005 – 2023 Base AM and PM peak
TFD006 – 2023 Base Weekend peak
TFD007 – 2028 Base AM and PM peak
TFD008 – 2028 Weekend peak
TFD009 – 2023 Base + Remaining BM1 trips AM and PM peak
TFD010 – 2023 Base + Remaining BM1 trips Weekend Peak
TFD011 – 2028 Base + Full Committed Development AM and PM peak
TFD012 – 2028 Base + Full Committed Development Weekend peak
TFD013 – New Development Trips (20%) AM and PM peak
TFD014 – New Development Trips (20%) Weekend peak
TFD015 – Pass-by Trips (40%) AM and PM peak
TFD016 – Pass-by Trips (40%) Weekend peak
TFD017 – Diverted Trips (40%) AM and PM peak
TFD018 – Diverted Trips (40%) Weekend peak
TFD019 – Proposed Development Trips Total AM and PM peak
TFD020 – Proposed Development Trips Total Weekend peak
TFD021 – 2023 Base + Remaining BM1 + Proposed Development AM and PM peak
TFD022 – 2023 Base + Remaining BM1 + Proposed Development Weekend peak
TFD023 – 2028 Base + Committed Development + Proposed Development AM and PM peak
TFD024 – 2028 Base + Committed Development + Proposed Development Weekend peak

Drawings

E702_PL_SK_246 Revision B – Proposed 4-arm District Centre Roundabout (Tie in with existing)
E702_PL_SK_247 Revision B – Proposed 4-arm District Centre Roundabout (tie in with committed improvements)
E702_PL_SK_249 – Proposed District Centre Illustrative Swept Path Movements (16.5m Artic)
E702_PL_SK_250 – Proposed District Centre Illustrative Swept Path Movements (11.2 Refuse Vehicle)
E702_PL_SK_251 – Proposed District Centre Illustrative Swept Path Movements (Fire Tender)
E702_PL_SK_252 – District Centre Roundabout (Swept Path 16.5m Artic)
E702_PL_SK_253 – District Centre Roundabout (Swept Path 11.2 Refuse Vehicle)
E702_PL_SK_254 – District Centre Roundabout (Swept Path Fire Tender)
E702_PL_SK_255 – District Centre Roundabout (Swept Path Bus Tracking
E702-DD-DR-030 – General Arrangement (District Centre Roundabout)
E702-DD-DR-630 P01 – District Centre Roundabout – Chellaston Lane (N) Long Section
E702-DD-DR-631 P01 – District Centre Roundabout – Chellaston Lane (S) Long Section
E702-DD-DR-632 P01 – District Centre Roundabout – Chellaston Lane (N) Cross Section
E702-DD-DR-633 P01 – District Centre Roundabout – Chellaston Lane (S) Cross Section
E702-DD-DR-230/231 – District Centre Roundabout – Surface Contours

Appendices

Appendix A – Masterplan
Appendix B – Scoping correspondence
Appendix C – Committed Offsite Highway Works DE C 004 and DE C001
Appendix D – Committed improvements to Alvaston District Centre
Appendix E – Derby City Cycling Map
Appendix F – Public Transport Information
Appendix G – Agreed AECOM Trip Matrices
Appendix H – Review Table of Approved Trip Type
Appendix I – Local Authority Correspondence on Approved Trip Types
Appendix J – Proposed Trip Rates
Appendix K – Foresters Leisure Park Information (Costa Examples)
Appendix L – Junction 2 – Chellaston Lane / Shardlow Road ARCADY output files
Appendix M – Junction 1 and 2 – Committed Development LinSIG output files
Appendix N – Junction 3 – Proposed District Centre Roundabout ARCADY output files
Appendix O – Junction 4 – Existing PHL Roundabout ARCADY output files.
Appendix P – VISSIM Input Matrices
Appendix Q – Proposed Speed Graphs

1 INTRODUCTION

1.1 Introduction

1.1.1 Cannon Consulting Engineers are appointed by JSC Farming Ltd and Central Land Holdings Ltd to provide highways and transportation advice in support of the development a District Centre and residential development located in the north-eastern part of the Boulton Moor Sustainable Urban Extension (SUE), as shown on the site location plan below:

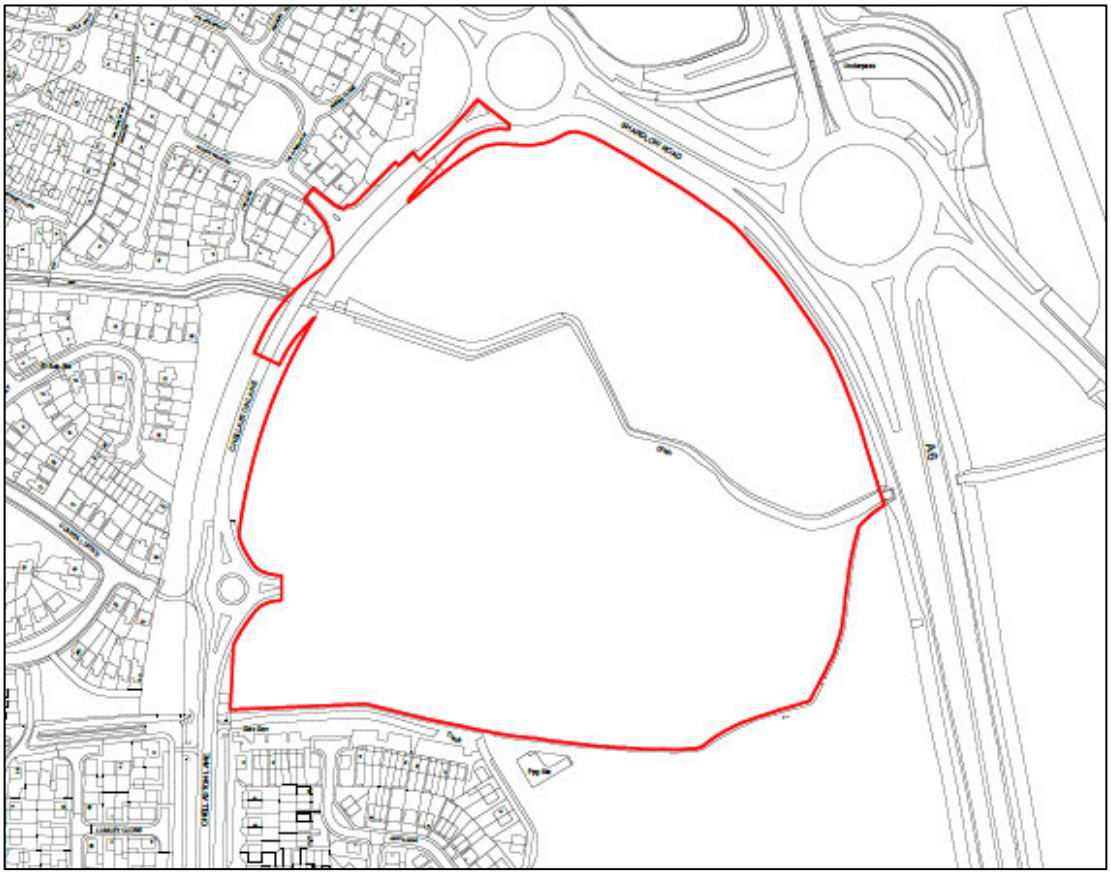


Image 1.1 – Proposed Site Location (*source www.google.com/maps*)

1.1.2 This Transport Assessment (TA) is accompanied by a Framework Travel Plan (FTP) and together these reports will form the supporting documentation for an outline planning application consisting of

> *A District Centre comprising the erection of new buildings to accommodate Use Classes E (a) – (f), a Transport Mobility Hub and Petrol Filling/Electric Charging Station. Residential dwellings, a retirement home, a care home, a community facility, and associated road infrastructure, landscaping, services, and engineering works. Outline application with all matters reserved except the northern access.*

1.2 Existing Site

1.1.3 The Boulton Moor Phase 1 (BM1) site forms part of a wider cross boundary area (Derby City and South Derbyshire) identified for sustainable development providing an SUE to Derby City. This SUE area consists of four phases, namely

- Boulton Moor Phase 1 (Derby reference SUA 1);
- Boulton Moor Phase 2 (Derby reference SUA 2);
- Boulton Moor Phase 3 (Derby reference SUA 3); and
- Snelsmoor Grange (application reference 04/13/00351)

1.1.4 The SUE is located on the south eastern fringe of the existing urban area of Derby, to the west of the A6 Corridor, south of the Alvaston residential area and to the east of Chellaston village. Snelsmoor Lane bisects the permitted Boulton Moor Phase 1 (BM1) development site.

1.1.5 South Derbyshire's Local Transport Plan 3 (LTP 3) states that:

> *'Land at Boulton Moor is capable of delivering strategic levels of growth due to its excellent transport links to the wider strategic road network and its location to employment opportunities.'*

1.1.6 Policy H13 identifies that the four Boulton Moor sites will accommodate a total 2,750 dwellings within the plan period up to 2028. These are split between the individual land parcels as follows:

- Boulton Moor Phase 1 – up to 1,058 dwellings, 2 form entry Primary School and land set aside for a future park and ride site (planning permission 2009);
- Boulton Moor Phase 2 – up to 700 dwellings (committed development comprising up to 550 residential units and 2 form entry Primary School (Planning Reference 9/2016/00166);
- Boulton Moor Phase 3 – up to 190 dwellings;
- Snelsmoor Grange – up to 800 dwellings (subject to a current planning application reference 04/13/00351)

1.1.7 BM2 site lies to the west of BM1 and to the east of the Snelsmoor Grange (SG) site, as shown on Figure 1.

1.2 Development Proposals

1.2.1 It is proposed to develop the parcel of land to the north of Thulston Brook as a mixed retail site providing a District Centre. The District Centre will include a transport mobility hub, foodstore, support retail, 2 drive-thru units, an early year's nursery, a petrol filling station and residential flats. Access to the site is proposed from Chellaston Lane and a new four arm

roundabout with Woods Meadow. The remaining retained land to the south of Thulston Brook is being promoted for up to 278 residential units and a 66 bedroom care home. The retained land will be accessed via the as built BM1 northern roundabout and spine road which has recently been constructed.

1.2.2 The illustrative masterplan is contained at Appendix A.

1.3 Background (Development Site)

1.3.1 The proposed District Centre site has been identified and allocated to Derby City Council through the BM1 S.106, to provide land for a Park and Ride with circa 1,000 spaces. This resulted from the original BM1 outline planning permission in 2005 and was carried forward within the renewed permission in 2011. The land for the Park and Ride site was not included in the planning permission, an agreement to deliver an access to the site in the form of a roundabout was included for and this is to be funded by the BM1 developer, in this instance Persimmon Homes Ltd.

1.4 Subsequently, Derby City Council (DCC) have not pursued a formal Park and Ride based on lack of available funding and following considerations related to feasibility and viability. It was decided in 2015 that the intention was to seek an alternative approach as a bus hub, providing an amenity in conjunction with a mixed use development on this site as a District Centre. Their correspondence is contained at Appendix B.

1.5 As part of the consultation process on the Boulton Moor Phase 2 (BM2) planning application (reference 9/2016/0166) which ran in parallel to adoption in the Local Plan and preparation of a Draft Development Framework, the Authorities reiterated that a smaller Bus Hub could be provided and incorporated into the District Centre proposals.

1.6 More recently Derby City Council have submitted a Transforming Cities Fund Bid in conjunction with Nottingham City Council to seek public funding for a number of sustainable infrastructure projects. Included within the bid was a proposal to investigate the delivery of the park and ride site, or bus hub, at Boulton Moor on the reserved land. Derby City Council were awarded full funding of £61 million which covers the design and implementation of a series projects over a three year period and the bid included the Park and Ride or bus hub facility at Boulton Moor, amongst other projects.

1.7 Derby City Council commissioned Tetratech (formally White Young Green) to review the potential for a Park and Ride site at this location. This work has since been carried out where it has been confirmed that a formal park and ride is not viable and therefore will not form part of the works delivered through the TCF. Instead the Derby City Council (DCC) have requested that a Transport Mobility Hub (TMH) should be included within the District Centre as a form of mitigation for the proposals.

1.8 The form and function of the TMH has been discussed with DCC where it is agreed in principle that it should include approximately 60 car parking spaces, electric charging points and ability

to support other sustainable initiatives such as an electric car club, e-scooters and e-bikes. The details of which will be agreed through a separate District Centre planning application.

1.9 Having agreed the scale of the TMH and its location the remaining site has been planned as a mixed use development, which has been discussed with DCC and is considered to be accepted in principle subject to a planning application coming forward. Pre-application discussions have also been held with South Derbyshire Council, where the proposals are accepted in principle.

1.10 As described in Section 1.1 access to the site has been identified through the Boulton Moor 1 planning permission as roundabout junction from Chellaston Lane. This had been secured in principle through the Boulton Moor 1 planning permission and the developer (Persimmon Homes Limited) are obligated to deliver the access.

1.11 As such the applicants are seeking planning permission for the proposed District Centre access to allow for this to be delivered as part of the current Boulton Moor 1 obligations (Planning Reference 9/2016/00166).

1.12 Highways Scoping

1.12.1 Pre-application discussions have been held with the local authorities dating back to 2015. These have led to the confirmation in 2015 and more recently in 2021 that a Park and Ride on the northern parcel, as identified in the original Boulton Moor 1 permission, is no longer being pursued by the local authority. The park and ride which has no planning permission has been dismissed on viability grounds and instead Derby City Council suggest that a smaller Transport Mobility hub is incorporated in to the development proposals.

1.12.2 The layout of the Transport Mobility hub, including number of parking spaces and sustainable initiatives has been discussed and has helped shape the Transport Mobility hub.

1.12.3 A copy of the scoping correspondence is contained at Appendix B.

1.13 Report Structure

1.13.1 Following this introduction this Transport Note has been prepared to consider proposed District Centre site access and its impact on the immediate highway network. The report is structured as follows:

- Section 2 of this report describes the application site and existing transport conditions in the vicinity of the proposed development. This includes a review of the existing access and linkages to the site.
- Section 3 presents a summary of the relevant transport policies at national and local levels which apply to the application site and the redevelopment proposal.
- Section 4 describes the development proposals, including the scale, layout of the residential proposal and access into the site.

- Section 5 outlines the estimated trip generation and traffic distribution as a result of the proposed development and provides a review of the resulting development transport impacts; including a capacity assessment of the site access junction.
- Section 6 presents the results of the highway assessment
- Section 7 provides details of the Framework Travel Plan
- Section 8 presents a summary and conclusion to this TA.

2 EXISTING CONDITIONS

2.1 Introduction

2.1.1 This section of the report outlines the existing local conditions including the provision for walking, cycling, public transport and the local highway network in the vicinity of the site. It also considers existing connectivity to local amenities and facilities. This will facilitate an evaluation of the opportunities that exist to help reduce dependence on travel by the private car by residents and visitors of the development.

2.2 Site Location

2.2.1 The site is split into the following distinct land parcels:

- Parcel 1 – Area of land to the north of Thulston Brook and bound by Chellaston Lane, Shardlow Road and the A6 (T) (as shown in Blue on Image 2.1); and
- Parcel 2 – Area of Land between Thulston Brook and Beeches Brook (as shown in Green on Image 2.1).

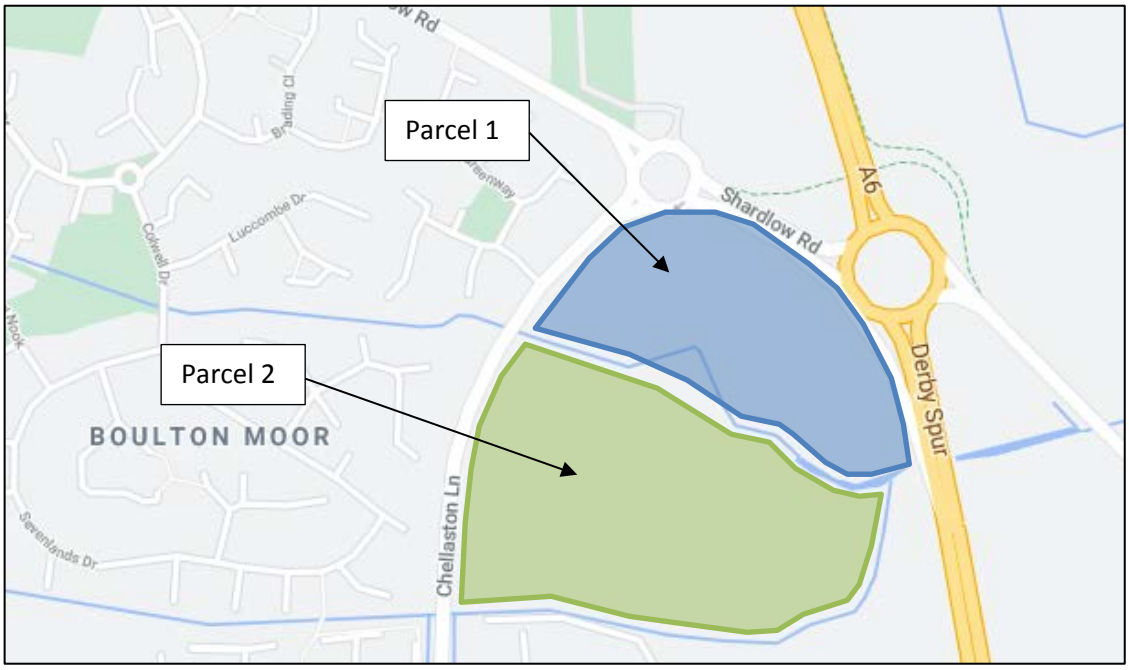


Image 2.1 – Proposed Access Location (mapping *source* www.google.com/maps)

2.2.2 Parcel 1, located to the north of Thulston Brook was identified as a future Park and Ride as part of the Boulton Moor 1 planning permission (2011). The park and ride and site has no planning permissions attached to it and lies outside of the allocated Boulton Moor growth area. This parcel of land is currently accessed from a gated farm access from Chellaston Lane.

2.2.3 The area located to the south of Thulston Brook (Parcel 2) is located within the allocated Boulton Moor SUE (Policy H13). The area is currently accessed from the newly constructed Boulton Moor roundabout and spine road as illustrated below:

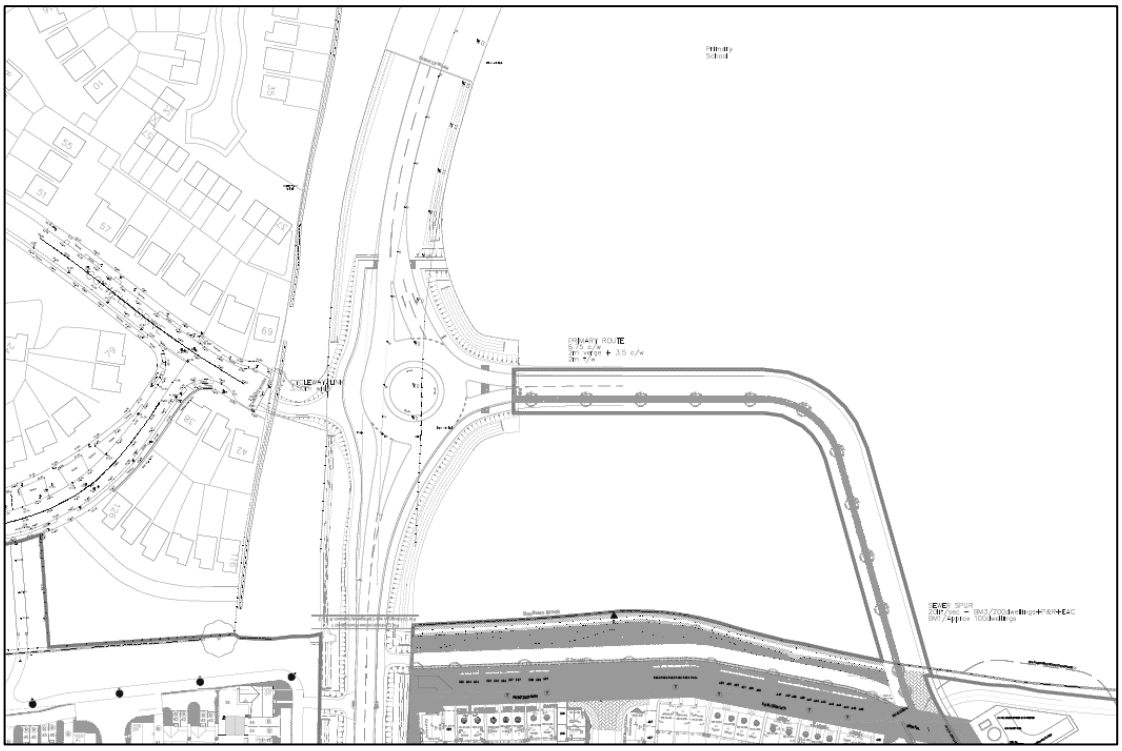


Image 2.2 – Parcel 2 Access and Spine Road Layout – (source PHL layout 9_2019_0658)

2.2.4 The roundabout access illustrated above has been agreed as part of the S.278 / S.38 agreements associated with the Boulton Moor 1 development and have been constructed by Persimmon Homes Ltd. The preliminary layout submitted as part of the Boulton Moor 2 development indicated that an ahead lane between Chellaston Lane south and north) may be required in order to accommodate the anticipated demand. However through the S.278 / S.38 process this element of the scheme has been removed at the request of the Local Highway Authority.

2.3 Local and Strategic Highway Network

2.3.1 As noted above access to the land parcels is from Chellaston Lane, which runs north to south connecting with Shardlow Road (to the north) and Snelsmoor Lane (to the south). Snelsmoor Lane continues west providing a connection to Chellaston. This is considered to be a secondary route and a scheme to traffic calm the road has been proposed as part of the Snelsmoor Grange development (planning reference 04/13/00351) to discourage its use.

2.3.2 Chellaston Lane forms the primary access for the Boulton Moor 1, Boulton Moor 2 and Snelsmoor Grange developments to access the wider highway network to the north. An improvement scheme has been secured through the Boulton Moor 2 permission (planning reference 9/2016/0166) and will be secured as part of the Snelsmoor Grange development (planning reference 04/13/00351). The improvement works include converting the existing roundabout to a traffic signal controlled T-junction as shown on drawing DE C 004 contained at Appendix C and shown on the extract below:

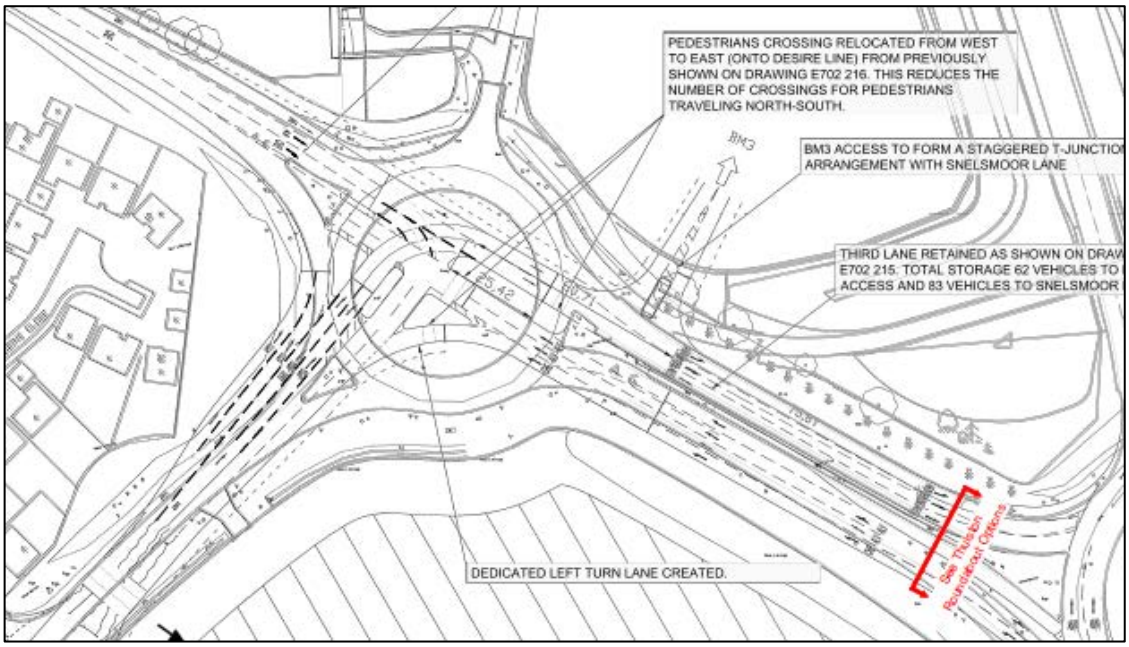


Image 2.3 – Extract from Committed Improvement Drawing DE_C_004

2.3.3 Based on the BM2 permission this scheme is to be implemented prior to the occupation of the 450th unit and the combined Boulton Moor 2 and Snelsmoor Grange developments, which is anticipated to occur around 2026 based on current planned start and build out trajectories.

2.3.4 Woods Meadow forms a priority T-junction with Chellaston Lane along the western boundary of Parcel 1. It is proposed to take access from this location due to the proximity of the Shardlow Road junction and Thulston Brook which forms the southern boundary of the site. As discussed, access was established from this location as part of the original 2005 BM1 permission and retained in principle in the 2011 permission.

2.3.5 Shardlow Road forms a primary route connecting with the A6 (T) Thulston Roundabout (to the south-east) and Harvey Road and London Road roundabouts, referred to the as the Alvaston District Centre (ADC), to the north-west. Shardlow Road provides local access from the residents of Alvaston Village, Alvaston Moor and Boulton Moor. Shardlow Road is subject to a 40mph speed limit, in the vicinity of Chellaston Lane.

2.3.6 The A6 (T) Thulston Roundabout is a four arm priority controlled roundabout with Shardlow Road, the B1050 and the A6 Derby Spur. The A6 (T) provides an eastern bypass between the A50 and the A52, forming part of National Highways Strategic Road Network (SRN). A scheme to implement partial traffic signal control has been agreed as part of the Boulton Moor 2 permission (planning reference 9/2016/0166) and Snelsmoor Grange development (planning reference 04/13/00351). The scheme has been designed to address existing (pre-COVID) queuing on Shardlow Road and to rebalance the operation of the junction and will be implemented prior to the 50th occupation of the combined Boulton Moor 2 and Snelsmoor Grange developments. The improvement works are illustrated on approved planning drawing DE C 001, contained at Appendix C and illustrated on the extract below:

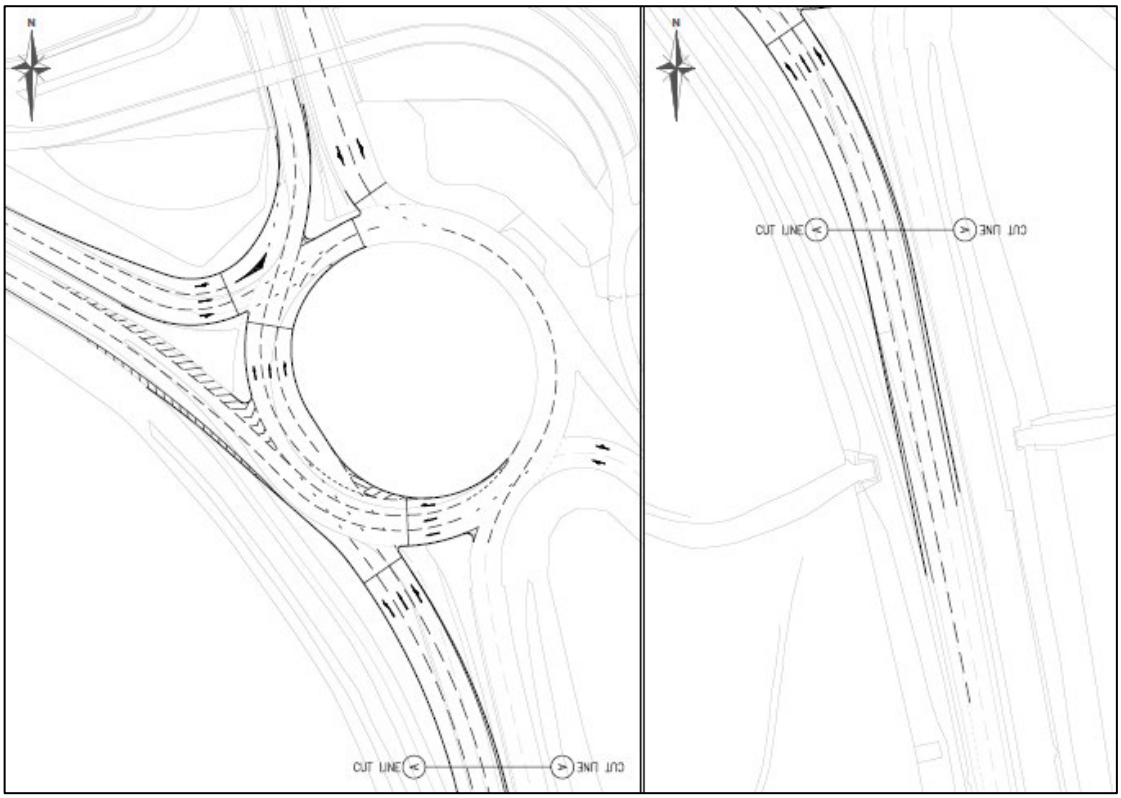


Image 2.4 – Extract from Committed Improvement Drawing DE C 001

2.3.7 The A50 forms a southern bypass of Derby City and connects to the M1 (to the east) and the A38 (to the west). The A52 provides connections with the M1 (to the east) and Derby City Centre and the A67 (to the west).

2.3.8 A scheme to convert the existing ADC roundabouts to traffic signal control has been agreed as part of the Boulton Moor 2 (planning reference 9/2016/0166) and Snelsmoor Grange (planning reference 04/13/00351) developments. The improvement works are shown on Drawings T13058 011 – 014 contained at Appendix D. These works are to be completed prior to the 100th occupation at the combined Boulton Moor 2 and Snelsmoor Grange developments.

2.4 Non Car Modes

2.4.1 Derby City have a dedicated website (www.derbyconnected.com) which provides advice on travel around the city using the following modes:

- Walking – Pedestrian Networks;
- Cycling – Cycle Route Networks and E-bike network; and
- Public Transport – Existing Bus and Train service provision;
- E-scooters; and
- Car Sharing

Walking and Cycling

Walking

2.4.2 Table 2.1 provides a summary of the Chartered Institution of Highways and Transportation (CIHT) guidance with respect to acceptable walking distances and times to key facilities.

IHT Guidelines	Distance		Walk Time	
	Commuting, Walking to School and Recreational	Other Non-Commuter Journeys	Commuting, Walking to School and Recreational	Other Non-Commuter Journeys
Desirable	500m	400m	6.25 mins	5 mins
Acceptable	1,000m	800m	12.5 mins	10 mins
Considered	2,000m	1,200m	25 mins	15 mins

Table 2.1: CIHT guidance 'Providing for Journeys on Foot':

2.4.3 Parcel 1, to the north of Thulston Brook is currently farmland and as such is not accessible by foot. There are currently no footways along the parcel boundary on Chellaston Lane, Shardlow Road or the A6 (T).

2.4.4 Footways are located in the adjoining Woods Meadow development which provide a connection via The Greenway to Shardlow Road and the existing bus stops (Bus Stop IDs dbsadjgt and dbsadjdm).

2.4.5 A shared footway/cycleway is located on the northern side of Shardlow Road. This link runs from the pedestrian connection at The Greenway and continues east, under the A6 (T) and along the eastern side of the A6 (T) to Alvaston and Spondon.

2.4.6 Parcel 2, to the south of Thulston Brook is currently farmland, however as part of the Boulton Moor 1 development PHL has constructed a 3 arm roundabout access and spine road through part of the land. The spine road has been provided with the following specification:

- 6.75m carriageway;
- 3m verge;
- 2m footway on the northern side of the carriageway; and
- 3.5m shared footway / cycleway on the southern side of the carriageway.

2.4.7 The access roundabout has been constructed with uncontrolled pedestrian crossings on the northern and eastern arms of the junction. It should be noted that the pedestrian crossing on the northern arm of the junction was identified in the Boulton Moor 1 planning permission as a Toucan Crossing. Through scoping with Derbyshire County Council confirmed that the authority had agreed that Toucan crossing were not required at this stage due to ongoing maintenance before demand for its use had been established. It is our understanding that the ducts and drawpits have been installed to allow for the future upgrade of the crossing and a contribution through the S.278 has been paid to facilitate the upgrade. This crossing provides

an east west connection between the Boulton Moor 1 site and the existing settlement area accessed from Cowell Drive.

2.4.8 From the access road a 3.5m shared footway / cycleway has been installed by PHL running southbound on both sides of Chellaston Lane to the southern access.

2.4.9 A second uncontrolled crossing point is located on Chellaston Lane at the east-west cycle link. Again this was required through the Boulton Moor 1 development being a Toucan Crossing, however through the S.278 process it was requested by Derbyshire County Council that this should be an uncontrolled crossing.

2.4.10 The east-west pedestrian / cycle link provide provides a direct connection between the Boulton Moor Urban Growth Areas (Boulton Moor 1, Boulton Moor 2 and Snelsmoor Grange developments). At the eastern boundary PHL are providing a new footbridge over the A6 (T) to provide access to the proposed leisure triangle. This link will extend beyond the triangle forming a connection to Elvaston Castle.

2.4.11 The Boulton Moor 1 development has been designed on a figure of eight loop road network. This route forms the central spine road through the development where a 2m footway and 3.5m shared cycle footway has been provided.

2.4.12 The accessibility isochrones have been plotted using TRACC as illustrated below:

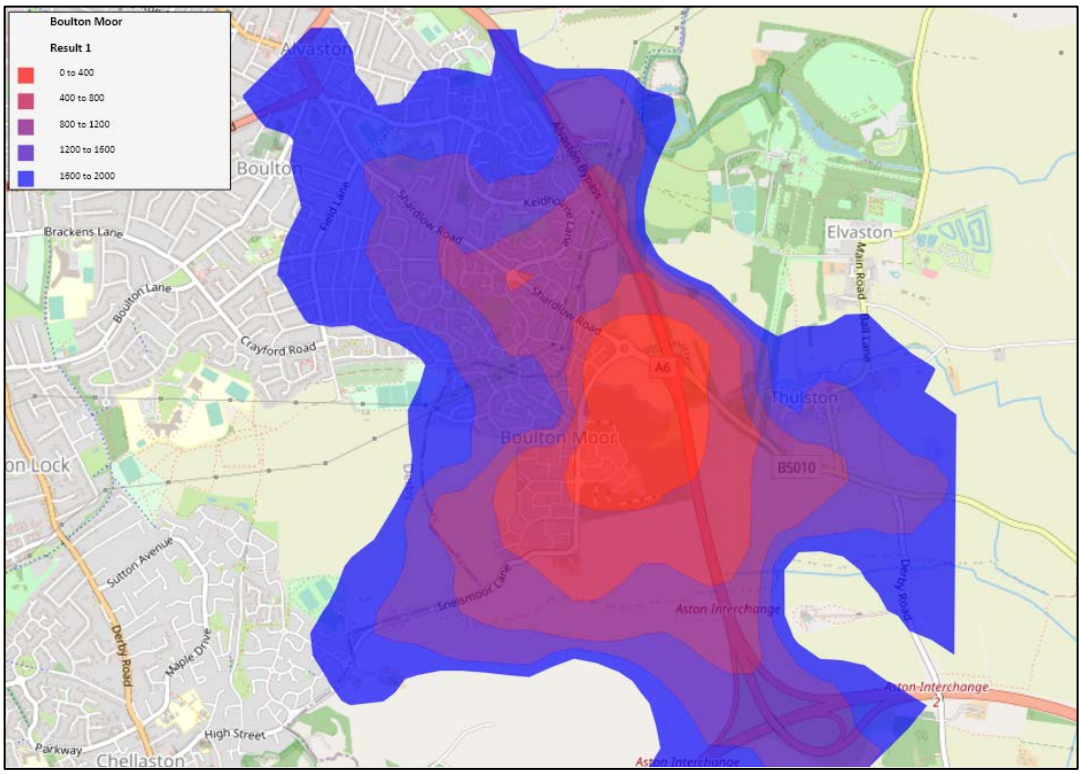


Figure 2.1 – Walking Isochrones from the Centre of Parcel 1 (District Centre)

Cycling

2.4.13 The local cycle network and connectivity of the site is described above. The wider cycle routes within the wider area are described below.

2.4.14 The Derby City Cycling Map is contained at Appendix E, which shows that there are a number of cycle routes within the vicinity of the site. The routes are a mixture of dedicated cycle routes and quiet routes.

2.4.15 National Cycle Route 6 (NCR 6) is described as providing a connection between London and Threlkeld (390 miles in length). NCR 6 follows the River Derwent through Derby in a north to south direction via a dedicated traffic free cycle path adjacent to the Swarkestone Road corridor. This section of the route is referred to as the Derby Canal Path and Cloud Trail and currently the most direct connection from the site is 1.7miles via Bracknell Drive.

2.4.16 Bracknell Drive forms the western section of Regional Route 66 (RR66), which provides a link between NCR6 and the A6 Corridor at Raynesway. RR66 is an on-road cycle route, operating along roads identified as 'quiet routes', namely Bracknell Drive, Farm Drive, Field Lane, Church Street and Green Lane.

2.4.17 RR66 is approximately 1.6km from the centre of the development site. This route proceeds along the south boundary of Field Lane Recreational Ground and onto Field Lane.

2.4.18 As identified RR66 connects with existing cycle provision on the A6 at Raynesway. A dedicated cycle route runs along the eastern side of the A6 bypass from its junction with the Thulston Roundabout (to the south) and A5111 (to the north).

Public Transport – Bus Services

Bus Services

2.4.19 A qualitative review of the existing public transport provision has been undertaken and three routes have been identified, namely routes F1, 73, and the Skylink service. These routes are shown on the bus service map extract contained at Appendix F.

2.4.20 Arriva operate radial route 1/1A and the F1, referred to as the Derby Circular, linking the existing Boulton residential area to Derby City Centre. From the development site the closest stops are located at the Needles and Newport Drive which are located approximately 700 metres and 850 metres from the centre of the site.

2.4.21 Kinchbus operate the Skylink service between Derby City and Leicester running along the Shardlow corridor. From the development the closest stop is located on Shardlow Road to the east of Chellaston Lane (ID dbsadjgt and dbsadjdm), which is located approximately 520m. The westbound bus stop is provided in a layby and has real time passenger information (RTPI), a bus shelter and timetabling information. The eastbound stop is provided with RTPI and timetabling information.

2.4.22 Table 2.3 provides a summary of the local bus services that are accessible from the development and further information about these services can be found at Appendix F including timetables.

Route Number	Main Destinations	Nearest Stop	Monday - Friday		Sat	Sun
			Peak	Off-Peak		
F1	Derby City	Newport Drive & The Needles	30mins	30mins	N/A	N/A
1/1A	Derby City		15mins	15mins	15mins	30mins
73	Derby City	Shardlow Road	N/A	1 per 2hrs	N/A	N/A
Skylink	Leicester	Shardlow Road	15mins	20mins	20mins	30mins

Table 2.2: Summary of Existing Bus Services

2.4.23 In addition to the services described above the extant Boulton Moor 1, Boulton Moor 2 and Snelsmoor Grange developments are obligated through their planning permissions to implement a new bus service along Chellaston Lane. This new service will operate with a 30 minute target frequency and will pass along the western site boundary and then loop round the Boulton Moor 1 development.

2.4.24 The provision of the service and bus stops will result in the development site being within 400m of a stop.

2.4.25 The Boulton Moor 1 development (currently being built out by Persimmon Homes Ltd) has triggered the procurement of the service, however the service is still to be implemented. The pandemic and ongoing effects may have delayed its delivery however given that the need for the service has been triggered it is expected that this will be delivered prior to the occupation of the proposed development.

2.4.26 Although no existing services use Chellaston Lane, two bus stops have been installed on Chellaston Lane, between Woods Meadow and the Shardlow Road junctions.

Rail Services

2.4.27 The closest rail station is located at Spondon approximately 3.4 miles north east of the site. Derby Station is located approximately 3.6 miles north-west of the development. Both stations are located outside of the CIHT walking guidelines; however, they would be accessible by bus or cycling with good cycle provision to both.

2.4.28 These stations are serviced by three operators namely Cross County (CC), East Midlands (EM) and Northern Rail (NR). A summary of the services and there current frequencies is provide on the table below:

Operator	Destination	Journey Time	Service Frequency in Peak Hours	First Train	Last Train
EM	St Pancras International	120 min	30 min	05:27	23:50
EM	Sheffield	57 min	30 min	05:27	23:50
CC	Birmingham	60min	30 min	05:27	23:50
CC	Nottingham	27min	30 min	05:26	23:50
CC	Stoke on Trent	90min	60 min	07:12	18:00

Table 2.3: Summary of Existing Rail Services

E-Scooters (Trial)

2.4.29 Derby City Council has partnered with Wind Mobility to provide 50 electric e-scooters for long term hire to key workers in the city. These are being provided at a 70% discount (£30 per month). This is part of the national trials which are taking place to understand if they can be implemented as a long terms sustainable transport measure.

2.4.30 Derby City Council confirmed that the trial is to be extended by an additional 50 e-scooters for general use. As a trial there is no guarantee that this is a long term service, however it is expected that a decision on the legal use of e-scooters will be made by Government in 2022.

E-bike Hire

2.4.31 Derby City operate e-Bikes Derby which provide around 200 e-bike and docking stations across the site. The service is operated by Hourbike, however Derby City Councils website states that the service is currently suspended due to vandalism.

2.4.32 Through scoping discussions with Derby City it is understood that a new bike hire service will be implemented imminently.

Car Sharing / E-car Hire

2.4.33 Co-wheels operate 3 electric car hire locations within the city. These are located at the Council House Car Park, Queen Street and Vernon Street.

2.5 Local Facilities

2.5.1 The proposals include a District Centre which will include a foodstore, drive thru units, PFS, local shops and a child care nursery. Access to these existing facilities has been reviewed to inform the existing catchment for the local area and summarised below.

	Destination	Distance (m) PHL C Rbt	Distance (m) (159 Bembridge Drive)
District Centre	Centre of Proposed District Centre Site	650m	1,800m (car) 1,000m (walk)
Foodstores	Asda Spondon (DE21 7LW)	6,275m	4,700m
	Lidl Raynesway (DE24 0DW)	3,000m	1,800m
	Lidl Chellaston (DE73 1UD)	3,700m	4,500m
	Aldi Chellaston (DE73 6WS)	3,700m	5,600m
	Aldi Alvaston (DE24 8NH)	3,900m	2,600m
	Sainsburys (DE21 6NZ)	7,240m	5,600m
Convenience Store	Tesco Express Chellaston (DE73 5SA)	2,900m	4,300m
	The Co-op Holbrook Road DE24 0LX	2,100m	650m
	The Co-op Bembridge Drive (DE24 0UQ)	1,600m	650m
Coffee Drive Thru's	Costa Chellaston (DE73 6WS)	3,700m	5,600m
	Costa Wyvern Drive (DE21 6NZ)	7,240m	5,600m
	Starbucks Allenton (DE24 8NG)	4,300m	3,200m
Drive Thru	McDonalds Commercial Park (DE21 7HX)	4,180m	2,600m
	McDonalds Wyvern Retail Park (DE21 6nz)	7,240m	5,600m
	KFC Foresters Leisure (DE23 8AG)	6,100m	5,000m
	KFC Wyvern Parkway (DE21 6RS)	6,900m	5,500m
PFS	Gulf Raynesway (DE24 0DU)	2,700m	1,900m
	Esso Rontect Harvey Road (DE24 8JZ)	3,900m	2,600m
	Asda PFS (DE21 7LW)	6,275m	4,700m
	Sainsburys PFS (DE21 6NZ)	7,240m	5,600m

Table 2.2: Summary of distances to existing facilities

2.5.2 The review of the accessibility to existing facilities which are proposed at the District Centre shows:

- The average distance to a foodstore/supermarket is
    - 4,600m from the Boulton Moor 1 site where the nearest store (Lidl) is located 3,000m away; and
    - 4,100m from Bembridge Drive where the nearest store (Lidl) is located 1,800m away.
- The average distance to a coffee drive thru is:
    - 5,080m from the Boulton Moor 1 site where the nearest store is located 3,700m away; and

- 4,800m from Bembridge Drive where the nearest store is located 3,200m away.

- The average distance to a food drive thru is:
  - 6,100m from the Boulton Moor 1 site where the nearest store is located 4,180m away; and
  - 4,675m from Bembridge Drive where the nearest store is located 2,600m away.

- The average distance to a Petrol Filling Station is:
  - 5,100m from the Boulton Moor 1 site where the nearest store is located 2,700m away; and
  - 3,700m from Bembridge Drive where the nearest store is located 1,900m away.

2.5.3 In summary the average distance to the existing facilities, which are being proposed for the District Centre is 4,700m (measured from Boulton Moor 1) and 3,900m (measured from Bembridge Drive). Access to these uses would reduce to around 650m (from the BM1 development and between 1,000 – 1,800m (from Bembridge Drive). As such it is considered that these use will attract trips from the immediate area surrounding the site and will not impact the wider highway network.

2.5.4 In addition to the District Centre the development proposals include residential development. The proximity of the centre of the residential development to key services and facilities is summarised on the table below.

Destination	Max Distance (m)
Proposed Boulton Moor Primary School	950m
Homefields Primary School Chellaston	3,100m
Oakwood Primary School	3,100m
Merrill Academy (Secondary School)	3,800m
Local Shops (Co-op Bembridge Drive)	800m
Post Office (Co-op Alvaston)	1,600m
Bus Stops	850m
Rail Station (Spondon)	5,600m
Dentist	2,800m
Proposed Triangle	600m

Table 2.3: Summary of walking journey times to key local destinations

2.5.5 A number of key facilities are located beyond the recommended commuting times as set out by the CIHT. For these journeys it is important that there is good access to public transport links.

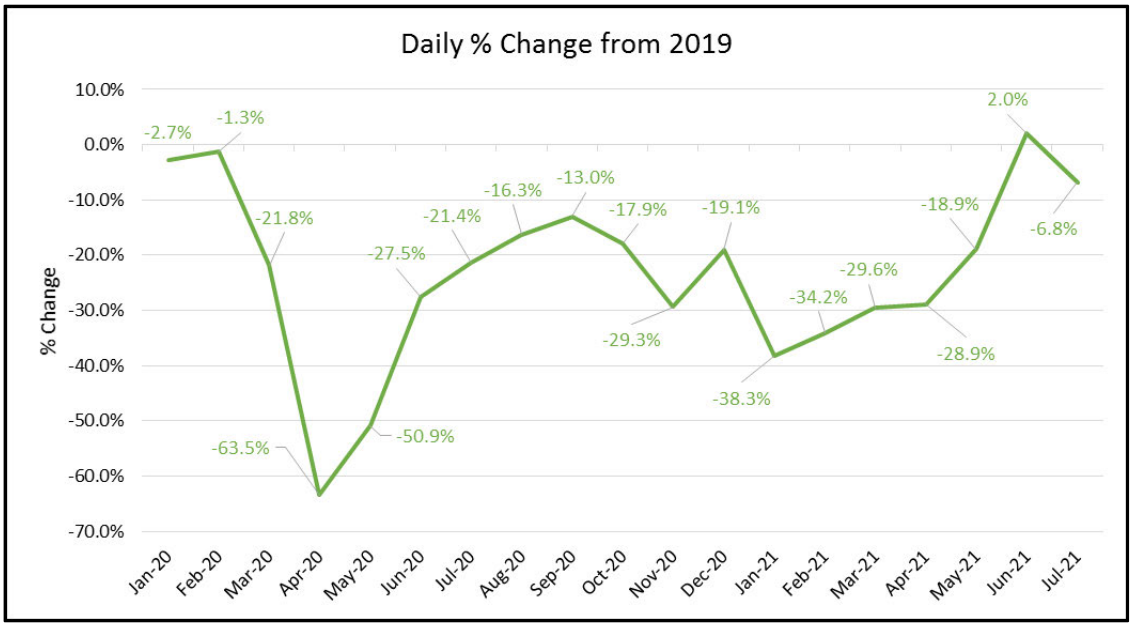
2.6 Access for Vulnerable Road Users

2.6.1 The area surrounding the site is characterised by roads that generally include wide footpaths that have been in situ for a period of some years. Although drop kerbs are present at the majority of existing desired crossing points, not all junctions include tactile paving. The development proposals will ensure that any new or improved junctions include for the provision of appropriate tactile paving.

2.7 Existing Traffic Flows

2.7.1 Traffic survey data is held for 2015 which was used to validate National Highways VISSIM model of the A6 (T) / Shardlow Road and Shardlow Road / Chellaston Lane junctions. This data is now considered to be outside the normally accepted data range. However the pandemic has meant that new surveys data could not be carried out in 2020 and for much of 2021.

2.7.2 The permanent count site, located on the A6 north of Shardlow Road (reference TMU 7162/1 & 7163/1) has been monitored to calculate the impact that the pandemic had on travel patterns and how they have recovered since the restrictions have been lifted. A summary of the traffic flows and comparisons to the figures from 2019 are summarised in the graph below and full details are contained at Appendix F.



Graph 2.1 – Monthly Traffic Volume Change (pandemic v 2019)

2.7.3 The graph above shows that pre pandemic (January and February 2020) daily traffic flows on the A6 (T) were marginally lower than those recorded in 2019 (-2.7% and -1.3% respectively). Through the pandemic vehicle trips reduced by up to -63.5%). However since the restriction were lifted traffic has returned to the network and in July 2021 the daily traffic levels were -6.2% lower than those recorded in 2019.

2.7.4 It is expected that there will be a permanent change to some travel patterns which are the result of more people being able to works from home, or have more flexibility to travel outside

of peak periods. As a result new traffic surveys were commissioned in July and September 2021 to form a new baseline assessment.

2.7.5 Traffic Survey Consultants, A-T-R, were commissioned to carry out a new traffic survey of the A6 (T) and Shardlow Road / Chellaston Lane roundabouts. The survey included:

- ANPR survey of the AM Peak Period – camera were located at the 7 feeding links into the network;
- ATC survey on the 7 feeding links into the network;
- Full 12 hour Manual Turning Count survey of the A6 (T) and Shardlow Road / Chellaston Lane roundabouts; and
- Queue Length survey of the A6 (T) and Shardlow Road / Chellaston Lane roundabouts.

2.7.6 The purpose of the surveys was to quantify a new baseline and to see how it compared to the historic 2015 data used in the Boulton Moor 2 development. In addition the data collected would allow National Highways VISSIM model to be re-calibrated and validated.

2.7.7 The extent of the survey is shown below:



Image 2.5 – Summary of Survey Locations (ANPR and ATC)

2.7.8 The traffic entering the network in the AM and PM peaks has been compared to the 2015 data as summarised below

Link	2015	July 2021		Sept 2021	
	Veh	Veh	Dif (%)	Veh	Dif (%)
A6 (T) North (SB)	1238	1242	+0.3%	1226	-1.0%
B1050 (WB)	611	340	-44.4%	383	-37.3%
A6 (T) South (NB)	2343	1650	-29.6%	1697	-27.6%
Chellaston Lane	301	416	+38.2%	389	+29.2%
Shardlow Road	539	521	-3.3%	572	+6.1%
Total	5077	4169	-17.9%	4267	-16.0%

Table 2.4 – Summary of Traffic Survey Information

2.7.9 The data shows that the total traffic flow in July 2021 has reduced by -17.9% when compared to the 2015 data. The change on each entry varies with the greatest reductions on the A6 (T) South (-29.6%) and B1050 (-44.4%) approaches to the junction. On the local network the traffic has reduced on Shardlow Road (-3.3%) and has increased by +38.2% on Chellaston Lane. The increase in Chellaston Lane is the result of the build out of the Boulton Moor 1 (Buttercup Leys) development.

2.7.10 The change between September 2021 and the 2015 surveys is -16.0% and is comparable to the July 2021 surveys. The change on each entry varies with the greatest reductions on the A6 (T) South (-27.6%) and B1050 (-37.3%) approaches to the junction. On the local network the traffic has increase on Shardlow Road (+6.1%) and has increased by +29.2% on Chellaston Lane. The increase in Chellaston Lane is the result of the build out of the Boulton Moor 1 (Buttercup Leys) development.

2.7.11 It should be noted that in addition to the occupation on the Boulton Moor 1 (Buttercup Leys) development there will also be a number of vehicles associated with the construction of the development. These are temporary, however no reduction has been made. The baseline traffic flows (September 2021) are considered to be representative of the current conditions and are suitable for future year forecasting. The use of new traffic survey data from September 2021 is now accepted by Derbyshire County Council as the Local Highway Authority, Derby City Council, and National Highways.

2.8 Personal Injury Accident Review

2.8.1 Personal injury Accident information for an area surrounding the proposed roundabout has been reviewed using the Crash map online mapping tool. The review covers the 5 year period between 1st January 2016 and 31st December 2020. An extract from the website is provided below:

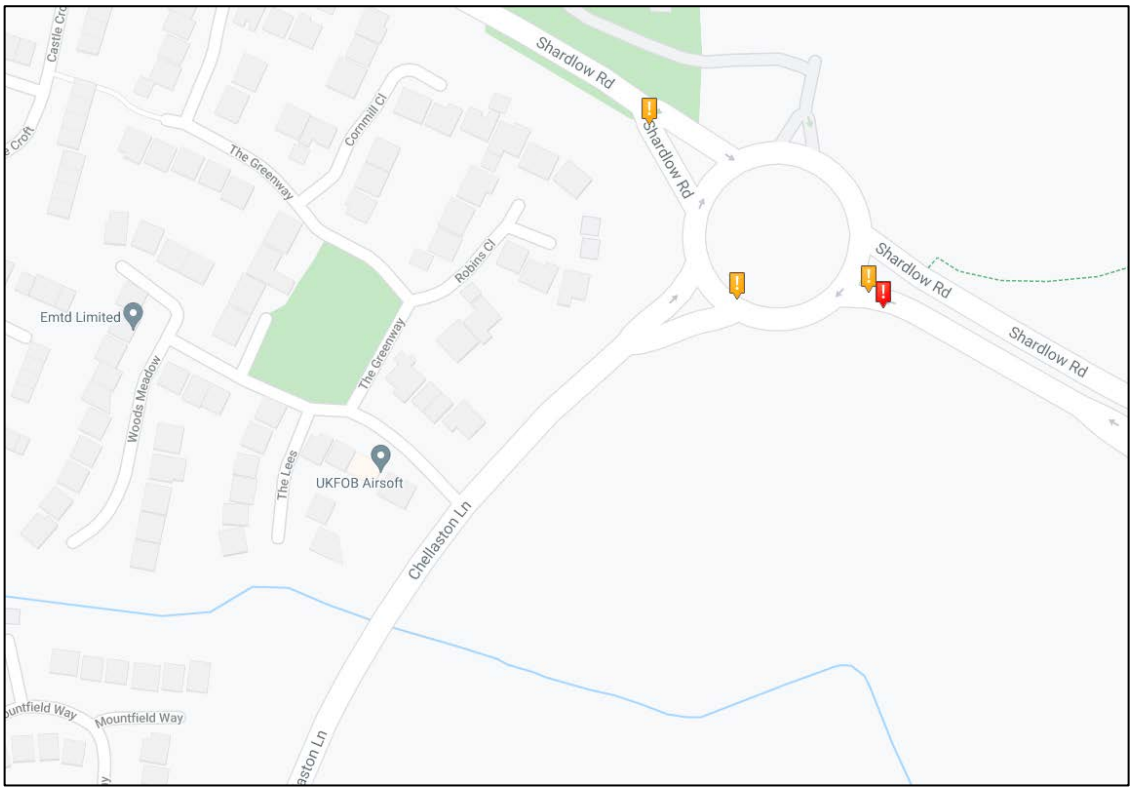


Image 2.2 – Personal Injury Accident Data Area *(source www.crashmap.co.uk/search)*

2.8.2 The image above shows whilst there have been four accidents at the Chellaston Lane / Shardlow Road junction there have been no accidents on Chellaston Lane in the vicinity of the site.

2.9 Existing Mode Share

2.9.1 The 2011 National Census data for journeys to work has been reviewed to look at how people in the area currently travel to their place of work. The site is located within Middle Super Output Area (MSOA) South Derbyshire 004, which covers a large rural area as illustrated below:

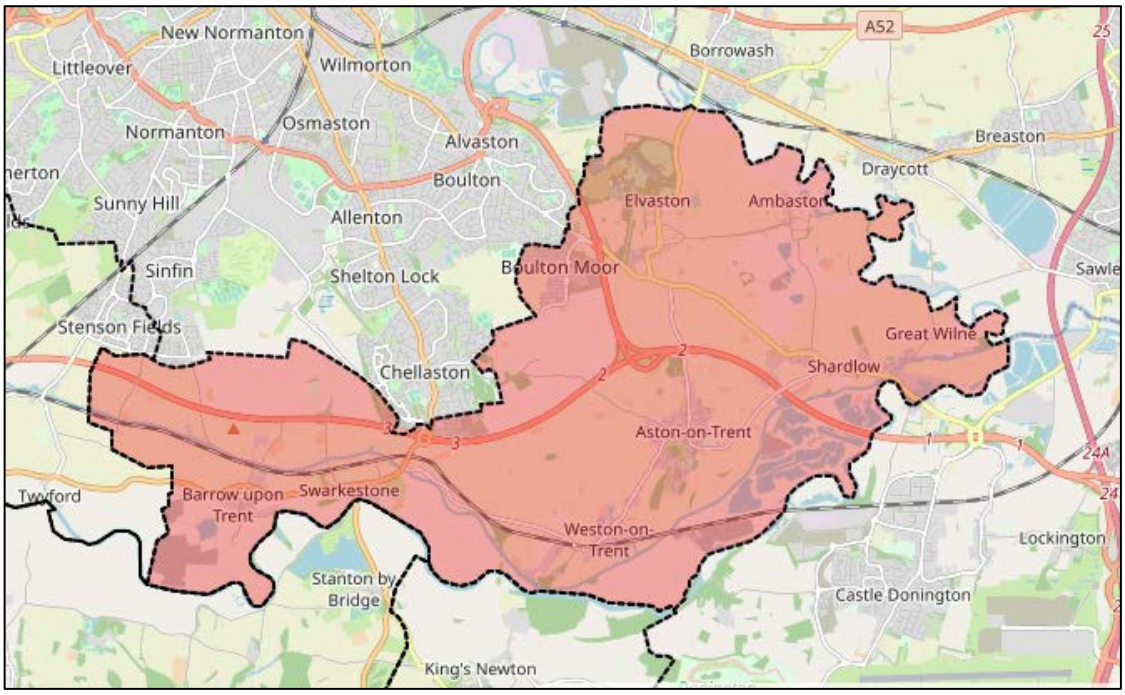


Image 2.3 – MSOA South Derbyshire 004 (source https://www.nomisweb.co.uk)

2.9.2 Asa comparison the neighbouring MSOA Derby 028 has been reviewed as illustrated in Image 2.4 below:

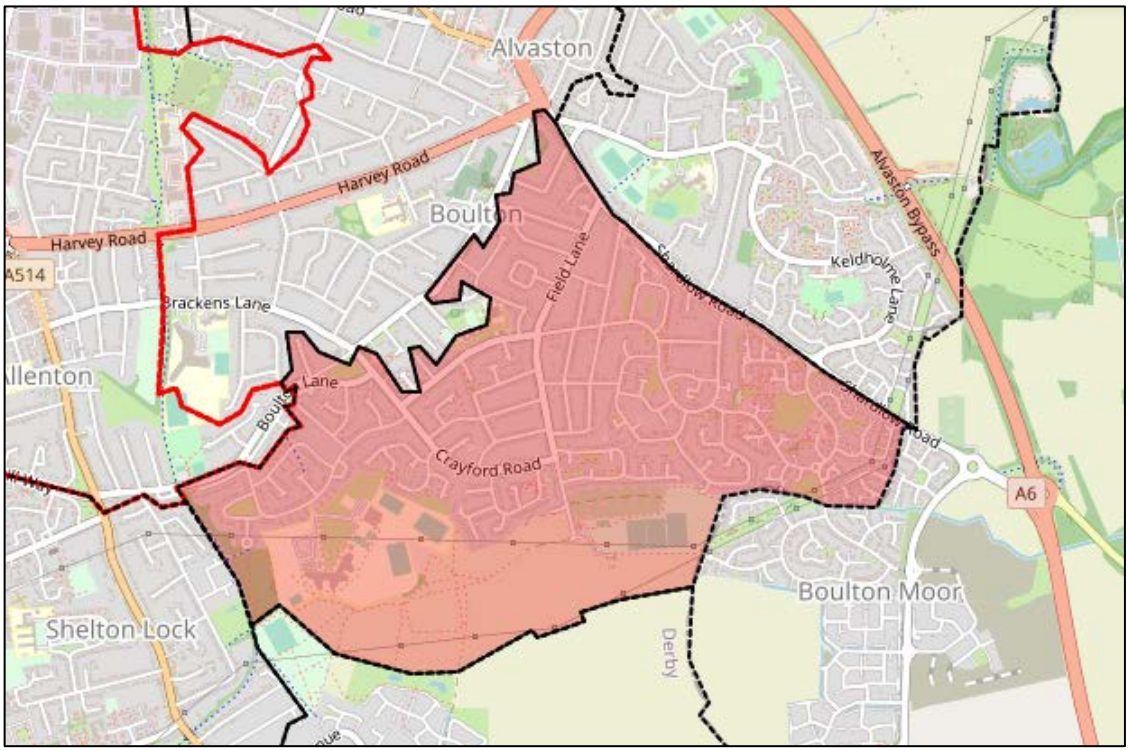


Image 2.4 – MSOA Derby 028 (source https://www.nomisweb.co.uk)

2.9.3 The 'Travel to Work' outbound trips to key destination have been reviewed for South Derbyshire 004 and Derby 028 as summarised in the Table below:

Workplace Destination	Derby 028 (Boulton)	South Derbyshire 004
Alvaston	23.8%	6.4%
South Derbyshire 004	0.7%	7.9%
Abbey	14.9%	8.9%
Arboretum	6.1%	2.8%
Derby 028 (Boulton)	4.0%	0.6%
Sinfin	4.6%	3.3%
Remaining Derby	19.1%	10.6%
Remaining Destinations	27.5%	59.5%
Total	**100%**	**100%**

Table 2.4 – Main Locations of Employment for Residents Living in the Boulton Ward

2.9.4 The census recorded 4.0% of the residents (excluding work from home) in the Boulton Ward also work within the ward. Furthermore a total of 72.5% of residents work within Derby itself which shows high containment that lends itself to measures targeted at reducing car based trips in favour of more sustainable modes. It is considered that as the site forms an urban extension of Derby City that the travel patterns will be similar to Derby 028 rather than the rural area of South Derbyshire 004. An extract from datashine is provide below which shows the key destinations of employment.

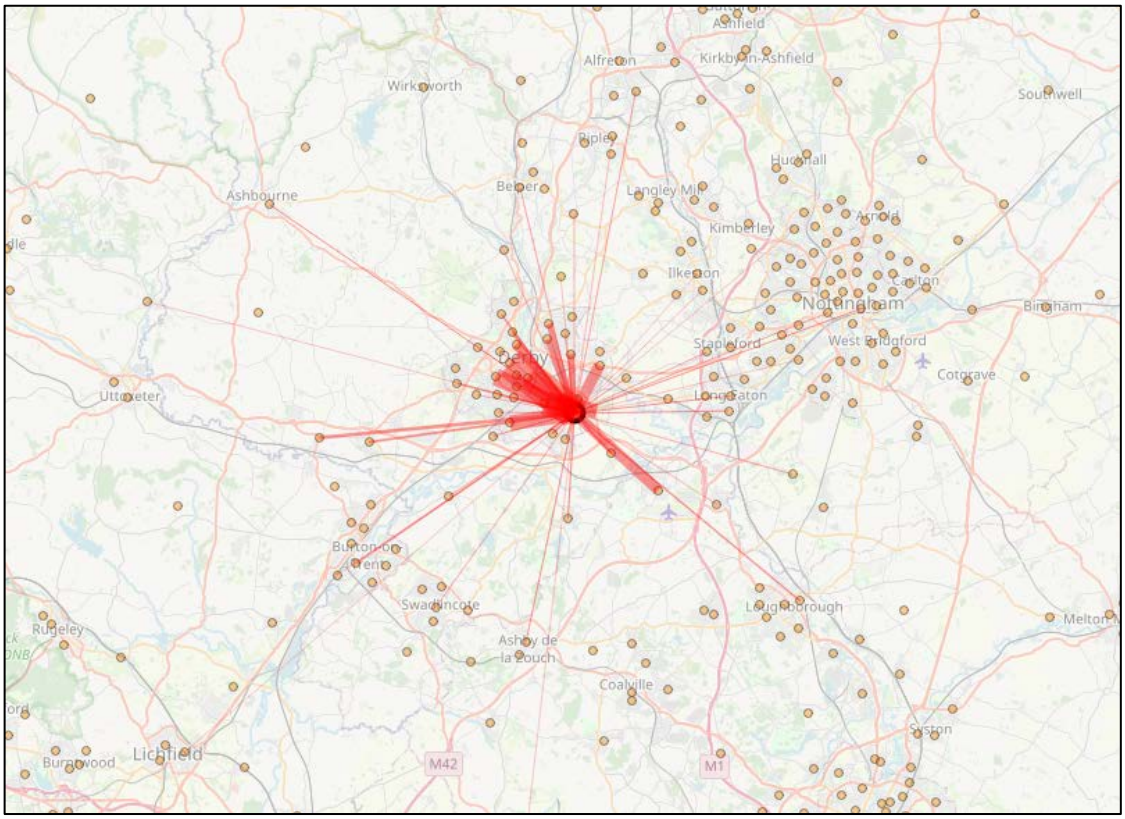


Image 2.4 Travel to Work Outbound from Derby 028 (source www.datashine.org.uk)

2.9.5 As noted above it is considered that MSOA Derby 028 is more representative of the likely travel to work and mode share of the future residents of the development. As such the mode share for all journeys to work have been reviewed and are summarised below:

Mode	Mode Share (%)	
	Derby 028 (all dest)	Within Derby 028
Train	0.8%	0.0%
Bus, minibus or coach	10.8%	1.8%
Taxi	0.5%	0.0%
Motorcycle, scooter or moped	1.6%	0.0%
Driving a car or van	66.2%	42.5%
Passenger in a car or van	6.3%	2.7%
Bicycle	6.4%	7.1%
On foot	7.0%	46.0%
Other method of travel to work	0.3%	0.0%

Table 2.5 – Existing Travel to Work Mode Share Outbound Derby 028

2.9.6 The review of the existing travel to work mode share to all destinations shows that sustainable mode share accounts for a total of 25.0% and within Derby 028 is 54.9%, which is considered to be good. It is expected that the proposed development will exhibit similar travel patterns.

2.9.7 The 'Travel to Work' inbound trips in to Derby 028 has been reviewed which shows there to be 551 jobs (excluding working from home). The key residential origins are summarised in the Table below:

Workplace Destination	Derby 028 (Boulton)
Alvaston	18.0%
South Derbyshire 004	2.9%
Chellaston	7.3%
Derby 028 (Boulton)	20.5%
Remaining Derby	26.3%
Remaining Destinations	25.0%
Total	**100%**

Table 2.6 – Travel to Work Inbound (Employment within Derby 028)

2.9.8 The census recorded of the employment within Derby 028, 20.5% were from employees living in the ward. A total 75.0% of employees who work within Derby 028 live within Derby and 25.0% of employees travel from outside of Derby. The distribution of inbound trips is shown on the datashine extract below:

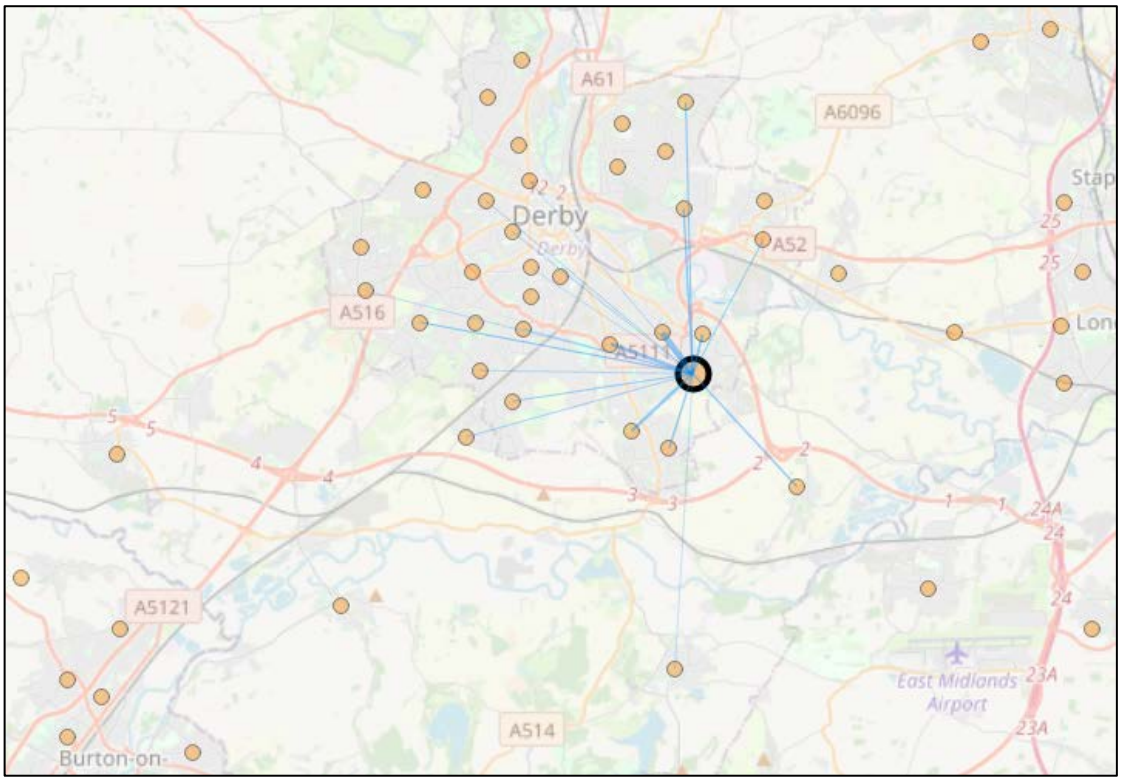


Image 2.4 Travel to Work Inbound from Derby 028 (source www.datashine.org.uk)

2.9.9 The mode share for all journeys to work have been reviewed and are summarised below:

Mode	Mode Share (%)	
	Derby 028 (all dest)	Derby 028
Train	0.4%	0.0%
Bus, minibus or coach	4.2%	1.8%
Taxi	0.9%	0.0%
Motorcycle, scooter or moped	0.4%	0.0%
Driving a car or van	66.1%	42.5%
Passenger in a car or van	4.4%	2.7%
Bicycle	4.5%	7.1%
On foot	19.2%	46.0%
Other method of travel to work	0.0%	0.0%

Table 2.9 – Existing Travel to Work Mode Share

2.9.10 The review of the existing travel to work mode share from all destinations shows that sustainable mode share accounts for a total of 28.3% and for those living and working within the ward the sustainable mode share is 54.9% which is considered to be good. It is expected that the proposed development may exhibit similar travel patterns, which can be encouraged through the implementation and management of a Travel Plan.

2.10 Accessibility Summary

2.10.1 The accessibility appraisal demonstrates that the site is located within a sustainable location for development, by walking, cycling and public transport and offers excellent opportunities for the majority of everyday journey purposes to be undertaken by non-car modes.

2.10.2 Local and strategic commitments to sustainable infrastructure, will provide benefits to all users. In addition the proposed development will maximise its location in terms of walking, cycling and public transport catchments, through the design of the site and as part of the travel plan process.

3 POLICY REVIEW

3.1 Policy Overview

3.1.1 This section reviews the national and regional policy as it relates to transport. The following documents have been considered:

- National Planning Policy Framework – NPPF (July 2021);
- National Planning Practice Guidance (NPPG);
- South Derbyshire Local Plan Part 1 - (2016)
- Derby City Local Plan Part 1 – (2017)

3.2 National Planning Policy Framework (July 2021)

3.2.1 The National Planning Policy Framework was revised on 20 July 2021 and sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous National Planning Policy Framework published in March 2012, revised in July 2018 and updated in February 2019.

3.2.2 The government updates to NPPF, are in response to findings set out in 'Living with Beauty' from The Building Better, Building Beautiful Independent commission set up to advise government on how to promote and increase the use of high-quality design for new build homes and neighbourhoods.

3.2.3 Section 2 sets out the overarching objectives to achieve sustainable development at paragraph 10 confirms states that *"so that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development."*

3.2.4 Paragraph 11 states that *"plans and decisions should apply a presumption in favour of sustainable development".* Part d of paragraph 11 specifies that for decision-taking this means where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:

- the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or
- any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.

3.2.5 Section 9 of NPPF refers to the promotion of sustainable transport.

3.2.6 Paragraph 104 of the 2021 NPPF states that "Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

a) The potential impacts of development on the transport networks can be addressed;

b) Opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;

c) Opportunities to promote walking, cycling and public transport use are identified and pursued;

d) The environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and

e) Patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places."

3.2.7 Paragraph 105 states that "The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making."

3.2.8 Paragraph 108 states that "Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport (in accordance with chapter 11 of the Framework). In town centres, local authorities should seek to improve the quality of parking so that it is convenient, safe and secure, alongside measures to promote accessibility for pedestrians and cyclists."

3.2.9 Paragraph 110 states that "In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

a) Appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b) Safe and suitable access to the site can be achieved for all users;

c) The design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and

d) Any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."

3.2.10 Paragraph 111 states that "Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.

3.2.11 Paragraph 112 states that "Within this context, applications for development should:

a) Give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;

b) Address the needs of people with disabilities and reduced mobility in relation to all modes of transport;

c) Create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;

d) Allow for the efficient delivery of goods, and access by service and emergency vehicles; and

e) Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations."

3.2.12 Paragraph 113 states that "All developments that generate significant amounts of movement should be required to provide a travel plan and should be supported by a transport statement or transport assessment so that the likely impacts of the proposals can be assessed."

3.3 National Planning Practice Guidance

3.3.1 The National Planning Practice Guide (NPPG) aims to provide an accessible web-based source for all national planning guidance. In the section relating to Travel Plans, Transport Assessments and Statements, the NPPG defines Transport Assessments and Statements as documents which:

> *"… are ways of assessing the potential transport impacts of developments (and they may propose mitigation measures to promote sustainable development. Where that mitigation relates to matters that can be addressed by management measures, the mitigation may inform the preparation of Travel Plans)."*

3.3.2 The NPPG also discusses the relationship between Transport Assessments and Travel Plans:

> *"Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal. (They may consider those impacts net of any reductions likely to arise from the implementation of a Travel Plan, though producing a Travel Plan is not always required). The Transport Assessment or Transport Statement may propose mitigation measures where these are necessary to*

avoid unacceptable or "severe" impacts. Travel Plans can play an effective role in taking forward those mitigation measures which relate to on-going occupation and operation of the development.".

3.3.3 The NPPG identifies key principles governing the production of these documents stating that they should be:

- proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;
- established at the earliest practicable possible stage of a development proposal;
- be tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally); and
- be brought forward through collaborative ongoing working between the Local Planning Authority / Transport Authority, transport operators, Rail Network Operators, Highways Agency where there may be implications for the strategic road network and other relevant bodies. Engaging communities and local businesses in Travel Plans, Transport Assessments and Statements can be beneficial in positively supporting higher levels of walking and cycling (which in turn can encourage greater social inclusion, community cohesion and healthier communities).

3.4 South Derbyshire Local Plan Part 1

3.4.1 South Derbyshire District Council's Local Plan Part 1 was adopted o the 2nd November 2017. It sets out the long term vision, objectives and strategy for growth within South Derbyshire.

3.4.2 Policy H13 out the planning policy for the Boulton Moor Urban extension, located to the south east of Derby). The policy requirements include:

A – Residential Development on land at Boulton Moor will provide for around 1,950 dwellings within South Derbyshire and 800 new homes within the Derby City administrative boundary.

B – The Council will require the below listed site specifics and accordance with other Local Plan policies:

I. That South Derbyshire District Council, Derby City and developers continue to work together to ensure that the proposals offer a holistic vision for a new suburb which is delivered in a comprehensive manner across the local authority boundaries. Delivery mechanisms will need to be established to ensure that the necessary level of co-ordination to effectively deliver the infrastructure and facilities to support the development;

II. A jointly prepared development framework shall be produced;

III. *A cross boundary approach to housing design, layout, density, open space and landscape shall be developed/ undertaken;*

IV. *A cross boundary approach to the provision of affordable housing shall be submitted with any application;*

V. *A plan of phasing for the delivery of this cross boundary site shall be submitted with any application;*

VI. *The provision of sustainable transport measures, including contributions to the delivery of a new park and ride and bus service to serve this the wider urban extension site;*

VII. *Highway works, including improvements to Snelsmoor Lane to ensure that the impact on its junctions with the A6 and High Street are satisfactorily mitigated;*

VIII. *Flood mitigation measures, to address fluvial, and surface water issues relating to the Thulston Brook watercourse and ground water levels;*

IX. *An appropriate flood risk assessment shall be submitted with any application;*

X. *Improvements to existing green infrastructure shall be made, along with the provision of new green infrastructure on the site;*

XI. *High quality pedestrian and cycle routes within the site and links between these and existing and proposed routes and green spaces beyond the site;*

XII. *A significant green buffer and landscaping boundary on the outer edges of the developments, to help soften the housing developments impact on the surrounding countryside, create a new defensible boundary and help mitigate the urbanising impact of new development upon Derby City's Green Wedge;*

XIII. *A new district centre shall be provided, anchored by a small/medium sized supermarket complemented by a range of smaller units providing for day to day needs of the 69 wider neighbourhood;*

XIV. *The scale of the anchor store will commensurate with the needs of the new community, the level of growth anticipated and the need to maintain the vitality and viability of other centres. The location of the centre should be the focal point at the heart of the new community;*

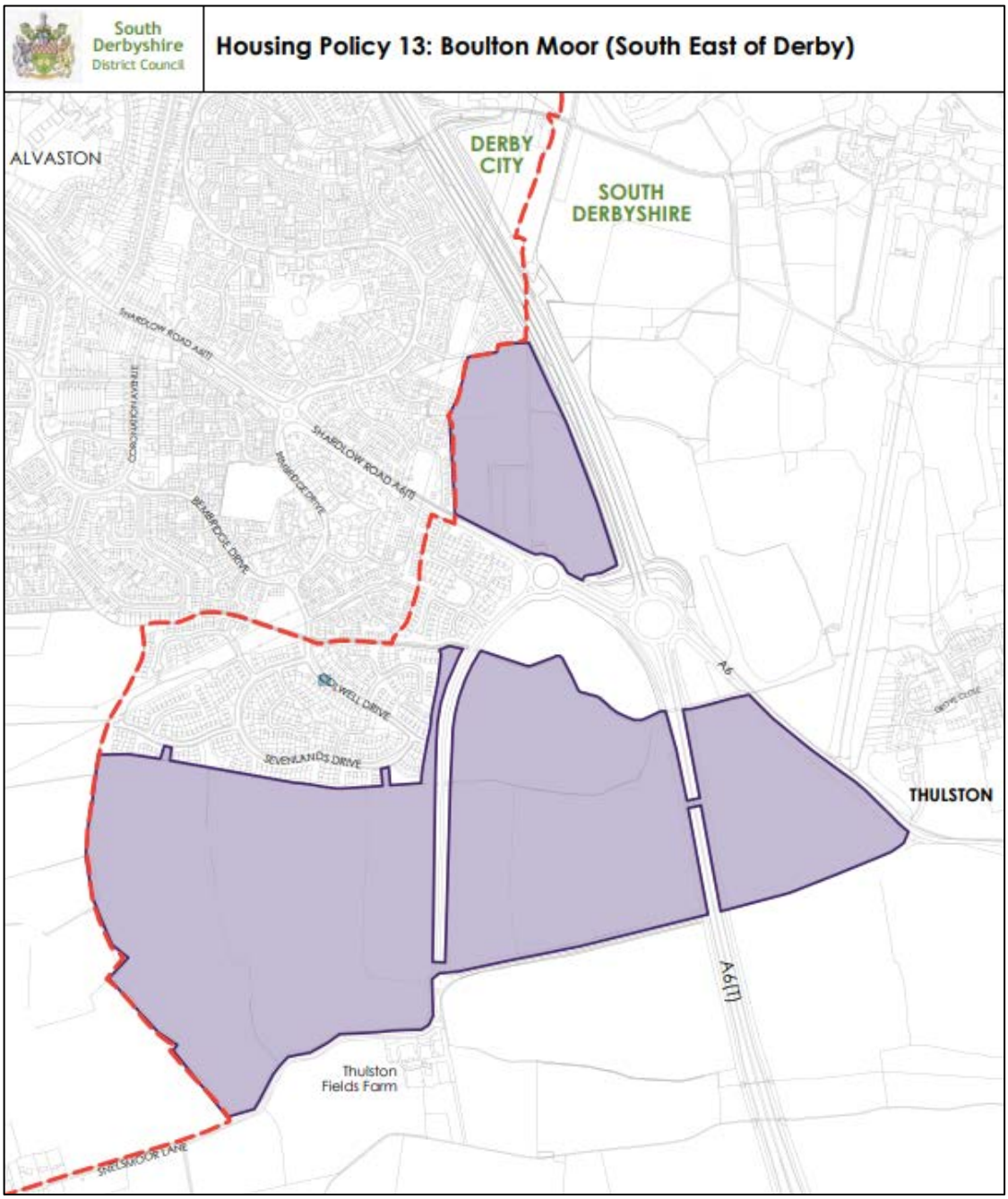
XV. *The provision of two form entry primary school to cover phases 1 and 2 with separate primary provision to serve the site in Derby;*

XVI. *The urban extension as a whole shall not adversely impact upon the setting of nearby Elvaston Historic Park and Garden and other heritage assets and will contribute towards softening the settlement edge around Boulton Moor;*

XVII. Any built development to the east of the A6 and west of the B5010 shall be in accordance with Green Belt Policy;

XVIII. Developer contributions to be made toward improvements to the A50/A514 and A50/A38 junctions to safeguard the operation of the Strategic Road Network.

3.4.3 Policy H13 covers parcel 2 of the proposed site and the land allocated within this policy is shown below:



Extract 3.1 – Policy H13 Land Parcels (source South Derbyshire Local Plan Part 1)

3.4.4 Policy S6 Sustainable Access states that the council will seek to minimise the need to travel, make the most efficient use of transport infrastructure and services, encourage modal shift away from the private car and support transport measures that address accessibility. This will be achieved by seeking:

- Patterns of development that enable travelling distances to be minimised and that make better use of existing transport infrastructure and services;
- The provision of new or enhanced walking, cycling, public transport and rail freight services and infrastructure and where needs cannot be met by the aforementioned means highway and car / lorry parking infrastructure; and
- The use of promotional measures and improved communication to encourage sustainable travel.

3.4.5 Policy INF2 Sustainable Transport states:

- *A) Planning permission will be granted for development where:*
    - *Travel generated by development, including goods vehicle movement, should have no undue detrimental impact upon local amenity, the environment, highway safety, the efficiency of transport infrastructure and the efficiency and availability of public transport services.*
    - *Appropriate provision is made for safe and convenient access to and within the development for pedestrians, cyclists, public transport users and the private car; and*
    - *Car travel generated by the development is minimised relative to the needs of the development*
- *B) Walking and Cycling*
    - *The council will work in partnership with…… and developers to secure the expansion, improvement and protection of walking and cycling routes, greenways and supporting infrastructure. Routes should be coherent, direct, continuous, safe, secure and attractive and should contribute to the wider green infrastructure network wherever possible.*
- *C) Public Transport*
    - *Development should be designed and laid out in such a way as to ensure that, wherever possible, public transport services are within convenient walking distance of all site residents, staff and visitors.*
    - *Where a need is identified under Part 1 of this policy, the Council will seek to negotiate the provision by developers of measures to encourage the use of public transport. These may include:*

- *Bus shelters and laybys*
- *Railway stations and public transport interchanges;*
- *Initial financial contributions towards the cost of running public transport services.*

- *Land is protected for a potential new park and ride facility at the junction of the A6 and London Road, Boulton Moor.*

- *D) Road and Rail Freight*

  - *Where appropriate development should make adequate provision for service vehicle access, manoeuvring and off-street parking;*

3.4.6 As an infrastructure application this development will not attract trips or vehicles, however it will facilitate access to the proposed District Centre. As such and as part of an holistic approach the future needs of the District Centre and surrounding area have been considered and incorporated into the layout in accordance with Policy INF2.

3.5 Derby City Council Local Plan Part 1

3.5.1 Although the site is not located within the boundary of Derby City it is adjacent to the boundary and the future District Centre will form an extension of the Boulton Moor SUE. The Derby City Local Plan Part 1 identifies district centres as:

> *District centres have an essential role in providing key services to the City's neighbourhoods including shopping, commercial, leisure, public and community functions, ensuring that residents can access such services easily. They are also a focus for the City's residential neighbourhoods, providing an important opportunity to define local character.*

4 DEVELOPMENT PROPOSALS

4.1 Introduction

4.1.1 The existing conditions are described in Section 2, which have been incorporated in to the layout of the proposed development. The proposed development is applied for in outline (except for the northern access) as set out in Section 1. For the purposes of the Transport Assessment the following development mix has been considered:

- District Centre, north of Thulston Brook
    - 2,000sqm Foodstore;
    - 190sqm Drive Thru Unit (Coffee Outlet)
    - 250sqm Drive Thru Unit (Food Outlet);
    - 8 bays Petrol Filling Station;
    - 500sqm A Children's Nursery.
    - 700sqm Local Retail Shops (A local centre was included in the permitted Boulton Moor 1 development);
    - Up to 31 Residential Unit / Apartments; and
    - A Transport Mobility Hub with 60 Car Parking Spaces.
- Residential Development South of Thulston Brook
    - 66 Bed Car Home;
    - 52 Retirement Units;
    - Up to 195 Residential Units (of which 155 units were permitted on this parcel of land as part of the committed Boulton Moor 1 (Buttercup Leys) development; and
    - A Community Hub / Building (as required by the permitted Boulton Moor 1 development.

4.2 Vehicular Access

Southern Parcel – Residential

4.2.1 As described in Section 2, Persimmon Homes Ltd have recently completed their northern access into the Boulton Moor 1 allocation. From the development arm (eastern arm) a spine road runs through the development connecting with the Boulton Moor 1 (Buttercup Leys) site, which Persimmon Homes Ltd are currently building out. The spine road has been provided in accordance with The 6cs design guide, with the following cross section:

- 6.75m wide carriageway to facilitate the development and future bus route;
- 2m footway to north of spine road;
- 2m verge and 3.5m shared footway / cycleway to south of spine road.

4.2.2 The existing roundabout and spine road will provide access to the southern parcel which comprises residential and care home uses. The spine road running through the proposed site does not currently have any access on it. It is proposed to provide two new accesses to the northern side of the spine road.

4.2.3 The proposed access the proposed care home will be via a dedicated access on the northern side of the spine road. This will be provided as a private entrance to the internal car park which will also be used for service and delivery vehicles. The internal layout of this plot will be designed so that vehicles can enter and exit in a forward gear and will be agreed through reserved matters..

4.2.4 The retirement unit parcel is located to the south of the spine road and is bound by the spine road (to the north and east), Beeches Brook (to the south) and Chellaston Lane (to the west). It is proposed to access this plot from its eastern boundary with the spine road, where a private entrance will be provided to the internal car parking areas. The internal layout of this plot will be designed to accommodate delivery and service vehicles so that they can enter and exit the development in a forward gear. The layout will be agreed through reserved matters.

Northern Parcel (District Centre)

4.2.5 It is proposed to develop land north of Thulston Brook for a mixed retail / commercial development and access is to be taken from Chellaston Lane via a new four arm roundabout with Woods Meadow as show on Drawing E702-PL-SK-246 Revision B. The proposed roundabout forms part of a current planning application (DMPA/2021/1362).

4.2.6 The proposed roundabout has been designed with a 38.8m inscribed circle diameter and is proposed to be offset into the proposed site to allow for sufficient entry path deflection. The layout of the roundabout has been designed to accommodate the intended design vehicles, which includes delivery, service and public transport vehicles. The layout has also been designed with sufficient capacity to accommodate the anticipated traffic demand.

4.2.7 The delivery of the access was secured through Boulton Moor 1 development to access the proposed park and ride. The plot has evolved as a District Centre which includes retail uses and a Transport Mobility Hub in place of the park and ride. Notwithstanding the above the delivery of the junction is still to be implemented by Persimmon Homes Ltd. The timing of its delivery will be in advance of the committed improvement works to the Chellaston Lane / Shardlow Road junction. These works are required prior to the occupation of the 450th unit of the combined Boulton Moor 2 and Snelsmoor Grange developments, which is estimated to be 2028.

4.2.8 As such the proposed roundabout has been designed to tie in with the exiting roundabout as shown on drawing E702-PL-SK-246 Revision B and below:

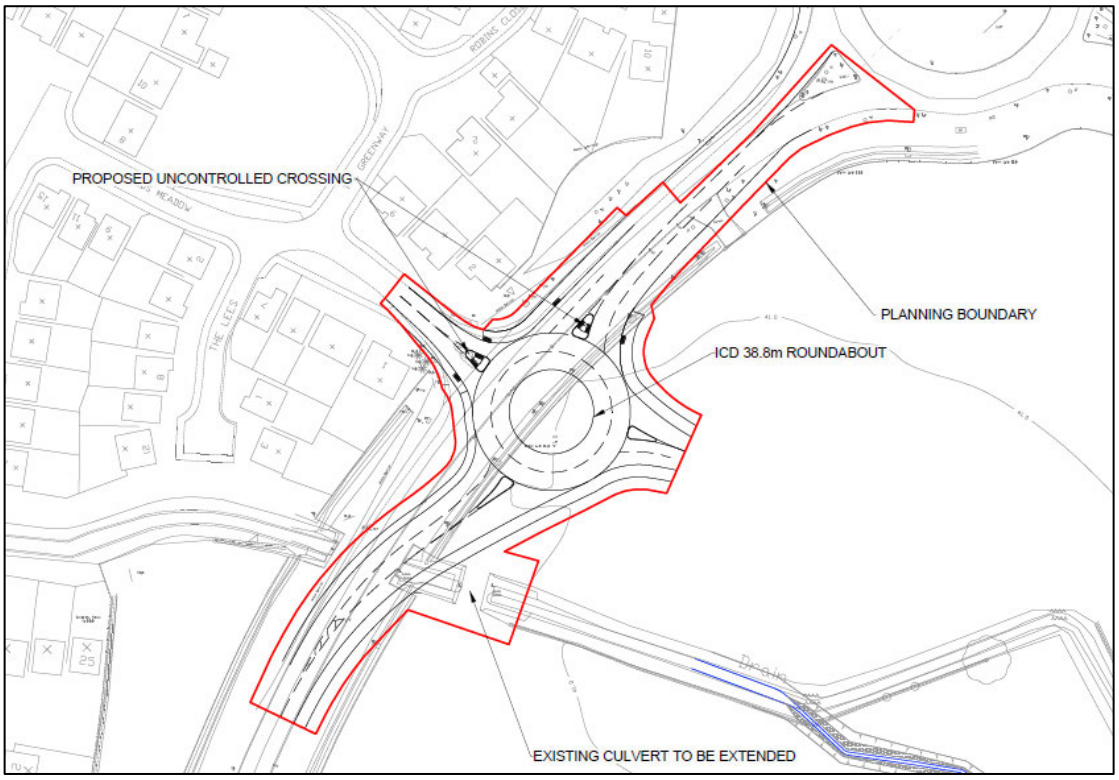


Image 4.1 – Proposed Roundabout Layout (Tie in with existing roundabout)

4.2.9 Setting the junction to the east of Chellaston Lane allows for the Woods Meadow drive to be built out to connect with the roundabout when an improve entry / exit alignment can be achieved. The splitter island and the give-way line on the Woods Meadow arm will move further east than its current location and therefore it is considered that access to properties 1 and 2 will be improved from the current arrangement.

4.2.10 Image 4.1 shows the proposed roundabout tying in with the existing Chellaston Lane / Shardlow Road roundabout alignment. This arrangement allows for the roundabout to be delivered prior to the committed offsite highway works being completed at the Chellaston Lane / Shardlow Road junction. This is necessary due to procurement of the roundabout which is an obligation of the Boulton Moor 1 developer.

4.2.11 However, the proposed roundabout layout has been considered with the committed improvement works at the Chellaston Lane / Shardlow Road junction which is shown on Drawing E702-PL-SK-247 Revision B and an extract is shown below:

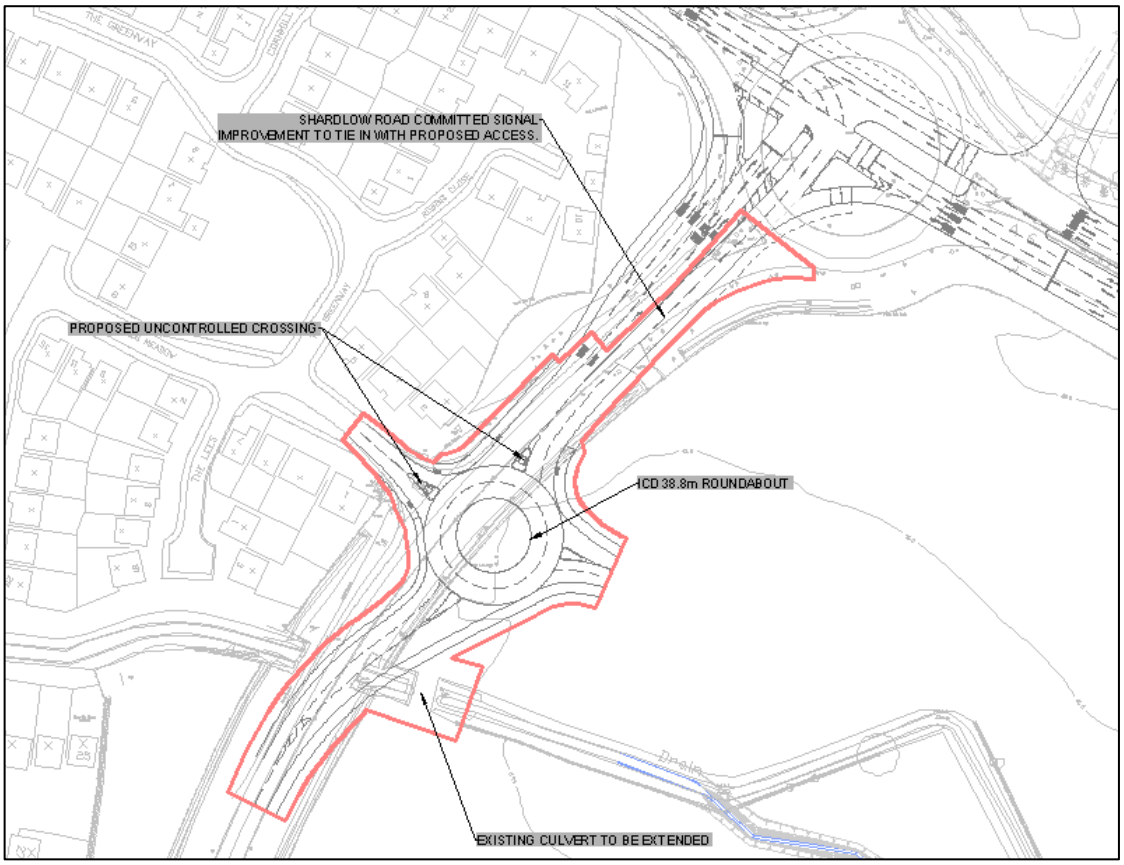


Image 4.2 – Proposed Roundabout Layout (Tie in with committed highway works)

4.2.12 The layout above shows how the proposed roundabout will tie in with committed works to the Chellaston Lane / Shardlow Road.

4.2.13 Access to the development site will be formed via the fourth (eastern arm) of the roundabout that will extend into the site forming an internal spine road. The spine road will be provided with a 7.3m wide carriageway and 3m shared footways / cycleways on both sides. The spine road will terminate at an internal roundabout, which will allow the design vehicles to enter and exit the site in a forward gear. The internal spine road is shown on the illustrative Masterplan and illustrative swept path analysis is shown on drawing E702-PL-SK-249-251.

4.3 Vertical Alignment

4.3.1 As described above the proposed District Centre roundabout forms part of a separate planning application to allow for its early delivery. The vertical alignment for the junction has been considered and the General Arrangement is shown on Drawing E702-DD-DR-030. From the vertical alignment long sections and cross sections along the centre line of the northern and southern arms of the junctions have been prepared as shown on the following drawings:

- E702-DD-DR-630 P01 – Chellaston Lane (North) Long Section;
- E702-DD-DR-632 P01 – Chellaston Lane (North) Cross Section;
- E702-DD-DR-631 P01 – Chellaston Lane (South) Long Section; and

- E702-DD-DR-633 P01 – Chellaston Lane (South) Cross Section.

4.3.2 The long and cross sections show that existing levels are generally maintained along the route. Where the roundabout diverts offline into the site the existing ground level is lower and as a result some building up will be required which can be accommodated.

4.3.3 In addition to the long and cross sections a surfacing contour plan has been prepared in order to consider the finished carriageway levels and road drainage. The surface contours are shown on Drawings E702-DD-DR-230 and 231.

4.4 Junction Capacity

4.4.1 The performance of the junction arrangement has been reviewed and is presented in Chapter 6.

4.5 Footway / Cycleway Provision

4.5.1 The existing footway and cycleway network is described in Section 2. Building on the existing conditions the proposed development will be designed on key desire lines to link with the existing network forming a fully permeable layout. The walking and cycling strategy is illustrated below:

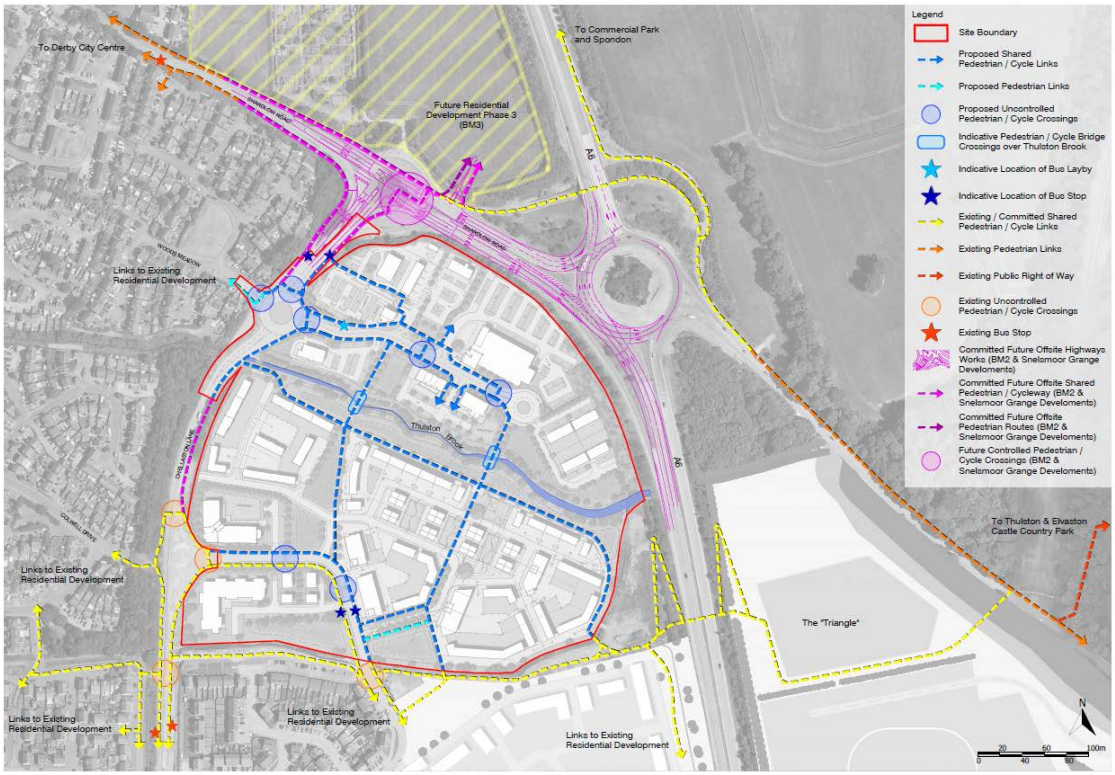


Image 4.3 – Proposed Walking and Cycling Strategy.

4.5.2 The image above shows the proposed walking and cycle strategy (in blue) and how this will link to the existing (yellow) and future committed (magenta) footway and cycleway network.

Footway / Cycleway Network (residential parcel)

4.5.3 As part of the development it is proposed to upgrade the 2m footway on the northern side of the residential spine road to a 3.5m wide shared footway / cycleway. The reason is to provide an of road route between Cowell Drive, the Crossing on Chellaston Lane and the east – west cycle link (located along the southern boundary of the site). This link will also connect with the two walking and cycling routes between the residential parcel and the District Centre.

4.5.4 The two internal links will crossing Thulston Brook at two new bridge crossings, providing direct links between the District Centre and the residential areas.

4.5.5 In addition a new shared footway / cycleway will be provided to the south of Thulston Brook which will connect Chellaston Lane (to the west) and the east-west cycleway route and A6 footbridge (to the south-east).

Footway / Cycleway Network (District Centre)

4.5.6 The proposed roundabout includes uncontrolled crossings on the northern and western arms of the junction. These are provided at the junction which utilise the traffic islands as pedestrian refuge areas. The pedestrian refuge areas measure 3.0m at the centre of the crossing, which are suitable for pedestrians with pushchairs or cyclists.

4.5.7 The existing footways on either side of Woods Meadow will be realigned and extended. The footway on the southern side of Woods Meadow will be extended to the exit of the roundabout where it will form an uncontrolled crossing to the northern side of the junction.

4.5.8 The footway on the northern side of Woods Meadow will be extended towards the give-way line at a width of 2.0m, where it will taper out to form a 3.0m shared footway / cycleway. As part of this application the shared footway / cycleway will extend to the crossing on the northern arm of the junction and to the existing Bus Stop on Chellaston Lane. The shared footway / cycleway connection will be extended as part of the committed offsite highway improvements secured as part of the Boulton Moor 2 and Snelsmoor Grange developments.

4.5.9 A 3.0m wide shared footway / cycleway will be provided from the existing Bus Stop on Chellaston Lane and will continue into the site and along the Spine Road. As with the provision on west, the shared footway / cycleway will be extended from the Bus Stop on Chellaston Lane as part of the committed offsite highway improvements secured as part of the Boulton Moor 2 and Snelsmoor Grange developments. Until this link is delivered it is considered that people accessing the bus stops on Shardlow Road will access these stops via the footway network within the Woods Meadow development.

4.5.10 A 3.0m wide shared footway / cycleway will be provided on the southern side of the internal spine road and extending to Chellaston Lane. The shared footway / cycleway will be extended along the eastern side of Chellaston Lane between the proposed District Centre access and the existing provision provided at the residential access to the south.

4.5.11 The proposed linkages will create a full permeable layout within the site and to and from the existing residential areas (to the west) and the triangle and Elvaston Castle (to the east).

4.6 Public Transport

4.6.1 As noted in Section 2, there are existing bus stops located on Shardlow Road and Chellaston Lane, although no service currently operates on Chellaston Lane. The stops on Shardlow Road already comprise of appropriate facilities and no further upgrades are required.

4.6.2 The northbound stop on Chellaston Lane is proposed to be retained until the committed development works to the Chellaston Lane / Shardlow Road works are completed by the Boulton Moor 2 / Snelsmoor Grange developments, at which points the northbound bus stop will be adjusted to suit the new alignment. The southbound bus stop will need to be relocated to suit the new kerb alignment of the proposed site access roundabout.

4.6.3 It is proposed to make the following upgrades to these stops:

- The northbound (inbound) stop is to be upgraded to include a bus shelter, RTPI and timetabling information; and
- The southbound (outbound) stop is to be upgraded to include timetabling information. As an outbound stop a shelter and RTPI is not considered necessary.

4.6.4 The bus stops on Chellaston lane will be serviced by the Boulton Moor 1 bus route which is being delivered by the committed Boulton Moor 1 development, although no set date for its implementation has been agreed. It therefore may be more appropriate to secure these improvements via a S.106 contribution.

4.6.5 The committed bus service will operate a figure of eight loop around the Boulton Moor 1 development. Although the proposed bus stops are to be agreed, it is intended that a new stop will be provided on the spine road accessing the residential area. The provision of a new bus stop on this link will result in all residential units being within 400m of a bus stop. In addition residents of the new development will be able to use the proposed footway and cycleway network to access the stops on Chellaston Lane (adjacent to the District Centre) or on Shardlow Road.

4.6.6 In addition to the above the internal District Centre layout incorporates a bus layby on the exit from the roundabout. This would allow the future service to enter the site, turn around the roundabout, to the east of the scheme, and exit back onto Chellaston Lane. Although at this stage it is considered that the committed Boulton Moor bus service will stop on Chellaston Lane itself.

4.7 Parking

Residential Parcel

4.7.1 The residential element of the scheme is applied for in outline, as such a detailed parking schedule is not available. The layout will be designed in accordance with South Derbyshire Parking Standards. The current local plan refers to a new supplementary planning document (SPD), however this is yet to be prepared / adopted. The rates set out in the previous local plan have been used as a guide. These are summarised below.

Class	Type	Boulton Moor	Outside Urban Areas
Class 3	1 Bedroom Dwellings	1 space / unit	1 space / unit + 0.5 spaces per unit visitor
	2 Bedroom Dwellings	1 space / unit	2 spaces unit
	3 Bedroom Dwellings	2 spaces / unit	2 space / unit
	4 Bedrooms +	2 space / unit	3 spaces / unit (2 shall be tandem parking)
Care Home	Care Home	2 spaces plus 1 space per 4 bedrooms.	

Table 4.1 – South Derbyshire Car Parking Standards (residential)

4.7.2 The standards identities in the previous south Derbyshire Local Plan have been summarised above, however it should be noted that Derby City's current parking standards state that for C3 residential uses the parking will be negotiated on a site by site bases. Therefore the above rates will be used as guide.

4.7.3 Cycle Parking will be provided in accordance with the local authority's parking guidance. Details of the parking will be agreed as part of the subsequent reserved matter applications.

District Centre Parcel (excluding Transport Mobility Hub)

4.7.4 The District Centre is being considered in outline and whilst the provision of parking has been considered in the illustrative masterplan the layout and number of spaces will be agreed as part of the reserved matters. The parking standards which apply to the uses proposed on the site are summarised below:

Use	Requirement
Petrol Filling Station	1 per 2 employees or 1 / 40sqm whichever is lower
Foodstore	1 / 14sqm of GFA
Drive Thru	1 / 5sqm customers * dependant on TA & 1 / 4 staff
Nursery	1 space per 2 employees
Local Shops	1 / 20 sqm GFA

Table 4.2 – Summary of Car Parking Standards (retail)

4.7.5 In addition to the above uses the District Centre will comprise a Transport Mobility Hub with 60 car parking spaces and residential apartments. The proposed parking schedule is summarised below:

Use	Size	Car Parking	
		Max (based on Guidance)	Proposed Provision
Petrol Filling Station	8 Bays / 400 sqm Store	10	9 Spaces + 4 EV
Foodstore	2,000 sqm	143	140
Drive Thru (Coffee)	160sqm	32	30
Drive Thru (Food)	250sqm	50	36
Nursery	500sqm	10	12
Local Shops	700sqm	35	6
Residential (main block)	19	19	34
Residential (above local shops)	12	12	12
Total		**252**	**283**

Table 4.3– Summary of Parking Standards (District Centre)

4.7.6 The parking summary above shows that a total of 283 parking spaces have been proposed on the site. The parking for each use has been designed based on the operational requirements of each end users to allow for appropriate parking provision to avoid overspill parking.

4.7.7 The illustrative parking layout is shown on the Masterplan contained at Appendix A.

4.7.8 Blue Badge parking provision will be provided in accordance with Derby City's parking guidance which is summarised below:

- Where up to 25 spaces are provided, a minimum of 1 space will be provided;
- From 25-100 spaces, 1 space per 25 or part thereof; and
- Above 100 spaces, 4 spaces plus 1 space per additional 100 or part thereof.

4.7.9 Cycle parking for the retail on the district centre will be provided in accordance with Derby City's parking guidance, as summarised below:

- For all developments over 100sqm there should be a minimum provision of 2 secure and preferably covered cycle spaces; and
- For developments of 1,000sqm and above, the provision of cycle spaces should follow the basic guideline of 5% of the maximum parking provision for cars.

4.8 Transport Mobility Hub

4.8.1 Following discussion with the local authority's it has been agreed that the Transport Mobility hub should include up to 60 car parking spaces, of which it is proposed that 3 electric vehicle (slow) chargers will be provide with passive provision for a further 7 spaces.

4.8.2 Disabled parking will be provided in accordance with the local authority's standards, details of which are to be agreed.

4.8.3 The Transport Mobility hub includes a paved are to the east of the site which could incorporate the following:

- Ticket or Coffee Kiosk / Pod;
- E-bike docking station – subject to Derby City's e-bike scheme, which is currently withdrawn;
- E-scooter docking station – subject to Derby City's e-scooter scheme and national trial status.

4.8.4 Given the current status of the e-bike and e-scooter scheme it is intended that these will be procured / operated by the Derby City.

4.9 Delivery and Servicing (Swept Path Analysis Proposed Design Vehicles)

Residential Parcel

4.9.1 As noted above the spine road within the residential parcel has been provided at a width of 6.75m which can accommodate a bus and delivery and service vehicle. The remaining residential layout is in outline and will be served via a looped access road. This will be designed to accommodate delivery and service vehicles including refuse vehicles and fire tenders. Therefore no swept path analysis has been carried out at this stage.

4.9.2 The care home will access from a private access and car park directly from the spine road. This will be designed so that delivery and service vehicles can enter and exit in a forward gear.

4.9.3 The retirement units will be accessed from a private access and road network. This will be designed so that delivery and service vehicles can enter and exit in a forward gear.

District Centre Layout

4.9.4 The District Centre comprises a number of uses each with their own servicing requirements. The design vehicle for each unit has been tracked to demonstrate that safe access can be achieved.

4.9.5 The proposed Petrol Filling Station will be serviced by articulated tankers (up to 16.5m) rigid delivery vehicle (11.2m), Fire Tender and refuse vehicles (11.2m). The layout will be agreed at reserved matters and will accommodate the anticipated design vehicles.

4.9.6 The Drive Thru (Coffee) unit will be serviced via the internal car park, which is considered standard practice. This approach has been accepted by South Derbyshire District and Derby City Councils. Deliveries and servicing of the building will be actively managed, out of operational hours, to reduce the impact to customers using the facility. The design vehicles to this unit include rigid vehicles (11.2m), Fire Tender and refuse vehicles (11.2m). The layout will be agreed at reserved matters and will accommodate the anticipated design vehicles.

4.9.7 As with the Coffee Drive Thru unit the Food Drive Thru unit will be serviced via the internal car park. Deliveries and servicing of the building will be actively managed, out of operational hours, to reduce the impact to customers using the facility. The layout will be agreed at reserved matters and will accommodate the anticipated design vehicles.

4.9.8 It is proposed to service the foodstore via a dedicated service yard accessed from the internal roundabout. The building will be accessed by a maximum length articulated vehicle (16.5m), Fire Tender and a refuse vehicle (11.2m). The layout will be agreed at reserved matters and will accommodate the anticipated design vehicles.

4.9.9 It is proposed to service the local shops, 12 apartments and nursery from the rear car park area, which has been designed with a turning head. These units will be served by rigid delivery vehicles (11.2m), Fire Tender and Refuse Vehicle (11.2m) and delivery vans. The layout will be agreed at reserved matters and will accommodate the anticipated design vehicles.

4.9.10 The 19 residential units to the east of the site are considered in outline. The units will be serviced by a refuse vehicle (11.2m) and a delivery van. The layout will be agreed at reserved matters and will accommodate the anticipated design vehicles.

4.9.11 Swept path analysis of the illustrative masterplan has been carried out to illustrate the delivery and servicing strategy as shown on drawing E702-PL-SK-249-251. However the development is applied for in outline (except for the District Centre Roundabout Access). As such the layouts will be agreed at reserved matters.

4.9.12 Deliveries and Servicing to each unit will be actively managed to avoid the peak periods to limit the impact on the operation of the site and the local highway network where possible.

4.9.13 All deliveries and servicing will be via the site access roundabout which has been tracked with the following vehicles:

- Articulated HGV - Max Length 16.5m;
- Refuse Vehicle – 11.2m;
- Fire Tender – 7.7m; and
- Bus

4.9.14 The swept path analysis for a 16.5m articulated HGV is shown on Drawing E702-PL-SK-252 which shows that all anticipated movements can be accommodated.

4.9.15 The swept path analysis for a refuse vehicle is shown on Drawing E702-PL-SK-253, which shows that all movements can be accommodated.

4.9.16 The swept path analysis for a fire tender is shown on Drawing E702-PL-SK-254 which shows that all movements can be accommodated.

4.9.17 The swept path analysis for a single deck bus is shown on Drawing E702-PL-SK-255 which shows that all movements can be accommodated. As noted in Section 2 there no service currently operate along Chellaston Lane, however a new service will be implemented by the Boulton Moor 1 development.

5 TRIP RATES AND TRAFFIC FLOW FORECASTS

5.1 Introduction

5.1.1 This section assesses the vehicular trip generation, distribution and assignment on the local highway network.

5.2 Base and Future Traffic Flow Forecasts

5.2.1 As described in Section 2 new traffic surveys were carried out in July 2021 and September 2021. The September 2021 surveys are summarised on Diagram TFD 001 and 002. Derbyshire County Council, South Derbyshire District Council, Derby City Council and National Highways have confirmed that they are now accepting new traffic surveys as of September 2021.

5.2.2 It is proposed to consider the following traffic forecasts:

- 2021 – Base Traffic Flows;
- 2023 – Open Year of development (National Highways Opening Year Test); and
- 2028 – Future Year End of Local Plan Test.

5.3 Background Growth

5.3.1 When considering background growth two methods are used, the first is to apply a generic growth rate percentage derived from TEMPro and the second is add the trips associated with the committed development sites exclusively.

5.3.2 Given the location of the site access and surrounding uses it is proposed to adopt the following methodology:

- Committed Growth – discrete development trips associated with the Boulton Moor 1, 2 and Snelsmoor Grange developments to be added in exclusively; and
- Network Growth – to be applied to all movements except to and from the Chellaston Lane corridor. These rates will be derived from TEMPro.

5.3.3 For committed growth the traffic flow matrices, agreed as part of the Boulton Moor 2 and Snelsmoor Grange development have been used. The agreed committed development matrices for the remaining Boulton Moor 1, Boulton Moor 2 and Snelsmoor Grange developments are contained at Appendix G.

5.3.4 The following amendments have been made to these matrices to account for changes through the planning process:

- The trips associated with 150 residential units from the Boulton Moor 2 development have been transferred to the proposed residential site;

- The trips associated with 150 residential units from the Snelsmoor Grange development have been transferred from the Chellaston Lane corridor to the Field Lane / Shardlow Road corridor to reflect the change to their planning application.

5.3.5 The proposed committed development trips are summarised on diagram TFD003 and 004.

5.3.6 The network growth factors have been calculated using TEMPro and middle super output area Derby 028. The growth rates are summarised below:

Base	Future	AM	PM	Daily	Weekend
2021	2023	1.019	1.0189	1.0196	1.0198
2021	2028	1.0661	1.0664	1.0695	1.0697

Table 5.1 – Proposed TEMPro Growth Factors

5.3.7 The rates summarised above have been applied to the baseline traffic forecasts and are summarised on the following diagrams:

- TFD 005 – 2023 Base AM and PM peaks;
- TFD 006 – 2023 Base Weekend Peak;
- TFD 007 – 2028 Base AM and PM Peaks; and
- TFD 008 – 2028 Base Weekend peak.

5.3.8 The committed development trips have been added to the 2023 and 2028 traffic flow forecasts and are summarised on the following diagrams:

- TFD009 – 2023 Base + Remaining BM1 Trips AM and PM peaks;
- TFD010 – 2023 Base + Remaining BM1 Trips Weekend Peak;
- TFD011 - 2028 Base + Full Committed Developments AM and PM peaks; and
- TFD012 – 2028 Base + Full Committed Developments Weekend peak.

5.4 Proposed Development Summary

5.4.1 It is proposed to develop Parcel 1 (District Centre) as a mixed retail development and up to 31 residential units. The development schedule for the District Centre is provided below:

Parcel	Development Use	Size
1	Petrol Filing Station	8 Bays
2	Foodstore	2,000sqm
3	Transport Mobility Hub	60 car parking spaces
4	Drive Thru 1	190sqm
5	Drive Thru 2	250sqm
6	Support Retail	700sqm
7	Nursery	500sqm
8	Residential Flats	31 Units

Table 5.2– Proposed District Centre Draft Development Schedule

5.4.2 As set out in Section 4 it is proposed to develop Parcel 2 for:

- Up to 278 Residential Units, of which 52 will be retirement;
- A 66 bedroom care home; and
- A community centre (which forms part of the Boulton Moor 1 extant permission)

5.4.3 As previously described Parcel 2 forms part of the extant Boulton Moor 1 permission and included 155 residential units, a primary school and support retail. As a result the impact of the 155 residential units has already been accepted.

5.4.4 In addition the Boulton Moor 2 development was granted permission for up to 550 residential units, however the traffic flow forecasts which supported the application included the trips associated with 700 residential units. As a result the impact of an additional 150 units have been included in the previous traffic flow forecasts and therefore the resulting impacts have been accepted, although it is noted that these do not form part of the BM2 permission.

5.4.5 In summary an additional 305 residential units have been included/accepted within the assessment of the extant permissions and associated traffic flow forecasts of the Boulton Moor 1 and Boulton Moor 2 developments. The proposed development comprises up to 278 (of which 52 are retirement units) and therefore these units have been accounted for on the wider networks. The trips have been redistributed at the residential site access to correct the assignment.

5.5 Linked, Pass-by and Internal Trips

5.5.1 As noted above it is expect that the majority of the trip attraction of the site will be non-primary. Recent planning applications, with similar uses have been reviewed to identify a suitable rate which has been agreed and can be applied to these proposals. Although the development is located with South Derbyshire District Council it forms an extension of the Derby City urban area. As such sites within the Derby City Council boundary have been reviewed. These include the following sites and full details of the review are contained at Appendix H:

- Chellaston Fields which includes an Aldi, Petrol Filling Station and Nursery (planning reference 9_2012_0568 and 9_2012_1208);
- Pride Park which includes a PfS and Drive Thru (planning 18_01_2109);
- Land at Uttoxeter New Road which includes a foodstore (planning reference 20_01247_FUL);
- Tim Hortons Coffee (planning reference 21_00819_FUL);
- Foresters Leisure Park which includes a Drive-Thru Costa (planning reference 21/00341/FUL; and
- ASDA Sinfin which includes a 2 Drive-Thru units (planning reference 20/01255/FUL).

5.5.2 From this review it is noted that the split between non-primary and primary trips vary greatly between sites, where the primary (new trips) vary between 4% and 30% new trips as an average.

5.5.3 Derby City Council prepared a response to the pride park planning application (dated 18th January 2019). A copy of their response is contained at Appendix I. At paragraph 3.5 Derby City confirm that:

> *"The proposed trip type percentages have been agreed as 40% each for bypass and divert trips, with 20% as new trips and 10% subtracted from the total to allow for Linked trips within the site."*

5.5.4 Derby City Council prepare a response to the development proposals a Sinfin (dated 4th February 2021). A copy of their response is contained at Appendix I. At paragraph 2.4 Derby City confirm that:

> *It must be noted that a large percentage of the trips attracted to the site are likely to already be on the local network or linked to trips associated with the existing retail centre at the site. The development is expected to attract 29 new trips* [206 total] *in the AM peak, 22 in the PM peak* [159 total] *and 37 new trips* [261 total] *during the Saturday mid-day peak.*

5.5.5 Based on their response and a 14% new trip factor was agreed as part of these proposals. The remaining trips (86%) were only considered at the site access, at the request of Derby City.

However now assessment was made on the wider network as they were assumed to already be on the network.

5.5.6 The Chellaston Fields development, located to the south-west of the site, agreed the following splits:

- 90% of nursery trips were linked (internal and therefore discounted);
- 30% of the foodstore trips were linked (internal and therefore discounted); and
- 100% of the PfS trips were linked (internal and therefore discounted).

5.5.7 Having reviewed the range of values accepted at similar sites it is proposed to adopt a single Whilst it is considered that the linked internal trips may be higher between the proposed uses (similar to those agreed for Chellaston Fields) it is proposed to adopted the recently agreed / recommend rates (Pride Park development (planning reference 18_01_2019). This is considered to be robust. The table below provides a summary of how these have been applied to the proposed uses.

	Development Use	Linked (Internal)	Pass-by (from Boulton Moor Dev)	Diverted (from Shardlow Road Corridor)	New
District Centre	PfS	-10%	40%	40%	20%
	Foodstore				
	Drive Thru 1				
	Drive Thru 2				
	Support Retail				
	Nursery				
	Residential Flats		N/A	N/A	100%
	Smart Hub	N/A	N/A	100%	N/A
RL	Residential Units	N/A			100%
	Care Home	N/A			100%

Table 5.3 – Summary of Trip Type Split

5.5.8 The trip type splits summarised above have been applied to the total development trips as summarised below. As noted above no factors have been applied to the planned retained development trips, these are considered to be new to the network.

5.6 Proposed Development Trips

5.6.1 The online planning portals for Derby City and South Derbyshire District Council have been reviewed for recent applications with similar development uses which have been accepted, including agreed assumptions for trip types (linked, pass-by and diverted).

5.6.2 The agreed trip rates have been reviewed where applicable and adopted in this assessment. Where agreed trip rates have not been found the TRICs online database has been used to

derive trip rates. The proposed trips rates and their source are summarised below. Full trip rate details are contained at Appendix J.

Development Use	Source	AM Peak		PM Peak		Weekend	
		Arrive	Depart	Arrive	Depart	Arrive	Depart
Pfs	TRICs	8.265	7.912	9.476	9.382	5.220	5.085
Foodstore	20/01255	2.024	1.571	3.339	3.449	5.356	5.336
Smart Hub	Estimated	1	0	0	1	0.5	0.5
Drive Thru	20/01255	11.792	11.726	13.140	13.229	30.526	31.853
Support Retail	20/01255	0.255	0.144	1.153	1.238	3.251	3.145
Nursery	TRICs	4.350	3.971	2.131	2.073	0	0
Residential	2019/0931	0.127	0.367	0.494	0.330	0.142	0.472
Care Home	TRICs	0.102	0.047	0.047	0.133	0.056	0.056

Table 5.4 – Proposed Trip Rates

5.6.3 As summarised above the proposed trip rates for the foodstore, drive thru and support (non-food) retail have been taken from the agreed Proposed Drive-Thru development at ASDA Sinfin (planning reference 20/01255).

5.6.4 The Petrol Filling Station (PfS) and Nursery have been derived using TRICs.

5.6.5 The Transport Mobility Hub (TMH) is being promoted for up to 60 parking spaces, which will attract existing trips from the network. There is limited information of the trip attraction of the TMH, however it is assumed that all trips will arrive in the AM peak and will leave in the PM peak which is considered to be the worst case with respect to trips at the proposed roundabout.

5.6.6 The trip rates summarised above have been used to estimate the total trip attraction of the development proposals and planned future development, which are summarised below:

Development Use	Size	AM Peak			PM Peak		
		Arrive	Depart	Two-way	Arrive	Depart	Two-way
Proposed District Centre							
Pfs	8 bays	66	63	129	76	75	151
Foodstore	1,315 sqm	40	31	72	67	69	136
Smart Hub	60 spaces	60	0	60	0	60	60
Drive Thru 1	190 sqm	22	22	45	25	25	50
Drive Thru 2	250 sqm	29	29	59	33	33	66
Support Retail	500 sqn	2	1	3	8	9	17
Nursery	400 sqm	22	20	42	11	10	21
Residential Flats	31 Units	4	11	15	10	5	15
Total		**245**	**177**	**422**	**230**	**286**	**516**
Planned Retained Land Development							
Residential	278	Included through BM1 extant permission and BM2 forecast, see adjustment section					
Carehome	66	7	3	10	3	9	12
Total		**7**	**3**	**10**	**3**	**9**	**12**

Table 5.5 – Proposed Vehicle Trips AM and PM peak

5.6.7 From the table above it is estimated that the proposed District Centre development will attract a total of 422 two-way trips in the AM peak and 516 two-way trips in the PM peak. The residential parcel could attract an additional 10 two-way trips in the AM peak and 12 two-way trips in the PM peak.

5.6.8 The process above has been repeated for the weekend trip generation as summarised below:

Development Use	Size	Saturday Peak		
		Arrive	Depart	Two-way
Proposed District Centre				
Pfs	7 bays	42	41	82
Foodstore	1,315 sqm	107	107	214
Smart Hub	60 spaces	30	30	60
Drive Thru 1	190 sqm	58	61	119
Drive Thru 2	250 sqm	76	80	156
Support Retail	500 sqm	23	22	45
Nursery	400 sqm	0	0	0
Residential Flats	31 Units	1	6	7
Total		**337**	**347**	**684**
Planned Retained Land Development				
Residential	278	11	52	57
Carehome	66	4	5	9
Total		**15**	**57**	**66**

Table 5.6 – Proposed Vehicle Trips Saturday peak

5.6.9 The traffic volumes summarised in the tables above represent the total cumulative trip attraction of the site. However as a mixed use development there will be an element of linked internal trips between the uses. In addition the majority of the trips will not be primary trips on the network (new trips). Instead they will be a mixture of new, diverted (from the Shardlow Road corridor already passing the site) and pass-by (from the Boulton Moor urban extension (Boulton Moor 1, Boulton Moor 2 and Snelsmoor Grange, which total approximately 2,500 units). The linked, diverted and pass-by are referred to as non-primary trips.

5.6.10 The agreed drive-thru development at Sinfin (planning reference 20/01255) has been reviewed along with other recent applications in order to identify what has been agreed at similar sites. Details of this review is presented in Section 5.4. The agreed rates have been applied to the total trip attraction of the site and a summary is provided below:

Trip Type Factor	AM Peak			PM Peak		
	Arrive	**Depart**	**Two-way**	**Arrive**	**Depart**	**Two-way**
Proposed District Centre						
Total	**245**	**177**	**422**	**230**	**286**	**516**
Total (ex TMH and Resi)	*182*	*167*	*349*	*219*	*221*	*440*
-10% Linked (internal)	*164*	*150*	*314*	*197*	*199*	*396*
40% Diverted	*66*	*60*	*125*	*79*	*80*	*159*
40% Pass-by	*66*	*60*	*125*	*79*	*80*	*159*
20% New	*33*	*30*	*63*	*39*	*40*	*79*
Residential (District Centre)	*4*	*11*	*15*	*10*	*4*	*15*
TMH Diverted	*60*	*0*	*60*	*0*	*60*	*60*
Summary						
New Trips	37	41	78	49	44	94
Pass-by	66	60	125	79	80	159
Diverted (including TMH)	126	60	186	79	140	219
Total	**229**	**161**	**389**	**207**	**264**	**472**

Table 5.7 – Summary of Primary and Non Primary Trips AM and PM peaks

5.6.11 In summary the proposed district centre is expected to generate the following trip attraction:

- New Trips – 78 two-way trips in the AM peak and 94 two-way trips in the PM peak;
- Pass-by – 125 two-way trips in the AM peak and 159 two-way trips in the PM peak; and
- Diverted Trips – 186 two-way trips in the AM peak and 219 two-way trips in the PM peak.

5.6.12 The process has been repeated for the Weekend peak. The trip type splits summarised above have been applied to the total development trips as summarised below. As noted above no factors have been applied to the planned residential development trips, which are considered to be new to the network.

Trip Type Factor	Weekend Peak		
	Arrive	Depart	Two-way
Proposed District Centre			
Total	**337**	**347**	**684**
Total (ex TMH and Resi)	306	310	616
-10% Linked (internal)	275	279	554
40% Diverted	110	111	222
40% Pass-by	110	111	222
20% New	55	56	111
Residential	1	6	7
TMH Diverted	30	30	60
Summary			
New Trips	56	62	118
Pass-by	110	111	221
Diverted (including TMH)	140	141	281
Total	**306**	**314**	**620**

Table 5.8 – Summary of Primary and Non Primary Trips weekend peak

5.6.13 In summary the proposed site is expected to generate the following trip attraction:

- New Trips – 118 two-way trips during the weekend peak;
- Pass-by – 221 two-way trips during the weekend peak; and
- Diverted Trips – 281 two-way trips during the weekend peak.

5.7 Sensitivity Review

5.7.1 During scoping discussions Derby City Council queried whether the trips associated with the Coffee Drive Thru were robust and suggested that a better methodology would be to use the trip rates and assumptions used as part of the Foresters Leisure Park development. A copy of Derby City Councils comments are contained at Appendix K.

5.7.2 Table 5.1 of the Forester Leisure Park TA provides a summary of the trip attraction of 6 Costa Coffee drive thru sites. Which are summarised in the Table below:

	Post Code	Description of Site
Cambridge	CB23 3AS	Roadside services located on the A428 at Caxton Gibbet Rbt, not adjoining to a residential area.
Warrington	WA2 9SX	On retail park with Aldi. Residential area adjacent
Didcot	OX14 4TX	Roadside services, adjacent to A34. Not adjoining to a residential area.
Bedford	MK42 7AZ	Retail Park, next to B530 , not adjoining to a residential area
Sheffield	S9 1EW	Adjacent to Meadowhall shopping centre and the M1. No adjoining residential.
Banbury	OX16 4AE	Adjacent to M40.

Table 5.9 – Summary of TPA Costa Survey locations (planning application 21/00341/FUL)

5.7.3 The locations included in the TPA review are well located to strategic highway connections and have limited access to existing residential areas and therefore operate as roadside services. It is considered that these locations would attract more car based trips, whereas it is considered that the proposed development will attached increased linked trips and local walking and cycling trips.

5.7.4 The two way trip rates, for the AM peak ranged from 143 vehicles to 193 with the average being 166 trips, of which the surveys showed that up to 98% of trips would be pass-by or diverted. As part of this development it has been agreed that 10% of trips are new while 45% are diverted and 45% are pass-by.

5.7.5 As a sensitivity test the assumptions accepted in the Foresters Leisure Park assessment have been reviewed and compared against the assumptions in this TA.

		Proposed	Foresters	Change
AM Peak	Total	45	166	-121
	New	8	17	-9
	Pass-by	16	75	-59
	Diverted	16	75	-59
PM Peak	Total	50	143	-93
	New	9	14	-5
	Pass-by	18	57	-39
	Diverted	18	57	-39
Sat Peak	Total	119	163	-44
	New	21	16	+5
	Pass-by	43	73	-30
	Diverted	43	73	-30

Table 5.10 – Comparison of TPA and Proposed Trip Rate Assumptions Drive Thru (Coffee)

5.7.6 Although the total trip rates have a larger degree of variation, when the trip type for new trips are changes are not considered to be significant. In summary the change would be -9 trips in the AM peak, -5 in the PM peak and +5 during the Saturday peak. The pass-by and diverted trips are already on the network either as a pass-by or diverted trip. Therefore it is not considered that a change in new two-way trips would result in a material impact.

5.7.7 Furthermore the assumptions for the development have been applied to all retail units and the pass-by and diverted trips have been assessed. However it has previously been accepted on other developments that the trips associated with a PFS are 100% pass-by, whereas in the proposed assessment 20% are considered to be new.

5.7.8 Based on the cumulative assessment of all trip rates it is considered that the proposed methodology and trip rate forecasts are robust.

5.8 Network Distribution and Assignment

5.8.1 The trip attraction of the proposed development (including the retained land) has been assigned to the network as follows:

- New Trips – for the District Centre it has been assumed that 50% will be from the Shardlow Road corridor and 50% from Chellaston Lane (south) which have been

assigned to the network using observed turning percentages. In addition the trips associated with residential and care home units have been assigned (100%) to and from the Shardlow Road corridor. The assignment of the new trips is shown on TFD013 and 014;

- Pass-by – These trips are associated with the Boulton Moor urban extension area and will already be passing the site on Chellaston Lane. The distribution of pass-by trips are shown on TFD015 and 016;
- Diverted – These trips are diverted from the Shardlow Road corridor, where the existing turning movements have been used to proportional assign the trips, as shown on TFD017 and 018.

5.8.2 The cumulative development flows for the AM, PM and Weekend peaks are shown on TFD019 and 020.

5.9 Proposed Traffic Flow Forecasts

5.9.1 The network growth, committed developments and proposed developments have been added to the 2021 base traffic flows to form the following assessment forecasts:

- TFD001 – 2021 Base AM and PM peaks
- TFD 002 – 2021 Base Weekend peak
- TFD009 – 2023 Base + Remaining BM1 Trips AM and PM peaks;
- TFD010 – 2023 Base + Remaining BM1 Trips Weekend Peak;
- TFD011 - 2028 Base + Full Committed Developments AM and PM peaks; and
- TFD012 – 2028 Base + Full Committed Developments Weekend peak.
- TFD021 – 2023 Base + Remaining BM1 + Proposed Development AM and PM peaks;
- TFD022 – 2023 Base + Remaining BM1 + Proposed Development Weekend peak;
- TFD023 – 2028 Base + Full Committed Development + Proposed Development AM and PM peaks; and
- TFD024 – 2028 Base + Full Committed Development + Proposed Development Weekend peak.

6 JUNCTION CAPACITY

6.1 Introduction

6.1.1 This section of the Transport Assessment described the highway assessment which has been undertaken on the surrounding network. As discussed in Section 2 it is considered that that the proposed development will provide a localised function given the similar uses serving the immediate wider area. In addition a large proportion of the trips will be linked, pass-by or diverted and therefore will already be on the wider network. Therefore it is proposed to model the following junctions:

- Junction 1 A6 (T) / B1050 / Shardlow Road and Junction 2 - Chellaston Lane / Shardlow Road Roundabouts;
- Junction 3 – Proposed District Centre Site Access with Woods Meadow; and
- Junction 4 – PHL northern roundabout (Proposed Residential Site Access)

6.1.2 As described in Section 5 it is proposed to assess the junction using the following Traffic Flow Forecasts:

- TFD009 – 2023 Base + Remaining BM1 Trips AM and PM peaks;
- TFD010 – 2023 Base + Remaining BM1 Trips Weekend Peak;
- TFD011 - 2028 Base + Full Committed Developments AM and PM peaks;
- TFD012 – 2028 Base + Full Committed Developments Weekend peak.
- TFD021 – 2023 Base + Remaining BM1 + Proposed Development AM and PM peaks;
- TFD022 – 2023 Base + Remaining BM1 + Proposed Development Weekend peak;
- TFD023 – 2028 Base + Full Committed Development + Proposed Development AM and PM peaks; and
- TFD024 – 2028 Base + Full Committed Development + Proposed Development Weekend peak.

6.1.3 The junction assessment has utilised the approved Boulton Moor 2 models where possible and have used the latest versions of Junction 9 ARCADY module (for the priority controlled roundabouts) and LinSIG V3 for the traffic signal controlled junctions.

6.1.4 The approved microsimulation model (VISSIM) has been updated as part of this assessment which is described in Section 7.

6.2 Junction 1 A6 (T) and Junction 2 - Chellaston Lane / Shardlow Road Roundabouts.

6.2.1 As described in Section 2 improvement works to Junctions 1 and 2 have been secured through the Boulton Moor 2 and Snelsmoor Grange Developments. In summary the traffic signal

improvements (Option 1b) will be completed prior to the occupation of the 50th unit at the combined Boulton Moor 2 and Snelsmoor Grange development. It is anticipated that these works will be completed prior to the occupation of the proposed development and therefore are considered to be committed works.

6.2.2 The works to Junction 2 will be completed prior to the occupation of the 450th unit at the combined Boulton Moor 2 and Snelsmoor Grange developments. It is anticipated that the proposed development will be completed around the time these works are completed. Therefore the following scenarios have been considered:

- Junction 2 – Existing Roundabout (all traffic flow scenarios); and
- Junction 1 and 2 – Committed Improvements (all traffic flow scenarios).

Junction 2 – Existing Junction Assessment

6.2.3 The Junctions 9 ARCADY model, agreed as part of the Boulton Moor 2 development, has been used and updated with the proposed traffic flow forecasts. The results of the AM peak assessment are summarised in the Table below. Full output details are contained at Appendix L.

AM Peak	2023 + BM1		2023 + BM1 + Dev		2028 + CD		2028 + CD + Dev	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
Allotments	0.00	0	0.00	0	0.00	0	0.00	0
Shardlow Road (E)	0.25	0	0.26	0	0.31	1	0.33	1
Chellaston Lane (s)	0.39	1	0.49	1	0.83	5	0.91	9
Shardlow Road (W)	0.32	1	0.34	1	0.44	1	0.47	1

Table 6.1 – Junction 2 – Existing Chellaston Lane / Shardlow Road Assessment AM

6.2.4 The results summarised above show that the existing junction arrangement can accommodate the trips associated with the proposed development and full committed developments within full saturated capacity (where the Ratio of Flow to Capacity (RFC) is less than 1.00. The maximum RFC in the AM peak is predicted to be 0.91 on Chellaston Lane in the 2028 base + full committed development and proposed development. The resulting queue is 9 vehicles, which would not extend back to the proposed site access junction.

6.2.5 The 2028 test is considered to be theoretical as the full improvement works as secured as part of the Boulton Moor 2 and Snelsmoor Grange developments is anticipated to be delivered around 2026. Notwithstanding, a minor improvement to the Chellaston Lane arm of the

roundabout to demonstrate the level of improvement required to reduce queuing on this arm. The potential improvement is illustrated below:

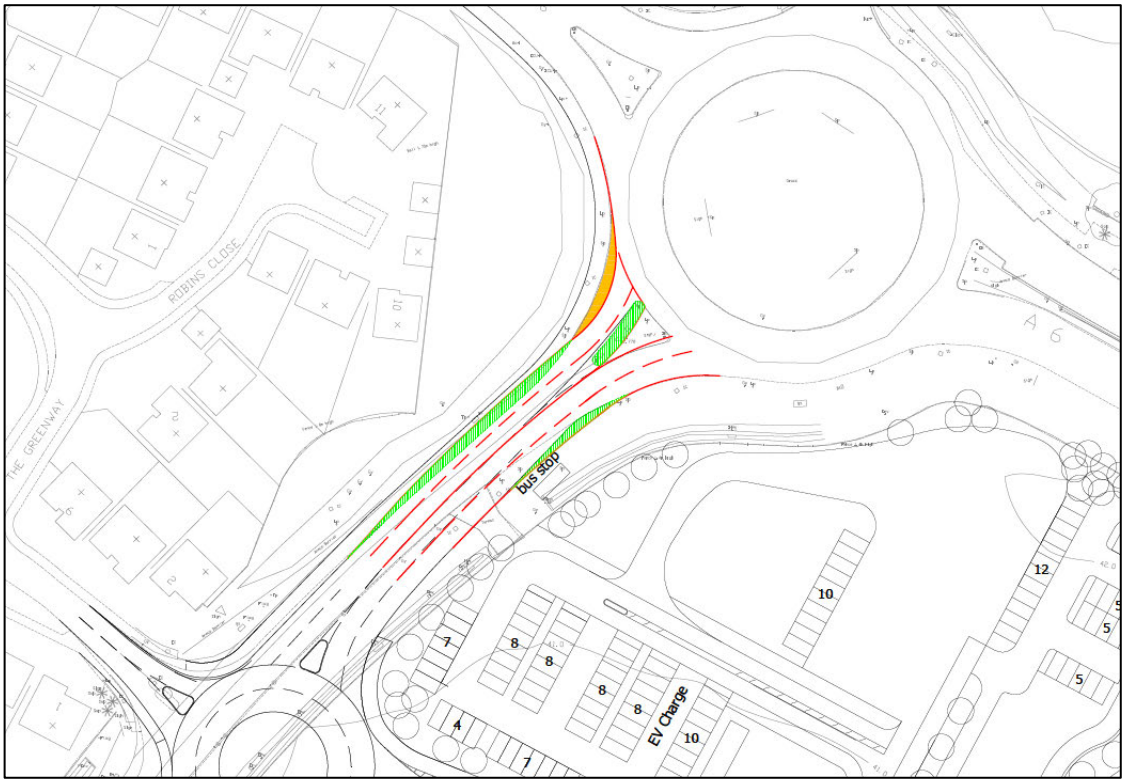


Image 6.1 – Potential Minor Improvement to Chellaston Lane arm

6.2.6 The minor improvement scheme has been modelled with the 2028 + Committed Development + Proposed Development Scenario a summarised below:

AM Peak	2023 + BM1		2023 + BM1 + Dev		2028 + CD		2028 + CD + Dev	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
Allotments	0.00	0	0.00	0	0.00	0	0.00	0
Shardlow Road (E)	0.25	0	0.26	0	0.31	1	0.33	1
Chellaston Lane (s)	0.29	0	0.36	1	0.61	2	0.67	2
Shardlow Road (W)	0.32	0	0.34	1	0.44	1	0.47	1

Table 6.2 – Junction 2 – Chellaston Lane / Shardlow Road Minor Improvement AM

6.2.7 The results show that with the minor improvement the junction would operate within operational capacity, where the RFC would reduce from 0.91 to 0.67 and the resulting queue would reduce from 9 vehicles to 2 vehicles.

6.2.8 The results of the existing layout using the PM peak forecasts are summarised in the Table below, full output files are contained at Appendix L.

PM Peak	2023 + BM1		2023 + BM1 + Dev		2028 + CD		2028 + CD + Dev	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
Allotments	0.00	0	0.00	0	0.00	0	0.00	0.0
Shardlow Road (E)	0.39	1	0.41	1	0.55	1	0.58	1
Chellaston Lane (s)	0.32	1	0.53	1	0.58	1	0.79	4
Shardlow Road (W)	0.36	1	0.39	1	0.48	1	0.52	1

Table 6.3 – Junction 2 – Existing Chellaston Lane / Shardlow Road Assessment PM

6.2.9 The results summarised above show that the existing junction arrangement can accommodate the trips associated with the proposed development and full committed developments. The maximum Ratio of Flow to Capacity (RFC) in the PM peak is predicted to be 0.79, which is below the operational threshold of 0.85. The resulting queueing on Chellaston Lane would be 4 vehicles which would not extend back to the proposed site access junction.

6.2.10 The results for the weekend peak assessment are summarised in the Table below, full output files are contained at Appendix L.

Weekend Peak	2023 + BM1		2023 + BM1 + Dev		2028 + CD		2028 + CD + Dev	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
Allotments	0.00	0	0.00	0	0.00	0	0.00	0
Shardlow Road (E)	0.30	0	0.33	1	0.33	1	0.36	1
Chellaston Lane (s)	0.30	0	0.49	1	0.53	1	0.71	2
Shardlow Road (W)	0.34	1	0.36	1	0.38	1	0.41	1

Table 6.4 – Junction 2 – Existing Chellaston Lane / Shardlow Road Assessment Weekend

6.2.11 The results summarised above show that the existing junction arrangement can accommodate the trips associated with the proposed development and full committed developments. The maximum Ratio of Flow to Capacity (RFC) in the PM peak is predicted to be 0.71. The resulting queueing on Chellaston Lane would be 2 vehicles which would not extend back to the proposed site access junction.

6.2.12 Based on the assessment of the existing Chellaston Lane / Shardlow Road junction no mitigation is required to facilitate the proposed development. However, based on build out trajectories, it is anticipated that the committed improvements (as secured through the Boulton Moor 2 and Snelsmoor Grange developments) will be implemented prior to 2028.

Junction 1 and 2 – Committed Improvements

6.2.13 As described above improvements works to partially traffic signal control the A6 (T) and convert the Chellaston Lane / Shardlow Road roundabout to a traffic signal controlled T-junction have been secured through the Boulton Moor 2 and Snelsmoor Grange developments. Based on the current build out trajectory of the Boulton Moor 2 and Snelsmoor Grange developments the improvement works will be completed prior to the 2028 forecast year.

6.2.14 The committed improvement works have therefore been tested with the proposed traffic flow forecasts. The assessment utilises the LinSIG models prepared by AECOM as part of the consultation process on the Boulton Moor 2 development. These models were used to set the signal timings used in the VISSIM micro-simulation model.

6.2.15 The requirements for the assessment of the Strategic Road Network (SRN) is for the development impacts to be tested in the opening year (2023). However the A6 (T) has been tested in combination with the Chellaston Lane / Shardlow Road junction and therefore has been tested at the end of the plan period (2028). The results of the updated committed

development AM peak assessment as summarised in the table below, full output files are contained at Appendix M.

AM Peak	2023 + BM1		2023 + BM1 + Dev		2028 + CD		2028 + CD + Dev	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
A6 (T) North	62.3%	10	58.0%	9	71.7%	13	71.8%	13
A6 (T) North CL	66.2%	2	65.0%	2	76.8%	3	76.1%	3
B1050	45.4%	2	42.9%	2	65.8%	3	64.6%	3
A6 (T) South CL	52.4%	8	53.7%	7	52.6%	8	60.1%	8
A6 (T) South	42.5%	3	47.0%	3	53.6%	4	56.4%	4
Shardlow Road EB Reservoir	81.9%	10	65.9%	7	77.5%	11	84.3%	11
Shardlow Road EB CL Reservoir	64.1%	5	66.4%	5	77.8%	7	73.9%	6
Shardlow Road WB Reservoir	31.4%	4	32.0%	4	54.2%	6	59.2%	5
Chellaston Lane	61.2%	5	59.2%	6	77.6%	11	76.4%	11
Shardlow Road EB	29.5%	5	55.1%	5	47.3%	6	77.5%	8
PRC	+30.4%		+35.5%		+15.7%		+15.7%	

Table 6.5 – Committed A6 (T) and Chellaston Lane / Shardlow Road Assessment AM

6.2.16 The results summarised above show that the committed Boulton Moor 1 and Snelsmoor Grange junction improvements can accommodate the trips associated with the proposed development and full committed developments. The maximum Degree of Saturation (DoS) values for each scenario are all within the operational capacity threshold of 90%. For an optimised roundabout junction it is best practise to run the entries to the junction close to 90% therefore allowing the circulatory lanes to operate with maximum green time to limit internal queueing on the circulatory lanes (CL). The queuing on the circulatory and central reservoir link can be contained within the lane and would not cause blocking back.

6.2.17 The results for the PM peak assessment are summarised in the Table below, full output files are contained at Appendix M.

PM Peak	2023 + BM1		2023 + BM1 + Dev		2028 + CD		2028 + CD + Dev	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
A6 (T) North	68.6%	12	72.2%	13	88.0%	20	88.0%	19
A6 (T) North CL	70.4%	4	70.5%	4	71.5%	4	77.6%	4
B1050	50.1%	3	53.5%	3	81.2%	7	86.5%	8
A6 (T) South CL	60.6%	9	61.2%	10	87.2%	16	89.2%	16
A6 (T) South	48.3%	4	47.2%	4	51.7%	6	54.3%	6
Shardlow Road EB Reservoir	64.2%	7	66.1%	7	69.2%	9	71.4%	9
Shardlow Road EB CL Reservoir	56.3%	3	57.4%	3	63.4%	3	74.9%	3
Shardlow Road WB Reservoir	36.7%	5	40.9%	6	50.4%	8	64.5%	8
Chellaston Lane	73.5%	4	58.6%	5	86.4%	9	73.3%	9
Shardlow Road EB	44.0%	3	63.8%	5	75.9%	7	83.9%	10
PRC	+22.5%		+24.6%		+2.3%		+0.9%	

Table 6.6 – Committed A6 (T) and Chellaston Lane / Shardlow Road Assessment PM

6.2.18 The results summarised above show that the committed Boulton Moor 1 and Snelsmoor Grange junction improvements can accommodate the trips associated with the proposed development and full committed developments. The maximum Degree of Saturation (DoS) values for each scenario are all within the operational capacity threshold of 90%. For an optimised roundabout junction it is best practise to run the entries to the junction close to 90% therefore allowing the circulatory lanes to operate with maximum green time to limit internal queueing on the circulatory lanes (CL). The queuing on the circulatory and central reservoir link can be contained within the lane and would not cause blocking back.

6.2.19 In addition the queue on Chellaston Lane is predicted to be a maximum of 10 passenger can units (PCUs). This link is a single lane plus a flare of 10 metres for the right turn movements. As such the queue of 5 vehicles per lane can be accommodated and will not interact with the proposed site access junction.

6.2.20 The results for the Weekend peak assessment are summarised in the Table below, full output files are contained at Appendix M.

PM Peak	2023 + BM1		2023 + BM1 + Dev		2028 + CD		2028 + CD + Dev	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
A6 (T) North	66.1%	11	62.7%	10	73.9%	13	70.0%	12
A6 (T) North CL	59.1%	4	58.3%	4	62.1%	5	62.5%	5
B1050	48.5%	3	48.8%	3	57.1%	3	55.0%	3
A6 (T) South	46.4%	7	47.0%	7	49.2%	8	62.1%	10
A6 (T) South CL	36.6%	3	37.4%	4	37.4%	3	28.5%	4
Shardlow Road EB Reservoir	62.3%	7	59.3%	6	67.9%	8	65.7%	7
Shardlow Road EB CL Reservoir	46.9%	4	52.2%	5	47.8%	5	57.8%	4
Shardlow Road WB Reservoir	29.0%	4	43.0%	5	36.2%	5	53.8%	6
Chellaston Lane	55.0%	4	59.8%	5	61.7%	6	68.2%	7
Shardlow Road EB	30.7%	4	62.0%	8	41.4%	6	69.8%	9
PRC	+36.2%		+43.6%		+21.8%		+28.7%	

Table 6.7 – Committed A6 (T) and Chellaston Lane / Shardlow Road Assessment Weekend

6.2.21 The results summarised above show that the committed Boulton Moor 1 and Snelsmoor Grange junction improvements can accommodate the trips associated with the proposed development and full committed developments. The maximum Degree of Saturation (DoS) values for each scenario are all within the operational capacity threshold of 90%. For an optimised roundabout junction it is best practise to run the entries to the junction close to 90% therefore allowing the circulatory lanes to operate with maximum green time to limit internal queueing on the circulatory lanes (CL). The queuing on the circulatory and central reservoir link can be contained within the lane and would not cause blocking back.

6.2.22 In addition the queue on Chellaston Lane is predicted to be a maximum of 10 passenger can units (PCUs). This link is a single lane plus a flare of 9 metres for the right turn movements. As such the queue of 4-5 vehicles per lane can be accommodated and will not interact with the proposed site access junction.

6.2.23 In summary the modelling shows that the committed improvements at the junction can accommodate the full traffic flow forecasts. The LinSIG models assesses a single cycle and

static cycle time. It is proposed that the junction will operate using MOVA which will allow the junction to monitor and adapt to changes in demand. This will allow for improved efficiency and reduced delay through the junction.

6.2.24 In addition to the above the agreed micro simulation (VISSIM) model has been revalidated using the September 2021 survey data and modelled with the proposed traffic flow forecasts. The results of the micro simulation model are presented in Chapter 7.

6.3 Junction 3 – Proposed District Centre Site Access with Woods Meadow

6.3.1 The proposed District Centre roundabout forms part of a separate planning application to allow its delivery in advance of development of the site. At the time of the application new traffic survey data was not available and the quantum of development was still being refined. As such the capacity assessment presented in the supporting Transport Note has been updated with the proposed traffic flow forecasts presented in this Transport Assessment.

6.3.2 The performance of the proposed roundabout has been tested using Junctions 9 ARCADY module, the industry standard software for modelling priority controlled roundabout junctions. The geometric parameters have been measured from the proposed plan as shown on Drawing E702_AR_SK_001, contained at Appendix M. The results of the AM Peak assessment are summarised below and full output files are contained at Appendix N.

AM Peak	2023 + BM1 + Dev		2028 + CD + Dev	
	RFC	Queue	RFC	Queue
Chellaston Ln (n)	0.22	0	0.33	1
Site Access	0.13	0	0.14	0
Chellaston Lane (s)	0.33	1	0.64	2
Woods Meadow	0.08	0	0.15	0

Table 6.8 – Proposed District Centre Access – AM peak

6.3.3 The summary of results above shows that the junction will work well within operational capacity. The maximum RFC is predicted to be 0.64 with a resulting queue of 2 vehicles in the AM peak period.

6.3.4 The results of the PM Peak assessment are summarised below and full output files are contained at Appendix N.

PM Peak	2023 + BM1 + Dev		2028 + CD + Dev	
	RFC	Queue	RFC	Queue
Chellaston Ln (n)	0.33	1	0.55	1
Site Access	0.22	0	0.31	0
Chellaston Lane (s)	0.25	0	0.42	1
Woods Meadow	0.26	0	0.00	0

Table 6.9 – Proposed District Centre Access – PM peak

6.3.5 The summary of results above shows that the junction will work well within operational capacity. The maximum RFC is predicted to be 0.55 with a resulting queue of 1 vehicles in the PM peak period and therefore is considered suitable for the proposed development.

6.3.6 The results of the Weekend peak assessment are summarised below and full output files are contained at Appendix N.

PM Peak	2023 + BM1 + Dev		2028 + CD + Dev	
	RFC	Queue	RFC	Queue
Chellaston Ln (n)	0.29	0	0.32	1
Site Access	0.24	0	0.25	0
Chellaston Lane (s)	0.27	0	0.43	1
Woods Meadow	0.02	0	0.03	0

Table 6.10 – Proposed District Centre Access – Weekend peak

6.3.7 The summary of results above shows that the junction will work well within operational capacity. The maximum RFC is predicted to be 0.43 with a resulting queue of 1 vehicles during the weekend peak period.

6.4 Junction 4 – PHL northern roundabout (Proposed Residential Site Access)

6.4.1 The proposed residential development is to be accessed by the Persimmon Homes Ltd northern roundabout and spine road network, which has recently been completed. The junction has been modelled in Junctions 9 ARCADY module and tested using the future year development forecast. The results of the assessment for the AM peak is summarised below, full output files are contained at Appendix O.

AM Peak	2023 + BM1 + Dev		2028 + CD + Dev	
	RFC	Queue	RFC	Queue
Chellaston Ln (n)	0.24	0	0.40	1
Site Access (Resi)	0.22	0	0.25	0
Chellaston Lane (s)	0.36	1	0.86	6

Table 6.11 – Existing Residential Site Access – AM peak

6.4.2 The summary of results above shows that the junction will work well within capacity. The maximum RFC is predicted to be 0.86 with a resulting queue of 6 vehicles in the AM peak period. The layout of the junction layout has been agreed as part of the adjacent Boulton Moor 1 (Buttercup Leys) development.

6.4.3 The results of the assessment for the AM peak is summarised below, full output files are contained at Appendix O.

PM Peak	2023 + BM1 + Dev		2028 + CD + Dev	
	RFC	Queue	RFC	Queue
Chellaston Ln (n)	0.44	1	0.77	3
Site Access (Resi)	0.18	0	0.26	0
Chellaston Lane (s)	0.28	0	0.27	0

Table 6.12 – Existing Residential Site Access – PM peak

6.4.4 The summary of results above shows that the junction will work well within operational capacity. The maximum RFC is predicted to be 0.77 with a resulting queue of 3 vehicles, therefore no further improvement works are required. .

6.4.5 The results of the assessment for the AM peak is summarised below, full output files are contained at Appendix P.

Weekend Peak	2023 + BM1 + Dev		2028 + CD + Dev	
	RFC	Queue	RFC	Queue
Chellaston Ln (n)	0.29	0	0.34	1
Site Access (Resi)	0.11	0	0.16	0
Chellaston Lane (s)	0.30	0	0.51	1

Table 6.13 – Existing Residential Site Access – Weekend peak

6.4.6 The summary of results above shows that the junction will work well within operational capacity. The maximum RFC is predicted to be 0.51 with a resulting queue of 1 vehicles, therefore no further improvement works are required.

6.5 Junction Assessment Summary.

6.5.1 The proposed and existing adjoining junctions have been assessed using the proposed traffic flow forecasts. In summary the assessment shows:

- Junction 1 Existing A6 (T) roundabout – no static assessment of the existing roundabout has been carried out. The committed improvements secured through the Boulton Moor 2 and Snelsmoor Grange developments are required prior to the occupation of the combined 50th unit. This trigger is expected to occur prior to, or early in the delivery of the proposed District Centre and therefore is considered to be a committed improvement. The committed improvement works (Option 1b) can accommodate the trips associated with the proposed District Centre and Residential Development.

- Junction 2 Existing Chellaston Lane / Shardlow Road Roundabout – using the updated traffic flow forecasts the existing junction has been modelled which shows that it can accommodate the full traffic flow forecasts with a minor improvement to the Chellaston Lane approach to the junction. However this minor improvement is not considered necessary as the Boulton Moor 2 and Snelsmoor Grange developments are committed to implementing the improvement works prior to the occupation of the 450th dwelling.

- As such the assessment of the full committed development (Boulton Moor 1, 2 and Snelsmoor Grange) without the secured improvements is theoretical and presents a worst case scenario.

- Junction 1 and 2 Committed Improvements – The full committed development improvements as secured as part of the Boulton Moor 2 and Snelsmoor Grange developments has been tested with the proposed traffic flow forecasts. The assessment shows that all trips can be accommodated by the committed improvements and no further works are required.

- Junction 3 Proposed District Centre Roundabout – The assessment included in the current roundabout application has been updated with the refined traffic flow forecast. The assessment shows that the junction will operate well within capacity and is therefore considered to be acceptable.

- Junction 4 Existing Persimmon Homes Northern Roundabout – The junction has been tested with the refined traffic flow forecasts, which shows that the all trips can be accommodated by the layout. Therefore no further works to this junction are required.

7 MICROSIMULATION MODEL (VISSIM)

7.1 Introduction

7.1.1 A micro-simulation model (VISSIM) was used to assess the impact of the Boulton Moor 2 and Snelsmoor Grange developments at the Chellaston Lane / Shardlow Road and A6 (T) Thulston Roundabout junctions. The assessment used the Aone+ VISSIM model which was calibrated and validated for the existing junction arrangements in a base year of 2015.

7.1.2 This model was used to assess the level of mitigation which was required to support the Boulton Moor 2 and Snelsmoor Grange developments. The level of mitigation was considered to address two issues, which is reflected in the trigger points for the improvement scheme secured through the Boulton Moor 2 and Snelsmoor Grange developments. The two issues were:

1. It came to light through the determination period that a queue had developed on the Shardlow Road approach to the A6 (T) Thulston Roundabout approach, which extended back through the Chellaston Lane / Shardlow Road roundabout and further along Shardlow Road. In order to release further development Derby City required a scheme to mitigate this queue. Subsequently a scheme to remove the segregated left turn lane and partially signalise the A6 (T) roundabout was agreed with Highways England supporting such an improvement. This scheme (referred to as Option 1b) addressed the existing queuing issue between the roundabouts and is to be delivered prior to the 50th occupation of the combined Boulton Moor 2 and Snelsmoor Grange development, addressed the existing queuing problem identified at the time (2015); and

2. Through the pre-application discussions (for the Boulton Moor 2 and Snelsmoor Grange developments) it was suggested by the Local Authority that a form of control should be implemented at the Chellaston Lane / Shardlow Road junction. The committed scheme will convert the existing roundabout to a traffic signal controlled staggered T-junction, which will also facilitate an access into the Boulton Moor 3 land parcel which needed to be located between the roundabouts. This scheme was not required in modelling terms until around the 900th unit, however it is secured by condition at a trigger prior to the 450th unit of the combined committed developments.

7.1.3 In order to consider the impacts of the proposed developments the September 2021 Automatic Number Plate Recognition (ANPR), Manual Turning Count (MTC), Queue Length and Automatic Traffic Count (ATC) data has been used to update and calibrate and validate the original Aone+ model. Therefore providing a new existing baseline model (Scenario 1).

7.1.4 In addition to the above the following scenarios have been tested:

- Scenario 2 – Existing Chellaston Lane / Shardlow Road layout and the proposed Option 1b scheme at the A6 (T) Thulston Roundabout. This represents the committed scheme at the 50th occupation of the combined Boulton Moor 2 and Snelsmoor Grange

development which is predicted to occur in 2023. This model uses the baseline structure from Scenario 1 and the approved traffic signal layout (as prepared by AECOM); and

- Scenario 3 – Full committed improvements to the Chellaston Lane / Shardlow Road and A6 (T) Thulston junctions. This is a update of the AECOM agreed model. No changes to the coding or baseline structure have been made.

7.1.5 The three scenarios have been tested using the following traffic flow forecasts:

- 2023 + Boulton Moor 1 Remaining Units AM peak;
- 2023 + Boulton Moor 1 + Proposed Development AM peak; and
- 2028 + Full Committed Development + Proposed Development AM peak.

7.2 Scenario 1 – Baseline Update

7.2.1 As described above the September 2021 traffic data has been used to update the original Aone+ VISSIM model, which used 2015 base traffic data. This model has been calibrated against and validated using the journey time data. As a further check the modelled and observed queue length data has been reviewed.

7.2.2 The model has been development using the following guidance:

- WebTAG Unit M3-1, 'Highway Assignment Modelling', (January 2014);
- Transport for London's Surface Transport Directorate of Traffic Operations Modelling Guidelines v3.0 (2010)

7.2.3 The ANPR and MTC data has been used to synthesise 15 minute origin / destination (OD) matrices of the network for the AM period 0600-0845. Previously the model was set up to run a 90 minute period, however this has been extended to allow for a longer 'warm up' period to stabilise the model. This is important as it allows traffic into the model and queues and delays to develop before the AM peak (0730-0830). The traffic flow matrices are contained at Appendix P.

7.2.4 The default simulation resolution of 10 time steps per simulation seconds has been used in the model, which is in accordance with TfL's best practice guidance. TfL's best practice guidance states at paragraph 5.3.1.3 that the default should be used and the value should be at least 5 which was the default at the time the TfL guidance was written. A simulation resolution of 10 means that driver decisions are reviewed 10 times per second.

7.2.5 The calibration process has taken place using a single seed validation of the model. For network stability the model has then been run over 10 seed runs. The results of the calibration / validation is described below:

Driver Behaviour

7.2.6 Co-operative Lane Changing (turned on)

7.2.7 Desired Speed Distributions have been calculated from the traffic survey information (ATC surveys). This supersedes the previous default speed data which was used in the Aone+ model. The proposed speed graphs are contained at Appendix Q.

Priority Give-way Markers - Gap Acceptance

7.2.8 The priority parameters for each movement have been reviewed for current operation. Within the priority rule coding there are two types of gap acceptance, the first is the willingness of a vehicle to exit in front of a circulating vehicle which is measured in seconds. The second is the follow on distance (in metres) behind a vehicle.

7.2.9 Although site observations can be useful to obtain a broad understanding of likely values it will still require an iterative process to calibrate the model. Once calibrated the give-way parameters should be checked against the acceptable range. This process has been completed below:

Approach	Car & LGV			HGVs		
	Modelled Gap (s)	Acceptable Range	Criteria	Modelled Gap (s)	Acceptable Range	Criteria
A6 (T) N SB	2.0-2.1	1.0-4.0	Pass	3.3-3.5	1.0-4.0	Pass
B1050	2.2-2.3	1.0-4.0	Pass	3.1-3.5	1.0-4.0	Pass
A6 (T) S NBl	2.6-2.7	1.0-4.0	Pass	3.7-3.9	1.0-4.0	Pass
Shardlow Road entry to A6 (T)	2.6-2.7	1.0-4.0	Pass	3.0-3.3	1.0-4.0	Pass
Shardlow Road (WB)	2.8-2.9	1.0-4.0	Pass	3.5-3.7	1.0-4.0	Pass
Chellaston Lane	2.8-2.9	1.0-4.0	Pass	3.5-3.7	1.0-4.0	Pass
Shardlow Road (EB)	2.7-2.9	1.0-4.0	Pass	3.5-3.7	1.0-4.0	Pass

Table 7.1 – Give-way Parameters used at A1071 / Swan Hill / B1113 junction

7.2.10 The table above shows the give-way parameters are within the acceptable ranges

7.3 Traffic Flow Calibration

7.3.1 The MTC and modelled traffic data has been compared to provide confidence that the model is replicating the existing conditions observed on the day of the survey. WebTAG prescribes the validation criteria for the acceptably of the traffic count data. The validation criteria is summarised below:

Criteria & Measures	Acceptability Guideline
Within 100 vehicles per hour for hourly flows < 700 vph	>85% of flows
Within 15% for flows 700 – 2,700 vph	>85% of flows
Within 400 vph for flows > 2,700 vph	>85% of flows
GEH statistics – individual flows : GEH < 5	>85% of flows

Table 7.2 – WebTAG Unit M3-1 Table of Traffic Flow Validation Criteria

7.3.2 Based on the validation criteria summarised above the traffic flows have been calibrated using the GEH criteria. The GEH statistic for each origin into the network has been calculated for the periods 0630-0730 and 0730-0830 as summarised below:

Approach	Time	Observed (veh)	Modelled (veh)	Difference (veh)	Difference GEH	Pass / Fail
A6 (T) (N) SB	0630-7300	975	955	-20	0.6	Pass
	0730-0830	1273	1229	-44	1.2	Pass
B1050	0630-7300	241	241	0	0.0	Pass
	0730-0830	384	383	-1	0.1	Pass
A6 (T) (S) NB	0630-7300	1097	1085	-12	0.4	Pass
	0730-0830	1734	1730	-4	0.1	Pass
Chellaston Lane	0630-7300	239	232	-7	0.5	Pass
	0730-0830	362	362	0	0.0	Pass
Shardlow Road	0630-7300	554	558	+4	0.2	Pass
	0730-0830	581	577	-4	0.2	Pass
				Percentage Pass (%)		100%

Table 7.3 – GEH Statistics of Modelled Traffic Flows

7.3.3 The vehicle movements summarised above show 100% compliance to the WebTAG GEH criteria. Therefore it is considered the model accurately represents vehicle demand.

7.3.4 The next section presents the journey validation results.

7.4 AM Peak Period - Journey Time Validation

7.4.1 The test for compliance is to achieve journey times within 15% of the observed journey time, however, within small networks such as the RRC a 15% change in a journey time amounts to very small changes in journey times, accordingly the potential journey time variation that can occur within small signal controlled networks, the propensity for journey times falling outside of this 15% threshold increases. Accordingly there is a second test, which considers that 80% of journey times are within 60 seconds. The results are summarised below.

Route	Observed	Modelled	Difference (sec)	Difference (%)	Within 15%	Within 60 secs
A-A	39	49	10	24.9%	×	✓
A-B	29	32	3	10.5%	✓	✓
A-C	32	35	3	9.2%	✓	✓
A-F	32	39	7	23.5%	×	✓
A-D	68	70	2	2.2%	✓	✓
A-E	63	69	5	8.6%	✓	✓
B-A	44	51	7	16.0%	×	✓
B-C	44	43	0	-0.8%	✓	✓
B-F	33	49	16	47.2%	×	✓
B-D	77	86	9	11.7%	✓	✓
B-E	73	76	3	4.0%	✓	✓
C-A	26	34	8	30.7%	×	✓
C-B	36	42	5	14.9%	✓	✓
C-C	46	49	2	5.3%	✓	✓
C-D	45	44	-1	-1.9%	✓	✓
C-E	36	45	9	24.9%	×	✓
D-A	92	85	-7	-7.6%	✓	✓
D-B	102	82	-20	-19.3%	×	✓
D-C	101	95	-6	-6.0%	✓	✓
D-G	55	45	-10	-17.6%	×	✓
D-E	36	31	-5	-14.2%	✓	✓
E-A	83	77	-6	-7.0%	✓	✓
E-B	90	82	-8	-8.4%	✓	✓
E-C	89	90	1	1.0%	✓	✓
E-G	57	36	-21	-36.6%	×	✓
E-D	45	48	3	6.3%	✓	✓
Pass Rate					65%	100%

Table 7.4 – AM Peak Journey Time Comparison

7.4.2 The summary above shows that 65% of the routes are below the 15% test. As noted above on short links small changes in journey time can exceed the 15% threshold. Of the 9 routes which exceed 15%. 6 routes (67%) have longer journey times and therefore robust. In addition of the 9 routes, 5 of the routes have a difference of below 10 seconds, which is considered to be

insignificant. Taken these into account the pass rate would be 85%. Based on the percentage threshold test the model is considered to be acceptable and passes. Notwithstanding the above the second criteria is for all routes to have a difference of less than 60 seconds. When reviewing the 60 seconds test all routes 100% meet this criteria. It is therefore considered the AM peak model is acceptable and therefore representative of the operation of the junction.

7.4.3 A further check is review the queue lengths predicted in the model against those recorded in the survey. It should be noted that it is more important to achieve validated journey times rather than achieving queue lengths.

Arm	Time	Observed	Modelled	Difference
A6 (T) North	0730-0745	4	6	+2
	0745-0800	5	6	+1
	0800-0815	21	14	-7
	0815-0830	8	10	+2
B1050	0730-0745	5	3	-2
	0745-0800	13	5	-8
	0800-0815	13	18	+4
	0815-0830	13	4	-9
A6 (T) South	0730-0745	5	5	0
	0745-0800	2	3	+1
	0800-0815	3	7	+4
	0815-0830	5	8	+3
Shardlow Road (reservoir approach to A6 (T))	0730-0745	9	7	-2
	0745-0800	8	13	+4
	0800-0815	21	17	-3
	0815-0830	21	18	-3
Shardlow Road (Reservoir to Ch Ln Rbt)	0730-0745	1	0	-1
	0745-0800	1	1	0
	0800-0815	1	2	+1
	0815-0830	1	1	0
Chellaston Lane	0730-0745	1	2	+1
	0745-0800	1	2	+1
	0800-0815	2	4	+2
	0815-0830	3	5	+2
Shardlow Road (EB)	0730-0745	0	9	+9
	0745-0800	1	10	+9
	0800-0815	1	6	+5
	0815-0830	2	8	+6
Total		172	196	+24

Table 7.5 – Observed / Modelled Max Queue Length Comparison

7.4.4 The review of the maximum queue lengths shows good correlation between the observed and validated model. The total max observed queue on all arms was 172 which compares to 196,

which equates to a variance of 24 vehicles (+14%). The overall journey times in the validated model were longer which corresponds to the longer queue lengths in the model. The model is therefore considered to be representative of the current conditions.

7.4.5 It is important to note that the queues recorded are the maximum which occur during each time period. VISSIM also provide average queue length per time period which shows reduced queuing throughout the hour, which is reflected in the VISSIM model. It should also be noted that no queueing back through the junctions was recorded or along Shardlow Road itself. Therefore the queuing issue which was noted in the 2015 surveys is not currently present.

7.5 Scenario 1 – Existing Network Future Year Test

7.5.1 The validated existing network model has been updated with the proposed traffic flow forecasts to test the impact of the development. The impact on journey times and queuing has been recorded. The comparison of journey times against the validated base is provided below:

	Route	2021 Base (JT)	2023 + BM1		2023 + BM1 + Pro Dev	
			JT	Dif (sec)	JT	Dif (sec)
A6 (N) (Arm A)	A-A	49	53	4	52	-1
	A-B	32	32	0	34	2
	A-C	35	35	0	37	2
	A-D	70	70	0	76	6
	A-E	69	69	0	20	-49
B1050 (Arm B)	B-A	51	55	4	68	14
	B-C	43	39	-5	73	34
	B-D	86	75	-11	105	30
	B-E	76	70	-6	99	28
A6 (S) (Arm C)	C-A	34	35	0	34	0
	C-B	42	42	1	44	2
	C-C	49	50	1	46	-3
	C-D	44	46	2	49	3
	C-E	45	45	0	45	1
Chellaston Lane (Arm D)	D-A	85	91	5	104	13
	D-B	82	95	13	116	21
	D-C	95	113	18	126	13
	D-E	31	33	1	34	1
Shardlow Road (Arm E)	E-A	77	87	10	95	8
	E-B	82	88	6	103	14
	E-C	90	111	20	123	13
	E-D	48	49	2	57	8
Total		1316	1382	+66	1540	+158

Table 7.6 – AM Peak Journey Time Comparison – Existing Layout Opening Year Test

7.5.2 The results above show that the remaining Boulton Moor 1 units can be accommodated on the existing network in a future year of 2023 with a negligible impact on journey times. When trips associated with the proposed development are added the total journey times increases by 158 seconds which is predominantly on Chellaston Lane (48), Shardlow Road (43) and the B1050 (78). This considers the trips with the full development proposals in 2023 although the trips associated with the Boulton Moor 2 and Snelsmoor Grange developments have been excluded. This is considered reasonable since they are required to deliver an improvement prior to the occupation of the combined 50th unit and therefore these trips would not be on the existing network.

7.5.3 The corresponding queue lengths are compared in the table below:

Arm	Time	Observed	2023 + BM1		2023 + BM1 + Dev	
			Model	Dif	Model	Dif
A6 (T) North	0730-0745	6	7	+1	6	0
	0745-0800	6	6	0	6	0
	0800-0815	14	11	+3	14	0
	0815-0830	10	7	-3	10	0
B1050	0730-0745	3	4	+1	6	+3
	0745-0800	5	4	-1	3	-2
	0800-0815	18	8	-9	37	+19
	0815-0830	4	4	0	30	+25
A6 (T) South	0730-0745	5	2	-3	3	-2
	0745-0800	3	4	+1	4	1
	0800-0815	7	10	+3	4	-3
	0815-0830	8	7	0	4	-3
Shardlow Road (reservoir approach to A6 (T))	0730-0745	7	6	-1	7	0
	0745-0800	13	11	-2	13	+1
	0800-0815	17	24	+6	38	+20
	0815-0830	18	29	+11	38	+20
Shardlow Road (Reservoir to Ch Ln Rbt)	0730-0745	0	0	0	0	0
	0745-0800	1	1	0	2	+1
	0800-0815	2	4	+1	6	+4
	0815-0830	1	3	+2	2	+1
Chellaston Lane	0730-0745	2	2	0	2	0
	0745-0800	2	2	0	2	0
	0800-0815	4	3	-1	2	-2
	0815-0830	5	8	2	3	-2
Shardlow Road (EB)	0730-0745	9	3	-6	4	-5
	0745-0800	10	5	-5	4	-6
	0800-0815	6	9	+3	7	+1
	0815-0830	8	4	-5	11	+3
Total		196	189	-7	270	+74

Table 7.7 –Queue Length Comparison Existing Model Opening Year Test

7.5.4 The summary above shows that when the trips associated with the full development proposal are included overall queuing at the junction would increase from 196 in the validated model to 270 in the future year model (with development). This represents an increase of 74 vehicles. The largest increase to queueing is predicted on Shardlow Road eastbound approach to the A6 (T) where queuing would increase by 20 vehicles to 38 vehicles in the highest 15 minute period. A queue of 38 vehicles would equate to a queue of circa 220 metres. The distance between the Shardlow Road (A6 (T)) give-way line and the Shardlow Road give-way line (at the Chellaston Lane junction) is circa 220m and therefore would extend back. The modelling shows that queuing on Shardlow Road (west of Chellaston Lane) would be 11 vehicles (or circa 65m). This test assumes that all units at the proposed are occupied in 2023 which is unrealistic and instead will be phased of a longer buildout program. Therefore it is not considered that mitigation is required.

7.5.5 Furthermore the committed improvement works (Option 1b) at the A6 (T) Thulston Roundabout will be provided by the Boulton Moor 2 and Snelsmoor Grange sites prior to occupation of the 50th combined unit, which is estimated to occur in 2023. As a result this scheme will be implemented potential prior to phased occupations at the proposed Residential or District Centre sites and the likely conditions of queueing between the roundabouts described above in 7.5.4 would simply not happen.

7.5.6 This test represents the National Highways opening year test as a theoretical base using the existing layout with the full development trips. This is unrealistic for the reasons explained and although the results show that queuing starts to build it is considered that the existing layout could accommodate the full development or phase of the development until the Option 1b committed improvements are constructed by the Boulton Moor 2 and Snelsmoor Grange developments (estimated to occur in 2023).

7.5.7 The opening year has also been tested with the committed Option 1b scheme in place, see section 7.6.

7.6 Scenario 2 – Existing Chellaston Lane / Shardlow Road plus Option 1b

7.6.1 The validated existing network model has been updated to include the agreed coding for the Option 1b scheme as illustrated below:



Image 7.1 – Existing and Option 1b Network

7.6.2 The model has been run with the future year forecast years of 2023 and 2028 with the full committed and proposed developments. The journey time results are summarised below:

	Route	2021 Base (JT)	2023 + BM1 + Pro Dev		2028 + CD + Pro Dev	
			JT	Dif (sec)	JT	Dif (sec)
A6 (N) (Arm A)	A-A	49	100	47	100	46
	A-B	32	47	15	47	15
	A-C	35	49	14	49	14
	A-D	70	105	35	105	35
	A-E	69	27	-41	27	-41
B1050 (Arm B)	B-A	51	78	23	77	22
	B-C	43	40	1	40	1
	B-D	86	98	23	96	21
	B-E	76	88	17	89	18
A6 (S) (Arm C)	C-A	34	48	13	51	16
	C-B	42	78	36	82	40
	C-C	49	92	42	88	39
	C-D	44	71	26	81	35
	C-E	45	65	21	72	28
Chellaston Lane (Arm D)	D-A	85	95	5	98	7
	D-B	82	111	16	123	28
	D-C	95	105	-8	122	9
	D-E	31	38	6	40	7
Shardlow Road (Arm E)	E-A	77	77	-10	81	-7
	E-B	82	96	8	116	27
	E-C	90	94	-17	111	0
	E-D	48	56	6	65	16
Total		1316	1659	+277	1760	+378

Table 7.8 – AM Peak Journey Time Comparison – Option 1b Improvement Works

7.6.3 The results summarised above show that the journey times will increase in 2023 with and without the proposed development. This is to be expected given that traffic signals create small delay for more vehicles and therefore cumulatively the journey times will increase. However traffic signals will manage the profile of traffic and queuing better for all arms of the junction.

7.6.4 The queue length results for the Option 1b improvement works are summarised below:

Arm	Time	Observed	2023 + BM1 + Dev		2028 + BM1 + Dev	
			Model	Dif	Model	Dif
A6 (T) North	0730-0745	6	10	+3	11	+5
	0745-0800	6	12	+6	15	+9
	0800-0815	14	22	+9	23	+9
	0815-0830	10	11	+1	12	+2
B1050	0730-0745	3	3	0	3	0
	0745-0800	5	3	-2	5	0
	0800-0815	18	6	-12	7	-11
	0815-0830	4	5	0	5	0
A6 (T) South	0730-0745	5	8	+3	8	+3
	0745-0800	3	7	+3	9	+6
	0800-0815	7	10	+3	12	+5
	0815-0830	8	12	+4	14	+7
Shardlow Road (reservoir approach to A6 (T))	0730-0745	7	9	+2	12	+5
	0745-0800	13	10	-2	16	+3
	0800-0815	17	14	-4	21	+4
	0815-0830	18	12	-5	26	+8
Shardlow Road (Reservoir to Ch Ln Rbt)	0730-0745	0	1	+1	2	+2
	0745-0800	1	2	+1	1	0
	0800-0815	2	4	+2	9	+6
	0815-0830	1	1	0	6	+5
Chellaston Lane	0730-0745	2	2	0	5	+3
	0745-0800	2	2	0	3	+1
	0800-0815	4	4	0	5	+1
	0815-0830	5	3	-3	7	+1
Shardlow Road (EB)	0730-0745	9	1	-8	3	-6
	0745-0800	10	2	-8	5	-6
	0800-0815	6	4	-2	8	+2
	0815-0830	8	2	-6	7	-1
Total		196	182	-14	260	+65

Table 7.9 –Queue Length Comparison Existing Model + Option 1b

7.6.5 The summary above shows that the total vehicle queue would reduce from 270 vehicles to 182 with the Option 1b committed improvements in 2023. This a reduction of -14 vehicles when compared to validated base model. It is also important to note that while the queue lengths increase at the A6 (T), as a result of the traffic signals, this balances the junction and as a result queuing on the Shardlow Road reservoir and Chellaston Lane / Shardlow Road roundabout are reduced by -33 vehicles when compared to the 2021 validated base and -69 vehicles when compared to the 2023 proposed development scenario (existing layout).

7.6.6 The summary shows that in 2028 with the full committed development (Boulton Moor 1, Boulton Moor 2 and Snelsmoor Grange) and the Proposed Development the total queuing

increase from 196 to 260 vehicles (an increase of +65 vehicles). However the majority of the additional queuing is at the A6 (T) junction, which is a result of the installation of traffic signals. When the total queues on the Shardlow Road reservoir and Chellaston Lane / Shardlow Road roundabout approaches are reviewed it is noted that the net change in queuing is 7 vehicles.

7.6.7 In addition, the junction is proposed to operate using MOVA which will provide further benefits to the operation and management of the junction. As a result it is considered that the existing Chellaston Lane / Shardlow Road and Option 1b committed improvements could accommodate the full development without the need for the committed improvements to the Chellaston Lane / Shardlow Road junction.

7.7 Scenario 3 – Full Committed Development Improvements

7.7.1 The full committed development model as agreed as part of the Boulton Moor 2 and Snelsmoor Grange developments has been updated to include the future 2028 traffic flow forecast, with and without the proposed development.



Image 7.3 – Full Committed Development VISSIM Model Extract

7.7.2 The model has been run with the future year forecast and the results are summarised below:

	Route	2021 Base(JT)	2028 + CD + Pro Dev	
			JT	Dif (sec)
A6 (N) (Arm A)	A-A	49	74	21
	A-B	32	40	8
	A-C	35	46	11
	A-D	70	103	33
	A-E	69	121	52
B1050 (Arm B)	B-A	51	80	25
	B-C	43	44	5
	B-D	86	101	26
	B-E	76	108	38
A6 (S) (Arm C)	C-A	34	52	17
	C-B	42	84	42
	C-C	49	91	42
	C-D	44	76	30
	C-E	45	87	42
Chellaston Lane (Arm D)	D-A	85	125	35
	D-B	82	145	51
	D-C	95	152	38
	D-E	31	54	22
Shardlow Road (Arm E)	E-A	77	99	11
	E-B	82	117	28
	E-C	90	126	16
	E-D	48	73	24
Total		1316	1997	+615

Table 7.10– AM Peak Journey Time Comparison – Full Committed Development Scheme

7.7.3 The results above show that when the full committed development works are implemented the journey times would increase on all arms of the junctions and cumulatively by +615 seconds when compared to the validated 2021 base. This is to be expected given that traffic signals create small delay for more vehicles and therefore cumulatively the journey times will increase. However traffic signals will manage the profile of traffic and queuing better.

7.7.4 The queue length results for the Option 1b improvement works are summarised below:

Arm	Time	Observed	2028 + BM1 + Dev	
			Model	Dif
A6 (T) North	0730-0745	6	11	+5
	0745-0800	6	11	+5
	0800-0815	14	16	+2
	0815-0830	10	17	+7
B1050	0730-0745	3	5	+2
	0745-0800	5	3	-2
	0800-0815	18	6	-12
	0815-0830	4	6	+2
A6 (T) South	0730-0745	5	8	+3
	0745-0800	3	10	+7
	0800-0815	7	15	+8
	0815-0830	8	14	+6
Shardlow Road (reservoir approach to A6 (T))	0730-0745	7	14	+6
	0745-0800	13	14	+2
	0800-0815	17	26	+8
	0815-0830	18	21	+3
Shardlow Road (Reservoir to Ch Ln Rbt)	0730-0745	0	9	+9
	0745-0800	1	7	+6
	0800-0815	2	6	+4
	0815-0830	1	8	+8
Chellaston Lane	0730-0745	2	4	+2
	0745-0800	2	5	+3
	0800-0815	4	7	+3
	0815-0830	5	8	+3
Shardlow Road (EB)	0730-0745	9	7	-2
	0745-0800	10	11	0
	0800-0815	6	10	+4
	0815-0830	8	9	+1
Total		196	290	+94

Table 7.11 –Queue Length Comparison Full Committed Development Scheme

7.7.5 The summary above shows that the total vehicle queue would increase from 196 to 290 vehicles with the full committed development scheme implemented. This is an increase of 94 vehicles. . When the queuing on the Shardlow Road reservoir and Chellaston Lane / Shardlow Road approaches are reviewed the total queuing reduces by 25 vehicles when compared to the 2021 calibrated base model.

7.7.6 The junction is proposed to operate using MOVA which will provide further benefits to the operation and management of the junction. As a result it is considered that the existing Chellaston Lane / Shardlow Road and Option 1b committed improvements could

accommodate the full development without the need for the committed improvements to the Chellaston Lane / Shardlow Road junction.

7.8 VISSIM Model Summary

7.8.1 In summary it is considered that the VISSIM modelling shows:

- The existing layout could accommodate the remaining development at the extant Boulton Moor 1 development plus all or phases of the proposed development until the committed development (Option 1b) improvements to the A6 (T) Thulston Roundabout are delivered by the Boulton Moor 2 and Snelsmoor Grange developments;
- The existing Chellaston Layout / Shardlow Road layout and A6 (T) Option 1b layout could accommodate the proposed development and the full committed developments (Boulton Moor 1, 2 and Snelsmoor Grange) in 2028 without the need for the Chellaston Lane / Shardlow Road improvements; and
- The full committed development improvements can accommodate the full development forecast without the need for further mitigation.

8 FRAMEWORK TRAVEL PLAN

8.1 Introduction

8.1.1 A separate Framework Travel Plan (FTP) has been prepared to support the retail and residential developments at Boulton Moor 1. The FTP should be read in conjunction with this Transport Assessment.

8.1.2 The FTP provides details of the relevant National, Regional and Local policies that are to be considered in relation to the Travel Plan and for clarity, sets out details of the site and existing travel patterns.

8.1.3 The FTP then provides details of the Targets, Measures, Implementation Programme, Funding, Management, Monitoring, and Enforcement of the proposals set out in the FTP. These are summarised briefly in this section of the TA.

8.2 Travel Plan Co-ordinator

8.2.1 A Travel Plan Coordinator (TPC) will need to be appointed by the developer approximately 6 months prior to occupation of the first occupation at the site. The TPC's role will include the administration of the Travel Plan and liaison with DCC/SDDC travel planning team.

8.3 Travel Plan Objectives

8.3.1 The objective of the FTP is "to reduce car dependency of residents, staff and visitors and to promote more sustainable transport".

8.3.2 It is proposed that through the implementation of the FTP, a reduction of 10% of vehicle trips associated with the development is to be expected.

8.4 Monitoring Report

8.4.1 The TPC(s) will be responsible for undertaking or commissioning the appropriate travel/traffic surveys such that the Objectives & Targets can be reviewed and monitored. The results of these surveys are to be compiled within an Annual Monitoring Report.

8.4.2 The Annual Monitoring Report will outline any new measures/initiatives that are considered necessary to achieve the Objectives and/or maintain the targets identified through the monitoring process. These measures/initiatives shall be agreed in writing with the authority and the TPC within 6 months of the supply of the Annual Monitoring Report.

8.5 Measures/Initiatives

8.5.1 A package of measures/initiatives shall be made available to all residents and staff, and as far as reasonably practicable visitors to the site, which should include any or all of the items listed (a) to (p):

a) Provide maps for walking and cycling;

b) Ensure that good links for pedestrians and cyclists are provided

c) Ensure that residents are aware of the health benefits of walking & cycling

d) A discount voucher for the purchase of bicycles

e) Details of useful Apps

f) Provision of sheltered and secure cycle storage facilities

g) The TPC will organise promotional events for residents

h) Extension and diversion of the bus services to ensure good coverage

i) Integrated timetabling between bus and rail services

j) A discount voucher/season ticket for local bus services

k) Provision of up-to-date information on public transport services

l) Provision of a Welcome Pack

m) A website and information boards will provide details for residents

n) Vehicle charging points, or the infrastructure to install them

o) 6 months free membership to a car club, if one is introduced

p) Broadband access for households to facilitate working from home

8.6 Lifetime of the TP

8.6.1 The TP will be a 'live' document that will be reviewed on a regular basis in order to monitor, assess and ensure that the measures being implemented are working.

8.6.2 The TP is expected to be in place for approximately 5 years following the construction of the last residential property.

9 SUMMARY AND CONCLUSIONS

9.1.1 Cannon Consulting Engineers are appointed by JSC Farming Ltd and Central Land holdings Ltd to provide highways and transportation advice in support of the development of the most northern parcels of land located within the Boulton Moor Phase 1 development.

9.1.2 This Transport Assessment has been prepared to support an outline application for a District Centre incorporating mixed retail district centre, a Transport Mobility hub, residential units and a care home. The development proposals include the provision of a 4 arm roundabout on Chellaston Lane with Woods Meadow and the proposed Site access, which is submitted in detail.

9.1.3 The existing conditions have been reviewed which shows the site is well located to encourage and promote sustainable travel modes. The layout of the site incorporates shared footway / cycleways on key desire lines to connect to and form an extension of the existing highway network. The proposed connection will provide a full permeable layout.

9.1.4 The district centre incorporates a Transport Mobility hub with 60 car parking spaces. The layout makes provision for 3 electric charging bays (slow charging) and passive provision for 7 additional bays (slow charging). In addition space has been allocated for the provision of a kiosk, e-scooter and e-bike racks.

9.1.5 The permanent traffic counts on the A6 (T) has been monitored to calculate the impact which COVD has made. New traffic surveys were undertaken in July and September 2021 of the A6 (T) and Chellaston Lane / Shardlow Road junction. These surveys included ANPR, MTC and ATC surveys which have been used to carry out the highway assessment. The local authorities have confirmed that surveys from September 2021 are now being accepted as representative of new baseline conditions.

9.1.6 The trips associated with the development proposals have been estimated using agreed methodologies including trip types for the retail development (Linked (10%), New (20%), Pass-by (40%) and Diverted (40%).

9.1.7 The capacity assessment of the proposed site accesses have been assessed, which shows:

- The existing highway layout could accommodate the remaining development at the extant Boulton Moor 1 development plus all of the proposed development.
- This will be benefited by the committed development (Option 1b) improvements to the A6 (T) Thulston Roundabout that are delivered by the Boulton Moor 2 and Snelsmoor Grange developments;
- The existing Chellaston Layout / Shardlow Road layout and A6 (T) Option 1b layout could accommodate the proposed development and the full committed developments (Boulton Moor 1, 2 and Snelsmoor Grange) in 2028 without the need for the committed Chellaston Lane / Shardlow Road improvements; and

- The full committed development improvements can accommodate the full development forecast without the need for any further mitigation.

9.1.8 A review of national and local (current and draft) policy has been undertaken and it has been demonstrated that the development proposals are policy compliant.

9.1.9 A review of the relevant transport planning policies has been undertaken and set out within this TA. In summary, the following elements as set out within the National Planning Policy Framework (NPPF) have been addressed:

- NPPF (Para 17) – notes that the planning system should "*actively manage patterns of growth to make fullest possible use of public transport, walking, and cycling and focus significant development in locations which are or can be made sustainable*". – In this regard the development proposals are well located to take advantage of the sustainable transport links and enhance existing provision as well as introduce new provisions.

- NNPF (Para 29) – states that "*The transport system needs to be balanced in favor of sustainable transport modes, giving people a real choice about how they travel*." – Sustainable transport modes are accessible to the future occupiers of the proposed development.

- NPPF (Para 32) – states that "*All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of weather:*

    - *the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;* - It is considered that the development proposals meet this criteria

    - *safe and suitable access to the site can be achieved for all people;* - It is considered that the development proposals meet this criteria

    - *improvements can be undertaken within the transport network that cost effectively limits the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe*." - It is considered that the development proposals meet this criteria

- NPPF (Para 35) – states that "*developments should be located and designed where practical to:*

    - *accommodate the efficient delivery of goods and supplies;* - It is considered that the development proposals meet this criteria

- *give priority to cycle and pedestrian movements and have access to high quality public transport facilities;* - It is considered that the development proposals meet this criteria
- *create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;* - It is considered that the development proposals will meet this criteria
- *incorporate facilities for charging plug-in and other ultra-low emission vehicles;* - It is considered that the development proposals will meet this criteria
- *consider the needs of people with disabilities by all modes of transport*." - it is considered that the development proposals will meet this criteria

- NPPF (Para 36) – identifies that Travel Plans are a key tool to facilitate the above and "*All development that generate significant amounts of movement should be required to provide a Travel Plan*".

9.2 Conclusions

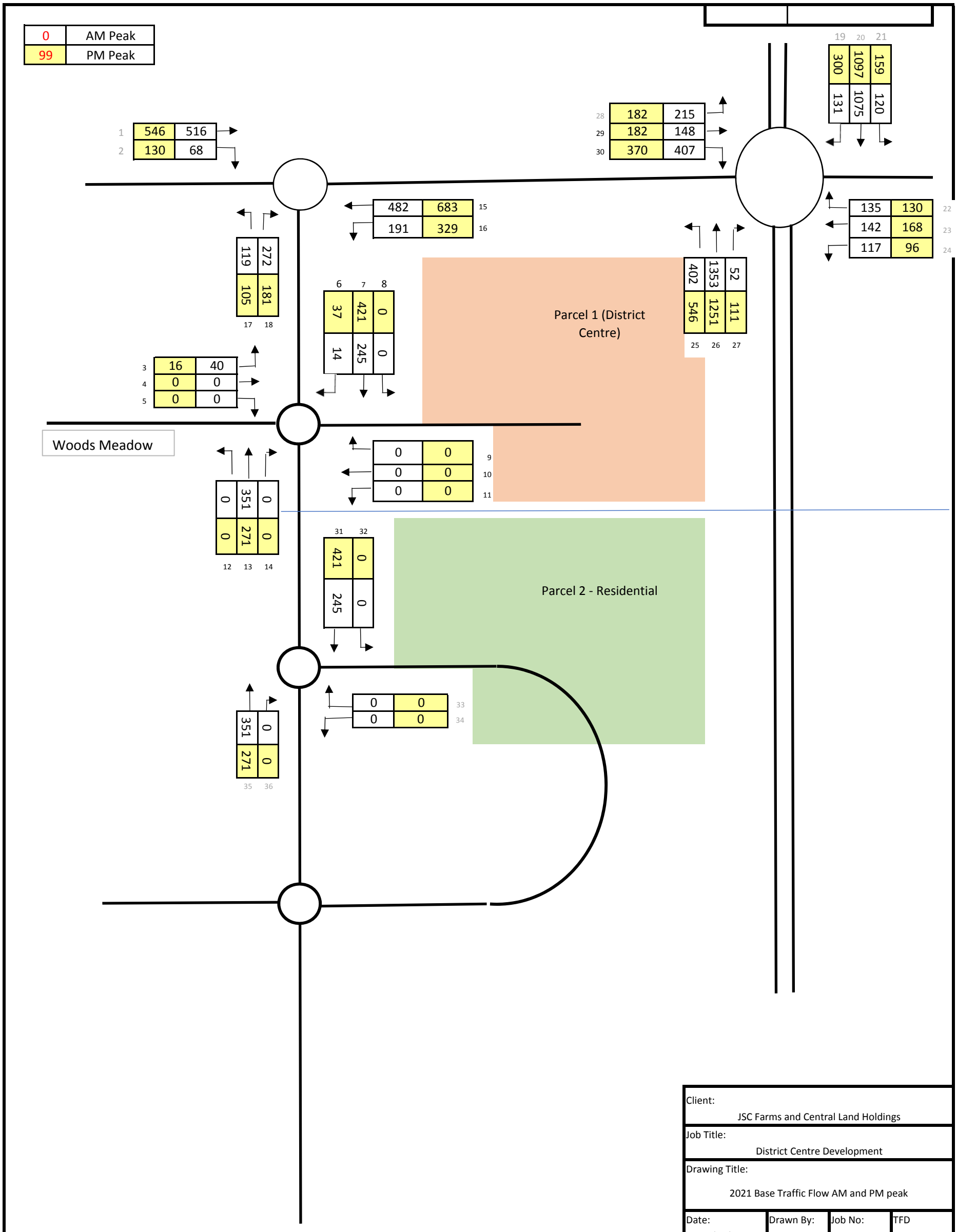
9.2.1 The Transport Assessment demonstrates that:

- The site has access to sustainable modes, including walking, cycling and public transport;
- Safe and sustainable access to the site can be achieved;
- The residual transport impacts of the Development are negligible and therefore not 'severe' as prescribed in NPPF.

9.2.2 CCE consider that this TA demonstrates that the proposals are acceptable in terms of highways and transportation issues.

Figures / Diagrams

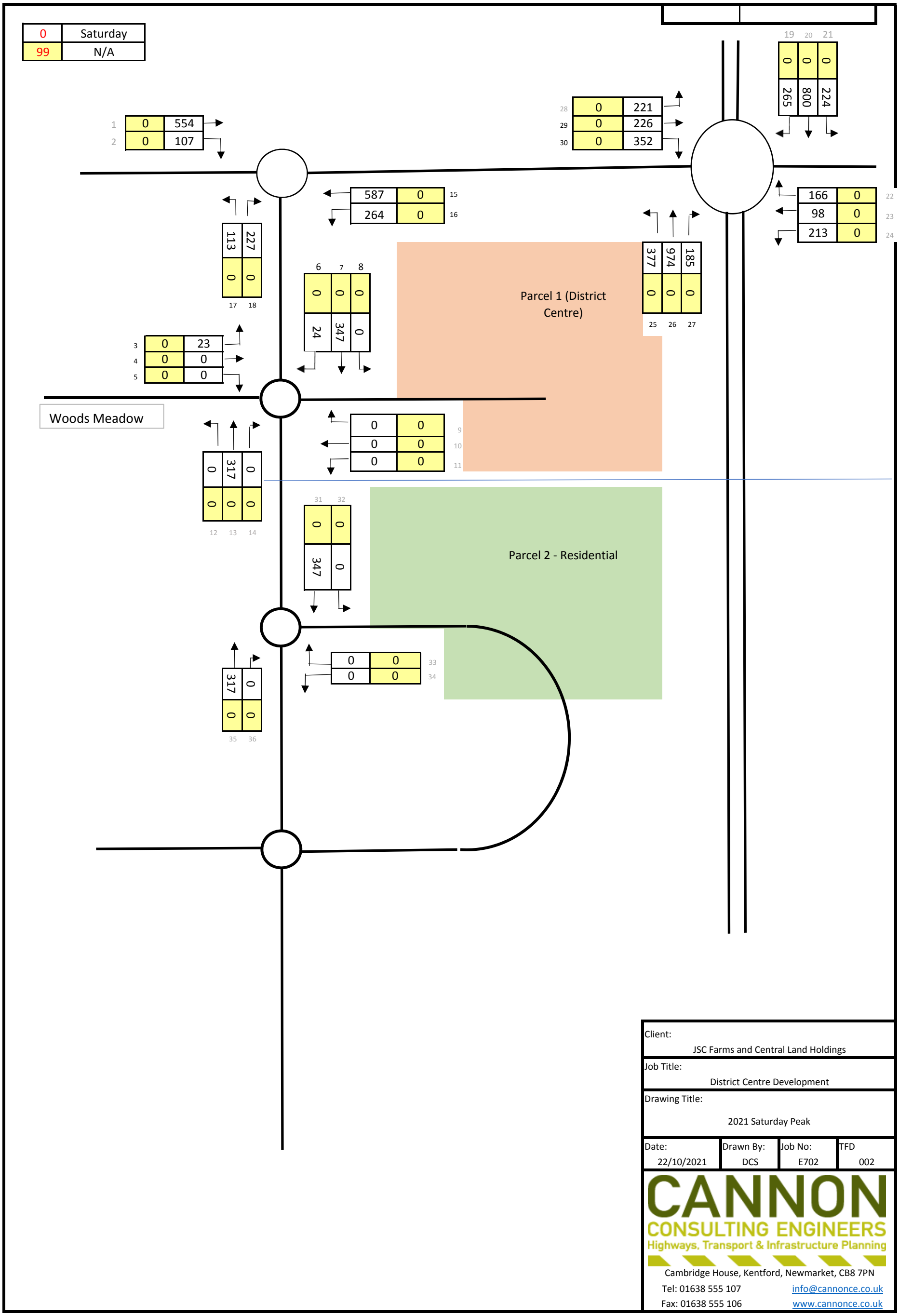
0	AM Peak
99	PM Peak



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: 2021 Base Traffic Flow AM and PM peak			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 001

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0	Saturday
99	N/A



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: 2021 Saturday Peak			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 002

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0	AM Peak
99	PM Peak

Parcel 1 (District Centre)

Parcel 2 - Residential

Woods Meadow

1	27	42	
2	135	96	

28	95	47	
29	103	167	
30	116	284	

19	147	0	0
20	18	0	0
21			

15	16	41	
16	154	406	

22	0	0	
23	62	161	
24	0	0	

17	258	414	
18	93	289	

6	7	8	
0	598	0	
0	275	0	

25	105	0	0
26	181	0	0
27			

3	0	0	
4	0	0	
5	0	0	

9	0	0	
10	0	0	
11	0	0	

12	0	671	0
13	0	382	0
14			

31	32		
449	93		
202	47		

33	125	94	
34	0	0	

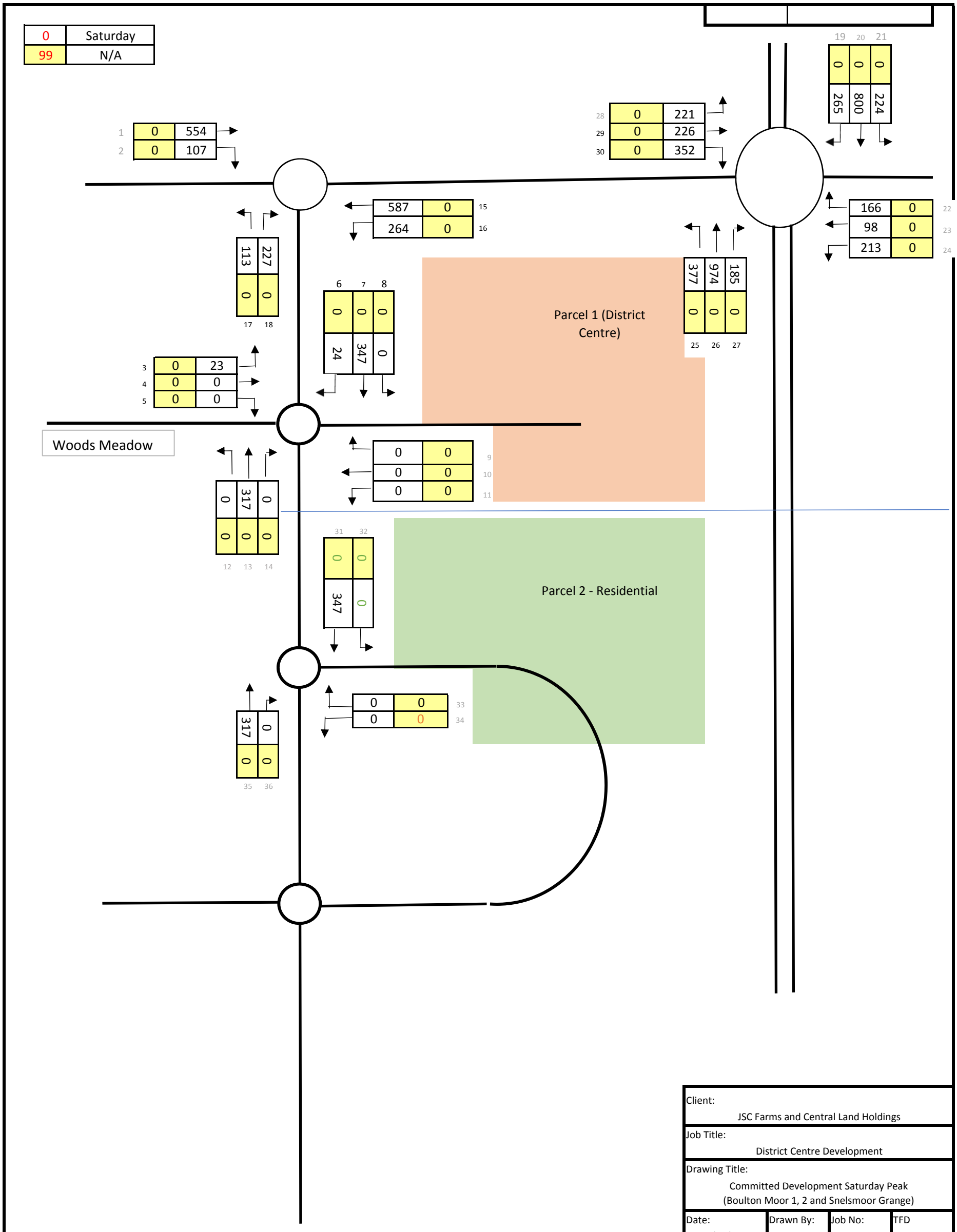
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Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	Committed Development Trips AM and PM peak (Boutlon Moor 1, 2 and Snelsmoor Grange)

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	003

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0	Saturday
99	N/A



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: Committed Development Saturday Peak (Boulton Moor 1, 2 and Snelsmoor Grange)			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 004

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0	AM
99	PM

1 2 | 557 | 526 |
|---|---|
| | 132 | 69 |

28 29 30 | 186 | 219 |
|---|---|
| | 186 | 151 |
| | 377 | 415 |

19 20 21 | 306 | 1117 | 162 |
|---|---|---|
| | 134 | 1095 | 122 |

491	696	15
195	335	16

22 23 24 | 138 | 132 |
|---|---|
| | 145 | 171 |
| | 119 | 98 |

17 18 | 121 | 277 |
|---|---|
| | 107 | 185 |

6 7 8 | 38 | 429 | 0 |
|---|---|---|
| | 14 | 249 | 0 |

25 26 27 | 410 | 1379 | 52 |
|---|---|---|
| | 556 | 1274 | 113 |

3 4 5 | 16 | 41 |
|---|---|
| | 0 | 0 |
| | 0 | 0 |

Parcel 1 (District Centre)

Woods Meadow

0	0	9
0	0	10
0	0	11

12 13 14 | 0 | 357 | 0 |
|---|---|---|
| | 0 | 276 | 0 |

31 32 | 429 | 0 |
|---|---|
| | 249 | 0 |

Parcel 2 - Residential

0	0	33
0	0	34

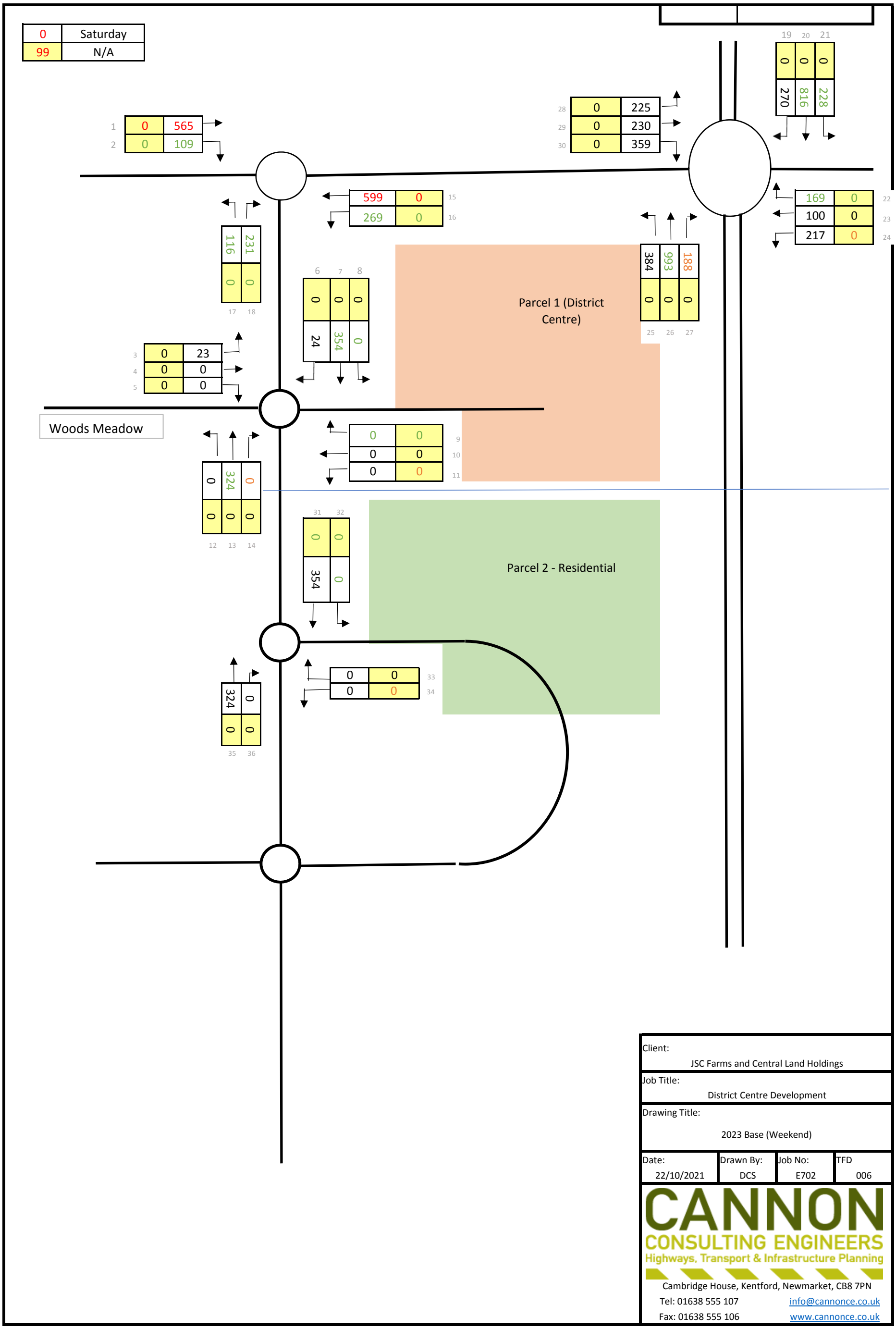
35 36 | 357 | 0 |
|---|---|
| | 276 | 0 |

Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	2023 Base AM and PM

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	005

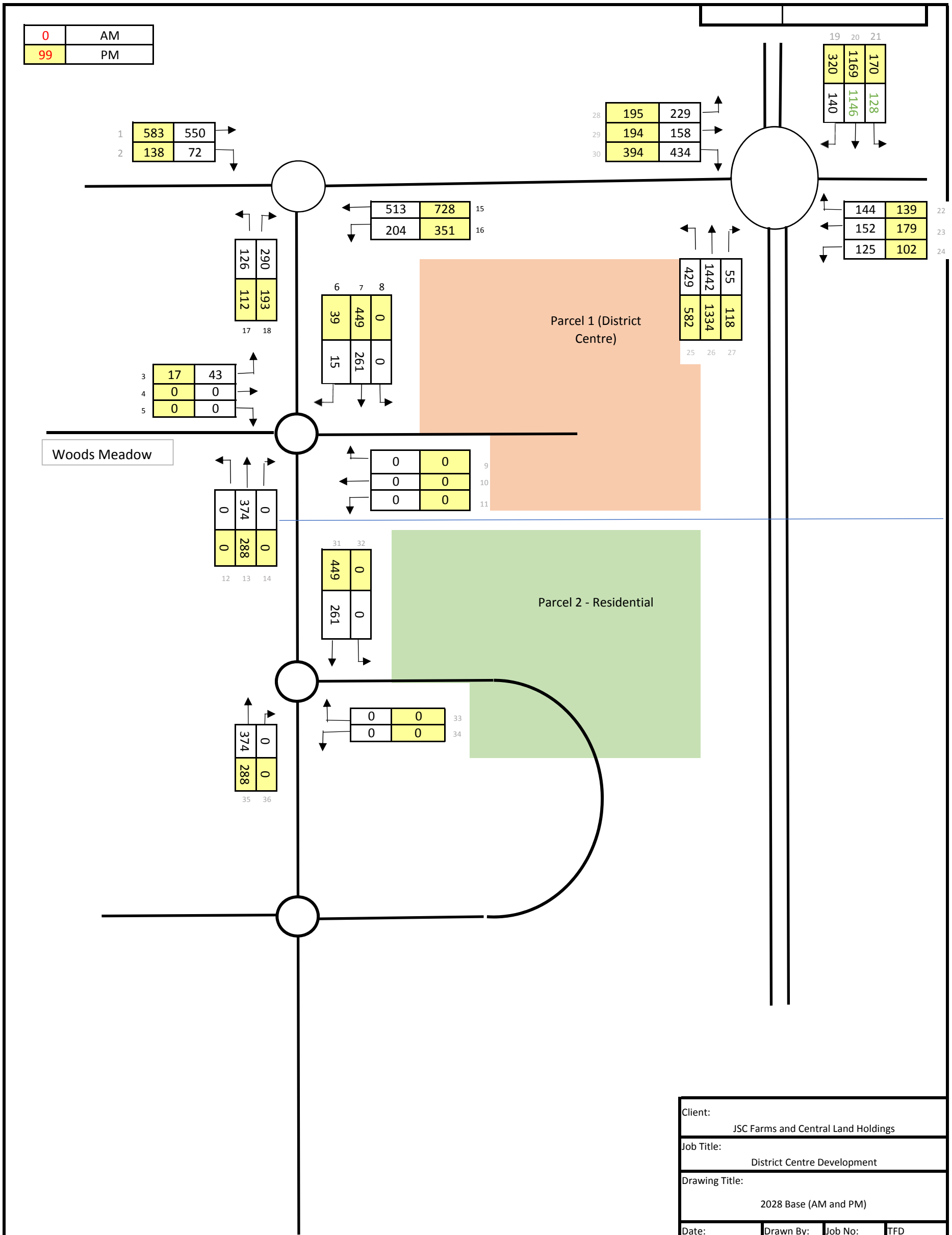
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0	Saturday
99	N/A



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: 2023 Base (Weekend)			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 006

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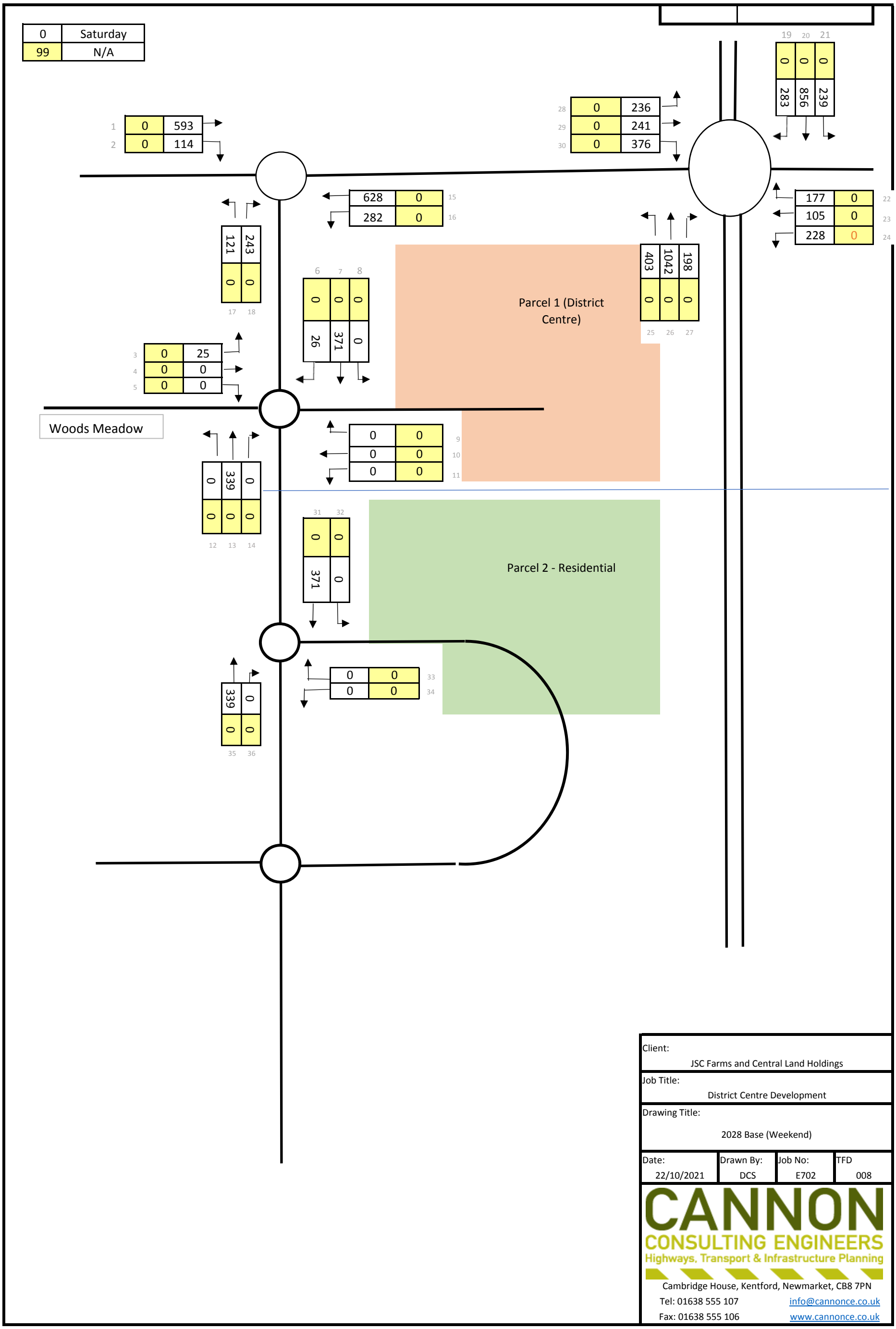


Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	2028 Base (AM and PM)

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	007

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0	Saturday
99	N/A



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: 2028 Base (Weekend)			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 008

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0	AM
99	PM

1	557	526	
2	149	87	

28	201	226	
29	202	177	
30	395	459	

19	20	21	
329	1117	162	
137	1095	122	

491	696		15
224	411		16

138	132		22
155	196		23
119	98		24

169	354		
124	262		
17	18		

6	7	8	
38	522	0	
14	296	0	

426	1379	52	
584	1274	113	
25	26	27	

3	16	41	
4	0	0	
5	0	0	

Parcel 1 (District Centre)

Woods Meadow

0	0		9
0	0		10
0	0		11

0	482	0	
0	370	0	
12	13	14	

31	32		
429	93		
249	47		

Parcel 2 - Residential

125	94		33
0	0		34

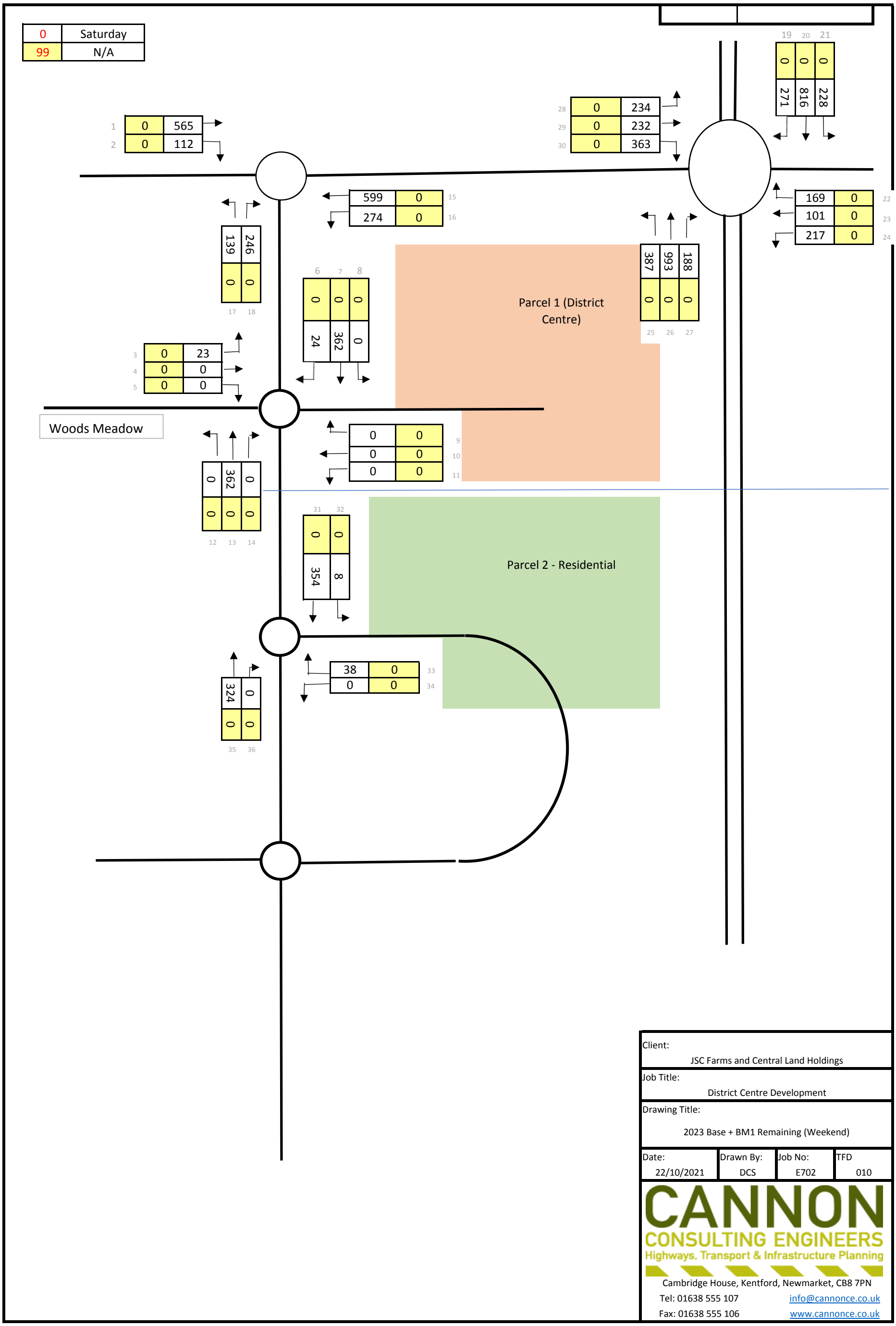
357	0		
276	0		
35	36		

Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	2023 Base + BM1 Remaining (AM and PM)

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	009

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0	Saturday
99	N/A



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: 2023 Base + BM1 Remaining (Weekend)			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 010

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0	AM
99	PM

Parcel 1 (District Centre)

Parcel 2 - Residential

Woods Meadow

1	609	592	
2	274	168	

28	290	276	
29	297	325	
30	510	718	

19	20	21	
467	1169	170	
158	1146	128	

529	770		15
357	757		16

144	139		22
214	340		23
125	102		24

384	704		
205	482		
17	18		

6	7	8	
39	1047	0	
15	535	0	

534	1442	55	
763	1334	118	
25	26	27	

3	17	43	
4	0	0	
5	0	0	

0	0		9
0	0		10
0	0		11

0	1045	0	
0	670	0	
12	13	14	

31	32		
898	93		
463	47		

125	94		33
0	0		34

920	0		
288	0		
35	36		

Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	2028 Base + Com Dev (AM and PM)

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	011

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0	Saturday
99	N/A

Parcel 1 (District Centre)

Parcel 2 - Residential

Woods Meadow

1	0	593	
2	0	143	

28	0	318	
29	0	259	
30	0	413	

19	20	21	
0	0	0	
290	856	239	

628	0		15
317	0		16

177	0		22
112	0		23
228	0		24

284	379		
0	0		
17	18		

6	7	8	
0	0	0	
26	434	0	

424	1042	198	
0	0	0	
25	26	27	

3	0	25	
4	0	0	
5	0	0	

0	0		9
0	0		10
0	0		11

0	638	0	
0	0	0	
12	13	14	

31	32		
0	0		
418	16		

76	0		33
0	0		34

562	0		
0	0		
35	36		

Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	2028 Base+ Com Dev (Weekend)

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	012

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0	AM
99	PM

Parcel 1 (District Centre)

Parcel 2 - Residential

Woods Meadow

1	0	0	
2	13	20	
3	0	0	
4	0	0	
5	0	0	
9	21	22	
10	0	0	
11	21	22	
15	0	0	
16	31	15	
22	0	0	
23	3	3	
24	0	0	
28	9	6	
29	2	1	
30	4	3	
33	71	9	
34	0	0	

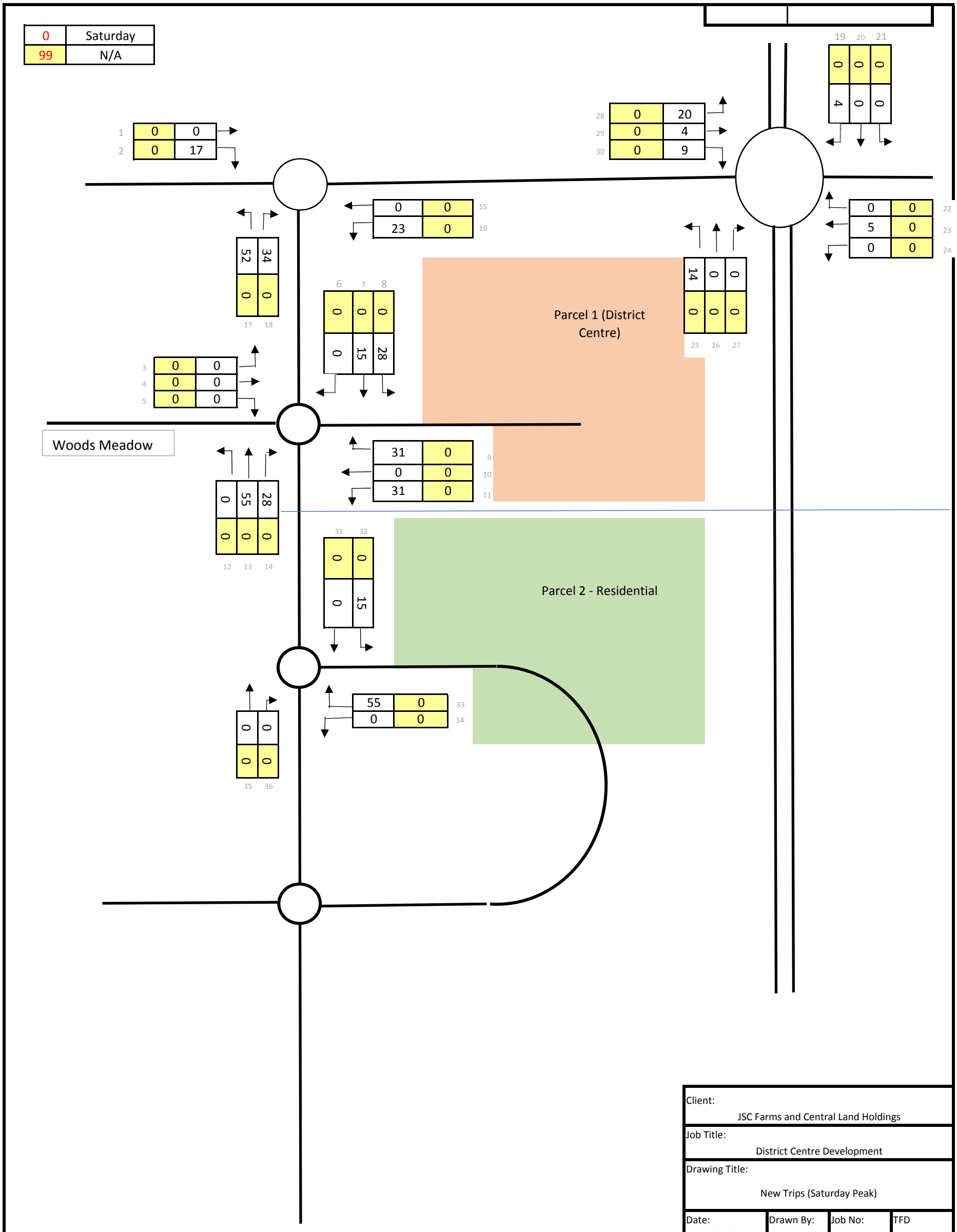
17	41	52	
18	16	15	
6	0	3	25
7	0	7	18
8			
12	0	71	18
13	0	9	25
14			
19	3	0	0
20	3	0	0
21			
25	9	0	0
26	9	0	0
27			
31	0	3	
32	0	32	
35	0	0	
36	0	0	

Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	New Trips AM and PM peak

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	013

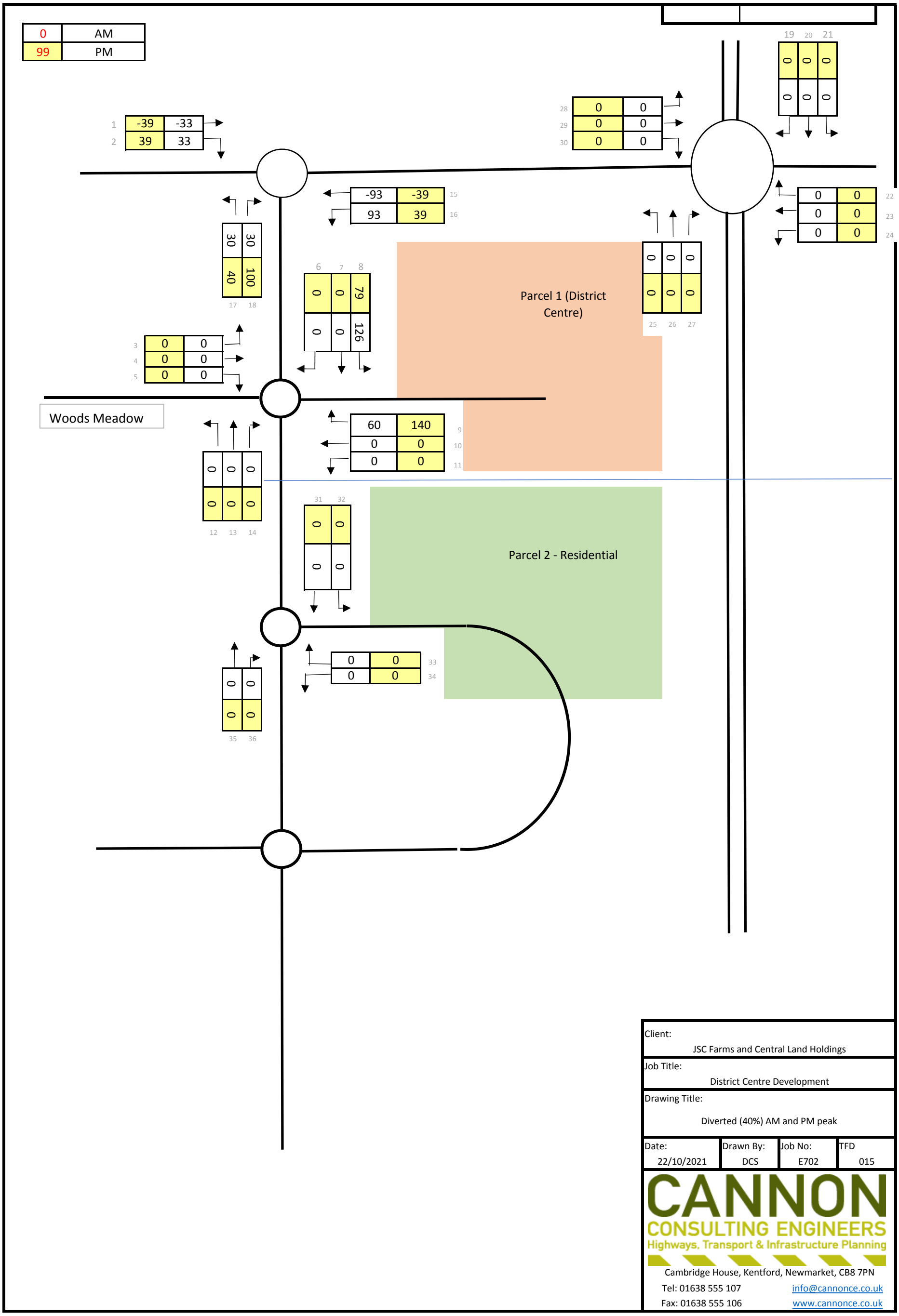
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0	Saturday
99	N/A



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: New Trips (Saturday Peak)			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 014

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Client:
JSC Farms and Central Land Holdings

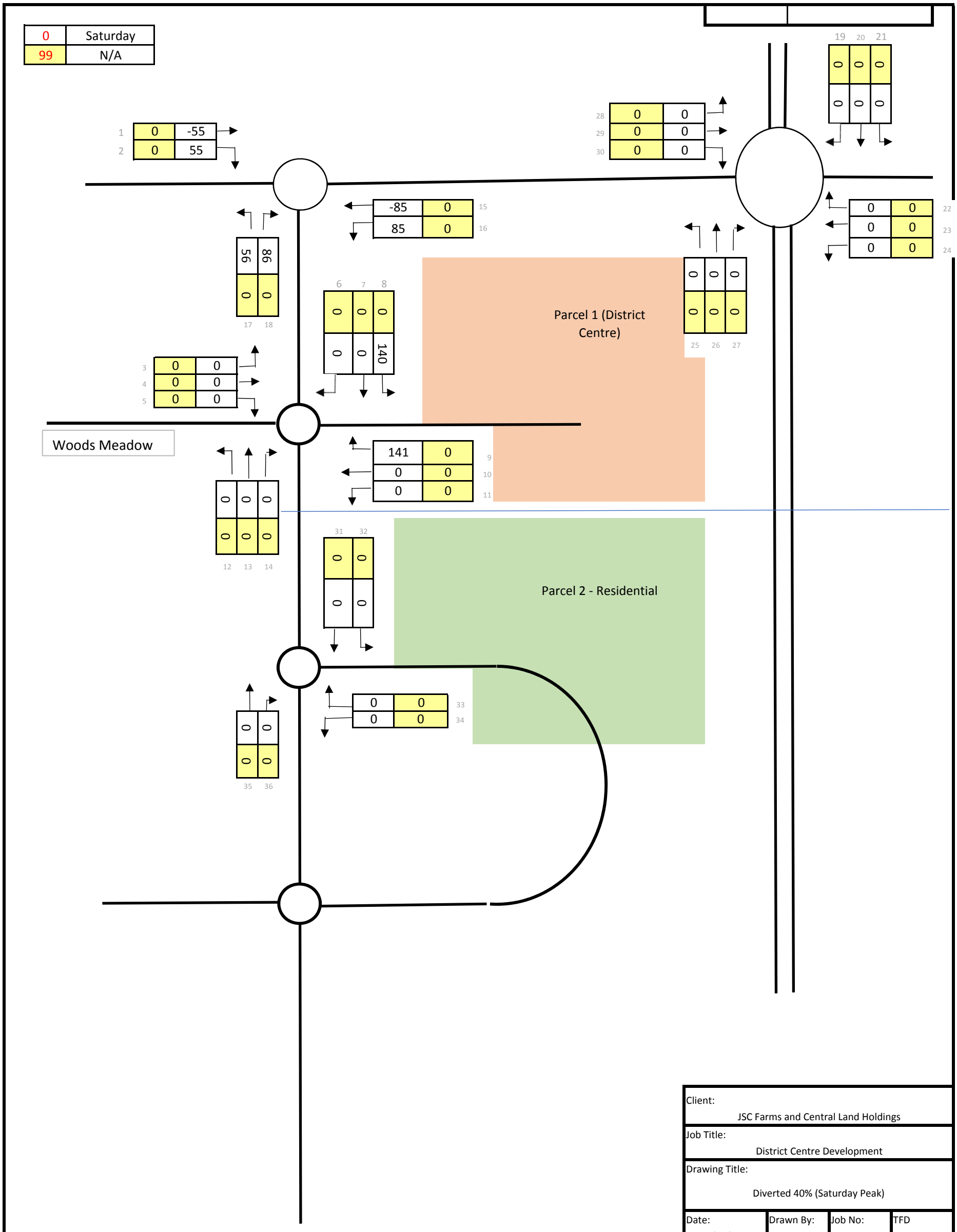
Job Title:
District Centre Development

Drawing Title:
Diverted (40%) AM and PM peak

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	015

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0	Saturday
99	N/A



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: Diverted 40% (Saturday Peak)			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 016

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0	AM
99	PM

Parcel 1 (District Centre)

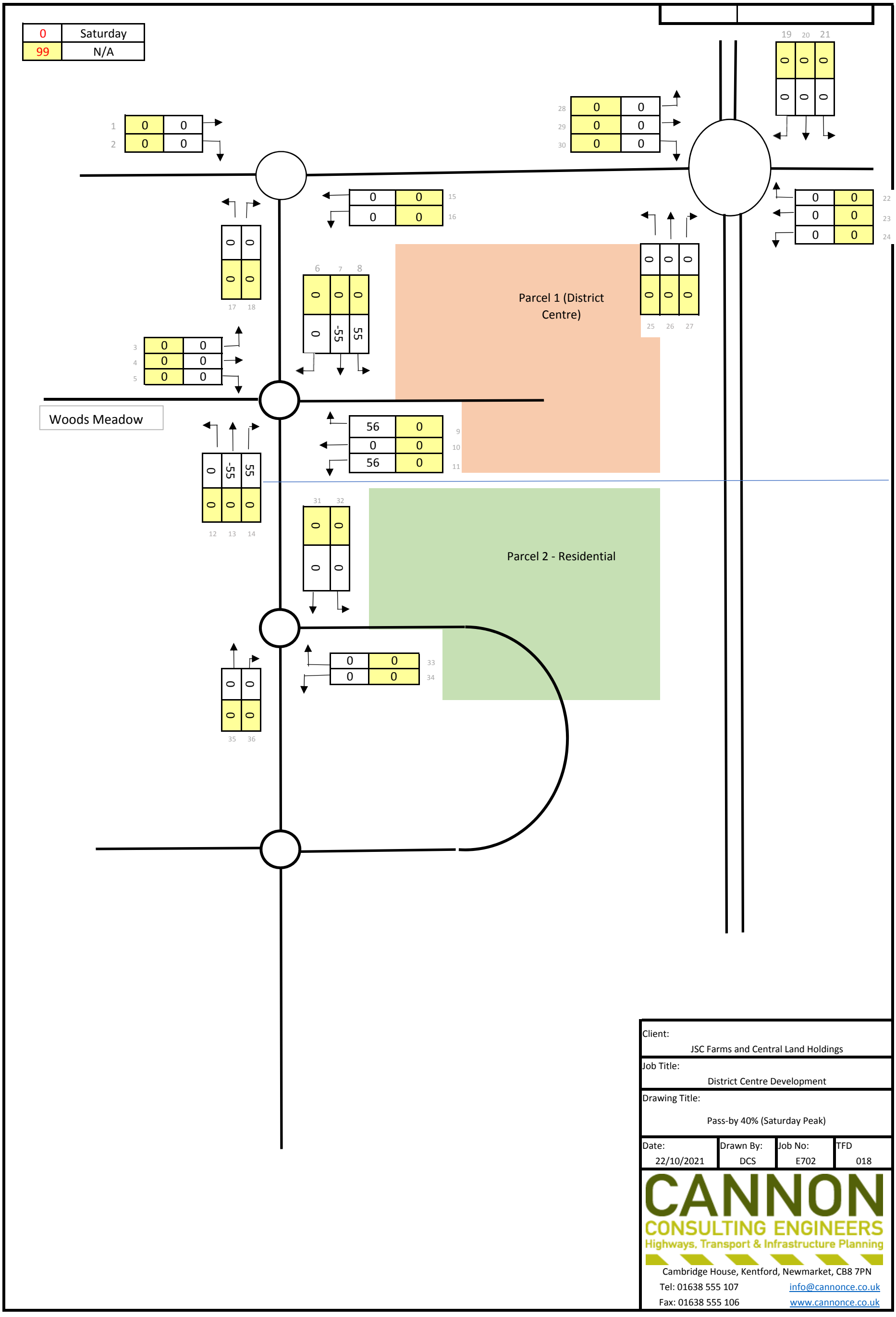
Parcel 2 - Residential

Woods Meadow

Client:	JSC Farms and Central Land Holdings		
Job Title:	District Centre Development		
Drawing Title:	Pass-by (40%) AM and PM peak		
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 017

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0	Saturday
99	N/A



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: Pass-by 40% (Saturday Peak)			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 018

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0	AM
99	PM

Parcel 1 (District Centre)

Parcel 2 - Residential

Woods Meadow

1	-39	-33	
2	53	52	

28	9	6	
29	2	1	
30	4	3	

19	20	21	
3	0	0	
3	0	0	

-93	-39		15
124	54		16

0	0		22
3	3		23
0	0		24

71	82		
56	115		
17	18		

6	7	8	
0	-36	143	
0	-26	177	

9	0	0	
9	0	0	
25	26	27	

3	0	0	
4	0	0	
5	0	0	

111	202		9
0	0		10
61	62		11

0	39	51	
0	-31	64	
12	13	14	

31	32		
0	3		
0	32		

71	9		33
0	0		34

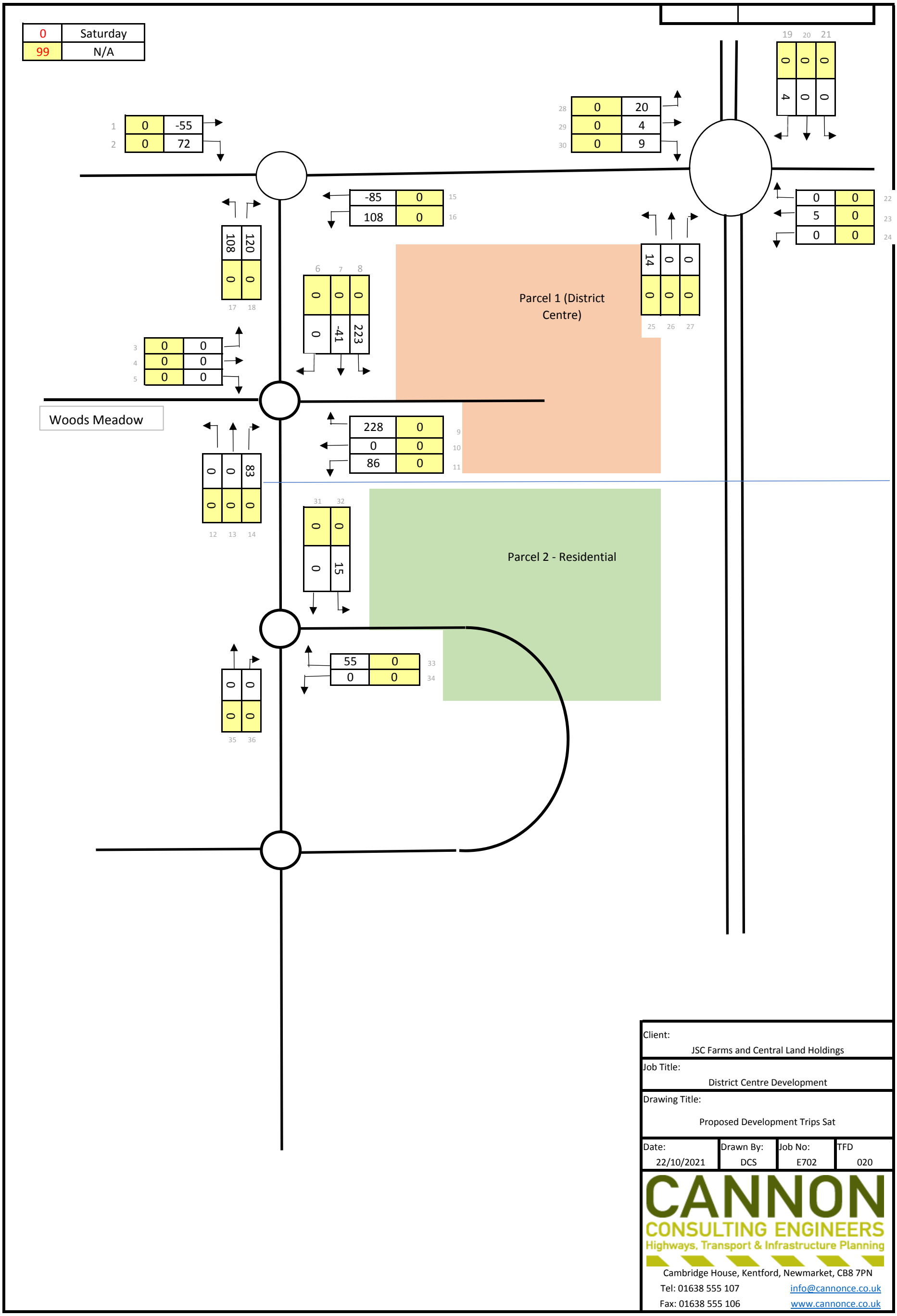
0	0		
0	0		
35	36		

Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	Proposed Development Trips AM and PM

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	019

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0	Saturday
99	N/A



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: Proposed Development Trips Sat			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 020

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0	AM
99	PM

1	517	493	
2	216	139	

28	210	232	
29	204	178	
30	399	461	

19	20	21	
332	1117	162	
140	1095	122	

398	657	15	
347	507	16	

138	132	22	
158	199	23	
119	98	24	

239	436		
190	403		
17	18		

6	7	8	
38	486	143	
14	270	177	

435	1379	52	
593	1274	113	
25	26	27	

3	16	41	
4	0	0	
5	0	0	

Parcel 1 (District Centre)

Woods Meadow

111	202	9	
0	0	10	
61	62	11	

0	521	51	
0	375	64	
12	13	14	

31	32		
429	152		
249	79		

Parcel 2 - Residential

196	139	33	
0	0	34	

357	0		
276	0		
35	36		

Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	2023 Base + BM1 Remaining + Proposed Development (AM and PM)

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	021

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0	Saturday
99	N/A

Parcel 1 (District Centre)

Parcel 2 - Residential

Woods Meadow

1	0	510	
2	0	184	

28	0	255	
29	0	237	
30	0	372	

19	20	21		
0	0	0		
275	816	228		

514	0		15
382	0		16

169	0			22
106	0			23
217	0			24

246	366			
0	0			
17	18			

6	7	8		
0	0	0		
24	321	223		

401	993	188		
0	0	0		
25	26	27		

3	0	23	
4	0	0	
5	0	0	

228	0			9
0	0			10
86	0			11

0	362	83		
0	0	0		
12	13	14		

31	32		
0	0		
354	23		

93	0			33
0	0			34

324	0		
0	0		
35	36		

Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	2023 Base + BM1 Remaining + Proposed Development (Weekend)

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	022

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0	AM
99	PM

1	570	560	
2	341	220	

28	298	282	
29	299	326	
30	514	720	

19	20	21	
470	1169	170	
161	1146	128	

436	730		15
481	853		16

144	139		22
217	343		23
125	102		24

455	785		
271	623		
17	18		

6	7	8	
39	1011	143	
15	509	177	

543	1442	55	
772	1334	118	
25	26	27	

3	17	43	
4	0	0	
5	0	0	

Parcel 1 (District Centre)

Woods Meadow

111	202		9
0	0		10
61	62		11

0	1084	51	
0	676	64	
12	13	14	

31	32		
898	152		
463	79		

Parcel 2 - Residential

196	139		33
0	0		34

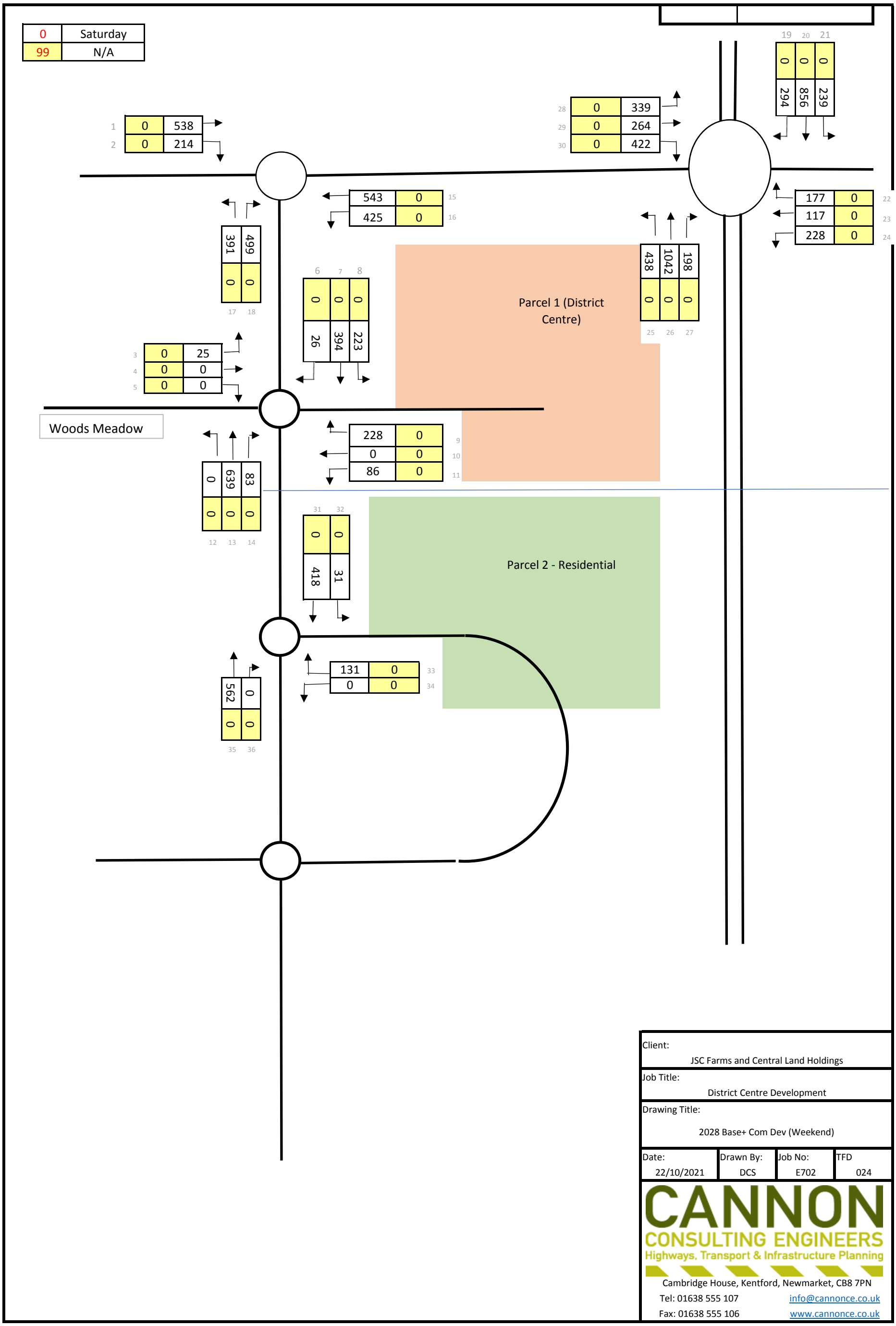
920	0		
288	0		
35	36		

Client:	JSC Farms and Central Land Holdings
Job Title:	District Centre Development
Drawing Title:	2028 Base + Com Dev + Proposed Development (AM and PM)

Date:	Drawn By:	Job No:	TFD
22/10/2021	DCS	E702	023

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0	Saturday
99	N/A



Client: JSC Farms and Central Land Holdings			
Job Title: District Centre Development			
Drawing Title: 2028 Base+ Com Dev (Weekend)			
Date: 22/10/2021	Drawn By: DCS	Job No: E702	TFD 024

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Drawings

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TO TIE IN WITH EXISTING LAYOUT

PROPOSED UNCONTROLLED CROSSING

ICD 38.8m ROUNDABOUT

EXISTING CULVERT TO BE EXTENDED

THE GREENWAY
CORNMILL CL
ROBINS CLOSE
GREENWAY
MEADOW
THE LEES
A 6
A 6
A 6
Def
UA Bdy
RH
Drain
Grass
Fence 1.4m high
Security Fence 3m high
42.0
41.0
41.0
41.0
41.0

KEY

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
B	RED LINE BOUNDARY AMENDED-	HDM	HDM	-	20/10/2021
A	RED LINE BOUNDARY AMENDED-	DS	DS	-	21/06

DESIGNED BY	DRAWN BY	CHECKED BY
DCS	DCS	DCS

SCALE @ A1 SIZE	DATE
1:500	14/01/2021

PROJECT TITLE

BOULTON MOOR - DISTRICT CENTRE

DRAWING TITLE

PROPOSED SITE ACCESS LAYOUT

CLIENT

JCS FARMING AND CENTRAL LAND

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

60 Cannon Street,
London,
EC4N 6NP
Tel: 020 70021156
info@cannonce.co.uk

Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

DRAWING NUMBER	REV.
E702-PL-SK-246	B

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\\dcsvr\Data\E702 Boulton Moor, DERBYSHIRE_\DRAWINGS\AUTOCAD\CURRENT DRGS\2020 DistrictCentre\E702-PL-SK-246 Revision A DistrictCentre Roundabout Plan

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SHARDLOW ROAD COMMITTED SIGNAL IMPROVEMENT TO TIE IN WITH PROPOSED ACCESS.

PROPOSED UNCONTROLLED CROSSING

ICD 38.8m ROUNDABOUT

EXISTING CULVERT TO BE EXTENDED

THE GREENWAY

CORNMILL CLOSE

ROBINS CLOSE

GREENWAY

THE LEES

MEADOW

A6

Drain

KEY

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
B	RED LINE BOUNDARY AMENDED-	HDM	HDM	-	20/10/2021
A	RED LINE BOUNDARY AMENDED-	DS	DS	-	21/06

DESIGNED BY	DRAWN BY	CHECKED BY
DCS	DCS	DCS

SCALE @ A1 SIZE	DATE
1:500	14/01/2021

PROJECT TITLE

BOULTON MOOR - DISTRICT CENTRE

DRAWING TITLE

SITE ACCESS
LAYOUT TIE IN DETAIL TO COMMITTED SHARDLOW WORKS

CLIENT

JCS FARMING AND CENTRAL LAND

CANNON CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

60 Cannon Street, London, EC4N 6NP
Tel: 020 70021156
info@cannonce.co.uk

Cambridge House, Lanwades Business Park, Kentford, Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

DRAWING NUMBER	REV.
E702-PL-SK-247	B

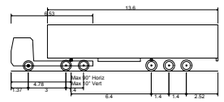
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\\cdcsvr\Data\E702 Boulton Moor, DERBYSHIRE_1\DRAWINGS\AUTOCAD\CURRENT DRGS\2020 District Centre\E702-PL-SK-247 Revision A District Centre Roundabout Plan

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KEY



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
A	FIRST ISSUE	HDM	HDM	-	19/10/2021

DESIGNED BY	DRAWN BY	CHECKED BY
HDM	HDM	DS

SCALE @ A1 SIZE	DATE
1:500	20/10/2021

PROJECT TITLE

BOULTON MOOR - DISTRICT CENTRE

DRAWING TITLE

DISTRICT CENTRE
16.5m ARTICULATED VEHICLE
SWEPT PATH ANALYSIS

CLIENT

JCS FARMING AND CENTRAL LAND

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

60 Cannon Street,
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Tel: 01638 555107
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DRAWING NUMBER

E702-PL-SK-249

REV.

A

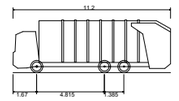
M:\E702 Boulton Moor, DERBYSHIRE_DRAWINGS\AUTOCAD\CURRENT DRGS\2020 District Centre\E702-PL-SK-249 Proposed District Centre VehicleTracking

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KEY



Phoenix 2 Duo (P2-15W with Elite 6x4 chassis)

Overall Length	11.200m
Overall Width	2.530m
Overall Body Height	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.500m

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
A	FIRST ISSUE	HDM	HDM	-	19/10/2021

DESIGNED BY	DRAWN BY	CHECKED BY
HDM	HDM	DS

SCALE @ A1 SIZE	DATE
1:500	14/01/2021

PROJECT TITLE

BOULTON MOOR - DISTRICT CENTRE

DRAWING TITLE

DISTRICT CENTRE
11.2m RIGID VEHICLE
SWEPT PATH ANALYSIS

CLIENT

JCS FARMING AND CENTRAL LAND

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

60 Cannon Street,
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Cambridge House, Lanwades
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Newmarket, CB8 7PN
Tel: 01638 555107
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DRAWING NUMBER	REV.
E702-PL-SK-250	A

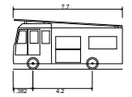
M:\E702 Boulton Moor, DERBYSHIRE_\DRAWINGS\AUTOCAD\CURRENT DRGS\2020 District Centre\E702-PL-SK-250 Proposed District Centre VehicleTracking

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KEY



Dennis Sabre Fire Tender (LWB)	
Overall Length	7.700m
Overall Width	2.430m
Overall Body Height	3.512m
Min Body Ground Clearance	0.397m
Track Width	2.380m
Lock to lock time	5.00s
Kerb to Kerb Turning Radius	7.400m

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
A	FIRST ISSUE	HDM	HDM	-	19/10/2021

DESIGNED BY	DRAWN BY	CHECKED BY
HDM	HDM	DS

SCALE @ A1 SIZE	DATE
1:500	20/10/2021

PROJECT TITLE

BOULTON MOOR - DISTRICT CENTRE

DRAWING TITLE

DISTRICT CENTRE
FIRE APPLIANCE
SWEPT PATH ANALYSIS

CLIENT

JCS FARMING AND CENTRAL LAND

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

60 Cannon Street,
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info@cannonce.co.uk

Cambridge House, Lanwades
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Newmarket, CB8 7PN
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www.cannonce.co.uk

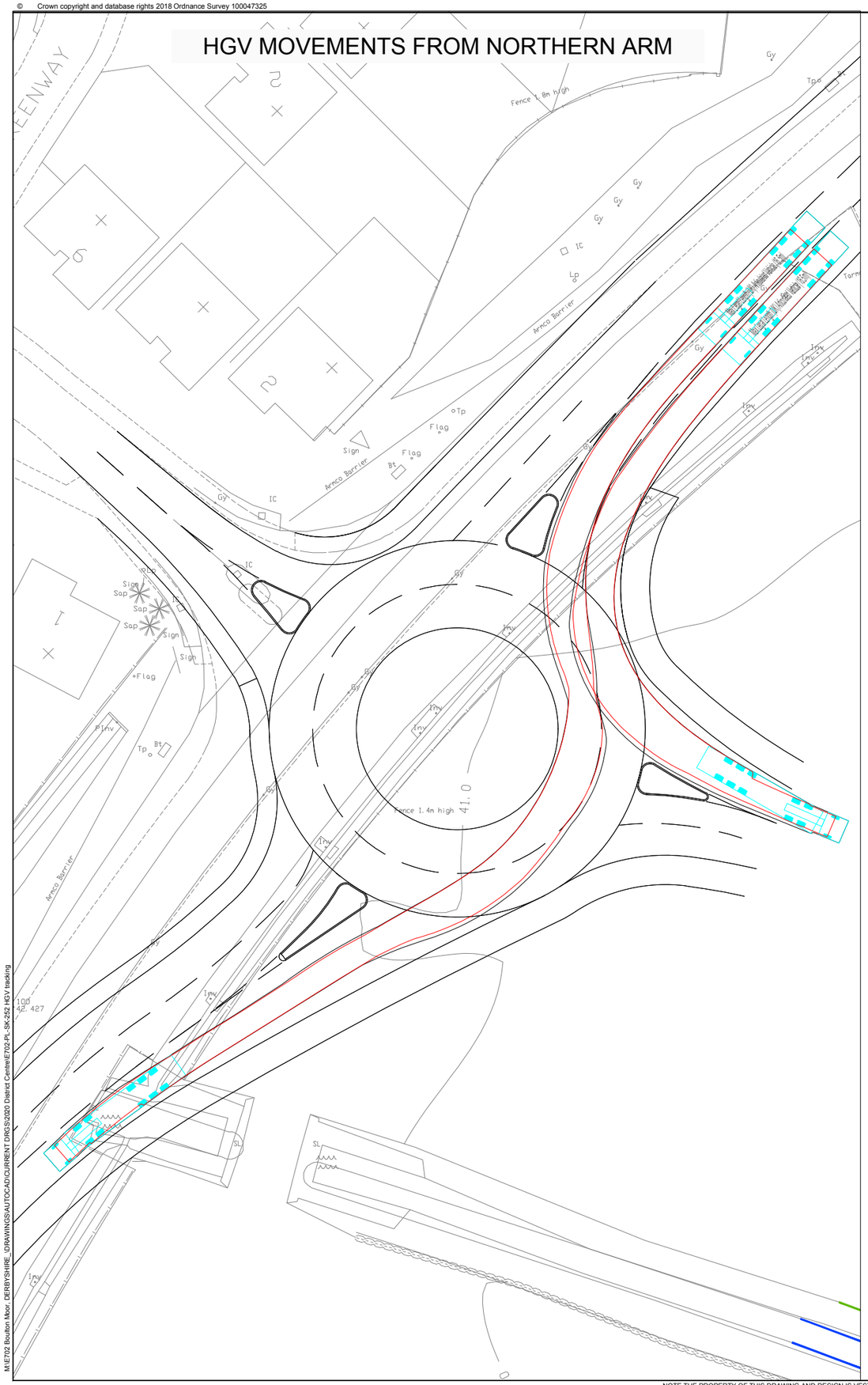
DRAWING NUMBER	REV.
E702-PL-SK-251	A

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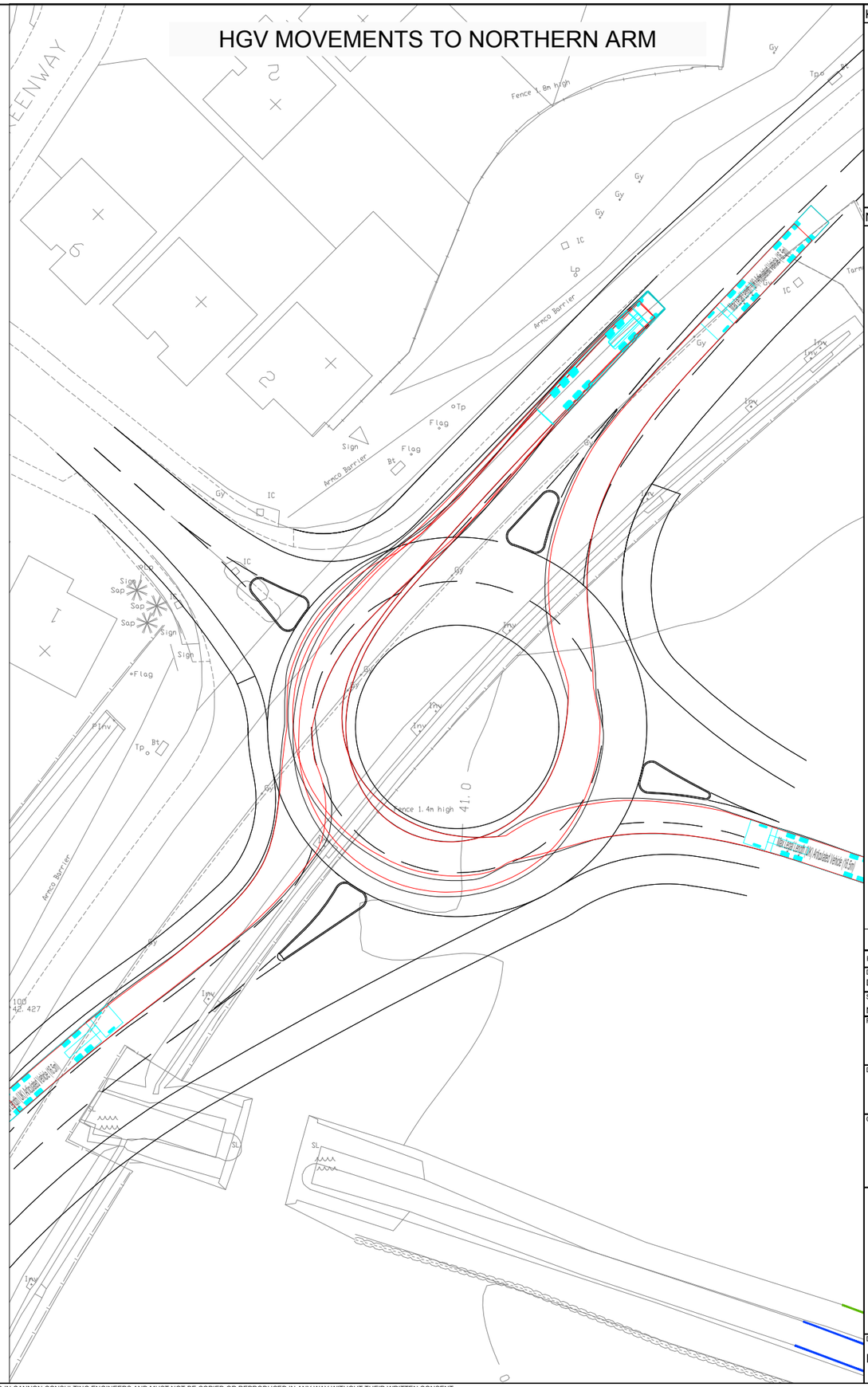
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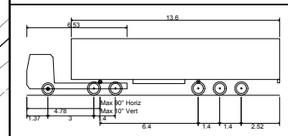
HGV MOVEMENTS FROM NORTHERN ARM



HGV MOVEMENTS TO NORTHERN ARM



KEY



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
-	-	-	-	-	21/06

DESIGNED BY	DRAWN BY	CHECKED BY
DCS	DCS	DCS

SCALE @ A1 SIZE	DATE
NTS	14/01/2021

PROJECT TITLE

BOULTON MOOR - DISTRICT CENTRE

DRAWING TITLE

SWEPT PATH ANALYSIS
16.5m ARTICULATED HGV

CLIENT

JCS FARMING AND CENTRAL LAND

CANNON
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Highways, Transport & Infrastructure Planning

60 Cannon Street,
London,
EC4N 6NP
Tel: 020 70021156
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Tel: 01638 555107
www.cannonce.co.uk

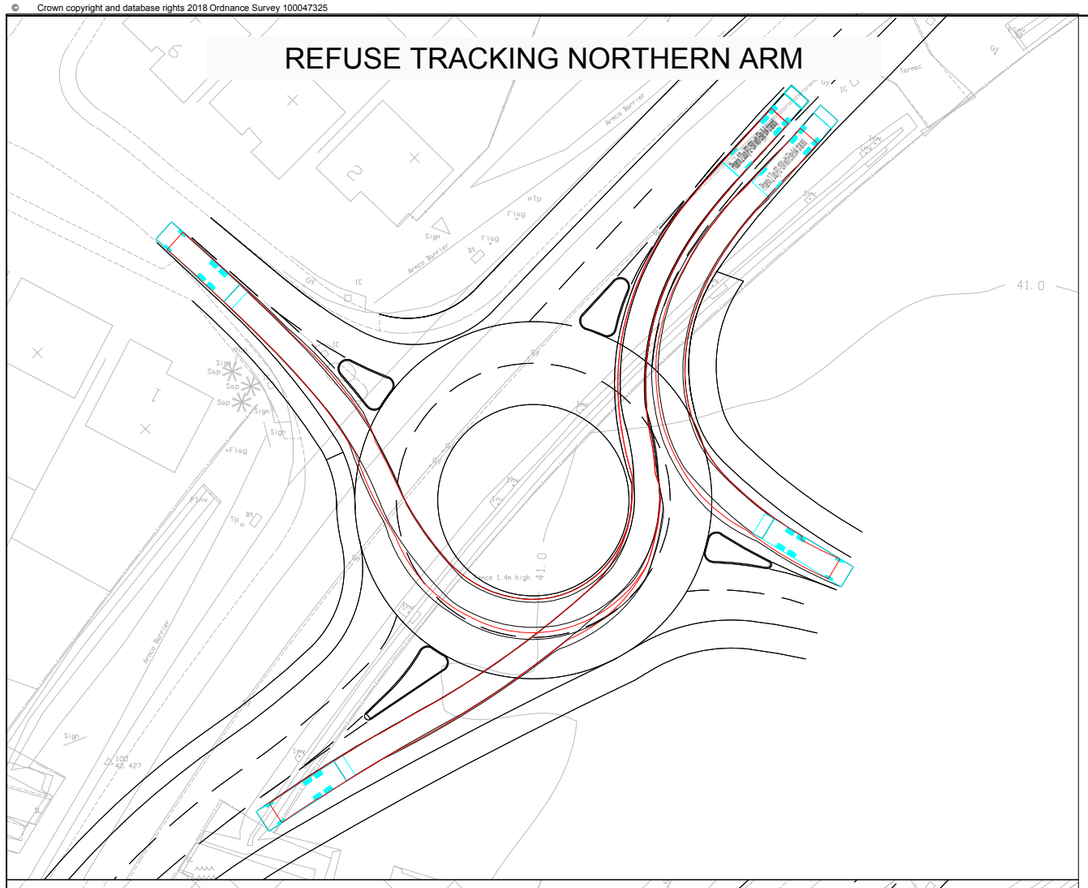
DRAWING NUMBER	REV.
E702-PL-SK-252	-

M:\E702 Boulton Moor, DERBYSHIRE_\DRAWINGS\AUTOCAD\CURRENT DRGS\2020 District Centre\E702-PL-SK-252 HGV tracking

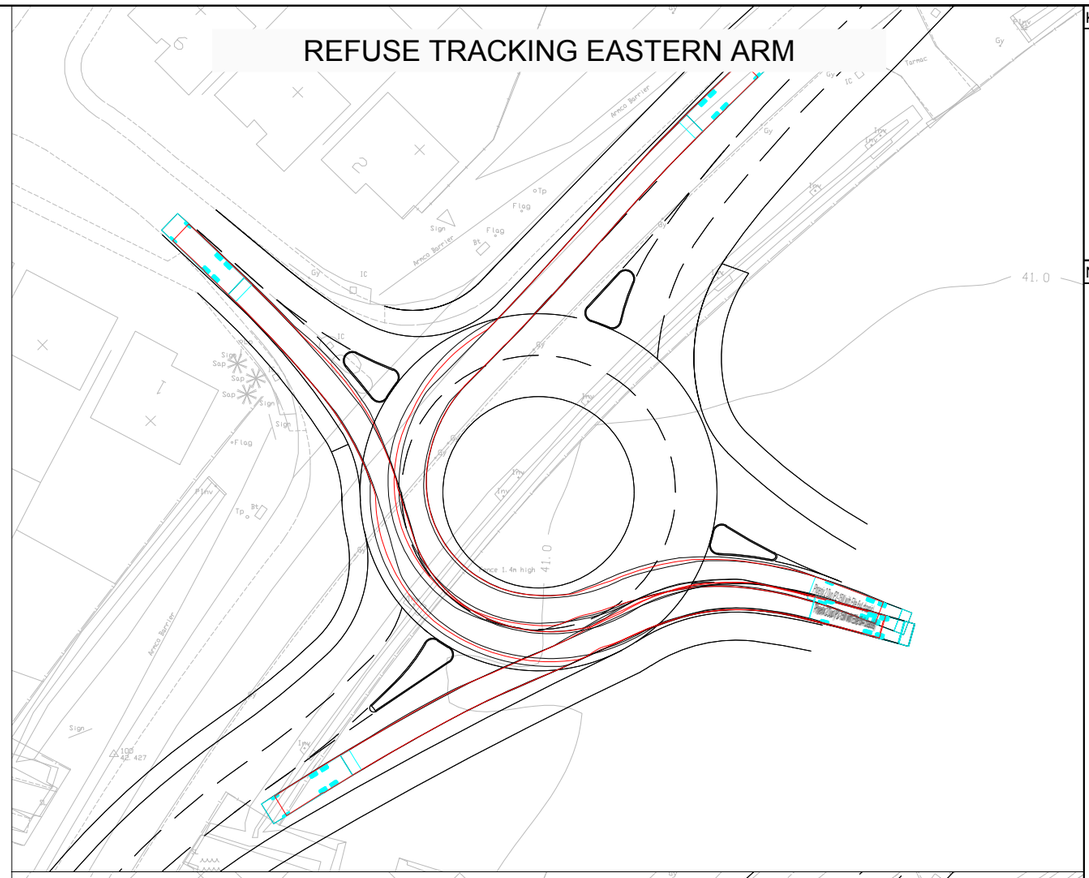
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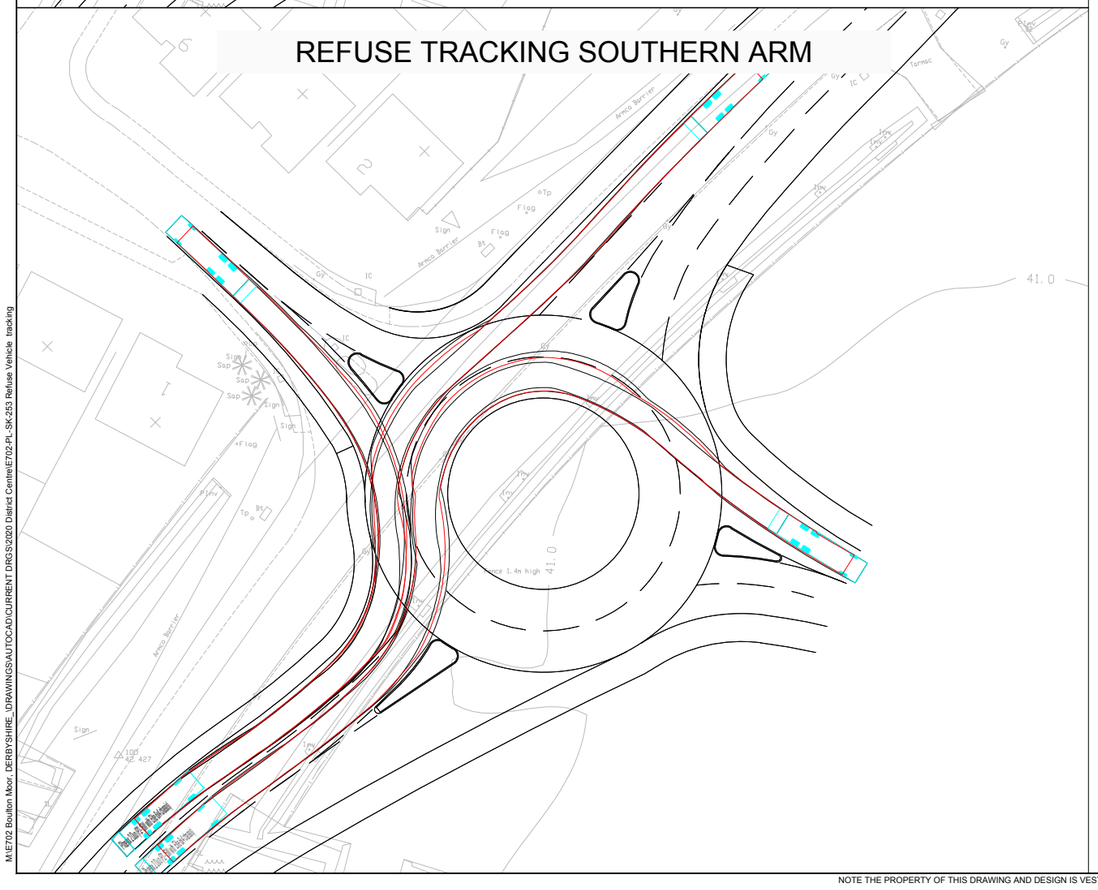
REFUSE TRACKING NORTHERN ARM



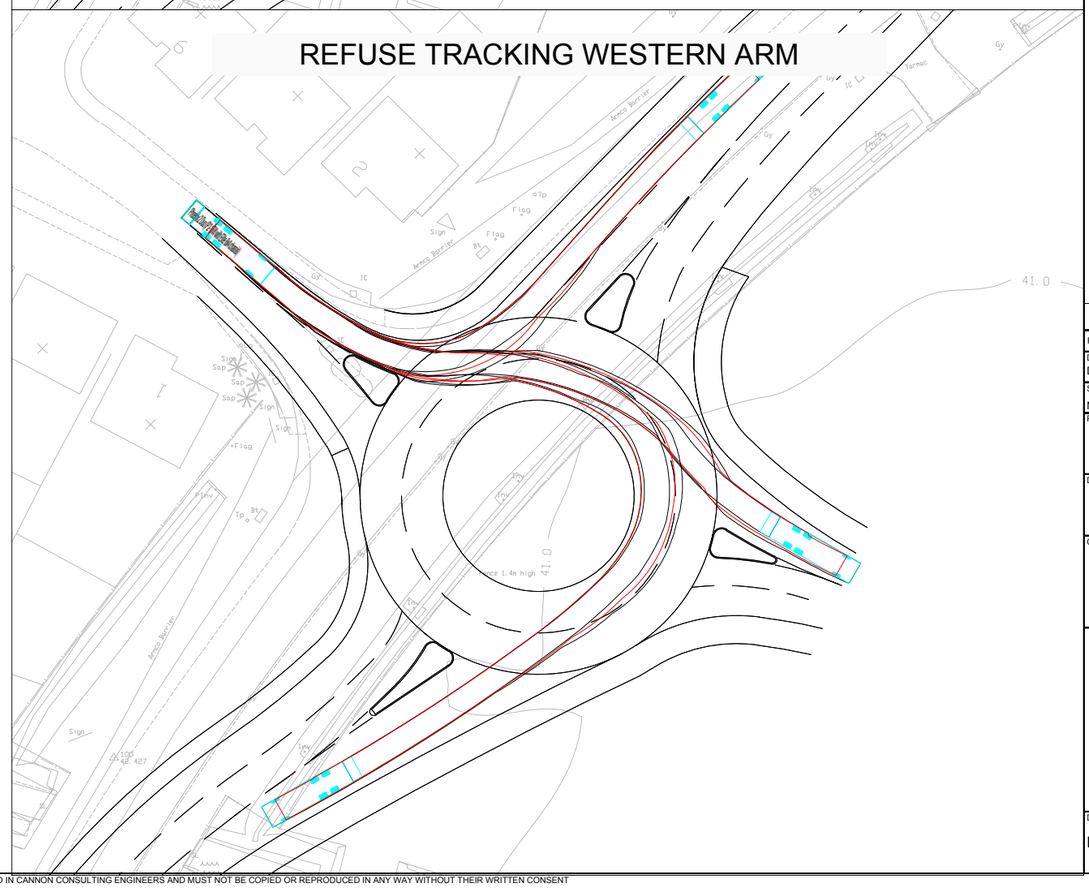
REFUSE TRACKING EASTERN ARM



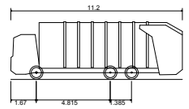
REFUSE TRACKING SOUTHERN ARM



REFUSE TRACKING WESTERN ARM



KEY



Phoenix 2 Duo (P2-15W with Elite 6x4 chassis)	
Overall Length	11.200m
Overall Width	2.530m
Overall Body Height	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.500m

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
-	-	-	-	-	21/06

DESIGNED BY	DRAWN BY	CHECKED BY
DCS	DCS	DCS

SCALE @ A1 SIZE	DATE
NTS	14/01/2021

PROJECT TITLE

BOULTON MOOR - DISTRICT CENTRE

DRAWING TITLE

SWEPT PATH ANALYSIS
11.2m REFUSE VEHICLE TRACKING

CLIENT

JCS FARMING AND CENTRAL LAND

CANNON
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Highways, Transport & Infrastructure Planning

60 Cannon Street,
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Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

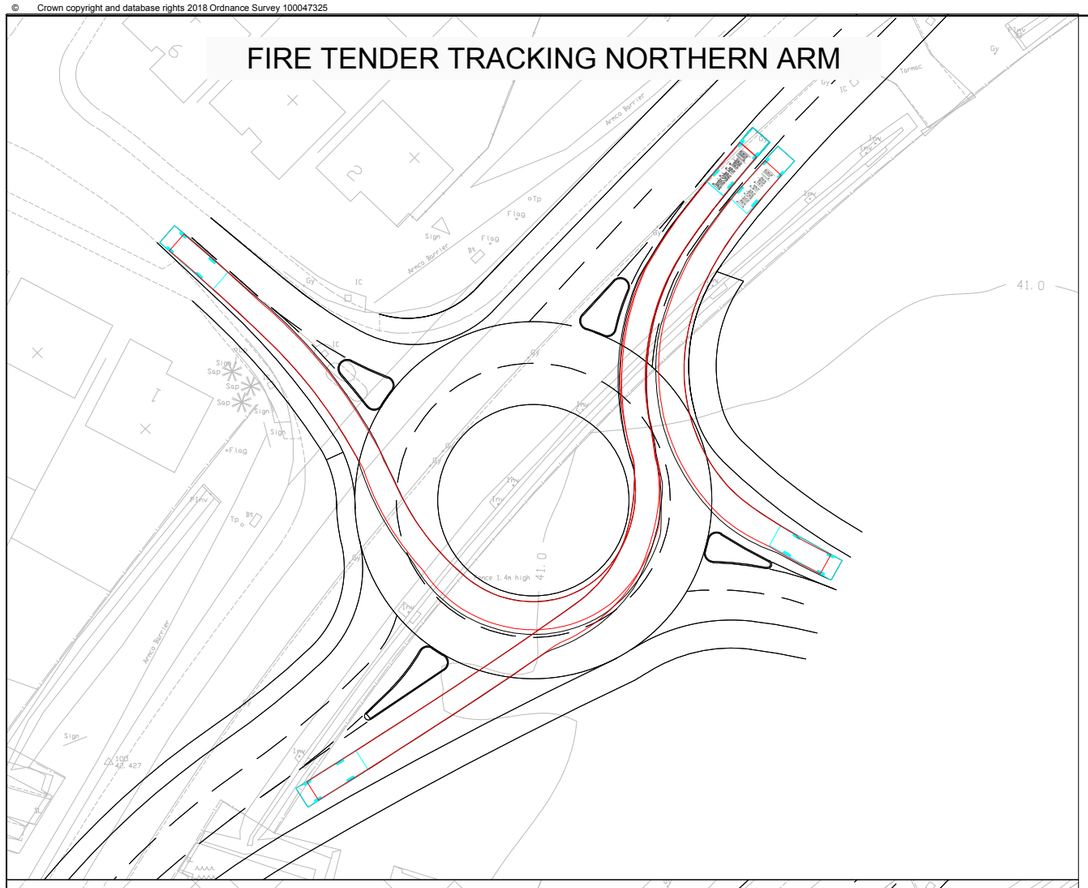
DRAWING NUMBER	REV.
E702-PL-SK-253	-

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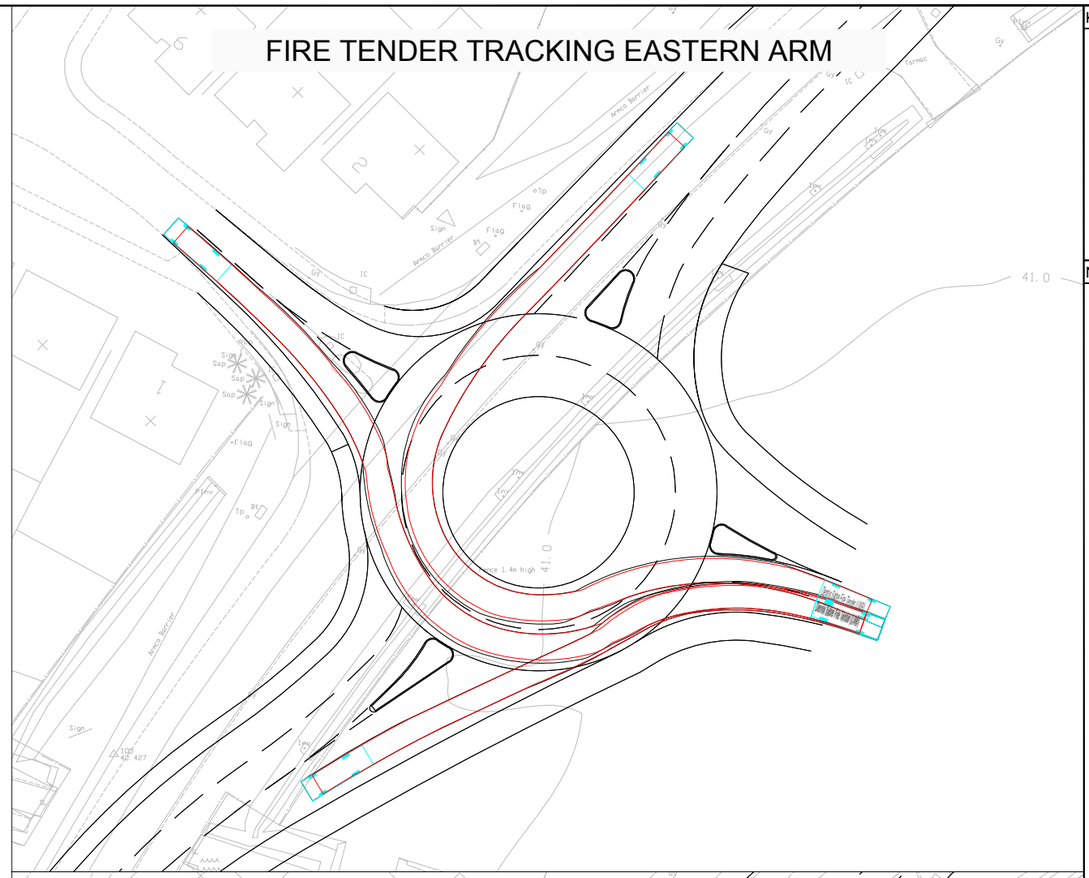
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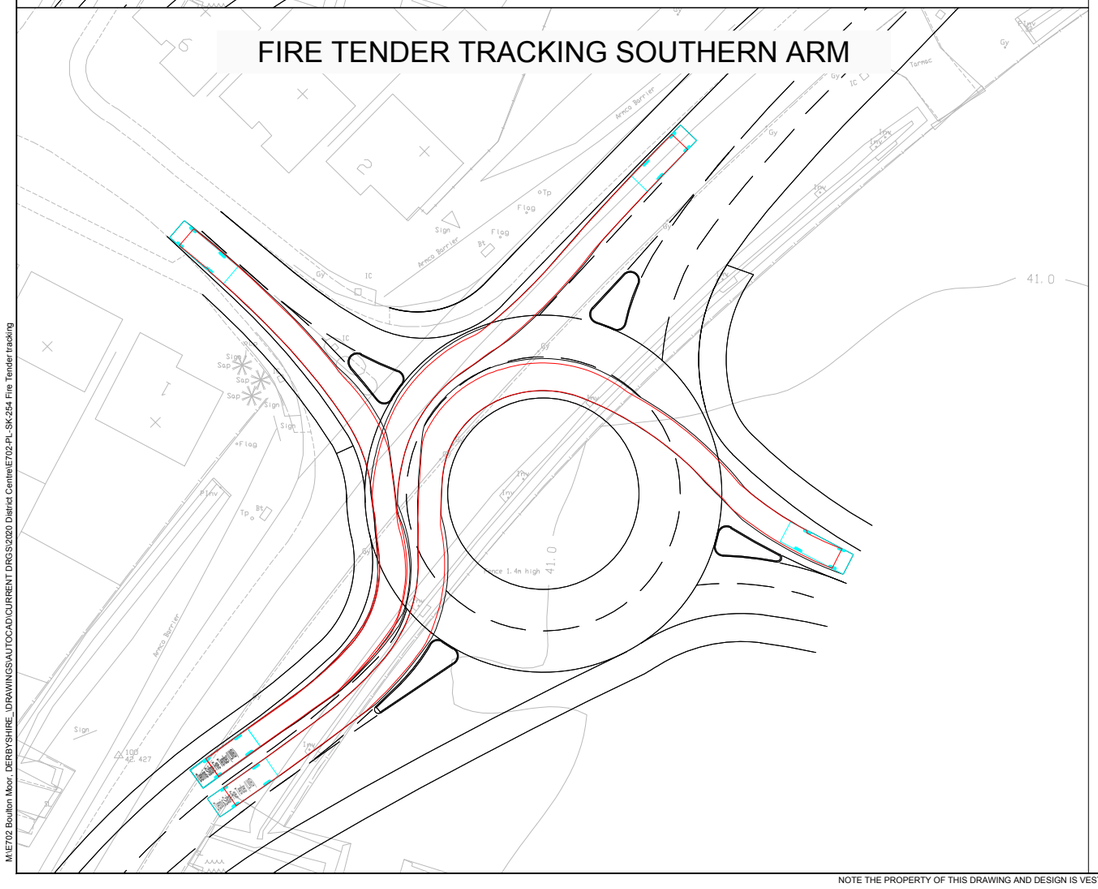
FIRE TENDER TRACKING NORTHERN ARM



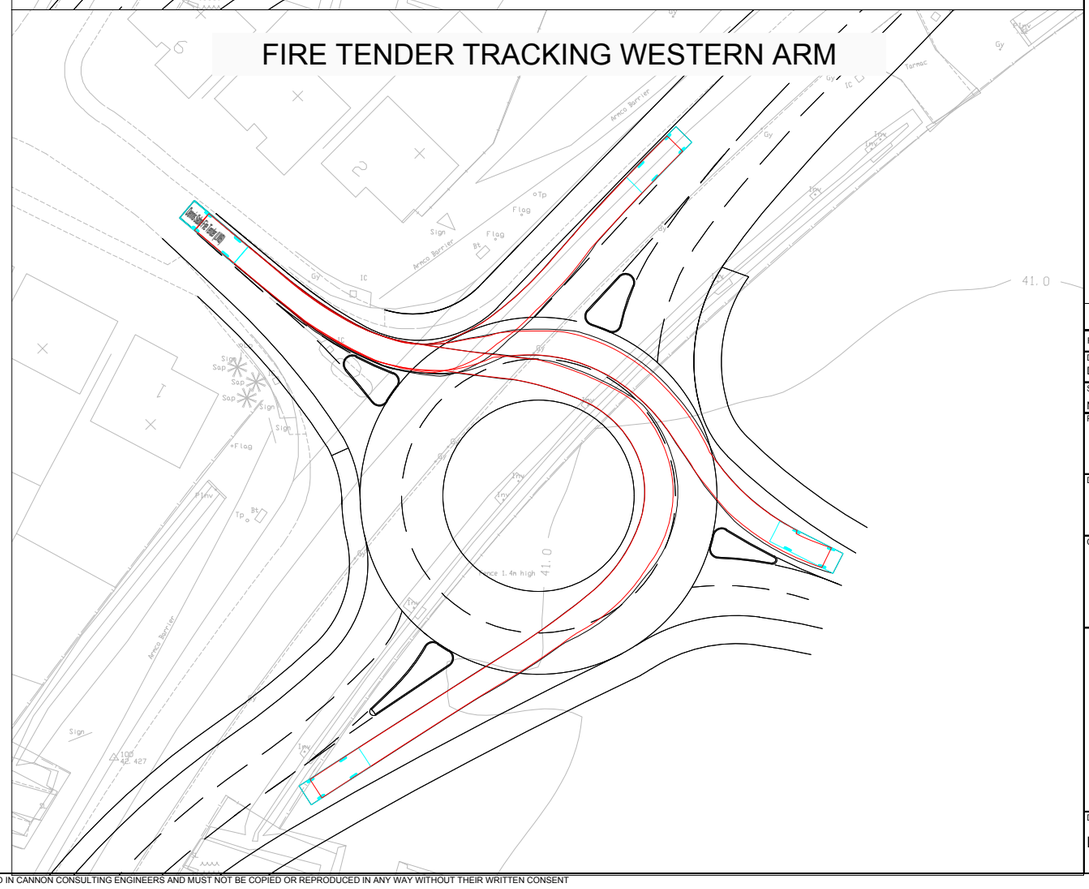
FIRE TENDER TRACKING EASTERN ARM



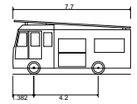
FIRE TENDER TRACKING SOUTHERN ARM



FIRE TENDER TRACKING WESTERN ARM



KEY



Dennis Sabre Fire Tender (LWB)	
Overall Length	7.700m
Overall Width	2.430m
Overall Body Height	3.512m
Min Body Ground Clearance	0.397m
Track Width	2.380m
Lock to lock time	5.00s
Kerb to Kerb Turning Radius	7.400m

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
-	-	-	-	-	21/06

DESIGNED BY	DRAWN BY	CHECKED BY
DCS	DCS	DCS

SCALE @ A1 SIZE	DATE
NTS	14/01/2021

PROJECT TITLE

BOULTON MOOR - DISTRICT CENTRE

DRAWING TITLE

SWEPT PATH ANALYSIS
FIRE TENDER TRACKING

CLIENT

JCS FARMING AND CENTRAL LAND

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

60 Cannon Street,
London,
EC4N 6NP
Tel: 020 70021156
info@cannonce.co.uk

Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

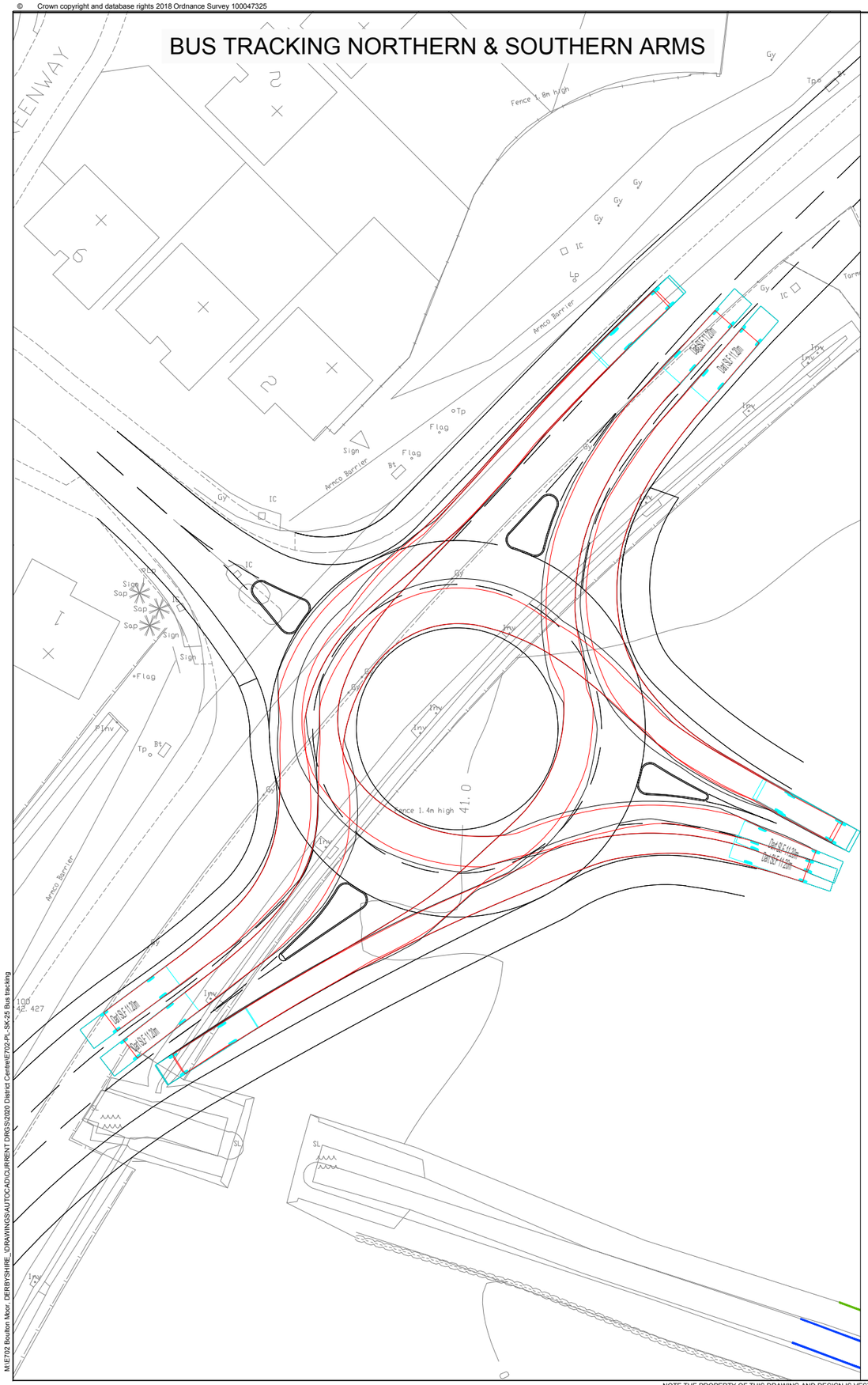
DRAWING NUMBER	REV.
E702-PL-SK-254	-

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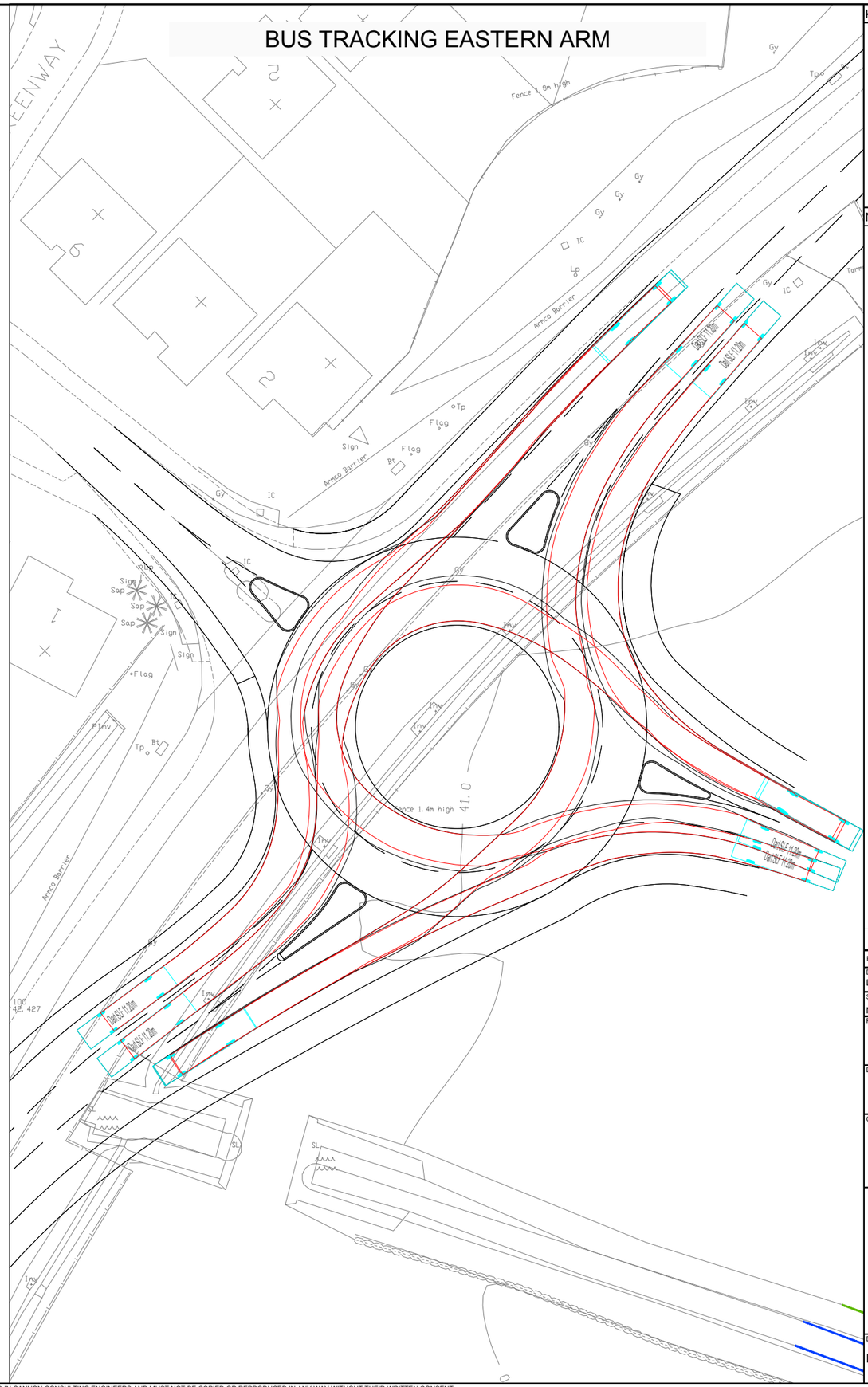
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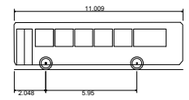
BUS TRACKING NORTHERN & SOUTHERN ARMS



BUS TRACKING EASTERN ARM



KEY



Dart SLF 11.20m	
Overall Length	11.009m
Overall Width	2.401m
Overall Body Height	3.077m
Min Body Ground Clearance	0.312m
Track Width	2.360m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.518m

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
-	-	-	-	-	21/06

DESIGNED BY	DRAWN BY	CHECKED BY
DCS	DCS	DCS

SCALE @ A1 SIZE	DATE
NTS	14/01/2021

PROJECT TITLE

BOULTON MOOR - DISTRICT CENTRE

DRAWING TITLE

SWEPT PATH ANALYSIS
SINGLE DECK BUS

CLIENT

JCS FARMING AND CENTRAL LAND

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

60 Cannon Street,
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info@cannonce.co.uk

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Tel: 01638 555107
www.cannonce.co.uk

DRAWING NUMBER	REV.
E702-PL-SK-255	-

M:\E702 Boulton Moor, DERBYSHIRE_\DRAWINGS\AUTOCAD\CURRENT DRGS\2020 District Centre\E702-PL-SK-25 Bus tracking

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KEY

- BLISTER TACTILE PAVING (RED)
- PROPOSED BUS STOP
- LP — NEW 12m PASSIVE SAFE LAMP POST WITH LED LUMINAIRE TO DERBY CITY COUNCIL STANDARD
- NEW ARMCO CRASH BARRIER
- BOLLARD

NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS STATED OTHERWISE.
2. DRAWING INTENDED TO BE VIEWED / PRINTED IN COLOUR.
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4. REFER TO DRAWING E702-DD-DR-1210 FOR SIGNAL DESIGN.

DRAFT

REV	DESCRIPTION	DE	DR	CH	DATE

DESIGNED BY	DRAWN BY	CHECKED BY
DL	DL	JM

SCALE @ A1 SIZE	DATE
1:500	05/02/21

PROJECT TITLE

BOULTON MOOR, DERBY

DRAWING TITLE

CHELLESTON LANE
GENERAL ARRANGEMENT

CLIENT

JSC FARMS & CENTRAL LAND HOLDINGS

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

Peek House, 20 Eastcheap
London,
EC3M 1EB
Tel: 020 7717 5870
info@cannonce.co.uk

Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

DRAWING NUMBER	REV.
E702-DD-DR-030	P01

M:\E702 Boulton Moor, DERBYSHIRE_\3 PLANS\DRAWINGS\CURRENT DRGS\E702-DD-DR-030 CHELLASTON LANE GENERAL ARRANGEMENT

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KEY

NOTES

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4. FOR ROAD ALIGNMENTS REFER TO DRG E702-DD-DR-630.

REV	DESCRIPTION	DE	DR	CH	DATE

DESIGNED BY	DRAWN BY	CHECKED BY
HM	HM	JM

SCALE @ A1 SIZE	DATE
1:500	10/08/2021

PROJECT TITLE

BOULTON MOOR, DERBY

DRAWING TITLE

CHELLASTON LANE LONGSECTIONS
SHEET 1 OF 2

CLIENT

JSC FARMS & CENTRAL LAND HOLDINGS

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

Peek House, 20 Eastcheap
London,
EC3M 1EB
Tel: 020 7717 5870
info@cannonce.co.uk

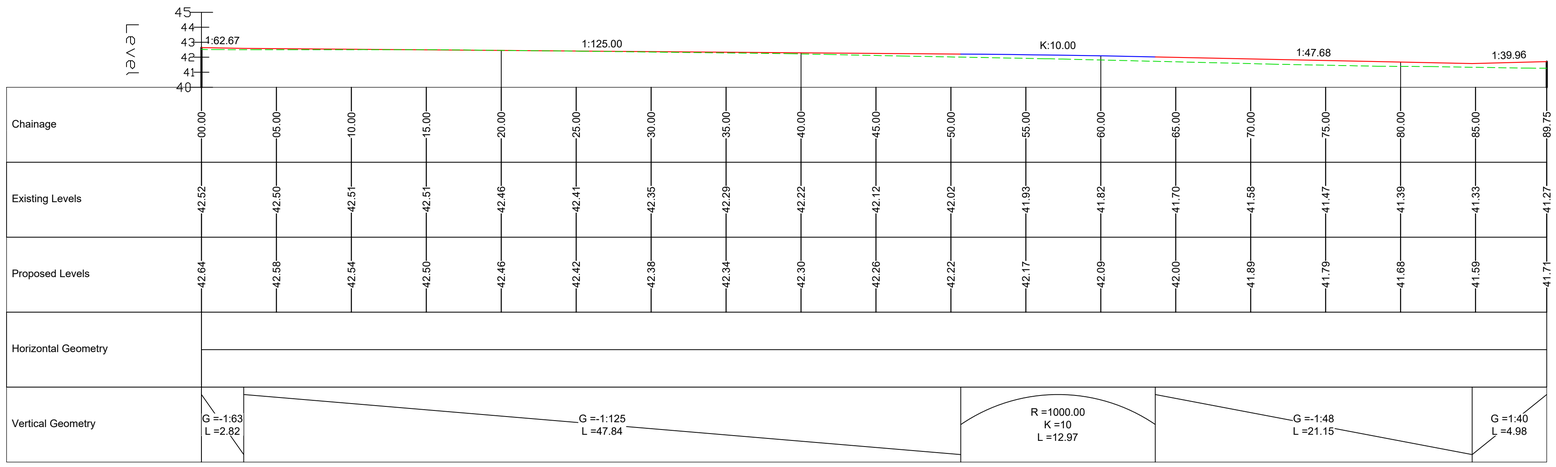
Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

DRAWING NUMBER	REV.
E702-DD-DR-630	P01

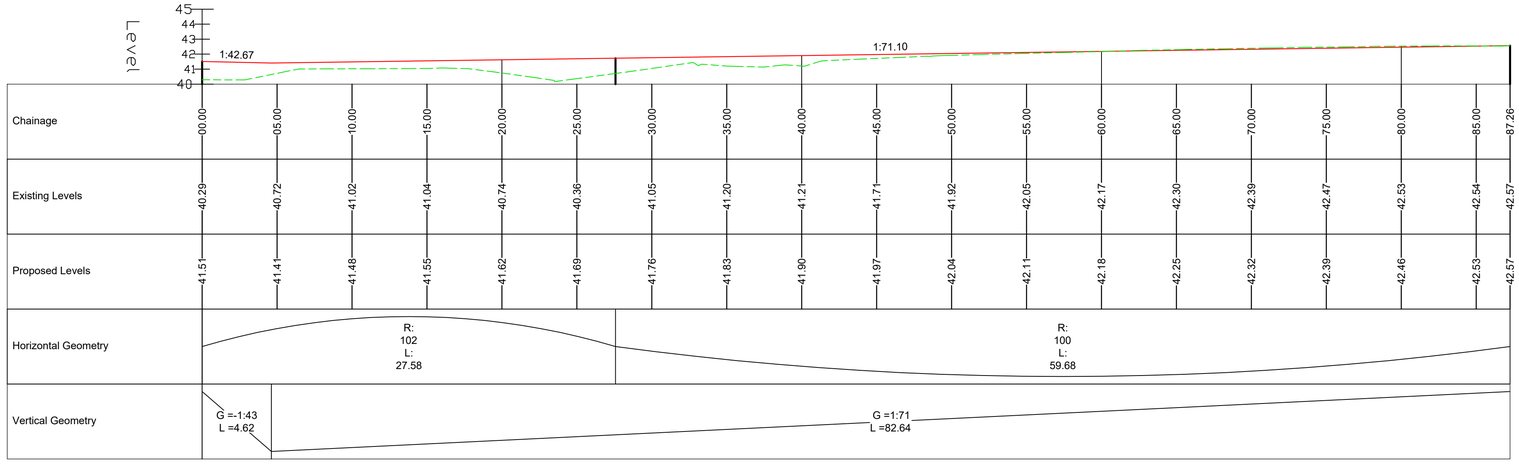
M:\E702 Boulton Moor, DERBYSHIRE_\3 PLANS\DRAWINGS\CURRENT DRGS\E702-DD-DR-260-261 CHELLASTON LANE LONGSECTIONS

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NORTHERN ARM
SCALE: H 1:200,V 1:200. DATUM: 40.000



SOUTHERN ARM
SCALE: H 1:200,V 1:200. DATUM: 40.000

KEY

EXISTING GROUND PROFILE

1:99 PROPOSED GROUND PROFILE

NOTES

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REV	DESCRIPTION	DE	DR	CH	DATE

DESIGNED BY	DRAWN BY	CHECKED BY
HM	HM	JM

SCALE @ A1 SIZE	DATE
1:200	10/08/2021

PROJECT TITLE
BOULTON MOOR, DERBY

DRAWING TITLE
CHELLASTON LANE LONGSECTIONS
SHEET 2 OF 2

CLIENT
JSC FARMS & CENTRAL LAND HOLDINGS

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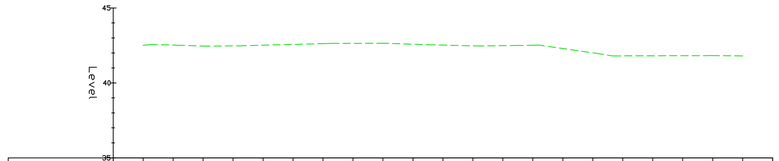
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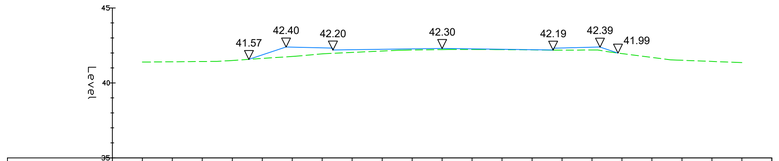
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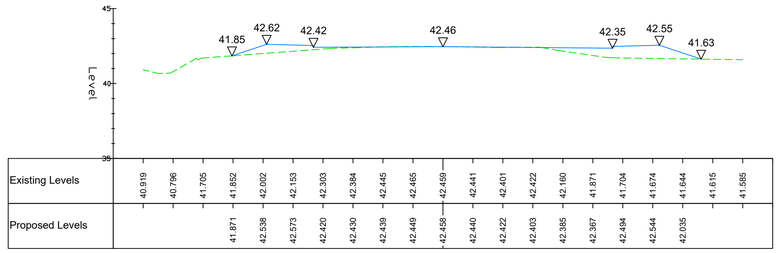
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Proposed Levels																					

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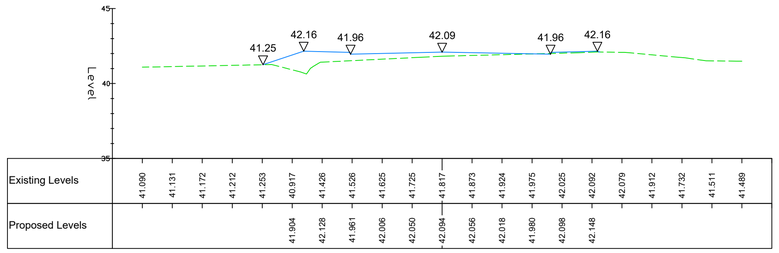
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Proposed Levels					41.866	42.385	42.335	42.214	42.242	42.270	42.298	42.269	42.240	42.211	42.328	42.378					

CHAINAGE: 40.00



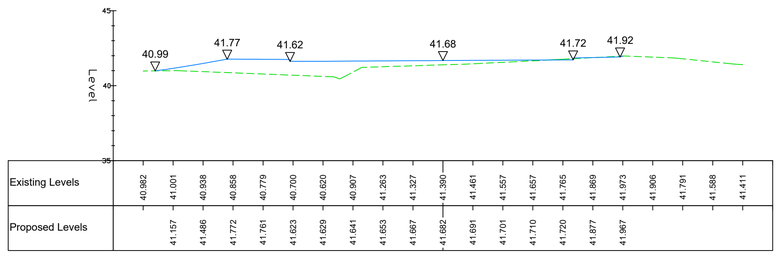
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Proposed Levels				41.871	42.538	42.573	42.420	42.430	42.439	42.449	42.458	42.440	42.422	42.403	42.385	42.367	42.494	42.544	42.035		

CHAINAGE: 20.00



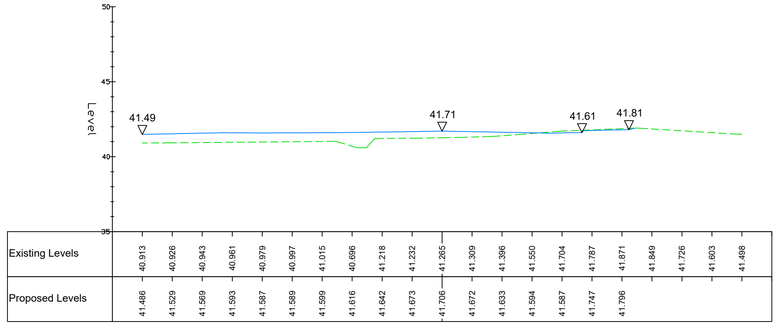
Existing Levels	41.090	41.131	41.172	41.212	41.253	40.917	41.426	41.526	41.625	41.725	41.817	41.873	41.924	41.975	42.025	42.092	42.079	41.912	41.732	41.511	41.489
Proposed Levels						41.904	42.128	41.961	42.006	42.050	42.094	42.056	42.018	41.980	42.098	42.148					

CHAINAGE: 60.00



Existing Levels	40.982	41.001	40.938	40.858	40.779	40.700	40.620	40.907	41.263	41.327	41.390	41.461	41.557	41.657	41.765	41.869	41.973	41.906	41.791	41.588	41.411
Proposed Levels		41.157	41.486	41.772	41.761	41.623	41.629	41.641	41.653	41.667	41.682	41.691	41.701	41.710	41.720	41.877	41.967				

CHAINAGE: 80.00



Existing Levels	40.913	40.926	40.943	40.961	40.979	40.997	41.015	40.696	41.218	41.232	41.265	41.309	41.396	41.550	41.704	41.787	41.871	41.849	41.726	41.603	41.498
Proposed Levels	41.486	41.529	41.569	41.593	41.587	41.589	41.599	41.616	41.642	41.673	41.706	41.672	41.633	41.594	41.587	41.747	41.796				

CHAINAGE: 89.75

NORTHERN ARM

KEY

EXISTING GROUND PROFILE

PROPOSED GROUND PROFILE

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DESIGNED BY	DRAWN BY	CHECKED BY
HM	HM	JM

SCALE @ A1 SIZE: 1:200

DATE: 10/08/2021

PROJECT TITLE: BOULTON MOOR, DERBY

DRAWING TITLE: CHELLASTON LANE CROSS SECTIONS SHEET 1 OF 2

CLIENT: JSC FARMS & CENTRAL LAND HOLDINGS

CANNON CONSULTING ENGINEERS
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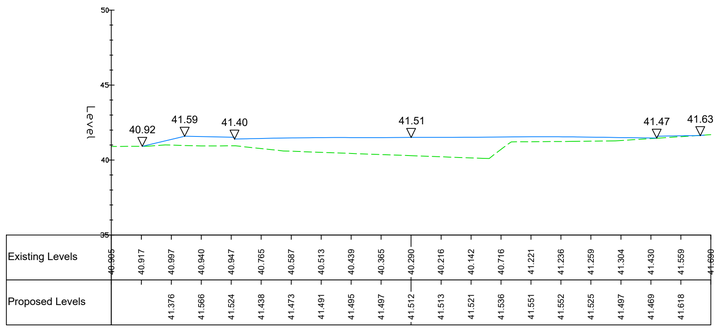
DRAWING NUMBER: E702-DD-DR-632

REV.: P01

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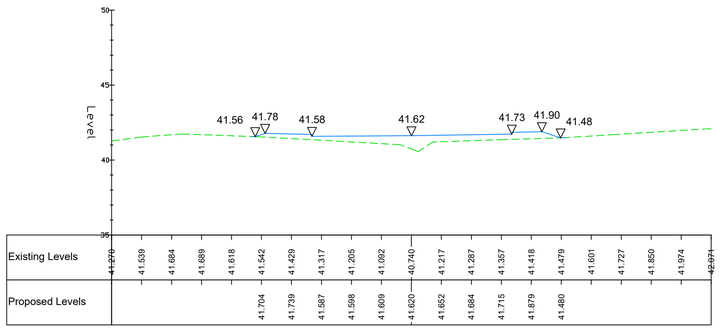
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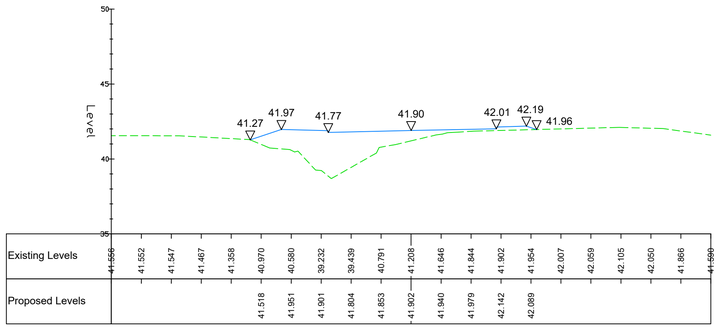
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Proposed Levels		41.376	41.566	41.524	41.438	41.473	41.491	41.495	41.497	41.512	41.513	41.521	41.536	41.551	41.552	41.525	41.497	41.469	41.618		

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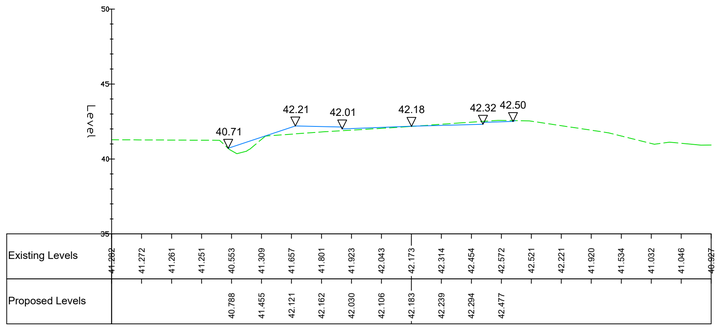
Existing Levels	41.270	41.539	41.684	41.689	41.618	41.542	41.429	41.317	41.205	41.092	40.740	41.217	41.287	41.357	41.418	41.479	41.601	41.727	41.850	41.974	42.074
Proposed Levels						41.704	41.739	41.587	41.598	41.609	41.620	41.652	41.684	41.715	41.879	41.480					

CHAINAGE: 20.00



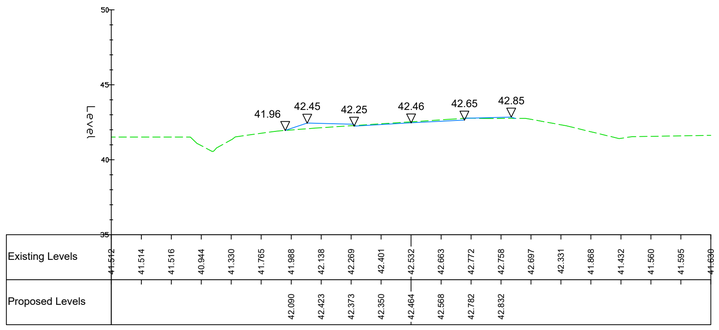
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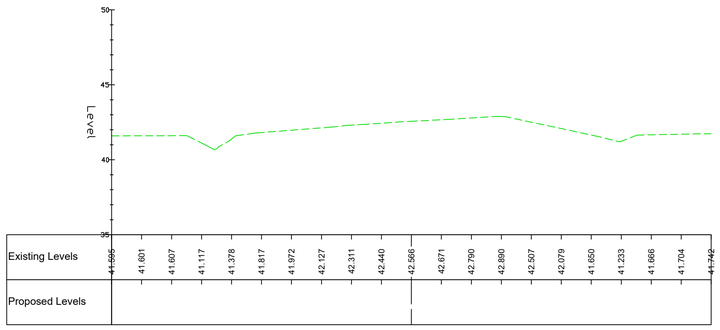
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Proposed Levels					40.788	41.455	42.121	42.162	42.030	42.106	42.183	42.239	42.294	42.477							

CHAINAGE: 60.00



Existing Levels	41.512	41.514	41.516	40.944	41.330	41.765	41.988	42.138	42.269	42.401	42.532	42.663	42.772	42.758	42.697	42.331	41.868	41.432	41.560	41.595	41.630
Proposed Levels							42.090	42.423	42.373	42.350	42.464	42.568	42.782	42.832							

CHAINAGE: 80.00



Existing Levels	41.595	41.601	41.607	41.117	41.378	41.817	41.972	42.127	42.311	42.440	42.566	42.671	42.790	42.890	42.507	42.079	41.650	41.233	41.666	41.704	41.742
Proposed Levels																					

CHAINAGE: 87.26

SOUTHERN ARM

KEY

EXISTING GROUND PROFILE

PROPOSED GROUND PROFILE

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SCALE @ A1 SIZE	DATE
1:200	10/08/2021

PROJECT TITLE

BOULTON MOOR, DERBY

DRAWING TITLE

CHELLASTON LANE CROSS SECTIONS
SHEET 2 OF 2

CLIENT

JSC FARMS & CENTRAL LAND HOLDINGS

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BURIED 100mm

PROPOSED ACCESS CHAMBER

IL: 39.23

NEW 1.0 x 0.5m BOX CULVERT

1:55 1.00 x 0.5m

1:105 1.00 x 0.5m

NEW 1.0 x 0.5m BOX CULVERT

38 1.00 x 0.5m

IL: 40.040

ALTERNATIVE OPTION FOR DRAINAGE RUN

NEW HEADWALL

IL: 39.00

REALIGN EXISTING DITCH

Armco Barrier

N

SCALE 1:200

KEY

- BLISTER TACTILE PAVING (RED)
- PROPOSED BUS STOP
- LP — NEW 12m PASSIVE SAFE LAMP POST WITH LED LUMINAIRE TO DERBY CITY COUNCIL STANDARD
- NEW ARMCO CRASH BARRIER
- BEANY BLOCKS / KERB DRAINAGE

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SCALE @ A1 SIZE	DATE
1:200	05/08/21

PROJECT TITLE

BOULTON MOOR, DERBY

DRAWING TITLE

JUNCTION 3
CHELLASTON ROAD ROUNDABOUT
ENGINEERING LAYOUT SHEET 1

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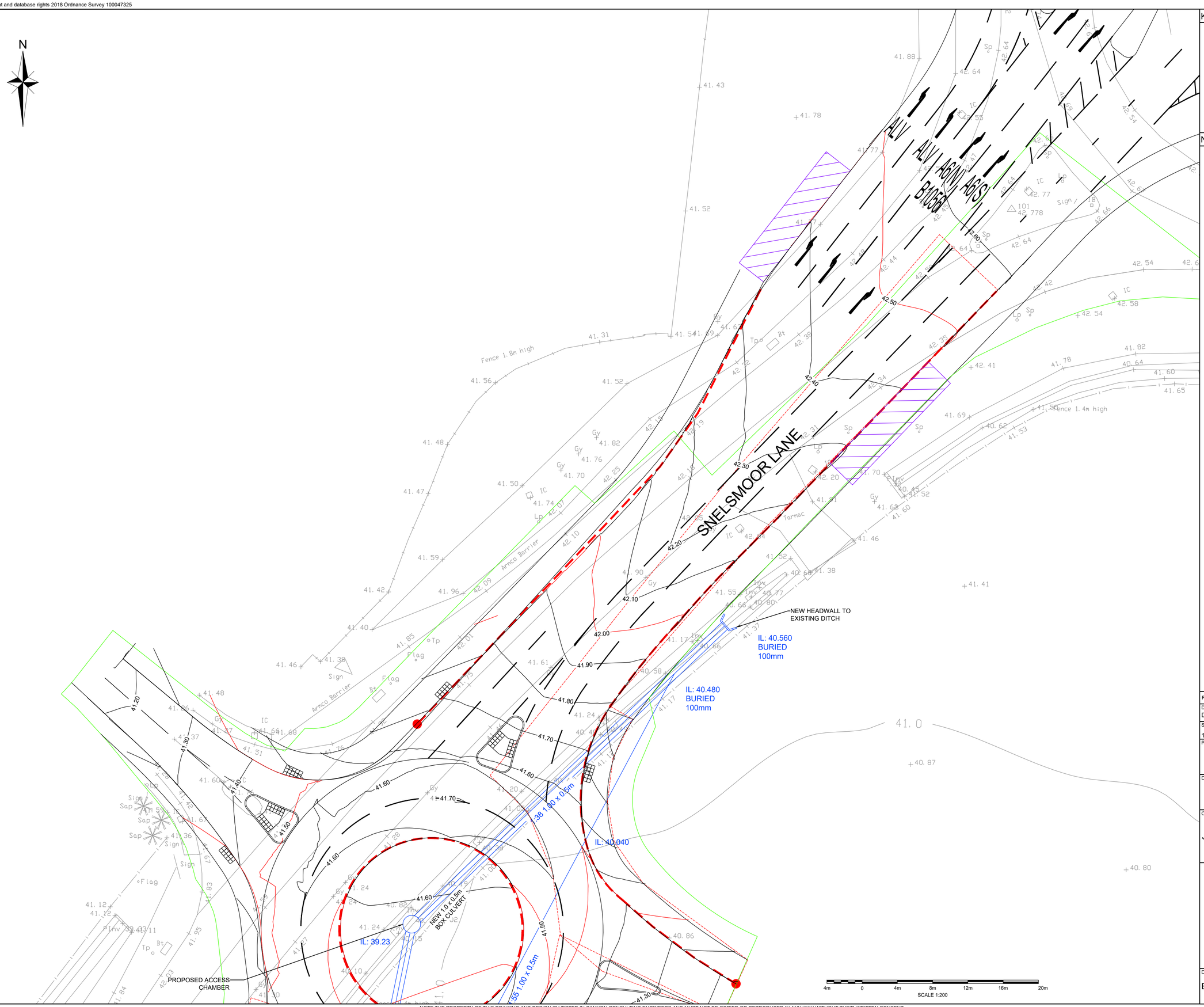
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KEY

- BLISTER TACTILE PAVING (RED)
- PROPOSED BUS STOP
- LP — NEW 12m PASSIVE SAFE LAMP POST WITH LED LUMINAIRE TO DERBY CITY COUNCIL STANDARD
- NEW ARMCO CRASH BARRIER
- BEANY BLOCKS / KERB DRAINAGE

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PROJECT TITLE

BOULTON MOOR, DERBY

DRAWING TITLE

JUNCTION 2
SHARDLOW ROAD/SNELSMOOR LANE
GENERAL ARRANGEMENT SHEET 2.

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SCALE 1:200

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Appendix A

Illustrative Masterplan

The scaling of this drawing cannot be assured

Revision		Date	Drn	Ckd
H	Removed DRAFT.	21.10.21	ALC	DS

Legend

Site Boundary

SHARDLOW ROAD

A6

CHELLASTON LANE

COLWELL DRIVE

WOODS MEADOW

THE GREENWAY

THE LEES

ROBINS CLOSE

CORNWELL CLOSE

GARDEN

EV/HUBS

EV CHARGE

PVHS HUB

1000m2

N.E.A.P

30.39

32.73

34.67

Project
BOULTON MOOR,
DERBY

Drawing Title
DISTRICT CENTRE
ILLUSTRATIVE LAYOUT - OPTION

Date	Scale	Drawn by	Check by
06.07.21	1:1,000@A1	ALC	DS

Project No	Drawing No	Revision
6748	RG-M-2030	H

0 10 20 30 40 50m

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Appendix B

Scoping correspondence

Streetpride SMT Briefing Note – Boulton Moor Park & Ride

Project	Boulton Moor Park and Ride	**Date**	05/10/2015
Note	Briefing Note	**Ref**	Park and Ride
Author	Andy Gibbard and Nicky Bartley		

1.0 Introduction

1.1 This note is intended to update SMT on the current position regarding the proposed Boulton Moor park and ride site. It further seeks support to investigate alternative approaches to the delivery of transport mitigation in this location in relation to increased levels of housing growth currently being planned for.

2.0 Background

2.1 The Boulton Moor area lies on the south east fringes of the City. In 2008 as part of the South Derbyshire Conjoined Inquiry a large housing site, wholly within South Derbyshire but close to the City boundary, was granted outline planning permission for 1,058 dwellings, primary school and new district centre.

2.2 Part of the transport mitigation package put forward by the developers at the time was the inclusion of a park and ride site. This reflected the aspirations of the LTP in force at the time, LTP2 (2006-2011) in seeking to deliver four strategic park and ride sites on the four trunk road corridors leading into the City, including the A6 London Road at Boulton Moor. This position is reflected in the adopted City of Derby Local Plan Review which identifies the need for a park and ride on the A6(T) corridor.

2.3 The park and ride was tested as part of cumulative mitigation package for all the Conjoined Inquiry sites undertaken in DATM. The modelling was not particularly sophisticated and assumed broad intercept rates based on research from operational park and rides, such as Oxford and Cambridge. The intercept rates were between 4% and 9%, reflecting the level of supporting bus priority and city centre demand management such as parking charges.

2.4 The mitigation package also provided capacity and bus priority improvements on London Road. From the journey time saving (estimated at 5.8 minutes) that this was predicted to provide it was assumed that the intercept rate for Boulton Moor would be around 8%. This equated to around the abstraction of 149 vehicles (or around 180 passengers) during the AM and PM peaks from London Road. Overall this was predicted to provide 86% mitigation using journey time as a metric.

2.5 On the basis of this evidence, the proposed park and ride was accepted as a fundamental part of the transport mitigation package by the Independent Planning Inspector presiding over the Inquiry; and included in the s106 (legal) agreement forming part of the planning permission. Whilst the land for the park and ride is outside the City the responsibility for the implementation and management of the park and ride, as set out in the legal agreement, falls to the City Council.

2.6 The legal agreement secures the provision of a site for the park and ride which upon written request will be leased to the City Council for a 99 year period, at peppercorn rent, for the specific purpose of the construction of an approximately 750 space park and ride facility. The City Council has 10 years to initiate the lease after construction of the Phase 1 development begins. The Council must however secure planning permission and work up a design, specification and agree a building contract before the request for the lease can be made.

2.7 A separate collateral agreement, which comes into forces upon the City Council entering into a lease for the park and ride site, requires the developers to deliver the main access junction into the park and ride site, with costs for such work being

recouped against future highway contributions associated with the BM2 development site.

2.8 The Section 106 agreement makes provision for £450,000 which can be used for the setting up the park and ride bus service as well as providing a service to serve the Boulton Moor site. This is followed by three annual payments, totalling £350,000, to support the service. The S106 does not however secure any funds towards the construction or maintenance of the park and ride itself.

2.9 Should the Council not enter into a lease for the park and ride site within the specified 10 year window, the developers are released from their obligation and the land remains in their control. The provisions requiring a bus service serving the site would still remain and offer some opportunity for modal shift. Should the Council not deliver the bus service within the required timescale (occupation of the 200th dwelling) any monies paid would have to be returned and the responsibility of delivering the bus service would fall back to the developer to satisfy.

2.10 If this happens the developer could opt not to provide a bus to serve the park and ride because their only obligation is to provide a service for the development site. The park and ride service is an additional option that that they can choose not to implement.

3.0 Progress

3.1 Due to number of considerations, including the viability of the scheme during the financial crisis, development on the initial phase of the Boulton Moor 1 site only commenced in 2014. The clock has therefore now begun ticking on the clauses of the legal agreement that fall to the City Council to deliver, which include the park and ride and associated bus service.

3.2 In the interim, the wider Boulton Moor area has now been identified by both the City Council and SDDC as a preferred location for a strategic urban extension to the City of c 2,750 homes, including those permitted at BM1. The sites (Snelsmoor Grange within the City and 3 sites in SDDC, including BM1) are allocated in both the City of Derby Local Plan Part 1: the Core Strategy, currently at pre-submission consultation stage, and SDDC's Local Plan Part 1 (see figure 1 and table 1).

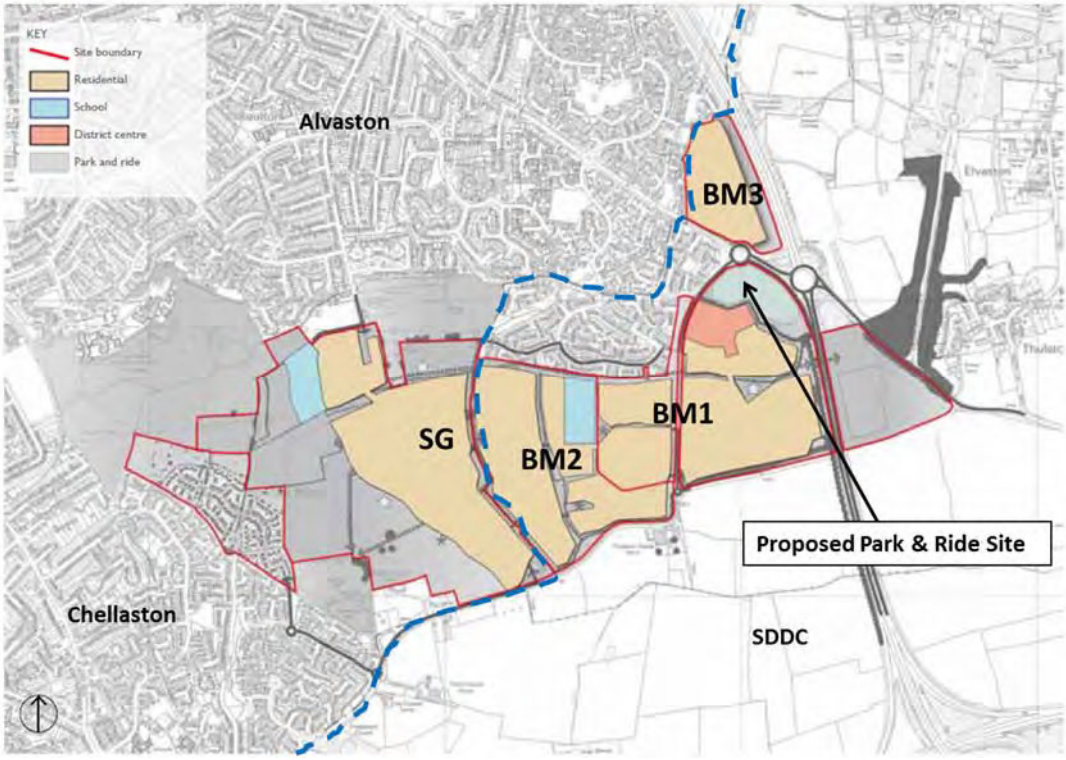


Figure 1: Boulton Moor Housing Sites

Site	No. Homes
Snelsmoor Grange (DCC)	800
BM1 (SDDC)	1,058
BM2 (SDDC)	700
BM3 (SDDC)	190
Total	**2,748**

Table 1: Boulton Moor Sites & Housing Numbers

3.3 Both the City Council's and SDDC's draft Boulton Moor policies require developers on either side of the City boundary to jointly prepare a Development Framework Document (DFD) to ensure a holistic vision for the wider cross boundary site is developed and implemented. Initial drafts of the DFD have been produced and work is on-going with SDDC to move the document forward.Preparing the DFD has enabled us to look at first principles afresh to take account of increased quantum of development and more up to date evidence, including more recent and realistic transport modelling, supporting the housing allocations in the respective Local Plans. This updated modelling takes account of the significant increase in housing being planned for and updates the modelling methodology used in the South Derbyshire Conjoined Inquiry, which was based on arbitrary values and did not consider the benefits of a bus service serving the residential area.The more up to date Core Strategy modelling considered both a bus service that served the park and ride and extended this to serve the residential population of Boulton Moor (1 and 2) and Snelsmoor Grange. The demand for park and ride was calculated by the model for those zones using algorithms within the demand model.

3.6 The Core Strategy testing provided very pessimistic results regarding the effectiveness of the park and ride in taking vehicle trips off the network. Calculations showed that the total demand for the park and ride would be 312 passengers per day. This totalled 52 passengers in the AM Peak of a total 147 passengers using the bus service between the Boulton Moor developments, park and ride and city centre. It is this method that has been applied to the testing of developments in the Boulton Moor area that are allocated in the City and South Derbyshire draft Local Plans.

3.7 Further testing of the park and ride was undertaken in order to understand the maximum level of usage that could be generated by the park and ride. The study was based on abstraction rates again but considered the limitations of park and ride in terms of its catchment and those people who were likely to use it. The catchment only included zones within the model that would use the A6 corridor, and only included those trips with a destination in the city centre. The base abstraction demand was replicated in the demand model and testing of different routes choices and reducing journey times, to represent bus priority improvements, input to understand how this demand would change.

3.8 The results of this testing estimated that the maximum AM Peak patronage was 280 passengers, that the daily utilisation was 776 passengers with a maximum parking accumulation of 496 spaces. This was based on a 15 minute bus frequency. As a general rule for out of town park and rides the 500-600 spaces are needed to make the operation viable. The appraisal work indicated that a park and ride was marginal and that the demand did not meet the initial 1,000 spaces identified in the South Derbyshire Public Inquiry.

3.9 In addition to concerns regarding the effectiveness of the P&R as part of the wider package of transport mitigation, there have been long held concerns regarding the deliverability of the park and ride proposals, particularly around construction costs

and long term financing of the maintenance of the site. Construction costs of the car park for the South Derbyshire Public Inquiry were estimated at around £0.5 million. Design work undertaken by DCC in 2012 put this construction cost closer to £3.5 million. In addition, it was estimated that maintenance and operation of the site was around £0.6 million per annum.

3.10 Whilst the Section 106 agreement provides funding which could be used to support the bus service, it provides nothing towards the construction or maintenance of the facility.

3.11 In light of the uncertain effectiveness and patronage of any P&R service; and the financial risks associated with currently unfunded construction and maintenance costs, officers from Traffic and Transportation and Planning, involved in bringing forward the broader development, consider that it is unlikely that the P&R can be delivered as currently secured.

4.0 A New Approach

4.1 The possibility of the park and ride not being delivered has meant that we have had to look at alternative options for mitigating the transport impacts of what is now a significantly increased quantum of development. The main requirements of any alternative option are that it should provide satisfactory and sustainable transport mitigation for the urban extension whilst not adversely affecting the viability and deliverability of the housing developments and reducing the risk to the City Council in terms of financing of the scheme in terms of construction, operation and maintenance.

4.2 One option that has been discussed is the idea of an alternate public transport hub. The hub approach is based on the idea of providing an interchange for transport in the new district centre that will be created as part of the Boulton Moor development, including shared parking facilities. This should include walking, cycling and public transport and be designed with high quality infrastructure and prioritised links to key destinations. For example, high quality cycle parking and high quality bus shelter with real time information for bus users. Although discussions need to be undertaken with bus operators to gauge their opinion, there is an opportunity for the Skylink and Service 73 to Aston on Trent to stop, along with the new bus service serving the development.

4.3 During discussions on the scale and form that the new District Centre may take; as part of DFD preparation, the developers of the South Derbyshire sites have advised that they want to look at the P&R/District Centre parcel of land afresh. It would therefore seem an opportune moment to look at potential alternative principles to the current P&R solution.

4.4 There is an opportunity to assess if the parking provided to support the retail and service functions of new district centre could be shared to support such a transport hub and/or to provide a less intensive park and ride facility. This has the potential to reduce the risk to the City Council in terms of constructions and long term maintenance costs associated with the large areas of parking typical of park and ride facilities.

4.5 Derby City Council currently run two park and rides in the Derby. The first is at Pride Park, however, this offers parking under contract to Derby City Council employees and Rolls Royce.

4.6 The second site is at the Meteor Centre, which basically utilises retail parking and an informal park and ride by providing a 15 minute bus service. Around 375 passengers

use the service on a weekday, with a peak AM (0800-0900) patronage of 20 passengers. The service is heavily used by people shopping rather than commuters and this may raise some questions about how a service at Boulton Moor would operate and the benefits it would provide.

4.7 In terms of parking spaces, the accumulation total is generally 65% of the total daily passengers. Based on the Meteor Centre park and ride usage of 375 passengers, and assuming an average 1.6 car occupancy rate, the site would require around 150 spaces per day.

4.8 Other options available to the Council include delivering a high quality bespoke bus service without P&R, attempting to secure additional developer funding towards delivering the current P&R scheme or letting the existing obligation lapse. However, none of these options offer the combination of benefits in terms of long term mitigation, an integrated hub with potential to deliver some form of P&R and better integration with the new District Centre as the public transport hub option. They also pose a number of risks around the viability of the developments.

5.0 Next Steps

5.1 Whilst officers at the County Council, as highway authority for the site and SDDC in whose authority the site lies, are aware of the concerns we have relating to the P&R, we have yet to discuss with them in any detail the new approach discussed herein. These discussions would need to take place to establish the respective authorities' formal positions before serious progress can be made.

5.2 Should SMT be supportive of an alternate approach we would seek a remit to explore this option in more detail. This would include discussing with the County and SDDC initially, the redesign of the P&R and District Centre elements of the BM1 site to provide for a transport interchange supporting bus services and shared parking with the District Centre.

5.3 Any interchange would have to deliver sufficient and sustainable mitigation, high quality facilities such as bus shelters, cycle parking, real-time information as well as shared district centre parking. We would also seek to discuss an option to reserve some land for additional parking should interchange need to grow in the future.

5.4 The result of these discussions would then be the basis for further refinement and testing, including potential additional modelling of a revised option. This would inform on-going developer negotiations, with agreed principles being secured through the DFD and in resulting planning permissions and revised s106 agreements.

Derby City Council

Sean McGregor - Travis Baker
Dean Smy - Cannon Consulting Engineers
By E-mail

Date 30 April 2019

Dear Sean/Dean

Boulton Moor Urban Extension - Joint Derby City & Derbyshire County Council Transport Response on Outstanding Issues.

This letter is a joint response from Derbyshire County Council and Derby City Council as relevant Highway Authorities. It sets out the remaining issues that need resolving before either the Snelsmoor Grange (SG) or Boulton Moor Phase 2 (BM2) applications can be determined in transport terms.

A significant amount of technical information has been passed between the applicants and the highway authorities involved in the Snelsmoor Grange (SG) and Boulton Moor Phase 2 (BM2) applications. In some cases separately between the different parties involved. As such, there are differing views on what has been agreed. Set out below is the joint position of the respective Local Highway Authorities on the way forward.

Chellaston Lane/Shardlow Road Traffic Signal Scheme and BM3
It is understood that the BM3 site is not part of the transport modelling that informs either of the current planning applications for SG or BM2. However, BM3 is part of the wider Boulton Moor allocation in the South Derbyshire Local Plan, therefore any improvement scheme at the Chellaston Lane/Shardlow Road junction will potential impact on any future access scheme for the site.

Derbyshire County Council provided comments on the proposed signal junction layout, which include a signal arm for BM3, and the accompanying LINSIG model in September 2017. It was highlighted that there were concerns about the staging of the signals and operation of the reservoir between the two stop lines on the northbound link between the Chellaston Lane/Shardlow Junction and BM3 junction.

Subsequent submissions of the signal scheme have excluded the BM3 access. As such, Derbyshire County Council wrote to South Derbyshire on the 9th January 2019, highlighting that the current submission excluded access to BM3. Further, that the BM3 access would be impossible to achieve in the future without negatively impacting on the operation of the linked junctions. Cannon responded to this outlining that AECOM on behalf of the HE had reviewed the LINSIG model and that they were satisfied that the addition of BM3 trips did not have a material impact on the highway network. However, this does not answer the specific question that has been raised by Derbyshire County Council, and the request remains for the latest LINSIG results to be submitted that shows the traffic signal timings (start and end of green particularly) or queue lengths in the reservoir between stop lines on the west bound Shardlow Rd approach to check if there are any blocking issues impeding or caused by right turning vehicles out of BM3.

If this information is not provided then the comments on the BM3 access, as set out in the letter dated 9th January 2019, will remain the view of the two Local Highway Authorities. It is understood that this may cause some concern to the Local Planning Authorities, particularly South Derbyshire, in terms of the feasibility of delivering their Local Plan housing numbers across the Boulton Moor allocation.

Highway Mitigation – Off-site works, phasing and Trigger Points

Both Local Highway Authorities acknowledge that a significant amount of work has been undertaken on the development of a scheme to mitigate the impacts of the Boulton Moor Urban Extension. The scheme is important to ensure the efficient movement of traffic around this network, reducing the social and environmental impacts of congestion, and providing improvements and access for public transport to reduce the reliance on car travel. Further, Derby City Council has always had concern about the impact of development traffic on Chellaston and the need to provide the main and most attractive access route via Shardlow Road.

Notwithstanding the comments that have been made above on BM3, both local authorities agree that the widening and overall signalised scheme for Chellaston Lane/Shardlow Road and the A6(T) Thulston Roundabout is acceptable to mitigate the impacts of SG and BM2.

However, the trigger points for these works remain to be agreed. For the avoidance of doubt the Local Highway Authorities' view on dwelling numbers relates to completions

across both BM2 and Snelsmoor Grange sites. Cannon's email dated 03/04/2019 suggests the following triggers:

- Interim Improvement scheme: comprising of carriageway widening at Shardlow Road should be at 50th dwelling.
- Phase 2 improvement scheme: comprising of converting the existing Shardlow Road/Snelsmoor Lane roundabout to a Traffic Signal Controlled staggered crossroad, and Option 1b A6(T) Thulston Roundabout partial signalisation should be the 900th unit.
- Alvaston District Centre work at 150-200th occupation.

The Local Highway Authorities agree that the completion of the 50th dwelling is the appropriate Phase 1 trigger but that completion rather than implementation of the widening scheme is a more appropriate measure.

However, leaving the delivery of the new junction at Shardlow Rd/Chellaston Lane and the signalisation of A6 roundabout until the 900th dwelling, which is around 60% of the urban extension, is a significant risk and the Local Highway Authorities currently do not agree with this. It is noted that Cannon has since suggested a trigger of 700th dwelling, and this is welcomed. However, it has always been the opinion of the Local Highway Authorities that the new signalised junction scheme is required at the start of the development. Whilst the 700th dwelling figure may have been discussed with officers this is not evidenced or justified at this stage. Indeed, the Information that has been provided in Cannon's technical note is generalised in terms of the presenting the network wide journey time for Graph 4.1 and Graph 4.2. As such, the Local Highway Authorities require detailed information on the queues at each arm between the Reference Case and 'Interim' scheme and journey times from each arm for the 2024 and 2027 scenarios, to enable suitable triggers for the new Chellaston Lane/Shardlow Road junction to be identified and agreed.

In terms of the off-site work at Alvaston District Centre a trigger of 100 dwellings is considered more appropriate. There are already significant capacity problems through Alvaston District Centre and Derby City Council has a planned district centre improvement scheme that cannot commence until the widening of Harvey Road and London Road are complete.

Snelsmoor Lane Realignment
Works to straighten Snelsmoor Lane in respect of the Snelsmoor Grange site are also required. This is covered by a separate planning permission in South Derbyshire (ref. 9/2013/0245), which lapses in May 2020. We would therefore welcome confirmation of how Bellway intend to progress the consented scheme?

Bus Service Strategy
The first technical note that Cannon produced in September 2016 was very helpful in trying to define the service in terms of patronage and costs. It highlights that based on the potential mode share of bus users, from the Boulton Moor urban extension alone, that there are financial limitations in achieving a frequency of four buses per hour and it is unlikely to be financially sustainable in the long term across the urban extension.

However, the developers of Boulton Moor need to accept that they are developing an urban extension on the edge of the City, and that there isn't an existing bus service that will serve this area. Therefore, either a new bus service or extension to an existing service needs to be provided to a frequency that will offer a real mode choice for residents. From this perspective, and in line with latest guidance (Buses in Urban Developments, CIHT, 2018), the minimum suggested daytime frequency is three buses an hour in urban areas. In accordance with the principles of NPPF and respective Local Plan policies, the development needs to provide for high quality public transport, however, any cost for mitigation needs to be of a reasonable scale to the size of the development.

The latest tech note prepared by Cannon, dated January 2019, suggests that both Derby City Council and Derbyshire County Council agree that a service frequency of two buses per hour during the daytime peak is acceptable. To be clear on this issue, neither of the Local Highway Authorities agrees with this statement.

As such, the calculation in Derby City Council's technical note dated October 2018, was designed to provide an option that could be implemented to deliver a 20 minute frequency bus service, taking into account the potential revenue that could be generated by the whole Boulton Moor Urban extension. The proposal was not designed to be financially sustainable but establish what the likely funding gap would be and hence identify a reasonable contribution/gap for the developers to support. From this perspective, designing a bus service and identifying contributions is difficult where there is no certainty over the bus service network in the future, mode share (which is linked to bus frequency), ticket pricing and the build out rate of the development.

Cannon's technical note also sets out a number of further service frequency options based on a revised housing profile build out for BM1, BM2 and SG. The note suggests a significantly reduced service frequency and contribution from BM1. As the bus service for BM1 is currently defined through a S106 agreement, neither of the local authorities are prepared to accept a lesser contribution.

Persimmon is currently in breach of the S106 agreement and there is a question over where this leaves the BM1 bus service and the triggers. It is understood there was an intention to re-negotiate the S106 agreement through a deed of variation, however, to date this has not been actioned. Clearly, this needs to be resolved in order to provide some certainty for BM2 and SG.

There is an economy of scale and cost benefit for the developers to jointly deliver a bus service that provides for the whole of the urban extension. Further, a joint bus service has more chance of becoming economically sustainable. However, Cannon's on behalf of BM2, has identified a higher cost share for Snelsmoor Grange based on the need to provide additional buses to cover a journey time that exceeds 30 minutes to the development. Derby City Council worked out their cost calculation based on the build out of houses each year on BM2 and SG. This is based on the assumption that cost sharing is more equal because of the benefits of delivering a service for the urban extension.

It should also be recognised that the desirable walking distance to a bus stop is 400m, as set out in the former, Providing for Journeys on Foot document, which largely remains the accepted 'benchmark'. It is understood that elements of the BM2 and all of the SG allocation would not benefit from such walking distances without a bus route being introduced through each of these allocations.

It is not in the direct gift of the Local Highway Authorities to re-negotiate the S106 agreement with BM1 in order to facilitate the delivery of a bus service for the urban extension. Further, in weighting the costs of bus service towards the SG development it makes it difficult for the Local Highway Authorities to set out a strategy and agree a contribution to deliver a bus service through a S106 agreement. As such, we intend to seek to condition the delivery of a bus service and for the developers of SG and BM2 to be secured through a joint service level agreement directly with an operator. This will be on the principle of ultimately delivering a bus service frequency of 3 buses per hour to the urban extension, or a suitable alternative separately if the developments do not come forward together, or the S106 for BM1 is not re-negotiated. The condition could be linked to certain housing delivery triggers across the whole Urban Extension to provide 1 bus per

hour, 2 buses per hour and then on review with the Local Highway Authorities 3 buses per hour, dependant on the contract with the bus operator and success of the service.

We would suggest that a meeting between respective transport consultants, local authorities and potential bus operators for the service would help to inform any potential service level agreement and refine the approach to conditions and trigger.

Future Highway Links

It is critical for the integration of the urban extension that the different developments are linked via the highway for vehicular, cycle and public transport to create permeability and connectivity across the urban extension. It is recognised that following discussions that reference to the phasing of the delivery of the links between SG and BM2 has been taken out the latest version of the DfD. Nevertheless, the links between SG and BM2 are intrinsically included in the DfD through the Access and Movement Strategy. These links are also commanded through the relevant local planning policies. As such, the respective Local Highway Authorities will seek to secure the links with triggers linked to development phases and based upon details of the detailed design of the links being submitted and agreed prior to delivery, recognising the outline nature of elements of the current SG and BM2 applications. The Local Highway Authorities are advised by the Local Planning Authorities at SDDC and DCC that unless the developers/landowner wish to liaise between themselves and agree a suitable way forward, which can be appropriately secured through the planning consents, that these links will be secured through either:

- s106 agreement; or
- As previously suggested, revising respective application site areas to cover the extent of the links and serving notice on relevant parties enabling conditions to be attached the permission securing the delivery of the links.

Bus Hub

In the absence of any Park and Ride facility, the delivery of the bus hub is key to the sustainability of the Boulton Moor Urban extension and is integral to the overall transport mitigation package. As such, the principles and delivery of the Bus Hub needs to be dealt with through the DfD but also through the changes to the BM1 S106 agreement. As such, we are pleased to see the Bus Hub is now referred to in the DFD. We would, however, like clearer detail on the specification for the Bus Hub adding to this part of the DFD, including but not limited to cycle facilities, the provision of electric vehicle charging points and e-bikes infrastructure. Further comments on this will be provided in a coordinated response

on the DFD from the Local Planning Authorities; with the delivery of the bus hub being secured through re-negotiation of the BM1 s106 agreement.

Yours Sincerely,

On behalf of Derby City Council

[redacted]

On behalf of Derbyshire County Council

[redacted]

CC. Steve Freek, Highways England – by e-mail.

Chris Nash, South Derbyshire District Council – by e-mail.

Stephen Bate – by e-mail.

Nicky Bartley, Derby City Council – by e-mail.

Paul Chamberlain, Derby City Council – by e-mail

Ian Wallis, Derby City Council – by e-mail

Geoff Blissett, Derbyshire County Council – by e-mail.

Chris Hegarty, Derbyshire County Council – by e-mail.

E702 - Meeting Note – 01/10/2021
Topic – Upcoming District Centre Application

Attendees – Geoff Blissett – Derbyshire County Council
Sue Highley – Derbyshire County Council
Dean Smy – Cannon Consulting Engineers

The meeting was held to discuss the District Centre application and proposed assessment methodology.

A brief of overview of the site was presented explaining

- how the northern parcel of the site evolved from the Park and Ride site (included as part of the Boulton Moor 1 residential scheme) to the current proposals.
- the proposals in the southern parcel which comprise 309 units (66 bed care home, 52 retirement and 191 residential units) of which 155 were part of the original Boulton Moor 1 development. In terms of modelling a further 150 units were already accounted for in the modelling due to the Boulton Moor 2 development being included as 700 units, when the permission included only 550 units (which was due to the school relocating). As such the net change in trips is negligible / reduced as a number of the units include retirement / care uses.

Traffic Survey Information

It was explained that surveys were carried out of the local highway network in July 2021 to inform an updated modelling exercise. This was on the basis the 2015 data was out of date and that newer data was not available pre-covid. This followed a period of monitoring the permanent count sites on the A6.

Derbyshire County confirmed that they are now accepting surveys from September 2021. It was explained that further surveys had been carried out in September 2021 to monitor traffic flows and a comparison of these would be included in the Transport Assessment.

Trip Rates

It was explained that where possible trip rates have been sourced from recent permitted developments rather than sourcing them from TRICs and having to agree them through scoping or the application.

In principle this methodology seemed to be acceptable but is subject to the comments from Derby City and National Highways (formally Highways England).

TEMPro

It was explained that a traditional traffic forecast using TEMPro growth rates and applying the BM1/BM2 and SG trips discretely has been adopted.

In principle this would appear acceptable subject to City and National Highways comments.

Pass-by / Linked / Diverted

It was explained that CCE had reviewed a number of planning applications to compare the trip type profiles which have been accepted / recommended by County and City Councils. These values were (10% internal as a result of the various uses; then based on the 90% of remaining trips 20% would be new trips on the network; 40% pass-by from the Snelsmoor Lane corridor (Boulton Moor 1, 2 and SG developments (2500 houses) and 40% from the Shardlow Road corridor.

It was acknowledged that a site with this mix of development would result in a mixture of trip types and in principle could be acceptable subject to City and National Highways Comments.

General Assessment Comment

Clearly it would be useful if all 3 Highway Authorities reached a similar conclusion to any assessment. It may therefore be beneficial for one party to take an lead of the review similar to that of the Boulton Moor 2 development which was primarily lead by City and with modelling advise (regarding Shardlow Road / A6 (T) from National Highways and their term consultants AECOM.

Shardlow Road / Snelsmoor Lane junction forms part of county's network. It is sandwiched between City and National Highways network and therefore from a network management point of view it sits mainly with them.

Notwithstanding the above County Highways would want to ensure that the network / committed offsite highway works can accommodate the proposed development in terms of capacity and highways safety. The later referring to the interaction between the proposed site access roundabout and the Shardlow Road / Snelsmoor Lane junction.

It was explained that this has been considered and will be set out in the Transport Assessment.

Offsite Highway Works

We discussed the committed off site highway works and that we have looked that the estimate program for their delivery based on a conservative approach. County asked whether either of these schemes would be required by this development.

It was explained that review of program shows that the Option1b (a6 (T) Thulston Roundabout) works will be delivered prior to or early in the District Centre build out (prior to the occupation of the 50th unit on the combined BM2/SG development). These works address the pre-covid queuing issues and provide sufficient capacity to accommodate the anticipated trips associate with the build out of BM2/SG and the District Centre.

The works to the Snelsmoor Lane / Shardlow Road junction would then be delivered at the 450th unit by the BM2/SG developments. This trigger was based on the need for the trigger to fall within the build out program of both sites. However, based on modelling these works would not actually be required until a later date.

What this means is that there is additional headroom and due to the build out trajectory it is considered that the full District Centre can be delivered without the need for these works. They will then be provided by BM2/SG and we have tested the full committed development scheme with

proposed traffic forecasts to show that the trips can be accommodated without further improvements to the junctions.

County expressed that this would need to be clearly set out in the Transport Assessment.

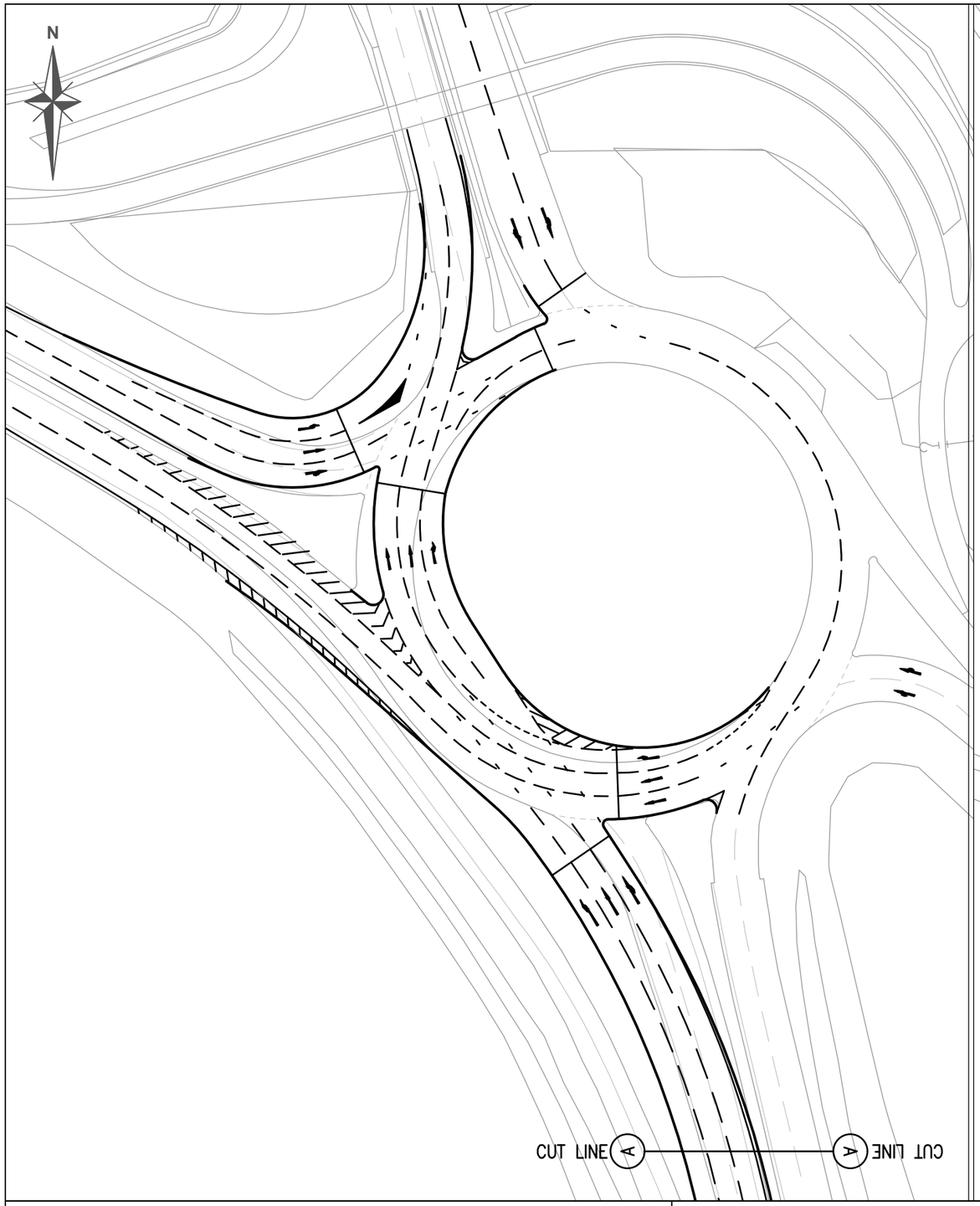
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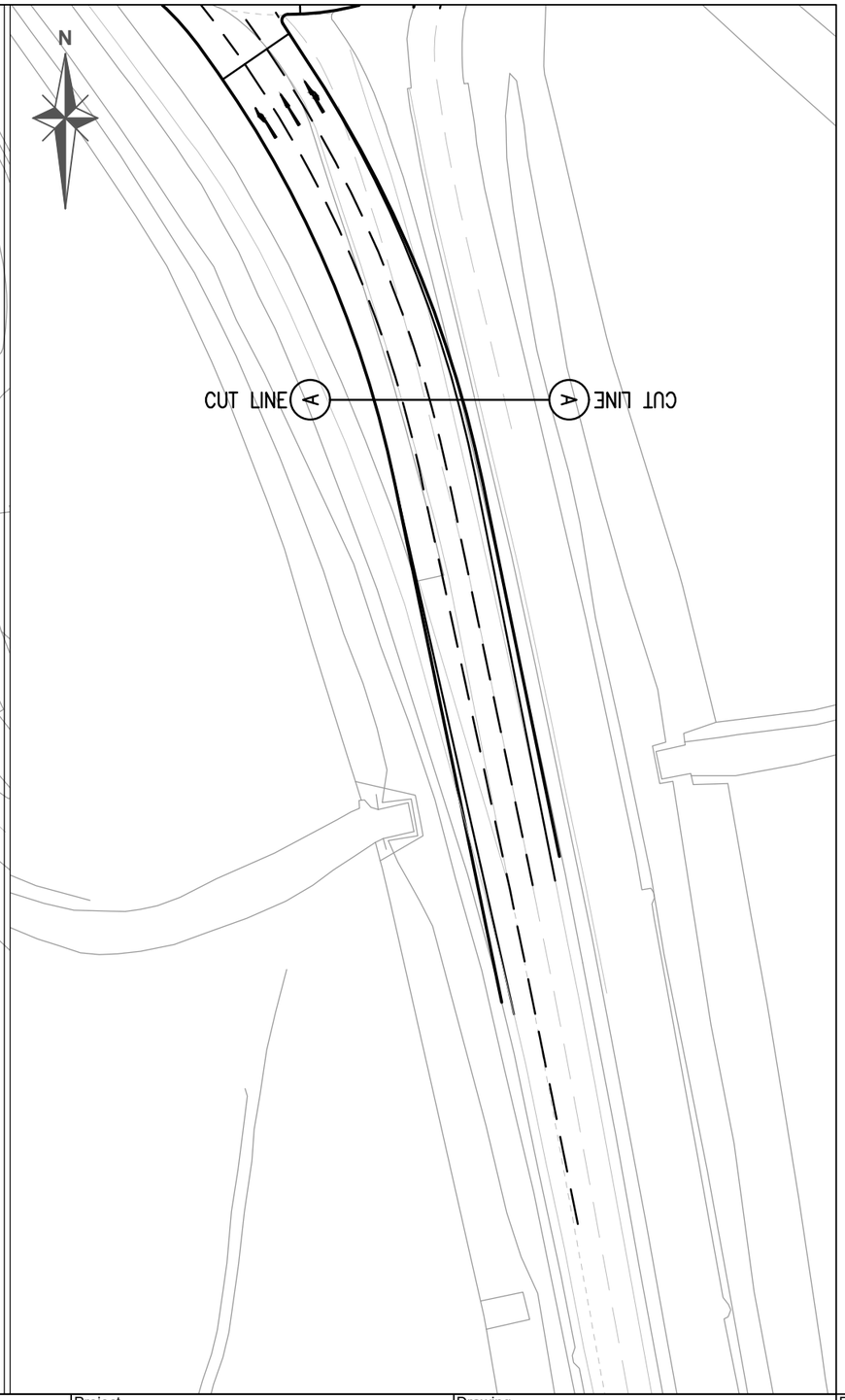
We discussed that the residential units would be accessed from Persimmons northern roundabout which had been constructed. However, CCE asked why the requirement for Toucan Crossings (BM1 planning) has subsequently agreed through the S.278 as uncontrolled crossing points). Was this due to demand or ongoing maintenance?

County explained that this had been dealt with by Kevin Barton who would be able to provide further comment however they believed that it was both and that ducts and drawpits had been installed should there be a need to upgrade the junction in the future.

Appendix C

Committed Offsite Highway Works DE C 004 and DE C001





Notes:

1
2
3

Key:

1
2
3

highways england

Area 7
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Rev	By	Chk	App	Date	Description

PRELIMINARY

Project: A6 Thulston Rounabout

Drawing: Proposed Alterations Option 1b

Drawing No.
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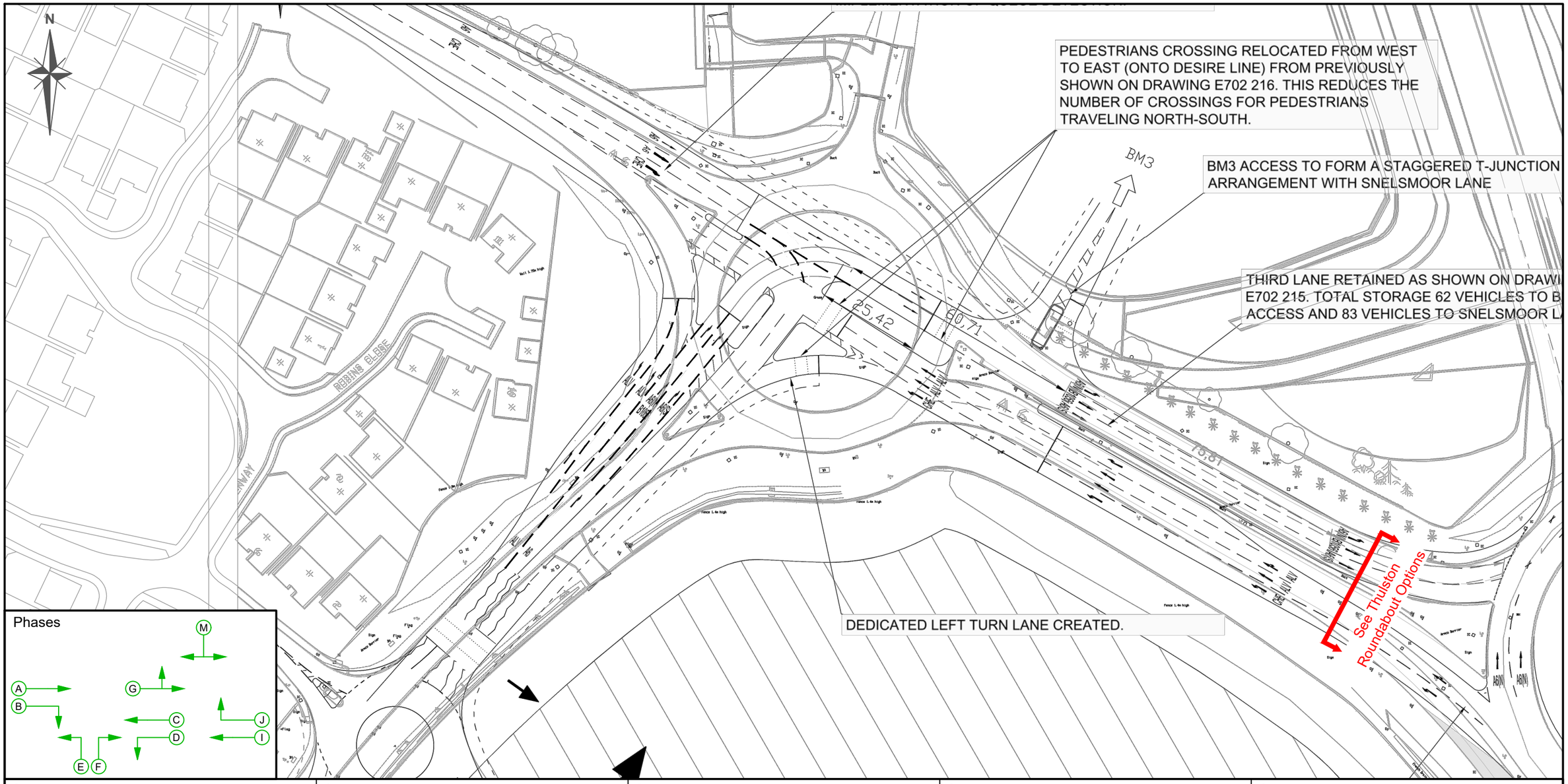
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Project Ref

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Checked : Date:
Approved : Date:
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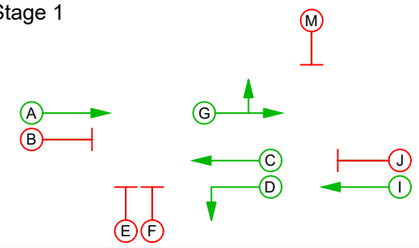
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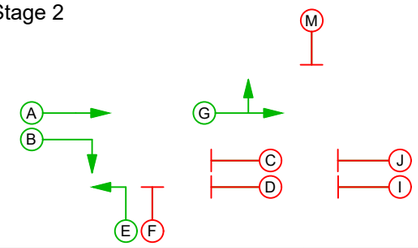


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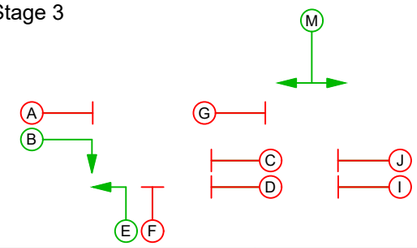
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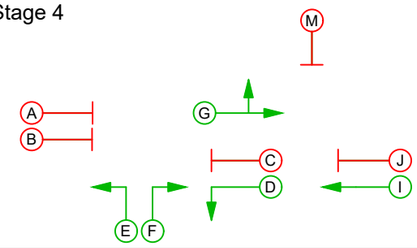
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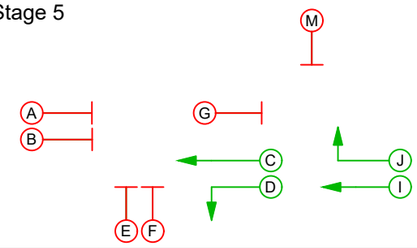
Stage 3



Stage 4



Stage 5



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Rev	By	Chk	App	Date	Description

PRELIMINARY

Project: A6 Thulston Rounabout

Drawing: Snelsmoor T-Junction Option 9 - Signal Stages

Drawing No.

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Revision

Project Ref

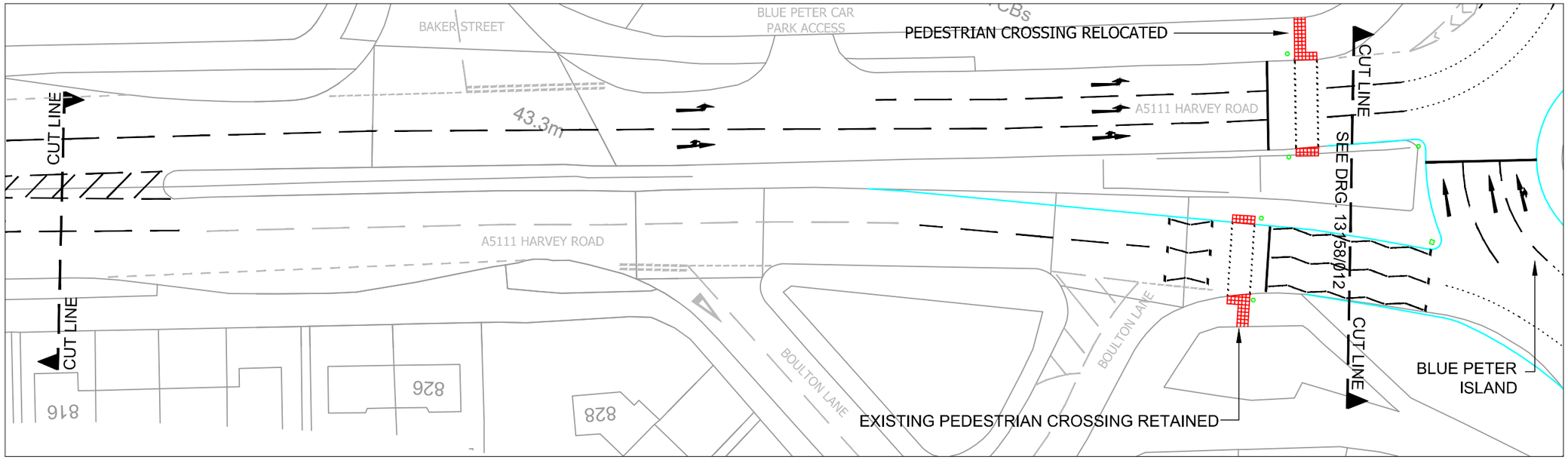
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Approved : Date:
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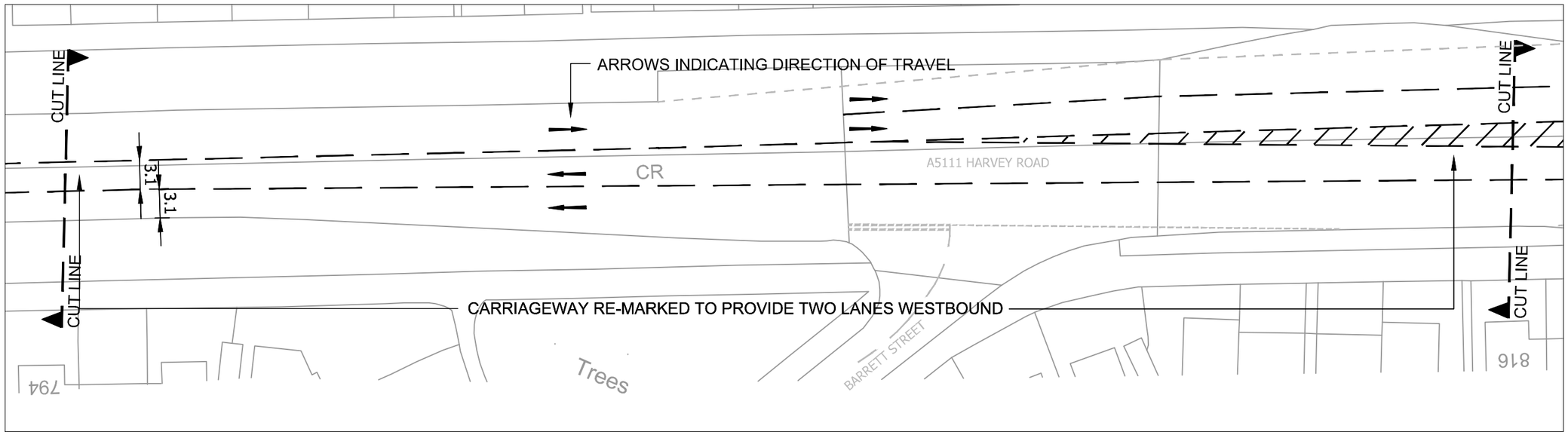
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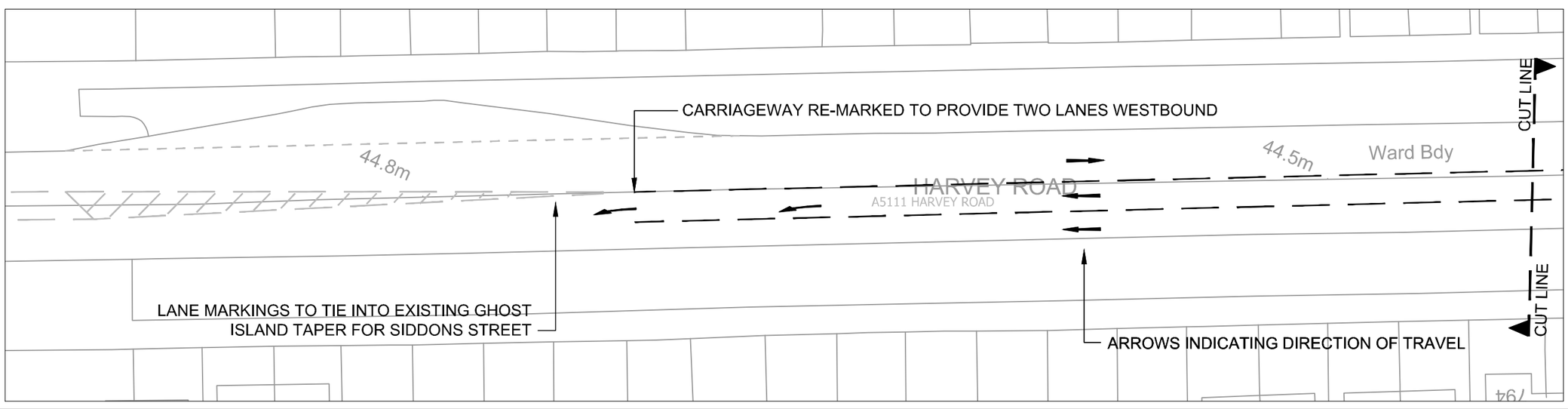
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Appendix D

Committed improvements to Alvaston District Centre







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PROJECT
Snelsmoor Grange

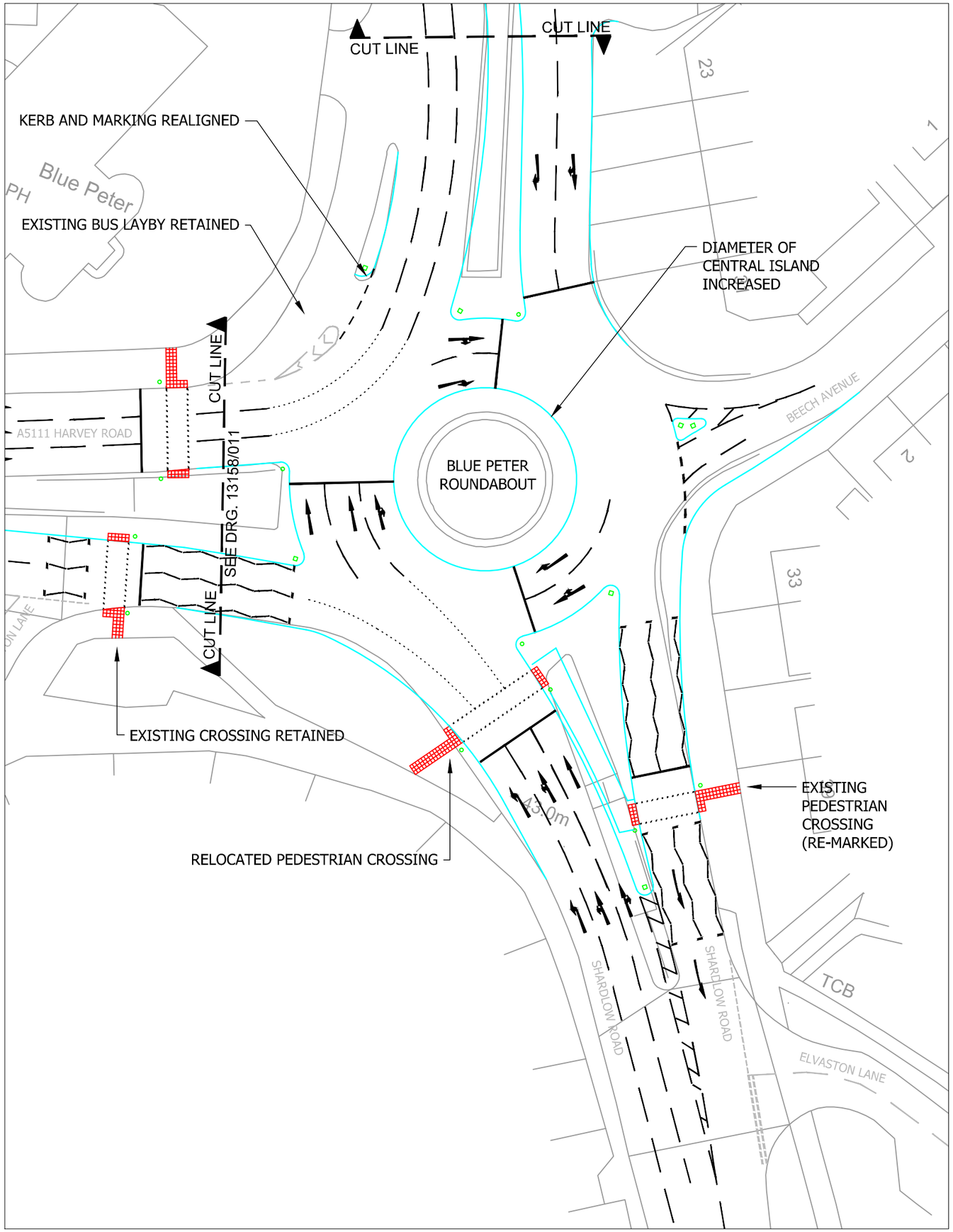
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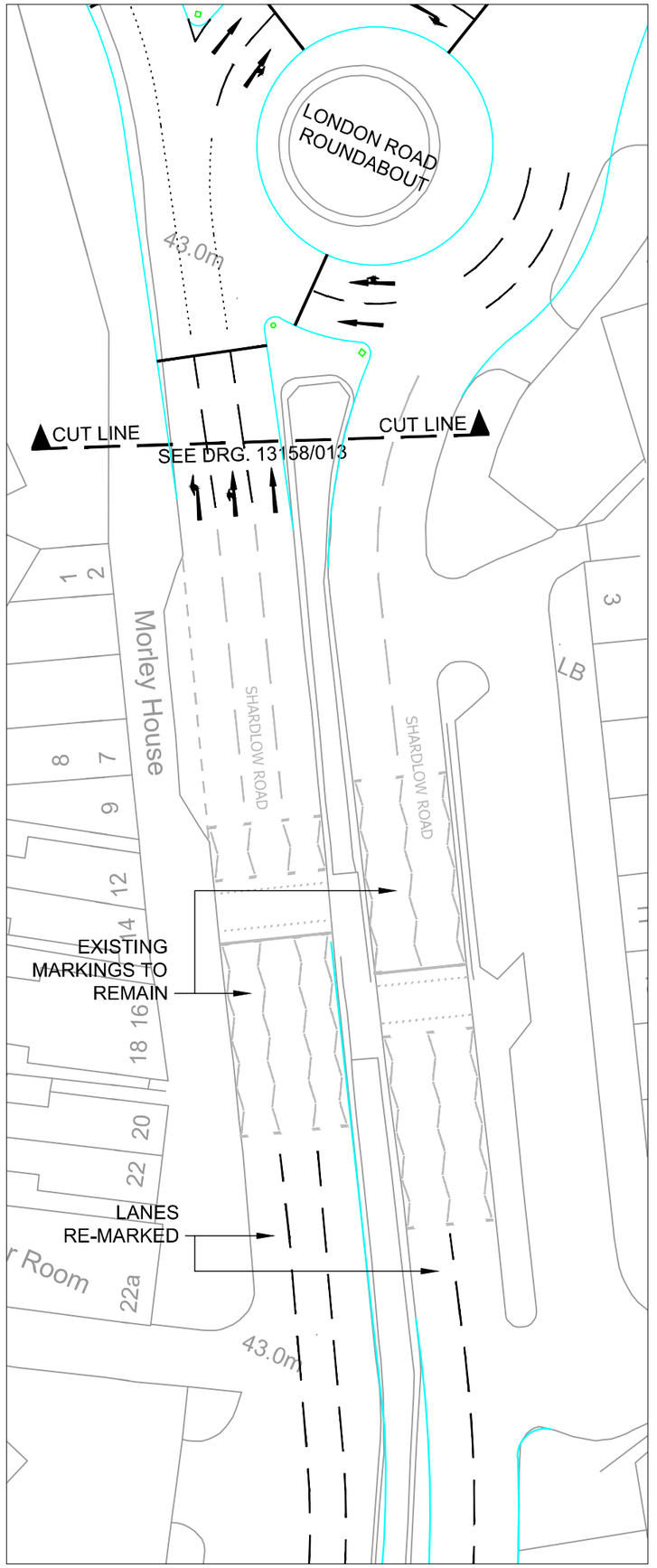
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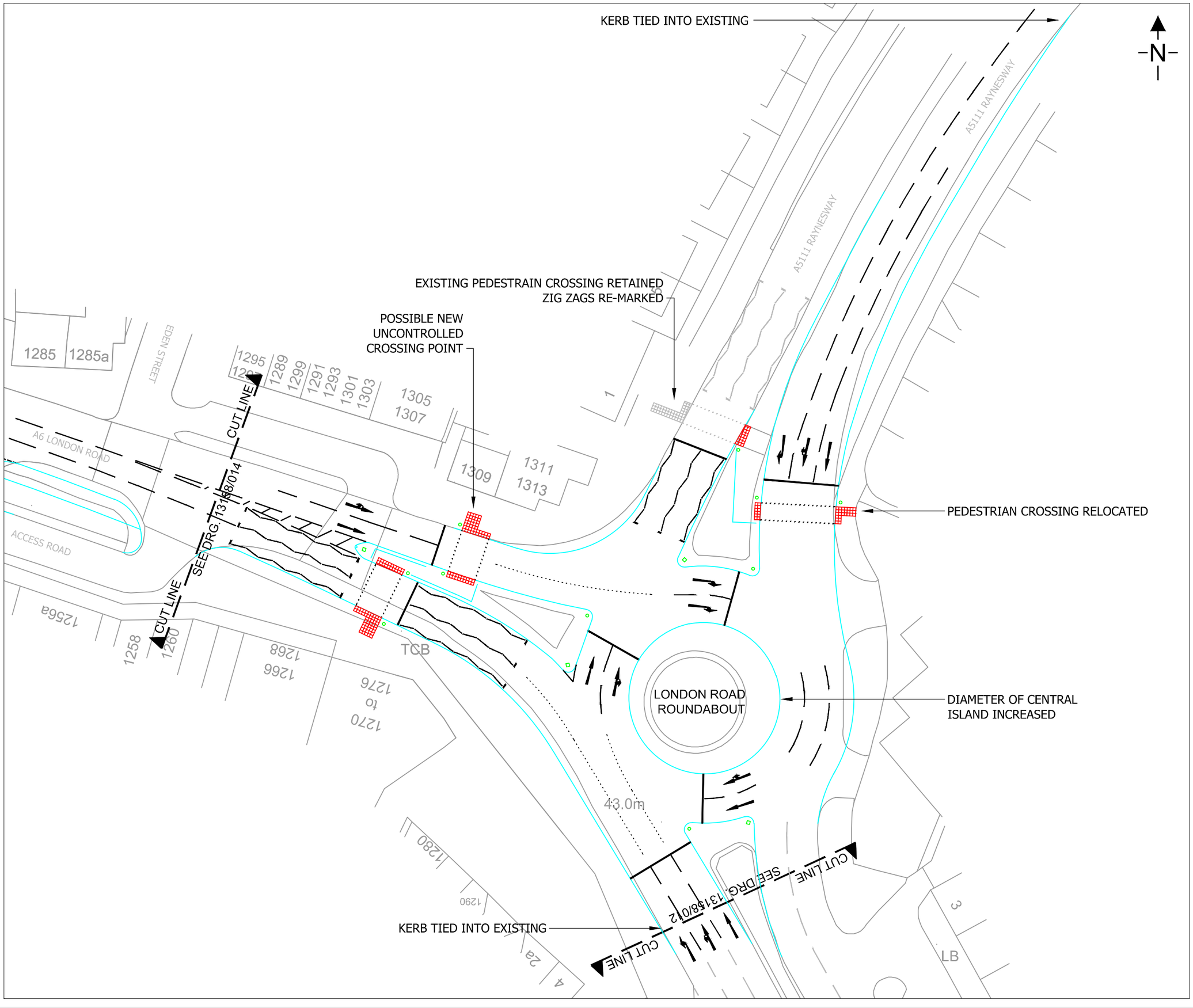
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POSSIBLE IMPROVEMENTS TO ALVASTON DISTRICT CENTRE - LONDON ROAD ROUNDABOUT

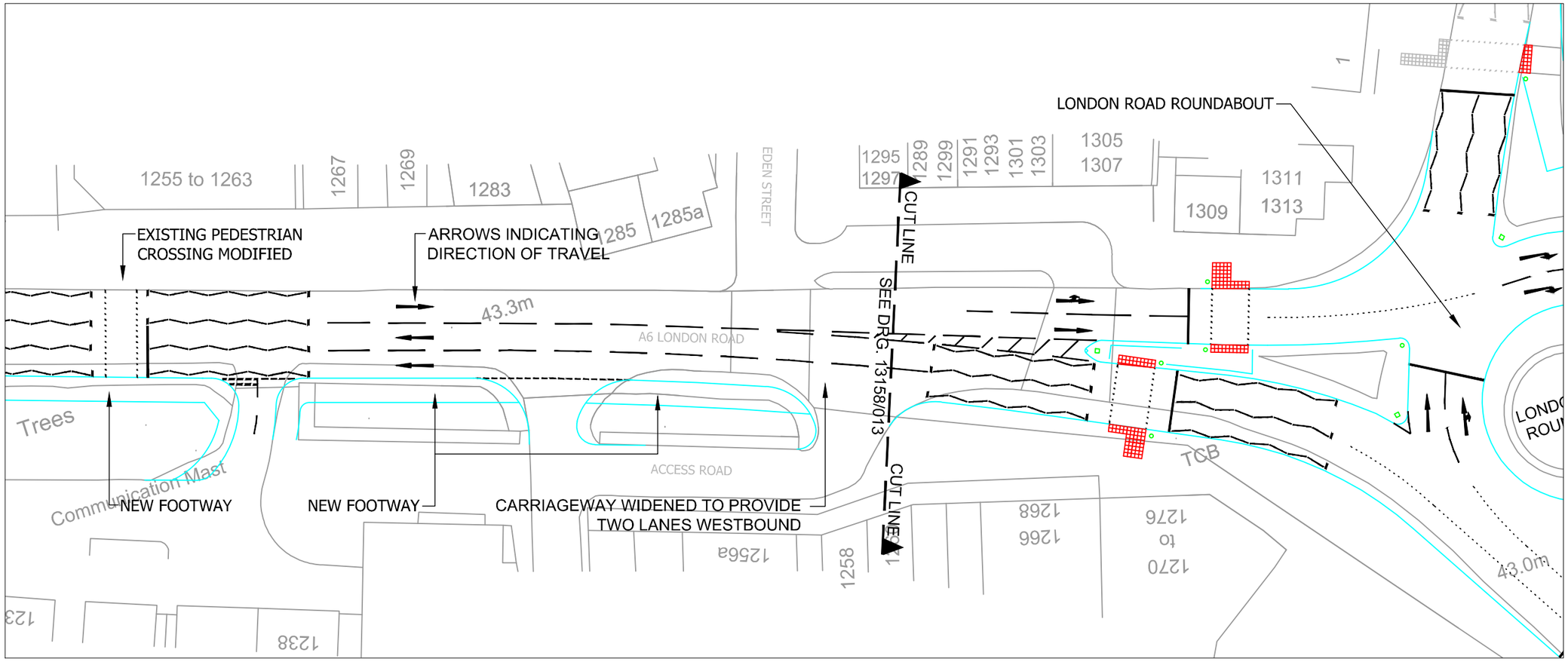
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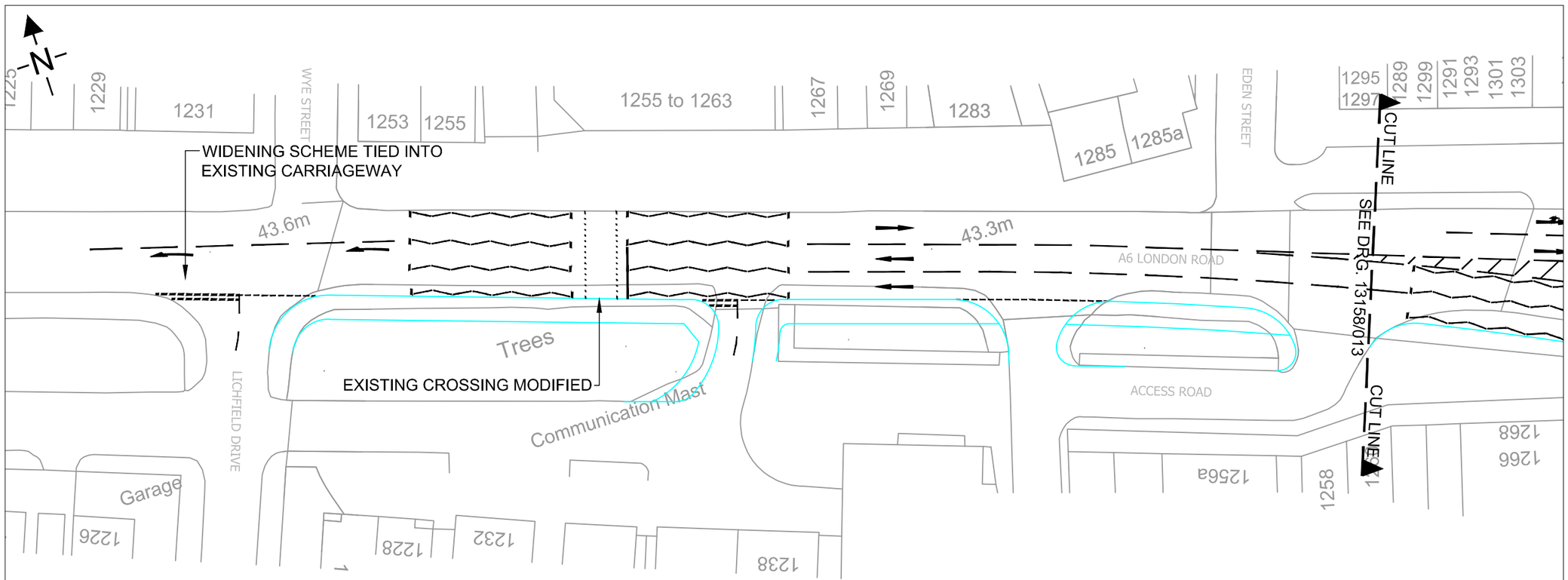
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POSSIBLE IMPROVEMENTS TO ALVASTON DISTRICT CENTRE - LONDON ROAD

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Appendix E

Derby City Cycling Map

cycle derby

Derby Cycle Map

Features

Key

Common signs

Advanced stop lines

DERBY CITY COUNCIL

Bike shops

Useful contacts

Streetpride
Derby City Council



Appendix F

Public Transport Information

DERBY CITY ROUTE MAP

DERBY CITY CENTRE

Tourist Information Centre
Library, Museum & Art Gallery
Assembly Rooms
Market Hall
Council House
Courts
BUS STATION
CAR PARK
EAGLE MARKET
Derby Theatre
INTU DERBY SHOPPING CENTRE
The Spot
London Road Community Hospital
Rail Station
RIVER DERWENT
Riverside Path
0 100 200 300 Metres
0 100 200 300 Yards

- C1 Main Bus Stops
- Other Stops
- Footpath links
- Pedestrian streets
- Taxi Rank

Duplicate Route Numbers

Please note that the following route number occurs more than once, and is therefore used to identify more than one service:

- 4 City Centre - Allenton - Alvaston
- 4‡ University - Markeaton Street
- 7 City Centre - Sinfin (via Stenson Road)
- 7‡ University - Ashbourne - University
- 9 City Centre - Ockbrook
- 9 City Centre - Mackworth Estate

Ab	The Allestree (blue route)
Ag	The Allestree (green route)
AMB	Amberline
BC	Black Cat
CMT	Comet
HQ	Harlequin
IF	Ilkeston Flyer
IGO	Indigo
Mb	The Mickleover (blue route)
Mg	The Mickleover (green route)
P&R	Park & Ride
RA	Red Arrow
ROY	Royal Derby
SF	Spondon Flyer
SKY	Skylink
SWI	Swift
TP	TransPeak

Bus served roads	
Hail & Ride bus roads	19*
Bus routes hourly or better*	32
Bus routes 4-5 journeys a day or better*	109
Infrequent bus service	423
Services passing non-stop	212/RA
Derby University 'Unibus' services	5‡
Certain journeys only	♦♦
Route terminus	* 90
Routes operate in direction of arrow	A3
Bus stop	
Pedestrian areas	
Rail line and station	
Tourist Information Centre	
Hospital	
Places of interest	Museum
Long distance trail	

*Weekday daytime frequency

0 ¼ ½ ¾ 1 Mile
0 ½ 1 1½ Kilometres

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1/1A Derby to Alvaston

via Rail Station and Blue Peter - Valid from Tuesday, August 31, 2021 to Wednesday, January 5, 2022

Monday to Friday - Derby Bus Station

	1A	1A	1A	1A	1A	1	1A	1	1A	1	1A	1	1A	1	1A	1	1A	1	1A	1	1A	1	1A	1	1A
Derby Bus Station	--	--	--	--	0622	--	0637	--	0652	--	0707	--	0722	--	0737	--	0752	--	0807	--	0822	--	0837	--	0852
Derby Bus Station	--	--	--	--	--	0629	--	0644	--	0659	--	0714	--	0729	--	0744	--	0759	--	0814	--	0829	--	0844	--
Derby Morledge	0534	0536	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wilmorton Alvaston Park	--	0547	0602	0617	0633	0639	0648	0654	0703	0709	0718	0725	0734	0741	0750	0756	0805	0811	0820	0828	0837	0843	0852	0858	0906
Boulton Bracknell Drive	--	0555	0610	0625	0642	--	0657	--	0712	--	0727	--	0743	--	0759	--	0814	--	0830	--	0848	--	0902	--	0915
Boulton The Cornishman	--	0601	0616	0631	0649	--	0704	--	0719	--	0734	--	0750	--	0807	--	0822	--	0838	--	0856	--	0909	--	0921
Boulton The Cornishman	--	--	--	--	--	0653	--	0708	--	0723	--	0739	--	0755	--	0810	--	0825	--	0844	--	0900	--	0915	--
Boulton Arlington Drive	--	--	--	--	--	0659	--	0715	--	0730	--	0746	--	0803	--	0818	--	0833	--	0852	--	0907	--	0922	--
Alvaston Blue Peter	0521	0606	0621	0636	0657	--	0712	--	0727	--	0743	--	0759	--	0816	--	0831	--	0848	--	0904	--	0917	--	0929
Wilmorton Conference Centre	0524	0609	0624	0639	0701	--	0717	--	0732	--	0748	--	0804	--	0821	--	0836	--	0853	--	0908	--	0921	--	0933
Wilmorton Ascot Drive	0525	0610	0625	0640	0702	0712	0718	0728	0733	0745	0749	0803	0805	0820	0822	0835	0837	0850	0854	0905	0909	0919	0922	0934	0934
Derby Bus Station	--	0624	0639	0654	0719	--	0735	--	0750	--	0807	--	0823	--	0840	--	0855	--	0910	--	0925	--	0937	--	0949
Derby Bus Station	--	--	--	--	--	0725	--	0741	--	0758	--	0806	--	0833	--	0848	--	0903	--	0918	--	0931	--	0946	--

	1		1A	1	1A	1	1A	1	1A	1		1	1	1A	1	1A	1	1A	1	1A	1	1A	1	1A	1	1A
Derby Bus Station	--		07	--	22	--	37	--	52	--		1452	--	1507	--	1522	--	1537	--	1552	--	1607	--	1622	--	1637	--	1652
Derby Bus Station	0859		--	14	--	29	--	44	--	59		--	1459	--	1514	--	1529	--	1544	--	1559	--	1614	--	1629	--	1644	--
Derby Morledge	--		--	--	--	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wilmorton Alvaston Park	0910		19	25	34	40	49	55	04	10		1504	1510	1521	1526	1536	1543	1551	1558	1606	1613	1621	1628	1636	1643	1652	1659	1707
Boulton Bracknell Drive	--		27	--	42	--	57	--	12	--		1512	--	1531	--	1546	--	1601	--	1617	--	1632	--	1647	--	1703	--	1719
Boulton The Cornishman	--	Then at these mins	34	--	49	--	04	--	19	--	past each hour until	1519	--	1539	--	1554	--	1609	--	1625	--	1640	--	1655	--	1712	--	1729
Boulton The Cornishman	0924		--	39	--	54	--	09	--	24		--	1524	--	1543	--	1600	--	1615	--	1630	--	1645	--	1659	--	1716	--
Boulton Arlington Drive	0931		--	46	--	01	--	16	--	31		--	1531	--	1551	--	1608	--	1623	--	1638	--	1653	--	1708	--	1726	--
Alvaston Blue Peter	--		42	--	57	--	12	--	27	--		1527	--	1549	--	1604	--	1619	--	1635	--	1650	--	1705	--	1722	--	1738
Wilmorton Conference Centre	--		46	--	01	--	16	--	31	--		1531	--	1554	--	1609	--	1624	--	1640	--	1655	--	1710	--	1727	--	1743
Wilmorton Ascot Drive	0942		47	57	02	12	17	27	32	42		1532	1542	1555	1604	1610	1621	1625	1636	1641	1651	1656	1706	1711	1721	1728	1739	1744
Derby Bus Station	--		02	--	17	--	32	--	47	--		1547	--	1609	--	1624	--	1639	--	1655	--	1710	--	1725	--	1742	--	1758
Derby Bus Station	0954		--	09	--	24	--	39	--	54		--	1554	--	1615	--	1632	--	1647	--	1702	--	1717	--	1732	--	1750	--

	1	1A	1	1A	1	1A	1	1A	1	1A	1	1A	1	1A		1	1A	1	1A		1A	1A	1	1A	1	1A	1	1A
Derby Bus Station	--	1707	--	1722	--	1737	--	1752	--	1810	--	1822	--	1848		--	18	--	48		--	2048	--	2118	--	2148	--	2218
Derby Bus Station	1659	--	1711	--	1729	--	1744	--	1759	--	1816	--	1833	--		03	--	33	--		2033	--	2103	--	2133	--	2203	--
Derby Morledge	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--		--	--	--	--	--	--	--	--
Wilmorton Alvaston Park	1715	1723	1727	1738	1745	1753	1800	1807	1813	1822	1830	1832	1845	1858		13	28	43	58		2043	2058	2113	2128	2143	2158	2213	2228
Boulton Bracknell Drive	--	1736	--	1751	--	1806	--	1819	--	1830	--	1840	--	1906		--	36	--	06		--	2106	--	2136	--	2206	--	2236
Boulton The Cornishman	--	1746	--	1800	--	1815	--	1828	--	1836	--	1846	--	1912	Then at these mins	--	42	--	12	past each hour until	--	2112	--	2142	--	2212	--	2242
Boulton The Cornishman	1732	--	1744	--	1802	--	1817	--	1828	--	1845	--	1901	--		26	--	56	--		2056	--	2126	--	2156	--	2226	--
Boulton Arlington Drive	1742	--	1753	--	1811	--	1826	--	1836	--	1852	--	1907	--		32	--	02	--		2102	--	2132	--	2202	--	2232	--
Alvaston Blue Peter	--	1754	--	1808	--	1823	--	1836	--	1844	--	1854	--	1920		--	50	--	20		--	2120	--	2150	--	2220	--	2250
Wilmorton Conference Centre	--	1758	--	1812	--	1827	1835	1840	1845	1848	1901	1858	--	1924		--	54	--	24		--	2124	--	2154	--	2224	--	2254
Wilmorton Ascot Drive	1754	1759	1805	1813	1823	1828	--	1841	--	1849	--	1859	1916	1925		41	55	11	25		2111	2125	2141	2155	2211	2225	2241	2255
Derby Bus Station	--	1816	--	1827	--	1842	--	1854	--	1859	--	1909	--	1935		--	05	--	35		--	2135	--	2205	--	2235	--	2305
Derby Bus Station	1805	--	1816	--	1834	--	--	--	--	--	--	--	1925	--		50	--	20	--		2120	--	2150	--	2220	--	2250	--

	1	1A	1
Derby Bus Station	--	2248	--
Derby Bus Station	2233	--	2303
Derby Morledge	--	--	--
Wilmorton Alvaston Park	2243	2258	2313
Boulton Bracknell Drive	--	2306	--
Boulton The Cornishman	--	2312	--
Boulton The Cornishman	2256	--	2326
Boulton Arlington Drive	2302	--	2332
Alvaston Blue Peter	--	2321	--
Wilmorton Conference Centre	--	2326	2341
Wilmorton Ascot Drive	2311	--	--
Derby Bus Station	--	--	--
Derby Bus Station	2320	--	--

Saturday - Derby Bus Station

	1A	1	1A	1	1A	1	1A		1	1A	1	1A	1	1A	1	1A		1A	1A	1	1A	1	1A	1	1A	1	1A	1
Derby Bus Station	--	--	--	0729	--	0744	--		59	--	14	--	29	--	44	--		1644	--	1659	--	1714	--	1729	--	1744	--	1759
Derby Bus Station	--	--	0707	--	0737	--	0752		--	07	--	22	--	37	--	52		--	1652	--	1707	--	1722	--	1737	--	1752	--
Wilmorton Alvaston Park	0648	0710	0719	0740	0749	0755	0804		10	19	25	34	40	49	55	04		1655	1704	1710	1719	1725	1734	1740	1749	1755	1804	1810
Boulton The Cornishman	--	0724	--	0754	--	0809	--		24	--	39	--	54	--	09	--		1709	--	1724	--	1739	--	1754	--	1809	--	1824
Boulton Arlington Drive	--	0731	--	0801	--	0819	--	Then at these mins	31	--	46	--	01	--	16	--	past each hour until	1716	--	1731	--	1746	--	1801	--	1816	--	1831
Boulton Bracknell Drive	0657	--	0727	--	0757	--	0812		--	27	--	42	--	57	--	12		--	1712	--	1727	--	1742	--	1757	--	1812	--
Boulton The Cornishman	0704	--	0734	--	0804	--	0819		--	34	--	49	--	04	--	19		--	1719	--	1734	--	1749	--	1804	--	1819	--
Wilmorton Conference Centre	0716	--	0746	--	0816	--	0831		--	46	--	01	--	16	--	31		--	1731	--	1746	--	1801	--	1816	1824	1831	1839
Wilmorton Ascot Drive	0717	0737	0747	0812	0817	0828	0832		42	47	57	02	12	17	27	32		1727	1732	1742	1747	1757	1802	1812	1817	--	1832	--
Derby Bus Station	--	0754	--	0824	--	0839	--		54	--	09	--	24	--	39	--		1739	--	1754	--	1809	--	1824	--	--	--	--
Derby Bus Station	0732	--	0802	--	0832	--	0847		--	02	--	17	--	32	--	47		--	1747	--	1802	--	1817	--	1832	--	1847	--

	1A	1	1A	1	1A		1	1A	1	1A		1A	1A	1
Derby Bus Station	--	1814	--	1833	--		03	--	33	--		2233	--	2303
Derby Bus Station	1807	--	1822	--	1848		--	18	--	48		--	2248	--
Wilmorton Alvaston Park	1819	1825	1834	1844	1858		13	28	43	58		2243	2258	2313
Boulton The Cornishman	--	1839	--	1900	--		26	--	56	--		2256	--	2326
Boulton Arlington Drive	--	1846	--	1906	--	Then at these mins	32	--	02	--	past each hour until	2302	--	2332
Boulton Bracknell Drive	1827	--	1842	--	1906		--	36	--	06		--	2306	--
Boulton The Cornishman	1834	--	1849	--	1912		--	42	--	12		--	2312	--
Wilmorton Conference Centre	1845	1854	1900	--	1924		--	54	--	24		--	2325	2341
Wilmorton Ascot Drive	1846	--	1901	1918	1925		44	55	14	25		2314	--	--
Derby Bus Station	--	--	--	1924	--		50	--	20	--		2320	--	--
Derby Bus Station	1859	--	1914	--	1935		--	05	--	35		--	--	--

Sunday - Derby Bus Station

	1	1A	1	1A	1	1A	1		1A	1	1A	1		1	1	1A	1	1A	1	1A	1
Derby Bus Station	--	--	--	--	--	1003	--		33	--	03	--		2003	--	2033	--	2118	--	2218	--
Derby Bus Station	--	--	0918	--	0948	--	1018		--	48	--	18		--	2018	--	2048	--	2148	--	2248
Wilmorton Alvaston Park	0857	0912	0928	0942	0958	1013	1028		43	58	13	28		2013	2028	2043	2058	2128	2158	2228	2258
Boulton Bracknell Drive	--	0921	--	0951	--	1021	--		51	--	21	--		2021	--	2051	--	2136	--	2236	--
Boulton The Cornishman	--	0927	--	0957	--	1027	--	Then at these mins	57	--	27	--	past each hour until	2027	--	2057	--	2142	--	2242	--
Boulton The Cornishman	0911	--	0941	--	1011	--	1041		--	11	--	41		--	2041	--	2111	--	2211	--	2311
Boulton Arlington Drive	0917	--	0947	--	1017	--	1047		--	17	--	47		--	2047	--	2117	--	2217	--	2317
Wilmorton Conference Centre	--	0939	--	1009	--	1039	--		09	--	39	--		2039	--	2109	--	2154	--	2255	2329
Wilmorton Ascot Drive	0924	0940	0959	1010	1029	1040	1059		10	29	40	59		2040	2059	2110	2129	2155	2229	--	--
Derby Bus Station	--	0950	--	1020	--	1050	--		20	--	50	--		2050	--	2120	--	2205	--	--	--
Derby Bus Station	0935	--	1005	--	1035	--	1105		--	35	--	05		--	2105	--	2135	--	2235	--	--

F1 Derby to Alvaston

via Pride Park and Blue Peter - Valid from Tuesday, August 31, 2021 to Wednesday, January 5, 2022

Monday to Friday - Boulton The Cornishman

	F1	F1		F1	F1		F1	F1	F1	F1	F1	F1
Derby Bus Station	0735	0815	Then at these mins	45	15	past each hour until	1445	1515	1555	1635	1715	1755
Pride Park Park-and-Ride	0741	0821		51	21		1451	1521	1601	1641	1721	1801
Boulton The Needles	0751	0831		01	31		1501	1531	1611	1651	1731	1811
Boulton The Cornishman	0754	0834		04	34		1504	1534	1614	1654	1734	1814

Monday to Friday - Derby Bus Station

	F1	F1	F1	F1		F1	F1		F1	F1	F1	F1	F1	F1
Boulton The Cornishman	0637	0717	0757	0837	Then at these mins	07	37	past each hour until	1507	1537	1617	1657	1737	1817
Boulton The Cornishman	0644	0724	0804	0844		14	44		1514	1544	1624	1704	1744	1824
Alvaston Bembridge Drive Top	0647	0727	0807	0847		17	47		1517	1547	1627	1707	1747	1827
Alvaston Blue Peter	0649	0729	0809	0849		19	49		1519	1549	1629	1709	1749	1829
Pride Park Park-and-Ride	0657	0737	0817	0857		27	57		1527	1557	1637	1717	--	--
Derby Bus Station	0707	0747	0827	0907		37	07		1537	1607	1647	1727	--	--

73 Derby to Weston-on-Trent

Effective from: 19/04/2021

Littles Travel



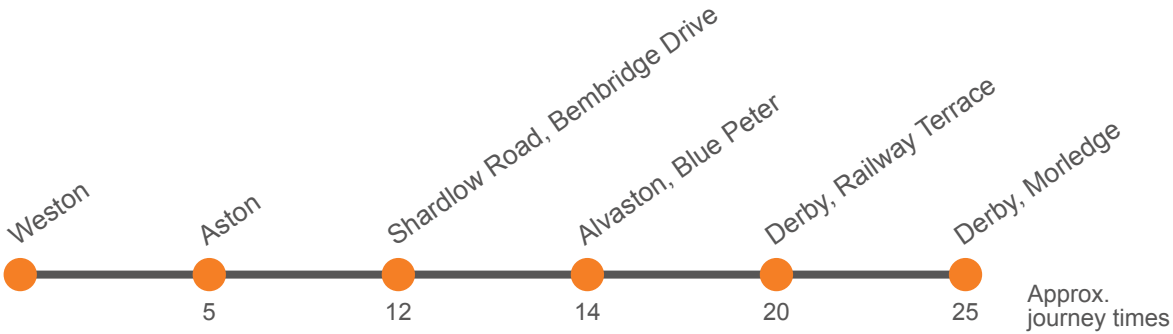
Monday to Friday

Derby, Bus Station, Bay 23	1045	1245
Derby Railway Station, Stop S2	1048	1248
Alvaston, Blue Peter	1055	1255
Shardlow Road, Bembridge Drive	1058	1258
Aston-on-Trent, White Hart Inn	1104	1304
Weston-on-Trent, Methodist Church	1109	1309

73 Weston-on-Trent to Derby

Effective from: 19/04/2021

Littles Travel



Monday to Friday

Weston-on-Trent, Methodist Church	0935	1115
Aston-on-Trent, White Hart Inn	0940	1120
Shardlow Road, Bembridge Drive	0947	1127
Alvaston, Blue Peter	0949	1129
Derby Railway Station, Stop S1	0955	1135
Derby, Bus Station, Bay 23	1000	1140

leicester > loughborough > airport > derby

mondays to fridays

		C		C		C	
	pm	am	am	am	am	am	am
Leicester Causeway Lane	11.55	12.55	-	1.55	-	2.55	-
Loughborough High Street Stop HB arr	12.20	1.20	-	2.20	-	3.20	-
Loughborough High Street Stop HB dep	12.20	1.20	3M	2.20	3M	3.20	3M
Hathern opp Anchor Inn	12.29	3M	1.29	3M	2.29	3M	3.29
Long Whatton Piper Drive	-	-	-	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-	-	-	-
Kegworth Square	12.35	-	1.35	-	2.35	-	3.35
East Midlands Gateway	12.39	-	1.39	-	2.39	-	3.39
Pegasus Business Park	12.40	-	1.40	-	2.40	-	3.40
East Midlands Airport Bay C arr	12.43	-	1.43	-	2.43	-	3.43
East Midlands Airport Bay C dep	12.46	-	1.46	-	2.46	-	3.46
East Midlands Airport DHL	12.49	-	1.49	-	2.49	-	3.49
Castle Donington Bus Station Stand A	12.54	-	1.54	-	2.54	-	3.54
Shardlow Navigation Inn	1.02	-	2.02	-	3.02	-	4.02
Alvaston Blue Peter	1.09	-	2.09	-	3.09	-	4.09
Derby Train Station Forecourt	1.15	-	2.15	-	3.15	-	4.15
Derby Bus Station Bay 8	-	-	-	-	-	-	-
Derby Morledge Stop C1	1.19	-	2.19	-	3.19	-	4.19

	am	am	am	am	am	am	am
Leicester Causeway Lane	-	3.55	4.25	-	4.55	-	5.30
Loughborough High Street Stop HB arr	-	4.20	4.50	-	5.20	-	5.55
Loughborough High Street Stop HB dep	3.50	4.20	4.50	5.05	5.20	5.40	5.55
Hathern opp Anchor Inn	3.59	4.29	4.59	5.14	5.29	5.49	6.04
Long Whatton Piper Drive	-	-	-	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-	-	-	-
Kegworth Square	4.05	4.35	5.05	5.20	5.35	5.55	6.10
East Midlands Gateway	4.09	4.39	5.10	5.25	5.40	6.00	6.15
Pegasus Business Park	4.10	4.40	5.12	5.27	5.42	6.02	6.17
East Midlands Airport Bay C arr	4.13	4.43	5.15	5.30	5.45	6.05	6.20
East Midlands Airport Bay C dep	4.16	4.46	5.19	5.34	5.49	6.09	6.24
East Midlands Airport DHL	4.19	4.49	5.23	5.38	5.53	6.13	6.28
Castle Donington Bus Station Stand A	4.24	4.54	5.28	5.43	5.58	6.18	6.33
Shardlow Navigation Inn	4.32	5.02	5.36	5.51	6.06	6.26	6.41
Alvaston Blue Peter	4.39	5.09	5.46	6.01	6.16	6.36	6.51
Derby Train Station Forecourt	4.45	5.15	5.52	6.07	6.22	6.42	7.00
Derby Bus Station Bay 8	-	-	5.56	6.11	6.26	6.46	7.04
Derby Morledge Stop C1	4.49	5.19	-	-	-	-	-

	am	am	am	am	am	am	am
Leicester Causeway Lane	-	5.55	-	6.20	6.40	7.15	7.35
Loughborough High Street Stop HB arr	-	6.20	-	6.48	7.08	7.43	8.08
Loughborough High Street Stop HB dep	6.10	6.20	6.40	6.49	7.09	7.44	8.09
Hathern opp Anchor Inn	6.19	6.29	6.49	6.58	7.18	7.53	8.18
Long Whatton Piper Drive	-	-	-	-	7.22	-	-
Diseworth opp Bull & Swan	-	-	-	-	7.28	-	-
Kegworth Square	6.25	6.35	6.55	7.05	-	8.00	8.24
East Midlands Gateway	6.30	6.40	7.00	7.13	-	8.08	8.31
Pegasus Business Park	6.32	6.42	7.02	7.15	7.33	8.10	8.32
East Midlands Airport Bay C arr	6.35	6.45	7.05	7.18	7.36	8.13	8.35
East Midlands Airport Bay C dep	6.39	6.49	7.09	7.22	7.40	8.17	8.39
East Midlands Airport DHL	6.43	6.53	7.13	7.25	7.43	8.20	8.42
Castle Donington Bus Station Stand A	6.48	7.02	7.22	7.34	7.52	8.30	8.52
Shardlow Navigation Inn	6.56	7.12	7.32	7.44	8.02	8.40	9.02
Alvaston Blue Peter	7.06	7.25	7.45	7.57	8.15	8.53	9.13
Derby Train Station Forecourt	7.16	7.34	7.54	8.17	8.35	9.10	9.25
Derby Bus Station Bay 8	7.20	7.38	7.58	8.21	8.39	9.14	9.29
Derby Morledge Stop C1	-	-	-	-	-	-	-

	am	am	am	am	am	am	am
Leicester Causeway Lane	7.50	8.15	8.40	9.00	9.20	9.40	10.00
Loughborough High Street Stop HB arr	8.23	8.53	9.13	9.33	9.53	10.13	10.33
Loughborough High Street Stop HB dep	8.24	8.54	9.14	9.34	9.54	10.14	10.34
Hathern opp Anchor Inn	8.33	9.03	9.25	9.45	10.05	10.25	10.45
Long Whatton Piper Drive	8.40	-	9.29	-	-	10.29	-
Diseworth opp Bull & Swan	8.46	-	9.35	-	-	10.35	-
Kegworth Square	-	9.09	-	9.51	10.11	-	10.51
East Midlands Gateway	-	9.16	-	9.58	10.18	-	10.58
Pegasus Business Park	8.50	9.17	9.39	9.59	10.19	10.39	10.59
East Midlands Airport Bay C arr	8.53	9.20	9.42	10.02	10.22	10.42	11.02
East Midlands Airport Bay C dep	8.55	9.24	9.46	10.06	10.26	10.46	11.06
East Midlands Airport DHL	8.58	9.27	9.49	10.09	10.29	10.49	11.09
Castle Donington Bus Station Stand A	9.08	9.34	9.56	10.16	10.36	10.56	11.16
Shardlow Navigation Inn	9.18	9.44	10.06	10.26	10.46	11.06	11.26
Alvaston Blue Peter	9.29	9.55	10.17	10.37	10.57	11.17	11.37
Derby Train Station Forecourt	9.41	10.07	10.26	10.46	11.06	11.26	11.46
Derby Bus Station Bay 8	9.45	10.11	10.30	10.50	11.10	11.30	11.50
Derby Morledge Stop C1	-	-	-	-	-	-	-

	am	am	am	am	am	pm	pm
Leicester Causeway Lane	10.20	10.40	11.00	11.20	11.40	12.00	12.20
Loughborough High Street Stop HB arr	10.53	11.13	11.33	11.53	12.13	12.33	12.53
Loughborough High Street Stop HB dep	10.54	11.14	11.34	11.54	12.14	12.34	12.54
Hathern opp Anchor Inn	11.05	11.25	11.45	12.05	12.25	12.45	1.05
Long Whatton Piper Drive	-	11.29	-	-	12.29	-	-
Diseworth opp Bull & Swan	-	11.35	-	-	12.35	-	-
Kegworth Square	11.11	-	11.51	12.11	-	12.51	1.11
East Midlands Gateway	11.18	-	11.58	12.18	-	12.58	1.18
Pegasus Business Park	11.19	11.39	11.59	12.19	12.39	12.59	1.19
East Midlands Airport Bay C arr	11.22	11.42	12.02	12.22	12.42	1.02	1.22
East Midlands Airport Bay C dep	11.26	11.46	12.06	12.26	12.46	1.06	1.26
East Midlands Airport DHL	11.29	11.49	12.09	12.29	12.49	1.09	1.29
Castle Donington Bus Station Stand A	11.36	11.56	12.16	12.36	12.56	1.16	1.36
Shardlow Navigation Inn	11.46	12.06	12.26	12.46	1.06	1.26	1.46
Alvaston Blue Peter	11.57	12.17	12.37	12.57	1.17	1.37	1.57
Derby Train Station Forecourt	12.06	12.26	12.46	1.06	1.26	1.46	2.06
Derby Bus Station Bay 8	12.10	12.30	12.50	1.10	1.30	1.50	2.10
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm	pm	pm	pm
Leicester Causeway Lane	12.40	1.00	1.20	1.40	2.00	2.25	2.40
Loughborough High Street Stop HB arr	1.13	1.33	1.53	2.13	2.33	2.58	3.13
Loughborough High Street Stop HB dep	1.14	1.34	1.54	2.14	2.34	2.59	3.14
Hathern opp Anchor Inn	1.25	1.45	2.05	2.25	2.45	3.13	3.28
Long Whatton Piper Drive	1.29	-	-	2.29	-	-	3.33
Diseworth opp Bull & Swan	1.35	-	-	2.35	-	-	3.39
Kegworth Square	-	1.51	2.11	-	2.51	3.19	-
East Midlands Gateway	-	1.58	2.18	-	2.58	3.26	-
Pegasus Business Park	1.39	1.59	2.19	2.39	2.59	3.27	3.43
East Midlands Airport Bay C arr	1.42	2.02	2.22	2.42	3.02	3.30	3.46
East Midlands Airport Bay C dep	1.46	2.06	2.26	2.46	3.06	3.34	3.50
East Midlands Airport DHL	1.49	2.09	2.29	2.49	3.09	3.37	3.53
Castle Donington Bus Station Stand A	1.56	2.16	2.36	2.56	3.17	3.45	4.01
Shardlow Navigation Inn	2.06	2.26	2.46	3.06	3.27	3.55	4.11
Alvaston Blue Peter	2.17	2.37	2.59	3.17	3.38	4.06	4.22
Derby Train Station Forecourt	2.26	2.46	3.06	3.26	3.47	4.18	4.34
Derby Bus Station Bay 8	2.30	2.50	3.10	3.30	3.51	4.22	4.38
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm	pm	pm	pm
Leicester Causeway Lane	3.00	3.20	3.35	4.10	4.30	4.50	5.10
Loughborough High Street Stop HB arr	3.33	3.53	4.13	4.48	5.08	5.28	5.53
Loughborough High Street Stop HB dep	3.34	3.54	4.14	4.49	5.09	5.29	5.54
Hathern opp Anchor Inn	3.48	4.08	4.28	5.03	5.23	5.48	6.13
Long Whatton Piper Drive	-	-	4.38	-	-	5.55	-
Diseworth opp Bull & Swan	-	-	4.44	-	-	6.01	-
Kegworth Square	3.54	4.15	-	5.10	5.34	-	6.24
East Midlands Gateway	4.02	4.23	-	5.18	5.42	-	6.31
Pegasus Business Park	4.04	4.25	4.50	5.20	5.44	6.06	6.32
East Midlands Airport Bay C arr	4.07	4.28	4.53	5.23	5.47	6.09	6.35
East Midlands Airport Bay C dep	4.11	4.32	4.57	5.27	5.51	6.13	6.39
East Midlands Airport DHL	4.14	4.35	5.00	5.30	5.54	6.16	6.42
Castle Donington Bus Station Stand A	4.22	4.43	5.12	5.42	6.06	6.23	6.49
Shardlow Navigation Inn	4.32	4.53	5.22	5.52	6.16	6.33	6.59
Alvaston Blue Peter	4.43	5.04	5.33	6.03	6.27	6.44	7.09
Derby Train Station Forecourt	4.55	5.16	5.45	6.15	6.36	6.53	7.16
Derby Bus Station Bay 8	4.59	5.24	5.53	6.19	6.40	6.57	7.20
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm	pm	pm	pm
Leicester Causeway Lane	5.35	5.55	6.20	6.50	7.10	7.35	8.10
Loughborough High Street Stop HB arr	6.18	6.33	6.53	7.23	7.38	8.03	8.35
Loughborough High Street Stop HB dep	6.19	6.34	6.54	7.24	3M	8.04	3M
Hathern opp Anchor Inn	6.38	6.45	7.05	7.35	-	8.15	-
Long Whatton Piper Drive	-	-	-	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-	-	-	-
Kegworth Square	6.44	6.51	7.11	7.41	-	8.21	-
East Midlands Gateway	6.51	6.58	7.18	7.48	-	8.28	-
Pegasus Business Park	6.52	6.59	7.19	7.49	-	8.29	-
East Midlands Airport Bay C arr	6.55	7.02	7.22	7.52	-	8.32	-
East Midlands Airport Bay C dep	6.59	7.06	7.26	7.56	-	8.36	-
East Midlands Airport DHL	7.02	7.09	7.29	7.59	-	8.39	-
Castle Donington Bus Station Stand A	7.09	7.16	7.36	8.06	-	8.46	-
Shardlow Navigation Inn	7.19	7.26	7.46	8.16	-	8.56	-
Alvaston Blue Peter	7.29	7.36	7.53	8.23	-	9.06	-
Derby Train Station Forecourt	7.36	7.43	8.03	8.33	-	9.13	-
Derby Bus Station Bay 8	7.40	7.47	8.07	8.37	-	9.17	-
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm	pm
Leicester Causeway Lane	8.25	8.55	9.25	9.55	10.55
Loughborough High Street Stop HB arr	8.50	9.20	9.50	10.20	11.20
Loughborough High Street Stop HB dep	3M	9.20	3M	10.20	11.20
Hathern opp Anchor Inn	-	9.29	-	10.29	11.29
Long Whatton Piper Drive	-	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-	-
Kegworth Square	-	9.35	-	10.35	11.35
East Midlands Gateway	-	9.39	-	10.39	11.39
Pegasus Business Park	-	9.40	-	10.40	11.40
East Midlands Airport Bay C arr	-	9.43	-	10.43	11.43
East Midlands Airport Bay C dep	-	9.46	-	10.46	11.46
East Midlands Airport DHL	-	9.49	-	10.49	11.49
Castle Donington Bus Station Stand A	-	9.54	-	10.54	11.54
Shardlow Navigation Inn	-	10.02	-	11.02	12.02
Alvaston Blue Peter	-	10.09	-	11.09	12.09
Derby Train Station Forecourt	-	10.15	-	11.15	12.15
Derby Bus Station Bay 8	-	10.19	-	11.19	-
Derby Morledge Stop C1	-	-	-	-	12.19

3M - runs to or from Derby Road/3M Island, C - Through passengers change buses

leicester > loughborough > airport > derby

mondays to fridays

		C		C		C	
	pm	am	am	am	am	am	am
Leicester Causeway Lane	11.55	12.55	-	1.55	-	2.55	-
Loughborough High Street Stop HB arr	12.20	1.20	-	2.20	-	3.20	-
Loughborough High Street Stop HB dep	12.20	1.20	3M	2.20	3M	3.20	3M
Hathern opp Anchor Inn	12.29	3M	1.29	3M	2.29	3M	3.29
Long Whatton Piper Drive	-	-	-	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-	-	-	-
Kegworth Square	12.35	-	1.35	-	2.35	-	3.35
East Midlands Gateway	12.39	-	1.39	-	2.39	-	3.39
Pegasus Business Park	12.40	-	1.40	-	2.40	-	3.40
East Midlands Airport Bay C arr	12.43	-	1.43	-	2.43	-	3.43
East Midlands Airport Bay C dep	12.46	-	1.46	-	2.46	-	3.46
East Midlands Airport DHL	12.49	-	1.49	-	2.49	-	3.49
Castle Donington Bus Station Stand A	12.54	-	1.54	-	2.54	-	3.54
Shardlow Navigation Inn	1.02	-	2.02	-	3.02	-	4.02
Alvaston Blue Peter	1.09	-	2.09	-	3.09	-	4.09
Derby Train Station Forecourt	1.15	-	2.15	-	3.15	-	4.15
Derby Bus Station Bay 8	-	-	-	-	-	-	-
Derby Morledge Stop C1	1.19	-	2.19	-	3.19	-	4.19

	am	am	am	am	am	am	am
Leicester Causeway Lane	-	3.55	4.25	-	4.55	-	5.30
Loughborough High Street Stop HB arr	-	4.20	4.50	-	5.20	-	5.55
Loughborough High Street Stop HB dep	3.50	4.20	4.50	5.05	5.20	5.40	5.55
Hathern opp Anchor Inn	3.59	4.29	4.59	5.14	5.29	5.49	6.04
Long Whatton Piper Drive	-	-	-	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-	-	-	-
Kegworth Square	4.05	4.35	5.05	5.20	5.35	5.55	6.10
East Midlands Gateway	4.09	4.39	5.10	5.25	5.40	6.00	6.15
Pegasus Business Park	4.10	4.40	5.12	5.27	5.42	6.02	6.17
East Midlands Airport Bay C arr	4.13	4.43	5.15	5.30	5.45	6.05	6.20
East Midlands Airport Bay C dep	4.16	4.46	5.19	5.34	5.49	6.09	6.24
East Midlands Airport DHL	4.19	4.49	5.23	5.38	5.53	6.13	6.28
Castle Donington Bus Station Stand A	4.24	4.54	5.28	5.43	5.58	6.18	6.33
Shardlow Navigation Inn	4.32	5.02	5.36	5.51	6.06	6.26	6.41
Alvaston Blue Peter	4.39	5.09	5.46	6.01	6.16	6.36	6.51
Derby Train Station Forecourt	4.45	5.15	5.52	6.07	6.22	6.42	7.00
Derby Bus Station Bay 8	-	-	5.56	6.11	6.26	6.46	7.04
Derby Morledge Stop C1	4.49	5.19	-	-	-	-	-

	am	am	am	am	am	am	am
Leicester Causeway Lane	-	5.55	-	6.20	6.40	7.15	7.35
Loughborough High Street Stop HB arr	-	6.20	-	6.48	7.08	7.43	8.08
Loughborough High Street Stop HB dep	6.10	6.20	6.40	6.49	7.09	7.44	8.09
Hathern opp Anchor Inn	6.19	6.29	6.49	6.58	7.18	7.53	8.18
Long Whatton Piper Drive	-	-	-	-	7.22	-	-
Diseworth opp Bull & Swan	-	-	-	-	7.28	-	-
Kegworth Square	6.25	6.35	6.55	7.05	-	8.00	8.24
East Midlands Gateway	6.30	6.40	7.00	7.13	-	8.08	8.31
Pegasus Business Park	6.32	6.42	7.02	7.15	7.33	8.10	8.32
East Midlands Airport Bay C arr	6.35	6.45	7.05	7.18	7.36	8.13	8.35
East Midlands Airport Bay C dep	6.39	6.49	7.09	7.22	7.40	8.17	8.39
East Midlands Airport DHL	6.43	6.53	7.13	7.25	7.43	8.20	8.42
Castle Donington Bus Station Stand A	6.48	7.02	7.22	7.34	7.52	8.30	8.52
Shardlow Navigation Inn	6.56	7.12	7.32	7.44	8.02	8.40	9.02
Alvaston Blue Peter	7.06	7.25	7.45	7.57	8.15	8.53	9.13
Derby Train Station Forecourt	7.16	7.34	7.54	8.17	8.35	9.10	9.25
Derby Bus Station Bay 8	7.20	7.38	7.58	8.21	8.39	9.14	9.29
Derby Morledge Stop C1	-	-	-	-	-	-	-

	am	am	am	am	am	am	am
Leicester Causeway Lane	7.50	8.15	8.40	9.00	9.20	9.40	10.00
Loughborough High Street Stop HB arr	8.23	8.53	9.13	9.33	9.53	10.13	10.33
Loughborough High Street Stop HB dep	8.24	8.54	9.14	9.34	9.54	10.14	10.34
Hathern opp Anchor Inn	8.33	9.03	9.25	9.45	10.05	10.25	10.45
Long Whatton Piper Drive	8.40	-	9.29	-	-	10.29	-
Diseworth opp Bull & Swan	8.46	-	9.35	-	-	10.35	-
Kegworth Square	-	9.09	-	9.51	10.11	-	10.51
East Midlands Gateway	-	9.16	-	9.58	10.18	-	10.58
Pegasus Business Park	8.50	9.17	9.39	9.59	10.19	10.39	10.59
East Midlands Airport Bay C arr	8.53	9.20	9.42	10.02	10.22	10.42	11.02
East Midlands Airport Bay C dep	8.55	9.24	9.46	10.06	10.26	10.46	11.06
East Midlands Airport DHL	8.58	9.27	9.49	10.09	10.29	10.49	11.09
Castle Donington Bus Station Stand A	9.08	9.34	9.56	10.16	10.36	10.56	11.16
Shardlow Navigation Inn	9.18	9.44	10.06	10.26	10.46	11.06	11.26
Alvaston Blue Peter	9.29	9.55	10.17	10.37	10.57	11.17	11.37
Derby Train Station Forecourt	9.41	10.07	10.26	10.46	11.06	11.26	11.46
Derby Bus Station Bay 8	9.45	10.11	10.30	10.50	11.10	11.30	11.50
Derby Morledge Stop C1	-	-	-	-	-	-	-

	am	am	am	am	am	pm	pm
Leicester Causeway Lane	10.20	10.40	11.00	11.20	11.40	12.00	12.20
Loughborough High Street Stop HB arr	10.53	11.13	11.33	11.53	12.13	12.33	12.53
Loughborough High Street Stop HB dep	10.54	11.14	11.34	11.54	12.14	12.34	12.54
Hathern opp Anchor Inn	11.05	11.25	11.45	12.05	12.25	12.45	1.05
Long Whatton Piper Drive	-	11.29	-	-	12.29	-	-
Diseworth opp Bull & Swan	-	11.35	-	-	12.35	-	-
Kegworth Square	11.11	-	11.51	12.11	-	12.51	1.11
East Midlands Gateway	11.18	-	11.58	12.18	-	12.58	1.18
Pegasus Business Park	11.19	11.39	11.59	12.19	12.39	12.59	1.19
East Midlands Airport Bay C arr	11.22	11.42	12.02	12.22	12.42	1.02	1.22
East Midlands Airport Bay C dep	11.26	11.46	12.06	12.26	12.46	1.06	1.26
East Midlands Airport DHL	11.29	11.49	12.09	12.29	12.49	1.09	1.29
Castle Donington Bus Station Stand A	11.36	11.56	12.16	12.36	12.56	1.16	1.36
Shardlow Navigation Inn	11.46	12.06	12.26	12.46	1.06	1.26	1.46
Alvaston Blue Peter	11.57	12.17	12.37	12.57	1.17	1.37	1.57
Derby Train Station Forecourt	12.06	12.26	12.46	1.06	1.26	1.46	2.06
Derby Bus Station Bay 8	12.10	12.30	12.50	1.10	1.30	1.50	2.10
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm	pm	pm	pm
Leicester Causeway Lane	12.40	1.00	1.20	1.40	2.00	2.25	2.40
Loughborough High Street Stop HB arr	1.13	1.33	1.53	2.13	2.33	2.58	3.13
Loughborough High Street Stop HB dep	1.14	1.34	1.54	2.14	2.34	2.59	3.14
Hathern opp Anchor Inn	1.25	1.45	2.05	2.25	2.45	3.13	3.28
Long Whatton Piper Drive	1.29	-	-	2.29	-	-	3.33
Diseworth opp Bull & Swan	1.35	-	-	2.35	-	-	3.39
Kegworth Square	-	1.51	2.11	-	2.51	3.19	-
East Midlands Gateway	-	1.58	2.18	-	2.58	3.26	-
Pegasus Business Park	1.39	1.59	2.19	2.39	2.59	3.27	3.43
East Midlands Airport Bay C arr	1.42	2.02	2.22	2.42	3.02	3.30	3.46
East Midlands Airport Bay C dep	1.46	2.06	2.26	2.46	3.06	3.34	3.50
East Midlands Airport DHL	1.49	2.09	2.29	2.49	3.09	3.37	3.53
Castle Donington Bus Station Stand A	1.56	2.16	2.36	2.56	3.17	3.45	4.01
Shardlow Navigation Inn	2.06	2.26	2.46	3.06	3.27	3.55	4.11
Alvaston Blue Peter	2.17	2.37	2.59	3.17	3.38	4.06	4.22
Derby Train Station Forecourt	2.26	2.46	3.06	3.26	3.47	4.18	4.34
Derby Bus Station Bay 8	2.30	2.50	3.10	3.30	3.51	4.22	4.38
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm	pm	pm	pm
Leicester Causeway Lane	3.00	3.20	3.35	4.10	4.30	4.50	5.10
Loughborough High Street Stop HB arr	3.33	3.53	4.13	4.48	5.08	5.28	5.53
Loughborough High Street Stop HB dep	3.34	3.54	4.14	4.49	5.09	5.29	5.54
Hathern opp Anchor Inn	3.48	4.08	4.28	5.03	5.23	5.48	6.13
Long Whatton Piper Drive	-	-	4.38	-	-	5.55	-
Diseworth opp Bull & Swan	-	-	4.44	-	-	6.01	-
Kegworth Square	3.54	4.15	-	5.10	5.34	-	6.24
East Midlands Gateway	4.02	4.23	-	5.18	5.42	-	6.31
Pegasus Business Park	4.04	4.25	4.50	5.20	5.44	6.06	6.32
East Midlands Airport Bay C arr	4.07	4.28	4.53	5.23	5.47	6.09	6.35
East Midlands Airport Bay C dep	4.11	4.32	4.57	5.27	5.51	6.13	6.39
East Midlands Airport DHL	4.14	4.35	5.00	5.30	5.54	6.16	6.42
Castle Donington Bus Station Stand A	4.22	4.43	5.12	5.42	6.06	6.23	6.49
Shardlow Navigation Inn	4.32	4.53	5.22	5.52	6.16	6.33	6.59
Alvaston Blue Peter	4.43	5.04	5.33	6.03	6.27	6.44	7.09
Derby Train Station Forecourt	4.55	5.16	5.45	6.15	6.36	6.53	7.16
Derby Bus Station Bay 8	4.59	5.24	5.53	6.19	6.40	6.57	7.20
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm	pm	pm	pm
Leicester Causeway Lane	5.35	5.55	6.20	6.50	7.10	7.35	8.10
Loughborough High Street Stop HB arr	6.18	6.33	6.53	7.23	7.38	8.03	8.35
Loughborough High Street Stop HB dep	6.19	6.34	6.54	7.24	3M	8.04	3M
Hathern opp Anchor Inn	6.38	6.45	7.05	7.35	-	8.15	-
Long Whatton Piper Drive	-	-	-	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-	-	-	-
Kegworth Square	6.44	6.51	7.11	7.41	-	8.21	-
East Midlands Gateway	6.51	6.58	7.18	7.48	-	8.28	-
Pegasus Business Park	6.52	6.59	7.19	7.49	-	8.29	-
East Midlands Airport Bay C arr	6.55	7.02	7.22	7.52	-	8.32	-
East Midlands Airport Bay C dep	6.59	7.06	7.26	7.56	-	8.36	-
East Midlands Airport DHL	7.02	7.09	7.29	7.59	-	8.39	-
Castle Donington Bus Station Stand A	7.09	7.16	7.36	8.06	-	8.46	-
Shardlow Navigation Inn	7.19	7.26	7.46	8.16	-	8.56	-
Alvaston Blue Peter	7.29	7.36	7.53	8.23	-	9.06	-
Derby Train Station Forecourt	7.36	7.43	8.03	8.33	-	9.13	-
Derby Bus Station Bay 8	7.40	7.47	8.07	8.37	-	9.17	-
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm	pm
Leicester Causeway Lane	8.25	8.55	9.25	9.55	10.55
Loughborough High Street Stop HB arr	8.50	9.20	9.50	10.20	11.20
Loughborough High Street Stop HB dep	3M	9.20	3M	10.20	11.20
Hathern opp Anchor Inn	-	9.29	-	10.29	11.29
Long Whatton Piper Drive	-	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-	-
Kegworth Square	-	9.35	-	10.35	11.35
East Midlands Gateway	-	9.39	-	10.39	11.39
Pegasus Business Park	-	9.40	-	10.40	11.40
East Midlands Airport Bay C arr	-	9.43	-	10.43	11.43
East Midlands Airport Bay C dep	-	9.46	-	10.46	11.46
East Midlands Airport DHL	-	9.49	-	10.49	11.49
Castle Donington Bus Station Stand A	-	9.54	-	10.54	11.54
Shardlow Navigation Inn	-	10.02	-	11.02	12.02
Alvaston Blue Peter	-	10.09	-	11.09	12.09
Derby Train Station Forecourt	-	10.15	-	11.15	12.15
Derby Bus Station Bay 8	-	10.19	-	11.19	-
Derby Morledge Stop C1	-	-	-	-	12.19

3M - runs to or from Derby Road/3M Island, C - Through passengers change buses

leicester > loughborough > airport > derby

sundays & bank holiday mondays

		C		C		C	
	pm	am	am	am	am	am	am
Leicester Causeway Lane	11.55	12.55	-	1.55	-	2.55	-
Loughborough High Street Stop HB	12.20	1.20	3M	2.20	3M	3.20	3M
Hathern opp Anchor Inn	12.29	3M	1.29	3M	2.29	3M	3.29
Long Whatton Piper Drive	-	-	-	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-	-	-	-
Kegworth Square	12.35	-	1.35	-	2.35	-	3.35
East Midlands Gateway	12.39	-	1.39	-	2.39	-	3.39
Pegasus Business Park	12.40	-	1.40	-	2.40	-	3.40
East Midlands Airport Bay C arr	12.43	-	1.43	-	2.43	-	3.43
East Midlands Airport Bay C dep	12.46	-	1.46	-	2.46	-	3.46
East Midlands Airport DHL	12.49	-	1.49	-	2.49	-	3.49
Castle Donington Bus Station Stand A	12.54	-	1.54	-	2.54	-	3.54
Shardlow Navigation Inn	1.02	-	2.02	-	3.02	-	4.02
Alvaston Blue Peter	1.09	-	2.09	-	3.09	-	4.09
Derby Train Station Forecourt	1.15	-	2.15	-	3.15	-	4.15
Derby Bus Station Bay 8	-	-	-	-	-	-	-
Derby Morledge Stop C1	1.19	-	2.19	-	3.19	-	4.19

	am	am	am	am	am	am	am
Leicester Causeway Lane	-	3.55	4.25	4.55	5.25	5.55	6.20
Loughborough High Street Stop HB	3.50	4.20	4.50	5.20	5.50	6.20	6.48
Hathern opp Anchor Inn	3.59	4.29	4.59	5.29	5.59	6.29	6.57
Long Whatton Piper Drive	-	-	-	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-	-	-	-
Kegworth Square	4.05	4.35	5.05	5.35	6.05	6.35	7.03
East Midlands Gateway	4.09	4.39	5.09	5.39	6.09	6.39	7.10
Pegasus Business Park	4.10	4.40	5.10	5.40	6.10	6.40	7.11
East Midlands Airport Bay C arr	4.13	4.43	5.13	5.43	6.13	6.43	7.14
East Midlands Airport Bay C dep	4.16	4.46	5.16	5.46	6.16	6.46	7.16
East Midlands Airport DHL	4.19	4.49	5.19	5.49	6.19	6.49	7.19
Castle Donington Bus Station Stand A	4.24	4.54	5.24	5.54	6.24	6.54	7.26
Shardlow Navigation Inn	4.32	5.02	5.32	6.03	6.33	7.03	7.36
Alvaston Blue Peter	4.39	5.09	5.39	6.11	6.41	7.11	7.46
Derby Train Station Forecourt	4.45	5.15	5.45	6.17	6.47	7.17	7.52
Derby Bus Station Bay 8	-	-	-	-	-	-	7.56
Derby Morledge Stop C1	4.49	5.19	5.49	6.21	6.51	7.21	-

	am	am	am	am	am	am	am
Leicester Causeway Lane	6.50	7.20	7.50	8.20	8.50	9.20	9.50
Loughborough High Street Stop HB	7.18	7.48	8.18	8.48	9.18	9.48	10.18
Hathern opp Anchor Inn	7.27	7.57	8.27	8.57	9.27	9.57	10.27
Long Whatton Piper Drive	7.31	-	8.31	-	9.31	-	10.31
Diseworth opp Bull & Swan	7.37	-	8.37	-	9.37	-	10.37
Kegworth Square	-	8.03	-	9.03	-	10.03	-
East Midlands Gateway	-	8.10	-	9.10	-	10.10	-
Pegasus Business Park	7.41	8.11	8.41	9.11	9.41	10.11	10.41
East Midlands Airport Bay C arr	7.44	8.14	8.44	9.14	9.44	10.14	10.44
East Midlands Airport Bay C dep	7.46	8.16	8.46	9.16	9.46	10.16	10.46
East Midlands Airport DHL	7.49	8.19	8.49	9.19	9.49	10.19	10.49
Castle Donington Bus Station Stand A	7.56	8.26	8.56	9.26	9.56	10.26	10.56
Shardlow Navigation Inn	8.06	8.36	9.06	9.36	10.06	10.36	11.06
Alvaston Blue Peter	8.16	8.46	9.16	9.46	10.16	10.46	11.16
Derby Train Station Forecourt	8.22	8.52	9.22	9.52	10.22	10.52	11.22
Derby Bus Station Bay 8	8.26	8.56	9.26	9.56	10.26	10.56	11.26
Derby Morledge Stop C1	-	-	-	-	-	-	-

	am	am	am	am	am	pm	pm
Leicester Causeway Lane	10.20	-	10.50	11.20	11.50	12.20	12.50
Loughborough High Street Stop HB	10.48	11.08	11.18	11.48	12.18	12.48	1.18
Hathern opp Anchor Inn	10.57	11.17	11.27	11.57	12.27	12.57	1.27
Long Whatton Piper Drive	-	-	11.31	-	12.31	-	1.31
Diseworth opp Bull & Swan	-	-	11.37	-	12.37	-	1.37
Kegworth Square	11.03	11.23	-	12.03	-	1.03	-
East Midlands Gateway	11.10	11.30	-	12.10	-	1.10	-
Pegasus Business Park	11.11	11.31	11.41	12.11	12.41	1.11	1.41
East Midlands Airport Bay C arr	11.14	11.34	11.44	12.14	12.44	1.14	1.44
East Midlands Airport Bay C dep	11.16	11.36	11.46	12.16	12.46	1.16	1.46
East Midlands Airport DHL	11.19	11.39	11.49	12.19	12.49	1.19	1.49
Castle Donington Bus Station Stand A	11.26	11.46	11.56	12.26	12.56	1.26	1.56
Shardlow Navigation Inn	11.36	11.56	12.06	12.36	1.06	1.36	2.06
Alvaston Blue Peter	11.46	12.06	12.16	12.46	1.16	1.46	2.16
Derby Train Station Forecourt	11.52	12.12	12.22	12.52	1.22	1.52	2.22
Derby Bus Station Bay 8	11.56	12.16	12.26	12.56	1.26	1.56	2.26
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm	pm	pm	pm
Leicester Causeway Lane	1.20	1.50	2.20	2.50	3.20	3.50	4.20
Loughborough High Street Stop HB	1.48	2.18	2.48	3.18	3.48	4.18	4.48
Hathern opp Anchor Inn	1.57	2.27	2.57	3.27	3.57	4.27	4.57
Long Whatton Piper Drive	-	2.31	-	3.31	-	4.31	-
Diseworth opp Bull & Swan	-	2.37	-	3.37	-	4.37	-
Kegworth Square	2.03	-	3.03	-	4.03	-	5.03
East Midlands Gateway	2.10	-	3.10	-	4.10	-	5.10
Pegasus Business Park	2.11	2.41	3.11	3.41	4.11	4.41	5.11
East Midlands Airport Bay C arr	2.14	2.44	3.14	3.44	4.14	4.44	5.14
East Midlands Airport Bay C dep	2.16	2.46	3.16	3.46	4.16	4.46	5.16
East Midlands Airport DHL	2.19	2.49	3.19	3.49	4.19	4.49	5.19
Castle Donington Bus Station Stand A	2.26	2.56	3.26	3.56	4.26	4.56	5.26
Shardlow Navigation Inn	2.36	3.06	3.36	4.06	4.36	5.06	5.36
Alvaston Blue Peter	2.46	3.16	3.46	4.16	4.46	5.16	5.46
Derby Train Station Forecourt	2.52	3.22	3.52	4.22	4.52	5.22	5.52
Derby Bus Station Bay 8	2.56	3.26	3.56	4.26	4.56	5.26	5.56
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm	pm	pm	pm
Leicester Causeway Lane	4.50	5.20	5.50	6.20	6.50	7.25	7.55
Loughborough High Street Stop HB	5.18	5.48	6.18	6.48	7.15	7.50	8.20
Hathern opp Anchor Inn	5.27	5.57	6.27	6.57	7.24	3M	8.29
Long Whatton Piper Drive	5.31	-	-	-	-	-	-
Diseworth opp Bull & Swan	5.37	-	-	-	-	-	-
Kegworth Square	-	6.03	6.33	7.03	7.30	-	8.35
East Midlands Gateway	-	6.10	6.40	7.10	7.37	-	8.39
Pegasus Business Park	5.41	6.11	6.41	7.11	7.38	-	8.40
East Midlands Airport Bay C arr	5.44	6.14	6.44	7.14	7.41	-	8.43
East Midlands Airport Bay C dep	5.46	6.16	6.46	7.16	7.41	-	8.46
East Midlands Airport DHL	5.49	6.19	6.49	7.19	7.44	-	8.49
Castle Donington Bus Station Stand A	5.56	6.26	6.56	7.26	7.51	-	8.54
Shardlow Navigation Inn	6.06	6.36	7.06	7.36	8.01	-	9.02
Alvaston Blue Peter	6.16	6.46	7.16	7.46	8.11	-	9.09
Derby Train Station Forecourt	6.22	6.52	7.22	7.52	8.17	-	9.15
Derby Bus Station Bay 8	6.26	6.56	7.26	7.56	8.21	-	9.19
Derby Morledge Stop C1	-	-	-	-	-	-	-

	pm	pm	pm	pm
Leicester Causeway Lane	8.25	8.55	9.55	10.55
Loughborough High Street Stop HB	8.50	9.20	10.20	11.20
Hathern opp Anchor Inn	3M	9.29	10.29	11.29
Long Whatton Piper Drive	-	-	-	-
Diseworth opp Bull & Swan	-	-	-	-
Kegworth Square	-	9.35	10.35	11.35
East Midlands Gateway	-	9.39	10.39	11.39
Pegasus Business Park	-	9.40	10.40	11.40
East Midlands Airport Bay C arr	-	9.43	10.43	11.43
East Midlands Airport Bay C dep	-	9.46	10.46	11.46
East Midlands Airport DHL	-	9.49	10.49	11.49
Castle Donington Bus Station Stand A	-	9.54	10.54	11.54
Shardlow Navigation Inn	-	10.02	11.02	12.02
Alvaston Blue Peter	-	10.09	11.09	12.09
Derby Train Station Forecourt	-	10.15	11.15	12.15
Derby Bus Station Bay 8	-	10.19	11.19	-
Derby Morledge Stop C1	-	-	-	12.19

3M - runs to or from Derby Road/3M Island, C - Through passengers change buses

Appendix G

Agreed AECOM Trip Matrices

AECOM Development Trips

AM	1	2	3	4	5
1	0	0	0	62	0
2	0	0	0	0	0
3	0	0	0	29	0
4	189	0	88	0	115
5	0	0	0	38	0

PM	1	2	3	4	5
1	0	0	0	165	0
2	0	0	0	0	0
3	0	0	0	77	0
4	99	0	46	0	60
5	0	0	0	101	0

CANNON Development Trips

AM	1	2	3	4	5
1	0	0	0	15	0
2	0	0	0	52	0
3	0	0	0	89	0
4	40	141	240	0	262
5	0	0	0	97	0

PM	1	2	3	4	5
1	0	0	0	124	0
2	0	0	0	136	0
3	0	0	0	153	0
4	80	87	98	0	95
5	0	0	0	148	0

Comparison of Development Trips

AM	1	2	3	4	5
1	0	0	0	47	0
2	0	0	0	-52	0
3	0	0	0	-60	0
4	149	-141	-152	0	-147
5	0	0	0	-59	0

PM	1	2	3	4	5
1	0	0	0	41	0
2	0	0	0	-136	0
3	0	0	0	-76	0
4	19	-87	-52	0	-35
5	0	0	0	-47	0

TEMPRO Growth Factors

AM	1.19045
PM	1.19235

CANNON development total: 1550
BM1 develpoment total: 284

BM1

AM	1	2	3	4	5
1	0	0	0	3	0
2	0	0	0	10	0
3	0	0	0	16	0
4	7	26	44	0	48
5	0	0	0	18	0

PM	1	2	3	4	5
1	0	0	0	23	0
2	0	0	0	25	0
3	0	0	0	28	0
4	15	16	18	0	17
5	0	0	0	27	0

Base Model Matrix

AM Base Model - Car Peak Period (0730 - 0830)

AM	1	2	3	4	5
1	2	23	228	22	7
2	49	0	59	8	22
3	414	17	2	5	129
4	34	4	33	0	16
5	14	20	83	21	0

AM	1	2	3	4	5
1	2	28	243	22	5
2	48	1	50	15	47
3	410	19	3	7	110
4	34	5	1	0	26
5	13	31	39	21	0

AM	1	2	3	4	5
1	1	21	238	27	7
2	46	0	56	14	46
3	414	20	4	7	111
4	40	9	5	0	21
5	18	41	86	18	0

AM	1	2	3	4	5
1	3	29	245	19	5
2	54	0	36	8	26
3	446	24	3	8	99
4	35	6	6	1	20
5	8	23	71	26	0

AM Base Model - HGV Peak Period (0730 - 0830)

AM	1	2	3	4	5
1	0	3	24	0	0
2	0	0	2	0	2
3	20	0	0	0	0
4	1	0	0	0	0
5	0	1	0	0	0

AM	1	2	3	4	5
1	1	2	27	0	0
2	2	0	2	0	2
3	19	0	1	0	1
4	1	2	0	0	0
5	0	0	3	0	0

AM	1	2	3	4	5
1	0	0	18	4	1
2	0	0	2	5	2
3	12	1	0	0	1
4	1	0	0	0	0
5	0	0	0	0	0

AM	1	2	3	4	5
1	4	0	20	0	2
2	7	0	0	0	0
3	34	0	0	1	1
4	0	0	0	0	0
5	0	0	2	0	0

AM Base Model Total + TEMPRO Growth

AM	1	2	3	4	5
1	15	126	1242	112	32
2	245	1	246	60	175
3	2106	96	15	33	538
4	174	31	54	1	99
5	63	138	338	102	0

AECOM Development Trips + AM Base Model Total (TEMPRO)

AM	1	2	3	4	5
1	15	126	1242	174	32
2	245	1	246	60	175
3	2106	96	15	62	538
4	363	31	142	1	214
5	63	138	338	140	0

CANNON Development Trips + AM Base Model Total (TEMPRO)

AM	1	2	3	4	5
1	15	126	1242	127	32
2	245	1	246	112	175
3	2106	96	15	122	538
4	214	172	294	1	361
5	63	138	338	199	0

CANNON Development Trips + AM Base Model Total + BM1 committed

AM	1	2	3	4	5
1	15	126	1242	130	32
2	245	1	246	121	175
3	2106	96	15	139	538
4	221	198	338	1	409
5	63	138	338	217	0

PM Base Model - Car Peak Period (1645 - 1745)

PM	1	2	3	4	5
1	1	41	271	38	7
2	23	1	13	9	40
3	292	36	5	9	108
4	22	10	4	3	11
5	20	75	108	17	1

PM	1	2	3	4	5
1	1	40	282	34	10
2	19	0	28	12	37
3	273	15	4	12	128
4	24	7	5	0	9
5	10	68	104	29	1

PM	1	2	3	4	5
1	0	51	265	29	14
2	30	0	21	15	23
3	294	31	1	12	157
4	15	13	3	0	21
5	12	66	124	28	0

PM	1	2	3	4	5
1	1	40	259	40	17
2	20	1	35	13	37
3	314	32	5	7	132
4	16	11	4	0	23
5	16	69	151	35	1

PM Base Model - HGV Peak Period (1645 - 1745)

PM	1	2	3	4	5
1	0	0	15	0	0
2	2	0	3	0	0
3	9	2	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0

PM	1	2	3	4	5
1	0	0	7	0	0
2	0	0	0	0	1
3	10	0	0	0	0
4	0	0	0	0	0
5	2	0	0	0	0

PM	1	2	3	4	5
1	0	0	11	0	0
2	0	0	0	0	2
3	5	0	0	0	1
4	0	0	0	0	0
5	0	2	0	0	0

PM	1	2	3	4	5
1	0	0	2	0	0
2	0	0	0	0	2
3	10	0	0	0	1
4	0	0	0	0	0
5	0	0	1	0	0

PM Base Model Total + TEMPRO Growth

PM	1	2	3	4	5
1	4	205	1326	168	57
2	112	2	119	58	169
3	1439	138	18	48	628
4	92	49	19	4	76
5	72	334	582	130	4

AECOM Development Trips + PM Base Model Total (TEMPRO)

PM	1	2	3	4	5
1	4	205	1326	334	57
2	112	2	119	58	169
3	1439	138	18	125	628
4	191	49	65	4	137
5	72	334	582	231	4

CANNON Development Trips + PM Base Model Total (TEMPRO)

PM	1	2	3	4	5
1	4	205	1326	292	57
2	112	2	119	194	169
3	1439	138	18	201	628
4	172	136	117	4	171
5	72	334	582	278	4

CANNON Development Trips + PM Base Model Total + BM1 committed

PM	1	2	3	4	5
1	4	205	1326	315	57
2	112	2	119	219	169
3	1439	138	18	229	628
4	186	152	135	4	189
5	72	334	582	305	4

Prepared By:	James Harper	26/07/2017
Checked By:	James Homer	27/07/2017
Approved By:	Chi Zhang	28/07/2017

A6 Thulston 2026 Flows with Development Traffic

AECOM

Project: Highways England Spatial Planning Arrangement
HA Ref: 60540307
Task: EM S 114
Date: 28 July 2017

AM 2026 Model - Car Peak Period (0730 - 0830)

0730-0745

AM	1	2	3	4	5
1	2	27	271	26	8
2	58	0	70	10	26
3	493	20	2	6	154
4	40	5	39	0	19
5	17	24	99	25	0

0745-0800

AM	1	2	3	4	5
1	2	33	289	26	6
2	57	1	60	18	56
3	488	23	4	8	131
4	40	6	1	0	31
5	15	37	46	25	0

0800-0815

AM	1	2	3	4	5
1	1	25	283	32	8
2	55	0	67	17	55
3	493	24	5	8	132
4	48	11	6	0	25
5	21	49	102	21	0

0815-0830

AM	1	2	3	4	5
1	4	35	292	23	6
2	64	0	43	10	31
3	531	29	4	10	118
4	42	7	7	1	24
5	10	27	85	31	0

AM 2026 Model - HGV Peak Period (0730 - 0830)

0730-0745

AM	1	2	3	4	5
1	0	4	29	0	0
2	0	0	2	0	2
3	24	0	0	0	0
4	1	0	0	0	0
5	0	1	0	0	0

0745-0800

AM	1	2	3	4	5
1	1	2	32	0	0
2	2	0	2	0	2
3	23	0	1	0	1
4	1	2	0	0	0
5	0	0	4	0	0

0800-0815

AM	1	2	3	4	5
1	0	0	21	5	1
2	0	0	2	6	2
3	14	1	0	0	1
4	1	0	0	0	0
5	0	0	0	0	0

0815-0830

AM	1	2	3	4	5
1	5	0	24	0	2
2	8	0	0	0	0
3	40	0	0	1	1
4	0	0	0	0	0
5	0	0	2	0	0

The developer (Cannon) supplied AECOM with a turning count diagram, containing the additional flows that the Boulton Moor 2 and Snelsmoor Grange developments will bring to the site. These are the flows that can be seen below, they will be split into 15 minute matrices before being added to the 2026 Model Flows that are above to derive the 2026 + Committed Development + Proposed Development Traffic Flows.

CANNON Development Trips

0730-0830

AM	1	2	3	4	5
1	0	0	0	15	0
2	0	0	0	52	0
3	0	0	0	89	0
4	40	141	240	0	262
5	0	0	0	97	0

15 minute matrix

AM	1	2	3	4	5
1	0	0	0	4	0
2	0	0	0	13	0
3	0	0	0	22	0
4	10	35	60	0	66
5	0	0	0	24	0

BM1

0730-0830

AM	1	2	3	4	5
1	0	0	0	3	0
2	0	0	0	10	0
3	0	0	0	16	0
4	7	26	44	0	48
5	0	0	0	18	0

15 minute matrix

AM	1	2	3	4	5
1	0	0	0	1	0
2	0	0	0	2	0
3	0	0	0	4	0
4	2	6	11	0	12
5	0	0	0	4	0

AM 2026 Base Flow with Committed and Proposed Development Traffic

Cars

0730-0745

AM	1	2	3	4	5
1	2	27	271	31	8
2	58	0	70	25	26
3	493	20	2	32	154
4	52	46	110	0	97
5	17	24	99	54	0

0745-0800

AM	1	2	3	4	5
1	2	33	289	31	6
2	57	1	60	33	56
3	488	23	4	35	131
4	52	48	72	0	108
5	15	37	46	54	0

0800-0815

AM	1	2	3	4	5
1	1	25	283	37	8
2	55	0	67	32	55
3	493	24	5	35	132
4	59	52	77	0	103
5	21	49	102	50	0

0815-0830

AM	1	2	3	4	5
1	4	35	292	27	6
2	64	0	43	25	31
3	531	29	4	36	118
4	53	49	78	1	101
5	10	27	85	60	0

Heavies

0730-0745

AM	1	2	3	4	5
1	0	4	29	0	0
2	0	0	2	0	2
3	24	0	0	0	0
4	1	0	0	0	0
5	0	1	0	0	0

0745-0800

AM	1	2	3	4	5
1	1	2	32	0	0
2	2	0	2	0	2
3	23	0	1	0	1
4	1	2	0	0	0
5	0	0	4	0	0

0800-0815

AM	1	2	3	4	5
1	0	0	21	5	1
2	0	0	2	6	2
3	14	1	0	0	1
4	1	0	0	0	0
5	0	0	0	0	0

0815-0830

AM	1	2	3	4	5
1	5	0	24	0	2
2	8	0	0	0	0
3	40	0	0	1	1
4	0	0	0	0	0
5	0	0	2	0	0

Prepared by:	James Homer	Date:	28/07/2017
Check by:	Chi Zhang	Date:	31/07/2017

A6 Thulston 2026 Flows with Development Traffic

AECOM

Project: Highways England Spatial Planning Arrangement
HA Ref: 60540307
Task: EM S 114
Date: 28 July 2017

PM 2026 Model - Car Peak Period (1645 - 1745)

1645-1700

PM	1	2	3	4	5
1	1	49	323	45	8
2	27	1	16	11	48
3	348	43	6	11	129
4	26	12	5	4	13
5	24	89	129	20	1

1700-1715

PM	1	2	3	4	5
1	1	48	336	41	12
2	23	0	33	14	44
3	326	18	5	14	153
4	29	8	6	0	11
5	12	81	124	35	1

1715-1730

PM	1	2	3	4	5
1	0	61	316	35	17
2	36	0	25	18	27
3	351	37	1	14	187
4	18	16	4	0	25
5	14	79	148	33	0

1730-1745

PM	1	2	3	4	5
1	1	48	309	48	20
2	24	1	42	16	44
3	374	38	6	8	157
4	19	13	5	0	27
5	19	82	180	42	1

PM 2026 Model - HGV Peak Period (1645 - 1745)

1645-1700

PM	1	2	3	4	5
1	0	0	18	0	0
2	2	0	4	0	0
3	11	2	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0

1700-1715

PM	1	2	3	4	5
1	0	0	8	0	0
2	0	0	0	0	1
3	12	0	0	0	0
4	0	0	0	0	0
5	2	0	0	0	0

1715-1730

PM	1	2	3	4	5
1	0	0	13	0	0
2	0	0	0	0	2
3	6	0	0	0	1
4	0	0	0	0	0
5	0	2	0	0	0

1730-1745

PM	1	2	3	4	5
1	0	0	2	0	0
2	0	0	0	0	2
3	12	0	0	0	1
4	0	0	0	0	0
5	0	0	1	0	0

The developer (Cannon) supplied AECOM with a turning count diagram, containing the additional flows that the Boulton Moor 2 and Snelsmoor Grange developments will bring to the site. These are the flows that can be seen below, they will be split into 15 minute matrices before being added to the 2026 Model Flows that are above to derive the the 2026 + Committed Development + Proposed Development Traffic Flows.

CANNON Development Trips

1645-1745

PM	1	2	3	4	5
1	0	0	0	124	0
2	0	0	0	136	0
3	0	0	0	153	0
4	80	87	98	0	95
5	0	0	0	148	0

15 minute matirx

PM	1	2	3	4	5
1	0	0	0	31	0
2	0	0	0	34	0
3	0	0	0	38	0
4	20	22	25	0	24
5	0	0	0	37	0

BM1

1645-1745

PM	1	2	3	4	5
1	0	0	0	23	0
2	0	0	0	25	0
3	0	0	0	28	0
4	15	16	18	0	17
5	0	0	0	27	0

15 minute matrix

PM	1	2	3	4	5
1	0	0	0	6	0
2	0	0	0	6	0
3	0	0	0	7	0
4	4	4	4	0	4
5	0	0	0	7	0

PM 2026 Base Flow with Committed and Proposed Development Traffic

Cars

1645-1700

PM	1	2	3	4	5
1	1	49	323	82	8
2	27	1	16	51	48
3	348	43	6	56	129
4	50	38	34	4	41
5	24	89	129	64	1

1700-1715

PM	1	2	3	4	5
1	1	48	336	77	12
2	23	0	33	55	44
3	326	18	5	60	153
4	52	34	35	0	39
5	12	81	124	78	1

1715-1730

PM	1	2	3	4	5
1	0	61	316	71	17
2	36	0	25	58	27
3	351	37	1	60	187
4	42	41	33	0	53
5	14	79	148	77	0

1730-1745

PM	1	2	3	4	5
1	1	48	309	84	20
2	24	1	42	56	44
3	374	38	6	54	157
4	43	39	34	0	56
5	19	82	180	86	1

Heavies

1645-1700

PM	1	2	3	4	5
1	0	0	18	0	0
2	2	0	4	0	0
3	11	2	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0

1700-1715

PM	1	2	3	4	5
1	0	0	8	0	0
2	0	0	0	0	1
3	12	0	0	0	0
4	0	0	0	0	0
5	2	0	0	0	0

1715-1730

PM	1	2	3	4	5
1	0	0	13	0	0
2	0	0	0	0	2
3	6	0	0	0	1
4	0	0	0	0	0
5	0	2	0	0	0

1730-1745

PM	1	2	3	4	5
1	0	0	2	0	0
2	0	0	0	0	2
3	12	0	0	0	1
4	0	0	0	0	0
5	0	0	1	0	0

Prepared by:	James Homer	Date:	28/07/2017
Check by:	Chi Zhang	Date:	31/07/2017

Appendix H

Review Table of Approved Trip Type

Rewview of Recent Planning Application and Agreed Pass-by, Linked, Interalisation and New

Planning Reference	Site	Local Authority	Date (report)	Development Type	Discount Agreed
9_2018_0451	Darklands Swadlincote	SDCC	May-17	Public House	-100%
				Drive Thru	-70%
				Restaurant	-70%
DMPA_2019_0931	Woodville Swadlincote	SDCC	Jul-19	Food Store	-50%
				Restaurant	-50%
				Public House	-50%
9_2012_0568 & 9_2016_1208	Chellaston Fields (Vectos)	DCC	Nov-16	Aldi	` - 30% internal
				PfS	-100%
				Nursery	`-90% internal
18_01_2019	Pride Park	DCC	Jan-19	PfS / Drive Thru Costa	40% Bypass / 40% Diverted / 20% new / 10% subtracted from total for internalisation
20_01247_FUL	Land at Uttoceter New Road	DCC	Sep-20	Foodstore	`-70% passby / diverted
21/00819/FUL	Tim Hortons Coffee (TPA)	DCC	May-21	Coffee	4% new weekday 7% new weekend
21/00341/FUL	Foresters Leisure Park Costa (TPA)	DCC	Feb-21	Costa	45% Pass-by 45% Diverted 10% New
20/01255/FULL	Drive Thru Asda SinFin (Dynamic Transport Planning)	DCC	Feb-21	Coffe and other Drive Thru	14% New / 86% discounted.

Appendix I

Local Authority Correspondence on Approved Trip Types

Technical Note Derby City Council

Project Note	Site of former Gas Holder Site Comments on TA for Erection of PFS, Drive through coffee shop, retail unit/ hot food shop and associated car park	**Date** **Ref**	18/01/2019 05/18/00651
Author	I. Allcock		

1.0 Introduction

1.1 This technical note provides an update for the application noted above. A meeting was held between the applicant and Derby City Council on 10th October to discuss the outstanding highways issues with the application. A second Addendum Transport assessment has since been submitted. As such, this technical note provides comment in regards to the latest submission.

2.0 Accessibility

2.1 Due to the location of the site, it is highly likely that the development will attract a significant amount of pedestrians. The latest plans show a ramped pedestrian access to Royal Way and the inclusion of a pedestrian footway on both sides of the site access from Pride Parkway.

3.0 Trip generation and type

3.1 The estimated trip generation for the site has been split by land use. The latest submission utilises the trip generation observed by Derby City Council for a local Drive through Coffee facility which was significantly higher than that of the previous TRICS submission.

3.2 A sensitivity test was required to address concerns relating to the blue land on the northern portion of the site under the ownership of the applicant. The proposed development and the land marked in blue will be served by a single site access. As such, the single access must be able to accommodate the land use of the current proposal and the future use of the land on the northern part of the site.

3.3 DTP have submitted the results which considers the trip generation of 5,000sqm of GFA of B1 office. The estimated 85th percentile trip generation can be seen below.

Table 4.8: Estimated Trip Generation – Office Development - Sensitivity

	Weekday AM Peak Hour (0800-0900)		Weekday PM Peak Hour (1600-1700)	
	Arrivals	Departures	Arrivals	Departures
Vehicles	141	39	33	97

The total estimated trip generation of the current application of the PFS with Retail, Food to go and Coffee drive through is shown in the table below.

	Weekday AM Peak (08:00 – 09:00)		Weak Day PM Peak (16:00 – 17:00)	
	Arrivals	Departures	Arrivals	Departures
Vehicles	199	181	204	176

3.4 The total estimated trip generation for the site including the sensitivity test can be seen below.

	Weekday AM Peak Hour (0800-0900)		Weekday PM Peak Hour (1700-1800)	
	Arrivals	Departures	Arrivals	Departures
Vehicles	340	220	237	273

3.5 The proposed trip type percentages have been agreed as 40% each for bypass and divert trips, with 20% as new trips and 10% subtracted from the total to allow for Linked trips within the site. The 10% linked trip reduction has only been applied to the current application and the sensitivity test considered the blue land use as 100% new to the network.

3.6 The PM peak hour has been modelled during the hours of 4pm and 5pm. This is based on the traffic surveys which showed a higher number of movements than the normal 5-6pm peak. The higher trip rates generated by the B1 office sensitivity test during the 5-6pm peak are offset by the greater volume of traffic shown in the survey data during the 4pm – 5pm. As such it is considered robust to model the relevant junctions with the higher number of vehicle movements during the 4-5pm hour.

4.0 Trip Distribution

4.1 The distribution of trips has been based on the recorded vehicle movements on the assessed junctions. The percentage breakdown of vehicles movements past the site access can be seen below. The impacts discussed below are inclusive of the trips generated by the sensitivity test.

Table 1 - Distribution figures

Weekday average Baseline 2018			
Distribution	**Am**	**IP**	**PM**
Northbound	680	499	539
Southbound	555	506	496
Total	1235	1005	1035

Weekday average % of total flow			
Distribution	**Am**	**IP**	**PM**
Northbound	55	50	52
Southbound	45	50	48
Total	100	100	100

4.2 Based on the above percentages during the AM peak 227 vehicles turn right into the site and 113 turn left into the site. Due to proposed access maintaining the left hand turn only exit all 220 vehicles in the AM peak would turn left out of the site and approach the A6/ Royal way roundabout. The distribution diagrams show that this would lead to a total of 189 new arrivals at the A6 north entrance of the A6/ Royal way roundabout junction. This equates to a 28% increase of arrivals on that arm of the junction. There is also an increase of 30% in vehicle movements onto the A6 north arm exit.

4.3 The PM peak would see 168 vehicles turning right into the site and 70 turning left into the site access. As with the AM peak the total 273 would turn left out of the site heading southbound on the A6. This results in an additional 242 vehicles entering the A6/ Royal way roundabout junction from the northern approach. The additional movements equate to a 41% increase on turning movements from that arm. The PM peak also has an increase of exits on the northern arm by 30%.

4.4 The percentage increase in movements is smaller on the A6 south and Royal Way arms. The largest impact being a 7% increase in vehicle movements from the A6 south approach. The Royal Way arm sees an increase of 1% in each peak.

4.5 In order to ensure a robust assessment the northbound right hand turn vehicle movements have been routed to U-turn on the roundabout after their exit from the site. Thus returning them to their northbound route. This has led to a large increase in U-turn movements from the A6 North approach. It is noted that it may be a more attractive option for the assigned u turners to turn left onto Royal Way and that the assigned distribution is a worst case scenario.

5.0 Junction Modelling

5.1 Assessments of the site access and the A6 royal Way roundabout have been conducted using the relevant PICADY and ARCADY models within the Junctions 9 software package. The model output reports are discussed in detail below.

AM Peak

5.2 The PICADY model has assessed the peak hour of 8-9am for the site access. Vehicles exiting the site and turning south on the A6 will experience a delay of 14.80 seconds as the turn will operate with a maximum RFC value of 0.48. The model shows that the right hand turn will operate a max RFC value of 0.50 with a delay of 15.61 seconds. The right hand turn lane is shown to result in a max queue length of 4.3 PCU with a mean queue of 1.1PCU's. The right hand turn lane has a capacity of 9 PCU's before it will impede the flow of traffic exiting the roundabout travelling north past the site access. The model therefore shows that the junction has the capacity to accommodate the proposed development. Due to the site access not currently being in use the junction will see a large intensification of vehicle movements.

5.3 The ARCADY model for the 2023 AM peak reports a maximum RFC value of 0.71 on the A6 south approach to the roundabout which has increased from the 2023 baseline of 0.64. This arm will also experience a growth in queue length of 1.1 PCU. The A6 north approach from the site access shows an increase from 0.42 to 0.54.

PM Peak

5.4 The PICADY model for the PM peak results in an RFC value of 0.56 the site exit left hand turn. The right hand turn site entrance at the site access results in a RFC value of 0.35. The delay seen at the site exit will be 16.96 seconds while the site entry right hand turn will have a delay of 11.35 seconds.

5.5 The ARCADY model for the PM peak shows the greatest impact of the A6 North arm in which traffic arrives from the site access. The model shows an increase of RFC value of 0.16 from

0.4 to 0.56. The delay at this arm is due to increase from 1.38 seconds to 5.55 seconds. The largest delay will be experienced on the Orient way arm which will extend to 10.09 seconds.

Existing Congestion

5.6 Pride Park and the A6/ Royal way roundabout experiences frequent congestion during the PM hours. The congestion itself does not appear to be the result of the A6/ Royal way junction being at capacity as the model outputs above suggest. The congestion on the junction is the result of an exit restriction on the A6 south arm of the roundabout which in turn causes queues on the A6 north arm and Royal Way. This congestion frequently blocks the operation of the roundabout other than the movements of A6 south and Orient Way to A6 north.

5.7 DCC have modelled the A6/ Royal way roundabout with an exit restriction in place in order to replicate the congestion experienced during these times. However, due to the existing congestion taking the roundabout over capacity in the 2018 baseline model, the additional traffic associated with the growth to 2023 and the development traffic does not result in an model output that accurately represents the impact of the development traffic.

5.8 The development will create an intensification of vehicle movements at the site access and the A6/ Royal way junction, especially the A6 north arm. The junction models show that there is sufficient capacity within both of the site access and the A6/ Royal way roundabout to accommodate the development. However, due to the existing congestion experienced at the A6/ Royal way roundabout during the PM peak, the potential for the existing congestion to inhibit these junctions will increase with the addition of the development traffic. As such, any queues that reach back to the site access will likely lead to queues back into the development site, potentially restricting movements at the site access and internally. As such, future traffic surveys and assessments will be required at the time an application is submitted for the northern parcel of the land.

6.0 Conclusion

6.1 The assessment of the above application has taken 85th percentile trips rates, observed trips rates from DCC and sensitivity tests for northern parcel of land outside of this application that is due to be served by the same access. The assessment analysed the impacts of the development the local road network.

6.2 The distribution shows an increase of arrivals at the A6/ Royal way roundabout of 28% in the AM peak and 41% in the PM peak. The northern arm has an increase in exit movements of 30% in both the AM and PM peak. The layout of the site access will lead to an increase of double movements through the junction which is highlighted by the percentage increases above.

6.3 The modelling outputs have shown that the site access and A6/ Royal Way roundabout junctions have sufficient capacity to cope with the development. The existing congestion experienced in the PM peak inhibits the operation of the roundabout and the traffic generated by the development will intensify the congestion experienced. Observed queues reaching back to the site access from the A6/ Royal way roundabout will potentially restrict movements around the site access and deter drivers from visiting the site.

6.4 Whilst the development will have an impact in terms of its intensification of movements around the A6/ Royal way roundabout. The impact does not warrant grounds for refusal. The National Planning Policy Frameworks (NPPF) sets out the criteria for assessing the highway impact of a proposal. Paragraph 109 of the NPPF states that “Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impact on the road network would be severe”.

6.5

6.6 The development will lead to an intensification of trips in its immediate vicinity. The development will add to the existing congestion experienced at the local junctions. This

intensification of movements, especially on the A6/ Royal Way roundabout will change traffic patterns on the pride park site. Whilst it is unknown precisely how the redistribution will manifest itself, the development will, as the only facility of its kind on Pride Park, attract trips from the entire pride park site. The site also has the potential to attract significant amounts of pedestrian and cycling trips. As such, a S106 contribution will be sought for use towards highway improvements and cycling and pedestrian facilities on the pride park access routes.

From: Nadine Davis <Nadine.Davis@derby.gov.uk>
Sent: 22 March 2021 10:19
To: Laura Neale <Laura.Neale@derby.gov.uk>
Cc: Chris Thorley <Chris.Thorley@derby.gov.uk>
Subject: KFC/Costa Foresters Park App 21/00341/ful -Initial TA Comments

Laura,

My comments below are in response to the TA submitted in support of planning application 21/00341/ful for the erection of a coffee shop with drive thru (Use Class E) with alterations to the existing parking layout and proposed additional parking.

Please could you forward on to the transport consultant. I am happy for them to contact me directly.

DCC are now advising traffic counts surveys will be required in the absence of historic count data, particularly as we have no historic count data for Foresters Way/Sinfin Lane junctions and the A5111 Osmaston Park Road. I appreciate this change of position will be frustrating to hear. The development is an additional intensification of the retail park and will change the dynamics of the local area, including traffic patterns.

I have provided further advice below on the expected level of assessment for this development going forward.

TA Methodology

A manual assessment applying local TEMPro growth rates to identify future background traffic for the opening year will be sufficient. The assessment should examine the Weekday and Saturday Peaks. I suggest the following times, AM (0800-0900), PM (1700-1800) and Interpeak (1200-1300), as well as a Saturday Interpeak (1200-1300). I have made an assumption on the times but these can be validated against the ATC data we have for 2019. We don't have any ATC data for Sinfin Lane but we do have most of 2019 on Osmaston Park Road (Site No 476) My colleague James.blandamour@derby.gov.uk will be able to provide you with this information. You may find that the peaks are different around the Sinfin ward because of its close proximity to Rolls Royce who operate on shift patterns.

Proposed Traffic Generation

In terms of traffic generation, Derby City Council uses the Delivering Streets and Places Design Guidance, and 6cs Appendix C – Assessing Transport Impacts. The guidance identifies the use of 85th percentile trip rates as the starting point for negotiation; or local observed rates in the absence of suitable 85th TRICs rates. It's not possible to derive 85th percentile rates for coffee drive thru's due to the lack of site surveys contained in the TRICs database. Therefore observed rates will be applied in this instance.

The TA provides an examination of six other Costa sites from 2016 observed surveys. The predicted level of trips for this site is derived from the average sum of the six surveyed sites. By way of a comparison, Derby City Council (DCC) has surveyed the Costa Drive Thru at the Wyvern in 2018. Both, the TA proposed and DCC's observed are comparable and acceptable.

The TA does not set out the peak times. Clarification of the peak times is required as these times may not align to peak times on the local network around the site. As set out in my point above the ATC data will highlight the peaks

167sqm	AM		PM		Saturday AM		Saturday PM	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT
	86	80	71	72	85	78	80	81
Total	166		143		163		161	

Existing Traffic Generation

The TA does not provide an examination of the existing car park trips. As the car park is still going to be operational, an examination of these trips will need to be provided. Although not explicit to this development proposal, and to understand if the roundabout will operate efficiently with the development in place, It would be helpful to understand the level of trips from the KFC as the repositioned car park, Costa and KFC will all utilise this roundabout.

Trip Type Composition

The TA presents a composition assumption (45% Diverted, 45% Pass by and 10% New) based on previous observed Costa sites, but not local to Derby. In my pre application advice I suggested a trip type composition based on DCC Costa sites. However, this advice was provided on the basis that DCC was not accepting traffic surveys at that time and therefore could not be validated against observed flows. Whist the TA may provide a comparable composition there is no way to verify these without validating the splits against the balance of flows from an observed survey.

Due to the one way out nature of Foresters Way, trips traveling west up the ring road to the store will have to double back on themselves (turn right) at the A5111/Sinfin Lane/Balaclava Road signalised junction to get back onto the Ring Road. Diverted trips are equally important because its these trips that add further impact at these junctions. The TA should provide a clear split definition of diverted trips, pass by trips, and primary trips.

Committed Development

The development will need to consider any committed development, or possible speculative development within the area. I would like to make you aware of a recent application seeking permission for a Lid on the former Buzz Bingo Site within the Foresters Retail Park. The application is available to view on the DCC planning portal under planning app 21/00182/ful. Both the Lidl and Costa applications have been submitted at the same time. In view of this, I will be requesting a sensitivity test is carried out for each development respectively once the traffic generation and distributions have been agreed by both applicants.

Traffic Data

DCC are now requesting full observed surveys for all development across Derby, including this development. Full turning movements and queue surveys are required. The study area and junctions assessment requirements are set out below.

Pre Covid, Sinfin Lane/Osmaston Park Road junction frequently experienced queuing traffic during the peaks. It still queues now, maybe not to the extent of pre Covid levels. My Signals colleague has provided further advice on the operation of these signals below which further highlights the need to understand how the signals will operates with the Costa in place.

The only real issue in this area is the capacity of Sinfin Lane at the junction with the A5111 when Rolls Royce shifts end. This of course also impacts on the Sinfin Lane / Foresters Way signals because if there's a queue on Sinfin Lane then traffic can't get out when they get a green signal. Outside of the Rolls Royce peak hours

it's generally ok – might be worth getting an early afternoon peak assessment as well as the usual AM and PM. Think Rolls Royce shift change is 2pm but worth checking.

It's worth bearing in mind that the A5111/Sinfin Lane junction is the only one in this area with any theoretical spare capacity at all in the peak hours (last time I looked anyway). So any new trips will have a negative impact at the A5111/Victory Road junction and also at the Stenson Road roundabout, and there's nothing that can be easily done at either junction. Victory Road junction is also very congested on Saturdays and Sundays because of Sainsburys and B&Q traffic so a weekend assessment would be worthwhile.

Junction Assessments/Study Area

Full junction assessments will need to be provided. I recommend the following junctions are considered in the study area. We may require the scope to be extended. However, this will depend on the outcomes off the proposed distribution splits of development traffic.

Foresters Way/A5111 Osmaston Park Road,
Foresters Way/Sinfin Lane
Sinfin Lane/A5111 Osmaston Park Road signals
Internal roundabout and access

My colleague David.moss@derby.gov.uk will be able to provide any signals data

Parking

The proposed development seeks to provide 48 spaces. This is a net increase of +13 when considered against our Local Plan advice. The TA provides acknowledges this increase is above maximum standard advice, However, this number is based on the uses of shared parking with KFC and observed examination of parking demand at other Costa drive thru's. The parking demand profile presented in the TA suggests that at its peak, the demand would be for 20 parking spaces. This would leave around 50% free for KFC customers. This seems a reasonable approach.

Could the amount of parking spaces be checked? On the site plan I make out the number proposed to be 44. This number includes 2 disabled bays. Is this correct as the TA states 48 spaces and 3 disabled bays?

The development proposes 6 covered cycle storage spaces. The 2 existing EV charge points will be retained and shared between the KFC and Costa.

Access

Direct access to the drive thru is taken off Foresters Way via an existing roundabout junction. Access to Foresters Way itself is taken off the one-way in from the A5111 Osmaston Park Ring Road, and the two way egress at the signalised junction of Foresters Way/Sinfin Lane. I do have concerns over the stacking space of both drive thru's utilising the same egress combined with the short distance from the entry off the A5111 onto the internal roundabout. In Derby, we are experiencing vehicles spilling onto the ring road as there is not enough stacking space for the high volume of vehicles waiting going to drive thru's. This is the case with the McDonalds at the Peak Drive/A5111 roundabout drive thru. Consequently, during peak times traffic queues back beyond the large storage unit blocking ahead traffic. As set out above DCC will require full capacity analysis of the junctions within the study area.

Sustainable Transport and Air Quality

The TA provides a comprehensive examination of existing sustainable transport modes. However, the Ring Road is part of an Air Quality Management Area. NPPF presumes in favour of sustainable development and is seeking to influence developers to put in place sustainable measures. The very

nature of these types of development are car reliant. However, there is an opportunity to provide some decent cycling and walking infrastructure around this development.

I have spoken to my cycling officer and we would like to see some off road connectivity from the existing cycle path that pops out from Peartree Station/Portland Street into this site. Ideally a 3.5m wide shared path to replace the existing path Draft proposals are welcome to aid further discussion.

Accidents
A full 5 years of accident data history between 2015 and 2019 has been provided for the A5111/Osmaston Park Road junction only. Accident history for all junctions highlighted in the study area is required.

It has been brought to my attention an accident problem at the signalised junction of A5111/Osmaston Park Road/Balaclava Way. Eighteen slight incidents occurred within this five year period, equating to just over three accidents a year. My Casualty reduction colleagues have advised this is a problematic junction and has been flagged up for a casualty reduction scheme, although to my knowledge nothing has been designed thus far and monitoring of the junction continues. The accident stats data is not provided with the TA so I can't look at the causation factors. If the data could be provided that would be helpful to aid further discussion.

Foresters Way/A5111 Osmaston Park Road slip = 0 accidents
Foresters Way/Sinfin Lane signalised priority junction = 5 accidents (1 serious 4 slight)
Sinfin Lane/A5111 Osmaston Park Road/Balaclava Way signals = 18 slight accidents

Planning Obligations
A S106 and/or S278 may be required.

Highway Extents
I have attached a plan of the extents around the store.

Kind regards

Nadine

Nadine Davis| Traffic and Transportation Engineer – Transport Planning | Traffic and Transportation |Communities and Place | Derby City Council, The Council House, Corporation Street, Derby, DE1 2FS | Telephone 01332 641742 | Minicom 01332 640666 | www.derby.gov.uk

Appendix J

Proposed Trip Rates

3 Proposed Development

General

3.1 The development proposals for the site consist of the construction of two new drive-thru units, replacing an area of car parking within the existing wider retail site car park.

3.2 The proposed coffee shop unit would have a GFA of around 200m² whilst the proposed restaurant unit would have a GFA of around 225m². The development will see the removal of 95 existing car parking spaces with 12 spaces provided for the development including four to mobility impaired standard. This total is exclusive of the drive-thru ordering and waiting bays.

3.3 The proposed site layout plan is included at **Appendix 1**.

Site Access Arrangements and Proposed Internal Layout

3.4 It is proposed that the existing ASDA site access and egress arrangements will be retained to serve the proposed development.

3.5 The layout of the proposed development has been designed to be incorporated harmoniously within the existing circulation arrangements of the wider site.

3.6 A swept path analysis of the site using a 7.5t box van servicing the site and a large car travelling around the drive thru lanes has been undertaken and demonstrates that the proposed layout will accommodate these vehicles. The swept path analysis is included at **Appendix 2**.

Traffic Generation and Parking Provision

Weekday TRICS Trip Generation and Parking Accumulation – Drive-Thrus

3.7 The TRICS Database has been used to estimate the likely numbers of trips expected to be generated by the development of the proposed drive thru units by using the most similar appropriate category within the database. The selection criteria applied to derive the comparative sites are listed below:

- Land use – Hotel, Food & Drink, sub-category – Fast Food Drive-Through;
- All London and Ireland sites excluded;
- Weekday or Saturday surveys only (as appropriate); and
- Selection by GFA.

3.8 A summary of the trip rates is shown below in **Table 3.1** with the full TRICS output provided at **Appendix 3**:

Table 3.1: TRICS Weekday Trip Rates (per 100m² GFA) for the proposed Drive-Thru Units

Time Range	Arrivals	Departures	Total	Accumulation Rate
05:00-06:00	0.417	0	0.417	0.417
06:00-07:00	3.708	2.921	6.629	1.204
07:00-08:00	8.664	7.231	15.895	2.637
08:00-09:00	11.792	11.726	23.518	2.703
09:00-10:00	10.749	11.27	22.019	2.182
10:00-11:00	10.869	11.492	22.361	1.559
11:00-12:00	13.185	12.962	26.147	1.782
12:00-13:00	18.797	16.793	35.59	3.786
13:00-14:00	15.857	17.461	33.318	2.182
14:00-15:00	12.071	12.962	25.033	1.291
15:00-16:00	12.16	11.759	23.919	1.692
16:00-17:00	14.165	13.14	27.305	2.717
17:00-18:00	13.14	13.229	26.369	2.628
18:00-19:00	13.63	13.63	27.26	2.628
19:00-20:00	13.452	13.452	26.904	2.628
20:00-21:00	8.552	10.646	19.198	0.534
21:00-22:00	8.419	7.973	16.392	0.98
22:00-23:00	6.813	7.125	13.938	0.668
23:00-24:00	4.918	6.339	11.257	0
Daily Trip Rate	201.357	202.111	403.468	-

3.9 The above trip rates have been applied to the GFA of the development, which totals approximately 425m^2, to provide the anticipated vehicle movements, as shown in **Table 3.2** below:

Table 3.2: Estimated Trip Generation – Weekday – Drive-Thru Units (425m² GFA)

Time Range	Arrivals	Departures	Total	Parking Accumulation
05:00-06:00	2	0	2	2
06:00-07:00	16	12	28	5
07:00-08:00	37	31	68	11
08:00-09:00	50	50	100	11
09:00-10:00	46	48	94	9
10:00-11:00	46	49	95	7
11:00-12:00	56	55	111	8
12:00-13:00	80	71	151	16
13:00-14:00	67	74	142	9
14:00-15:00	51	55	106	5
15:00-16:00	52	50	102	7
16:00-17:00	60	56	116	12
17:00-18:00	56	56	112	11
18:00-19:00	58	58	116	11
19:00-20:00	57	57	114	11
20:00-21:00	36	45	82	2
21:00-22:00	36	34	70	4
22:00-23:00	29	30	59	3
23:00-24:00	21	27	48	0
Daily Trip Rate	856	859	1715	-

3.10 The results show that during the busiest peak hour (12:00-13:00) the proposed drive thru unit development would result in around 151 two-way movements. The data also shows a peak parking accumulation of 16 vehicles between 12:00-13:00. This equates to under three vehicle every minute either arriving or departing the site during the busiest hour.

Saturday TRICS Trip Generation and Parking Accumulation – Drive Thrus

3.11 The same assessment has been run for Saturday data and is summarised at **Table 3.3** below with the full TRICS outputs included at **Appendix 3**:

Table 3.3: TRICS Saturday Trip Rates (per 100m² GFA) for the proposed Drive-Thru Units

Time Range	Arrivals	Departures	Total	Accumulation Rate
05:00-06:00	1.429	0.857	2.286	0.572
06:00-07:00	10.581	8.387	18.968	2.766
07:00-08:00	14.685	13.58	28.265	3.871
08:00-09:00	18.389	17.674	36.063	4.586
09:00-10:00	23.847	22.027	45.874	6.406
10:00-11:00	19.602	20.061	39.663	5.947
11:00-12:00	22.665	20.674	43.339	7.938
12:00-13:00	31.7	29.403	61.103	10.235
13:00-14:00	30.526	31.853	62.379	8.908
14:00-15:00	28.076	28.229	56.305	8.755
15:00-16:00	23.532	25.115	48.647	7.172
16:00-17:00	23.226	23.686	46.912	6.712
17:00-18:00	23.686	23.737	47.423	6.661
18:00-19:00	25.574	24.809	50.383	7.426
19:00-20:00	21.388	22.767	44.155	6.047
20:00-21:00	15.773	17.407	33.18	4.413
21:00-22:00	13.221	12.915	26.136	4.719
22:00-23:00	8.149	8.996	17.145	3.872
23:00-24:00	6.519	6.91	13.429	0
Daily Trip Rate	362.568	359.087	721.655	-

3.12 The above trip rates have been applied to the GFA of the development, which totals approximately 425m^2, to provide the anticipated vehicle movements, as shown in **Table 3.4** below:

Table 3.4: Estimated Trip Generation – Saturday – Drive-Thru Units (425m² GFA)

Time Range	Arrivals	Departures	Total	Parking Accumulation
05:00-06:00	6	4	10	2
06:00-07:00	45	36	81	12
07:00-08:00	62	58	120	16
08:00-09:00	78	75	153	19
09:00-10:00	101	94	195	27
10:00-11:00	83	85	169	25
11:00-12:00	96	88	184	34
12:00-13:00	135	125	260	43
13:00-14:00	130	135	265	38
14:00-15:00	119	120	239	37
15:00-16:00	100	107	207	30
16:00-17:00	99	101	199	29
17:00-18:00	101	101	202	28
18:00-19:00	109	105	214	32
19:00-20:00	91	97	188	26
20:00-21:00	67	74	141	19
21:00-22:00	56	55	111	20
22:00-23:00	35	38	73	16
23:00-24:00	28	29	57	0
Daily Trip Rate	1541	1526	3067	-

3.13 The results show that during the busiest Saturday lunchtime peak hour (13:00-14:00) the proposed drive thru unit development would result in around 265 two-way movements. The data also shows a peak parking accumulation of 43 vehicles between 12:00-13:00.

3.14 This equates to under five vehicles every minute either arriving or departing the site during the busiest peak hour.

3.15 In terms of the types of trips that would be generated by the development, it is anticipated that the significant majority of trips would be linked with the existing uses present on the wider site and that there would be negligible further trips that would involve additional vehicle movements on the local public road network. It is further noted that developments of this sort generate very low levels of 'new' or 'primary' vehicle trips.

Remaining Retail Site Parking Provision - Weekday

3.16 The development proposals result in the loss of 83 spaces following the provision of seven new spaces, thus revising the parking provision on the wider site to 557 spaces.

3.17 In order to demonstrate that the remaining car parking provision is suitable to serve the retail site, the TRICS Database has been used to estimate the likely numbers of trips expected to be generated by the foodstore and non-food retail unit by using the most similar appropriate category within the database. The selection criteria applied to derive the comparative sites are listed below:

- Land use – Retail, sub-category – Food Superstore/Non-food Retail;
- All London and Ireland sites excluded;
- Weekday or Saturday surveys only (as appropriate); and
- Selection by GFA.

3.18 A summary of the trip rates is shown below in **Table 3.5** with the full TRICS output provided at **Appendix 3**:

Table 3.5: TRICS Weekday Trip Rates (per 100m² GFA) for the Retail Park Uses

Time Range	Foodstore		Non-Food Retail	
	Arrivals	Departures	Arrivals	Departures
06:00-07:00	0.315	0.073	0	0
07:00-08:00	1.254	0.854	0.082	0
08:00-09:00	2.024	1.571	0.255	0.114
09:00-10:00	2.927	2.248	1.312	0.823
10:00-11:00	3.092	2.851	1.703	1.334
11:00-12:00	3.405	3.213	1.879	1.737
12:00-13:00	3.644	3.577	1.777	1.709
13:00-14:00	3.448	3.47	1.942	1.868
14:00-15:00	3.233	3.365	1.749	1.737
15:00-16:00	3.312	3.365	1.431	1.658
16:00-17:00	3.251	3.325	1.249	1.368
17:00-18:00	3.339	3.449	1.153	1.238
18:00-19:00	3.112	3.391	0.738	1.011
19:00-20:00	2.205	2.693	0.407	0.735
20:00-21:00	1.419	1.821	0	0.216
21:00-22:00	0.817	1.138	0	0
22:00-23:00	0.058	0.214	0	0
Daily Trip Rate	40.855	40.618	15.677	15.548

3.19 The above trip rates have been applied to the GFA of the foodstore, which totals approximately 8,472m^2, and the non-food retail units, which total approximately 1,334m² GFA, to provide the anticipated vehicle movements, as shown in **Table 3.6** below:

Table 3.6: Estimated Trip Generation – Weekday – Foodstore & Non-Food Retail

Time Range	Foodstore		Non-Food Retail		Parking Accumulation
	Arrivals	Departures	Arrivals	Departures	
06:00-07:00	27	6	0	0	43
07:00-08:00	106	72	1	0	78
08:00-09:00	171	133	3	2	118
09:00-10:00	248	190	18	11	182
10:00-11:00	262	242	23	18	208
11:00-12:00	288	272	25	23	226
12:00-13:00	309	303	24	23	233
13:00-14:00	292	294	26	25	232
14:00-15:00	274	285	23	23	221
15:00-16:00	281	285	19	22	213
16:00-17:00	275	282	17	18	205
17:00-18:00	283	292	15	17	195
18:00-19:00	264	287	10	13	168
19:00-20:00	187	228	5	10	122
20:00-21:00	120	154	0	3	85
21:00-22:00	69	96	0	0	58
22:00-23:00	5	18	0	0	44
Daily Trips	3461	3441	209	207	-

3.20 The TRICS data shows a peak parking accumulation of 233 vehicles between 12:00-13:00.

Remaining Retail Site Parking Provision - Saturday

3.21 The same assessment has been run for Saturday data and is summarised at **Table 3.7** below with the full TRICS outputs included at **Appendix 3**:

Table 3.7: TRICS Saturday Trip Rates (per 100m² GFA) for the Retail Park Uses

Time Range	Foodstore		Non-Food Retail	
	Arrivals	Departures	Arrivals	Departures
06:00-07:00	0.471	0.224	0	0
07:00-08:00	1.302	0.847	0.095	0
08:00-09:00	2.632	1.953	0.42	0.141
09:00-10:00	3.867	3.005	1.502	0.937
10:00-11:00	4.92	4.174	2.505	1.988
11:00-12:00	5.421	5.089	3.11	2.58
12:00-13:00	5.356	5.336	3.251	3.145
13:00-14:00	5.285	5.403	3.322	3.19
14:00-15:00	5.19	5.138	4.073	3.936
15:00-16:00	5.069	5.257	3.322	3.698
16:00-17:00	4.787	5.254	2.531	2.911
17:00-18:00	4.033	4.884	1.33	2.31
18:00-19:00	3.124	3.842	0.353	0.861
19:00-20:00	1.929	2.476	0.108	0.154
20:00-21:00	1.099	1.375	0.151	0.177
21:00-22:00	0.562	0.766	0	0.286
22:00-23:00	0.164	0.248	0	0
23:00-24:00	0.865	1.038	0	0
Daily Trip Rate	56.076	56.309	26.073	26.314

3.22 The above trip rates have been applied to the GFA of the foodstore, which totals approximately 8,472m^2, and the non-food retail unit, which totals 1,334m² GFA, as shown in **Table 3.8** below:

Table 3.8: Estimated Trip Generation – Saturday – Foodstore & Non-Food Retail

Time Range	Foodstore		Non-Food Retail		Parking Accumulation
	Arrivals	Departures	Arrivals	Departures	
06:00-07:00	40	19	0	0	44
07:00-08:00	110	72	1	0	83
08:00-09:00	223	165	6	2	145
09:00-10:00	328	255	20	12	225
10:00-11:00	417	354	33	27	295
11:00-12:00	459	431	41	34	331
12:00-13:00	454	452	43	42	334
13:00-14:00	448	458	44	43	325
14:00-15:00	440	435	54	53	332
15:00-16:00	429	445	44	49	311
16:00-17:00	406	445	34	39	266
17:00-18:00	342	414	18	31	181
18:00-19:00	265	325	5	11	113
19:00-20:00	163	210	1	2	66
20:00-21:00	93	116	2	2	43
21:00-22:00	48	65	0	4	21
22:00-23:00	14	21	0	0	14
23:00-24:00	73	88	0	0	0
Daily Trips	4751	4770	348	351	-

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 05 - HEALTH
Category : F - CARE HOME (ELDERLY RESIDENTIAL)
VEHICLES

Selected regions and areas:

05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	1 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YORKSHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of residents
Actual Range: 38 to 76 (units:)
Range Selected by User: 17 to 180 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/02 to 24/11/15

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:
Sunday 3 days

This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual count 3 days
Directional ATC Count 0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:
Suburban Area (PPS6 Out of Centre) 1
Edge of Town 2

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:
Residential Zone 3

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C2	3 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	1 days
25,001 to 50,000	2 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	1 days
125,001 to 250,000	1 days
250,001 to 500,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	3 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	3 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 LN-05-F-01 NURSING HOME LINCOLNSHIRE
23 NETTLEHAM ROAD

LINCOLN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of residents: 38
Survey date: SUNDAY 30/06/13 Survey Type: MANUAL

2 NY-05-F-04 NURSING HOME NORTH YORKSHIRE
ROECLIFFE LANE

BOROUGHBRIDGE
Edge of Town
Residential Zone
Total Number of residents: 76
Survey date: SUNDAY 16/10/11 Survey Type: MANUAL

3 WM-05-F-01 NURSING HOME WEST MIDLANDS
NEARHILL ROAD

BIRMINGHAM
Edge of Town
Residential Zone
Total Number of residents: 65
Survey date: SUNDAY 08/11/15 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 05 - HEALTH/F - CARE HOME (ELDERLY RESIDENTIAL)
VEHICLES
Calculation factor: 1 RESIDE
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. RESIDE	Trip Rate	No. Days	Ave. RESIDE	Trip Rate	No. Days	Ave. RESIDE	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	3	60	0.106	3	60	0.034	3	60	0.140
08:00 - 09:00	3	60	0.028	3	60	0.017	3	60	0.045
09:00 - 10:00	3	60	0.011	3	60	0.000	3	60	0.011
10:00 - 11:00	3	60	0.061	3	60	0.039	3	60	0.100
11:00 - 12:00	3	60	0.067	3	60	0.028	3	60	0.095
12:00 - 13:00	3	60	0.022	3	60	0.067	3	60	0.089
13:00 - 14:00	3	60	0.056	3	60	0.028	3	60	0.084
14:00 - 15:00	3	60	0.056	3	60	0.056	3	60	0.112
15:00 - 16:00	3	60	0.056	3	60	0.028	3	60	0.084
16:00 - 17:00	3	60	0.045	3	60	0.078	3	60	0.123
17:00 - 18:00	3	60	0.028	3	60	0.078	3	60	0.106
18:00 - 19:00	3	60	0.022	3	60	0.039	3	60	0.061
19:00 - 20:00	3	60	0.039	3	60	0.028	3	60	0.067
20:00 - 21:00	3	60	0.011	3	60	0.073	3	60	0.084
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.608			0.593			1.201

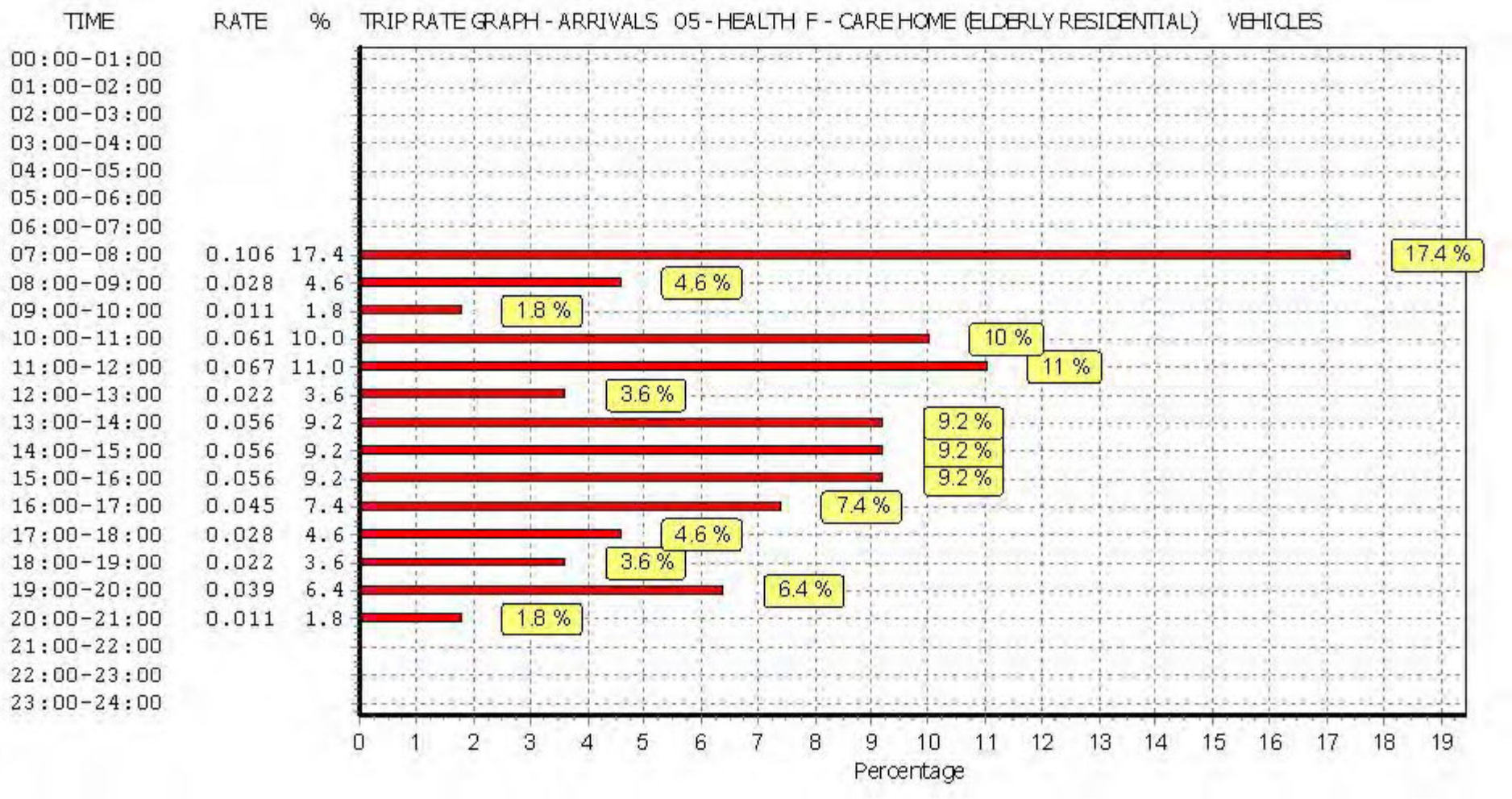
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

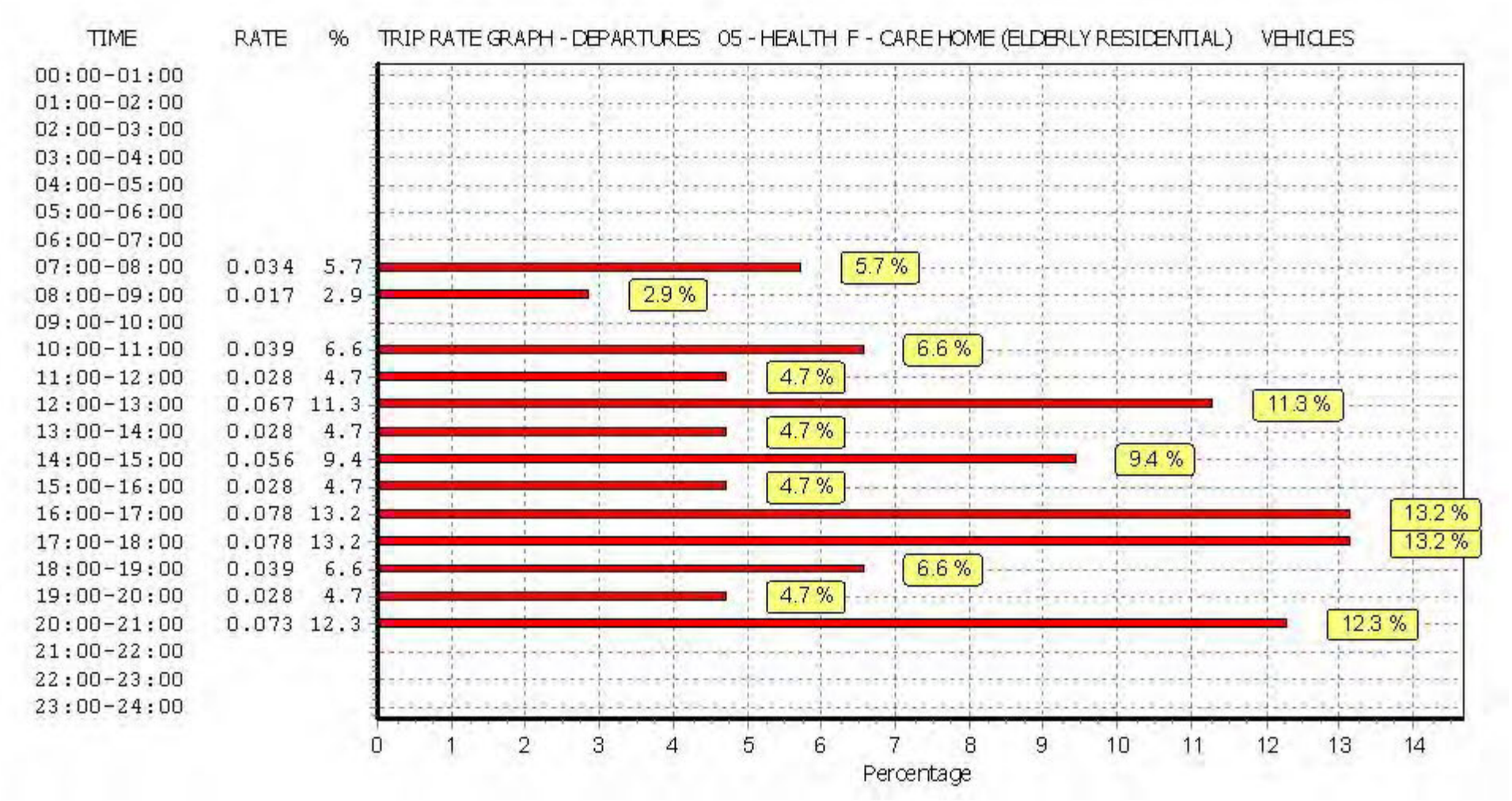
Parameter summary

Trip rate parameter range selected:	38 - 76 (units:)
Survey date date range:	01/01/02 - 24/11/15
Number of weekdays (Monday-Friday):	0
Number of Saturdays:	0
Number of Sundays:	3
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

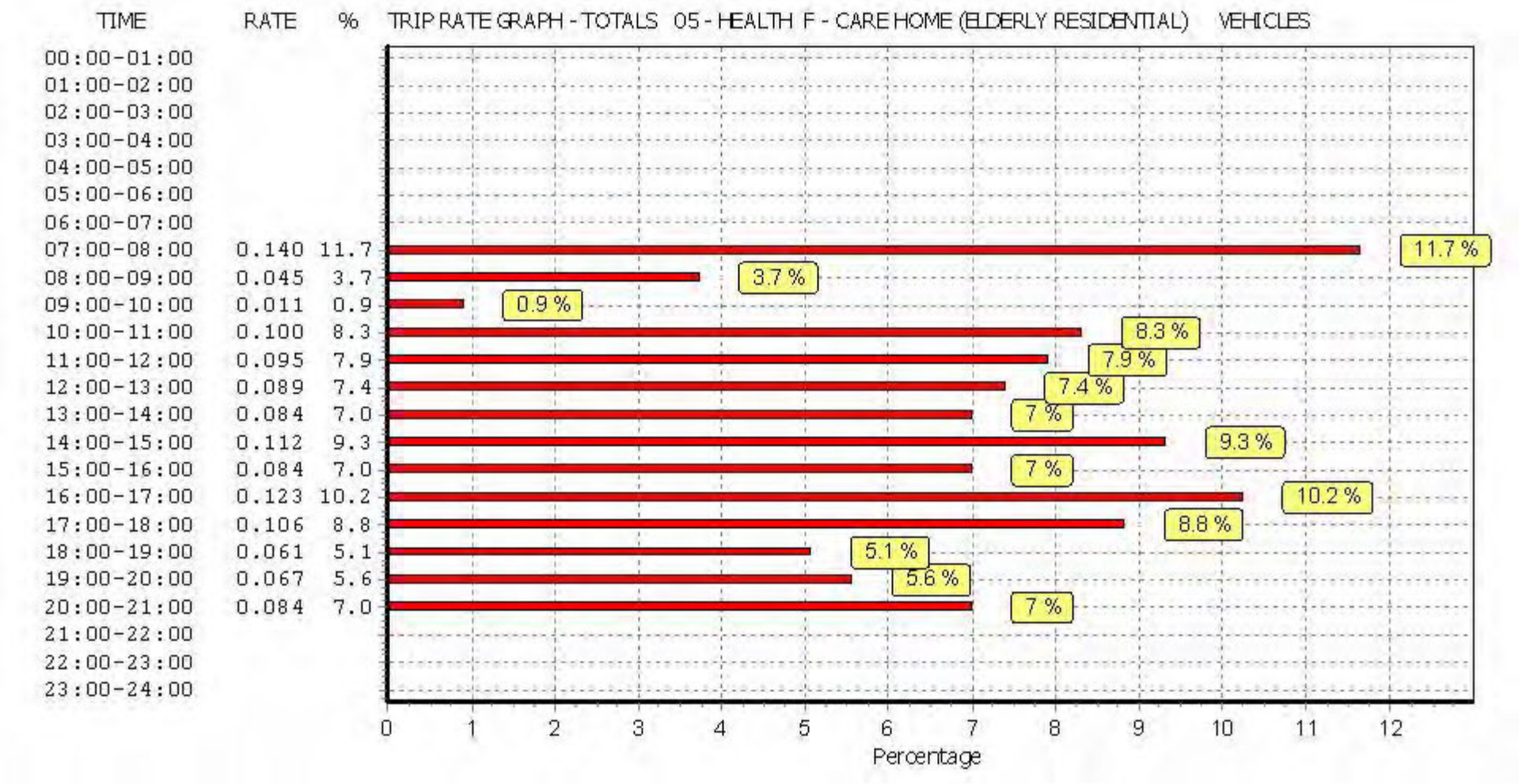
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Calculation Reference: AUDIT-243601-170124-0147

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 05 - HEALTH
Category : F - CARE HOME (ELDERLY RESIDENTIAL)
VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	EX	ESSEX	1 days
	HC	HAMPSHIRE	1 days
	HF	HERTFORDSHIRE	2 days
	WG	WOKINGHAM	1 days
03	SOUTH WEST		
	DC	DORSET	1 days
04	EAST ANGLIA		
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
	NR	NORTHAMPTONSHIRE	1 days
06	WEST MIDLANDS		
	WK	WARWICKSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YORKSHIRE	1 days
	WY	WEST YORKSHIRE	1 days
08	NORTH WEST		
	CH	CHESHIRE	1 days
	GM	GREATER MANCHESTER	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of residents
Actual Range: 17 to 120 (units:)
Range Selected by User: 17 to 180 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/08 to 24/11/15

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Tuesday	5 days
Wednesday	3 days
Thursday	2 days
Friday	3 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	14 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	3
Suburban Area (PPS6 Out of Centre)	7
Edge of Town	3
Neighbourhood Centre (PPS6 Local Centre)	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Development Zone	1
Residential Zone	10
Village	1
No Sub Category	2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C2	14 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,000 or Less	1 days
5,001 to 10,000	2 days
10,001 to 15,000	3 days
20,001 to 25,000	2 days
25,001 to 50,000	6 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	1 days
50,001 to 75,000	1 days
75,001 to 100,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	3 days
250,001 to 500,000	6 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	10 days
1.6 to 2.0	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	14 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	14 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 CH-05-F-01 NURSING HOME CHESHIRE
CREWE ROAD
HASLINGTON
NEAR CREWE
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Number of residents: 88
Survey date: FRIDAY 17/10/08 Survey Type: MANUAL

2 DC-05-F-02 NURSING HOME DORSET
WHARNCLIFFE ROAD
BOSCOMBE
BOURNEMOUTH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of residents: 43
Survey date: WEDNESDAY 16/07/08 Survey Type: MANUAL

3 DS-05-F-01 NURSING HOME DERBYSHIRE
29 VILLAGE STREET

DERBY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of residents: 70
Survey date: TUESDAY 21/10/14 Survey Type: MANUAL

4 EX-05-F-01 NURSING HOME ESSEX
WINSTON AVENUE
WESTCLIFF
SOUTHEND-ON-SEA
Edge of Town Centre
Residential Zone
Total Number of residents: 17
Survey date: THURSDAY 24/10/13 Survey Type: MANUAL

5 GM-05-F-03 NURSING HOME GREATER MANCHESTER
HALIFAX ROAD

ROCHDALE
Edge of Town
Residential Zone
Total Number of residents: 30
Survey date: WEDNESDAY 29/05/13 Survey Type: MANUAL

6 HC-05-F-01 CARE HOME HAMPSHIRE
BOTLEY ROAD

SOUTHAMPTON
Edge of Town
No Sub Category
Total Number of residents: 42
Survey date: TUESDAY 24/11/15 Survey Type: MANUAL

7 HF-05-F-01 NURSING HOME HERTFORDSHIRE
EXPLORER DRIVE

WATFORD
Suburban Area (PPS6 Out of Centre)
Development Zone
Total Number of residents: 120
Survey date: WEDNESDAY 16/07/08 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8 HF-05-F-02 NURSING HOME HERTFORDSHIRE
BEACONSFIELD ROAD

ST ALBANS
Edge of Town Centre
No Sub Category
Total Number of residents: 25
Survey date: TUESDAY 01/10/13 Survey Type: MANUAL

9 NR-05-F-01 NURSING HOME NORTHAMPTONSHIRE
ROCKINGHAM ROAD

CORBY
Edge of Town Centre
Residential Zone
Total Number of residents: 55
Survey date: FRIDAY 21/11/08 Survey Type: MANUAL

10 NY-05-F-01 NURSING HOME NORTH YORKSHIRE
HARROGATE ROAD

RIPON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of residents: 38
Survey date: MONDAY 22/09/08 Survey Type: MANUAL

11 SF-05-F-01 CARE HOME SUFFOLK
COLCHESTER ROAD

IPSWICH
Edge of Town
Residential Zone
Total Number of residents: 17
Survey date: FRIDAY 18/09/15 Survey Type: MANUAL

12 WG-05-F-01 NURSING HOME WOKINGHAM
BARKHAM ROAD

WOKINGHAM
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of residents: 58
Survey date: TUESDAY 20/11/12 Survey Type: MANUAL

13 WK-05-F-01 NURSING HOME WARWICKSHIRE
CLARENDON SQUARE

LEAMINGTON SPA
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of residents: 32
Survey date: THURSDAY 25/10/12 Survey Type: MANUAL

14 WY-05-F-01 NURSING HOME WEST YORKSHIRE
CLIFF ROAD
HYDE PARK
LEEDS
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of residents: 58
Survey date: TUESDAY 15/06/10 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 05 - HEALTH/F - CARE HOME (ELDERLY RESIDENTIAL)
VEHICLES
Calculation factor: 1 RESIDE
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. RESIDE	Trip Rate	No. Days	Ave. RESIDE	Trip Rate	No. Days	Ave. RESIDE	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	14	50	0.098	14	50	0.045	14	50	0.143
08:00 - 09:00	14	50	0.074	14	50	0.063	14	50	0.137
09:00 - 10:00	14	50	0.058	14	50	0.025	14	50	0.083
10:00 - 11:00	14	50	0.088	14	50	0.063	14	50	0.151
11:00 - 12:00	14	50	0.068	14	50	0.078	14	50	0.146
12:00 - 13:00	14	50	0.069	14	50	0.066	14	50	0.135
13:00 - 14:00	14	50	0.092	14	50	0.075	14	50	0.167
14:00 - 15:00	14	50	0.094	14	50	0.104	14	50	0.198
15:00 - 16:00	14	50	0.068	14	50	0.108	14	50	0.176
16:00 - 17:00	14	50	0.063	14	50	0.089	14	50	0.152
17:00 - 18:00	14	50	0.048	14	50	0.091	14	50	0.139
18:00 - 19:00	14	50	0.049	14	50	0.065	14	50	0.114
19:00 - 20:00	12	46	0.064	12	46	0.047	12	46	0.111
20:00 - 21:00	11	46	0.034	11	46	0.047	11	46	0.081
21:00 - 22:00	1	38	0.026	1	38	0.026	1	38	0.052
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.993			0.992			1.985

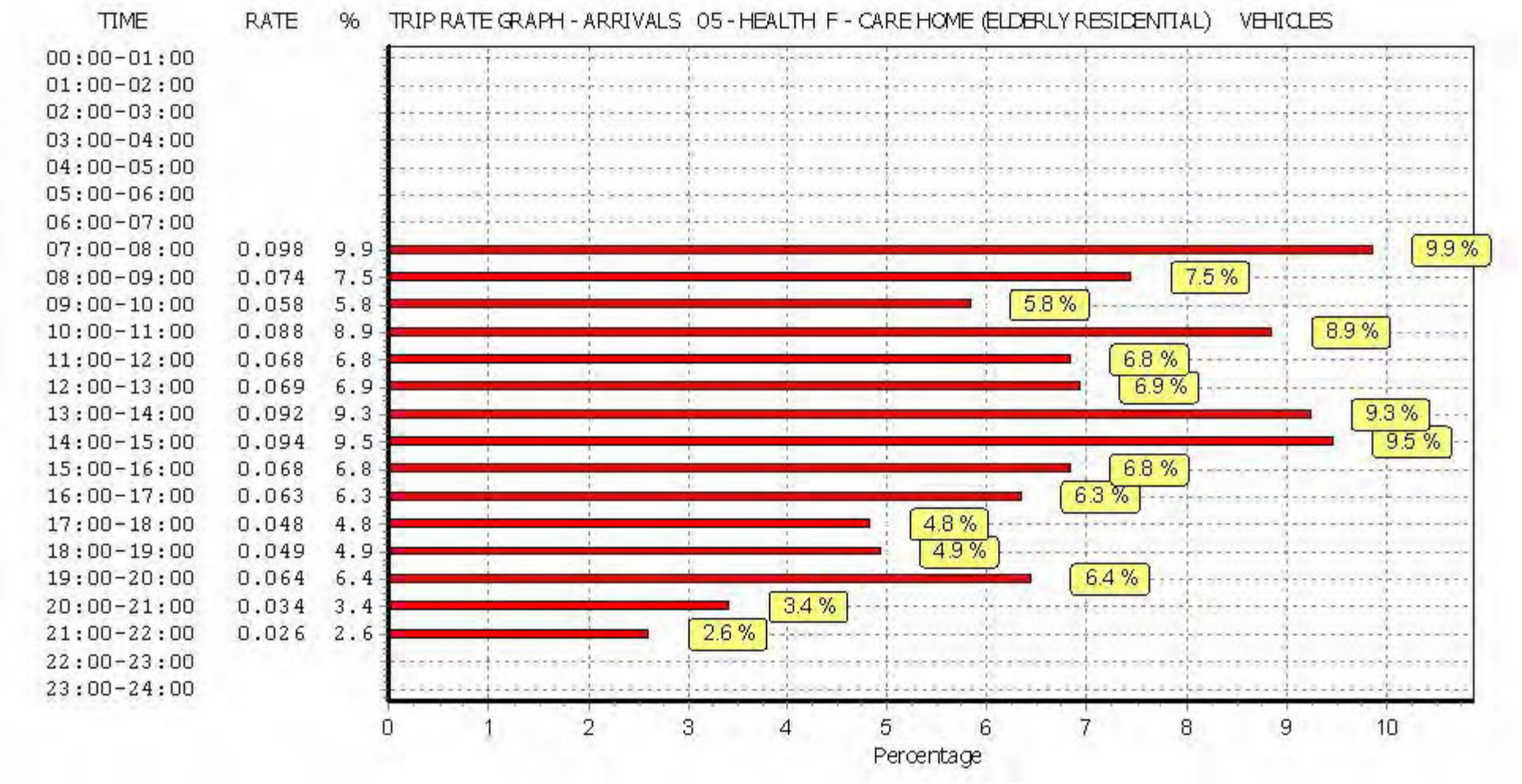
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

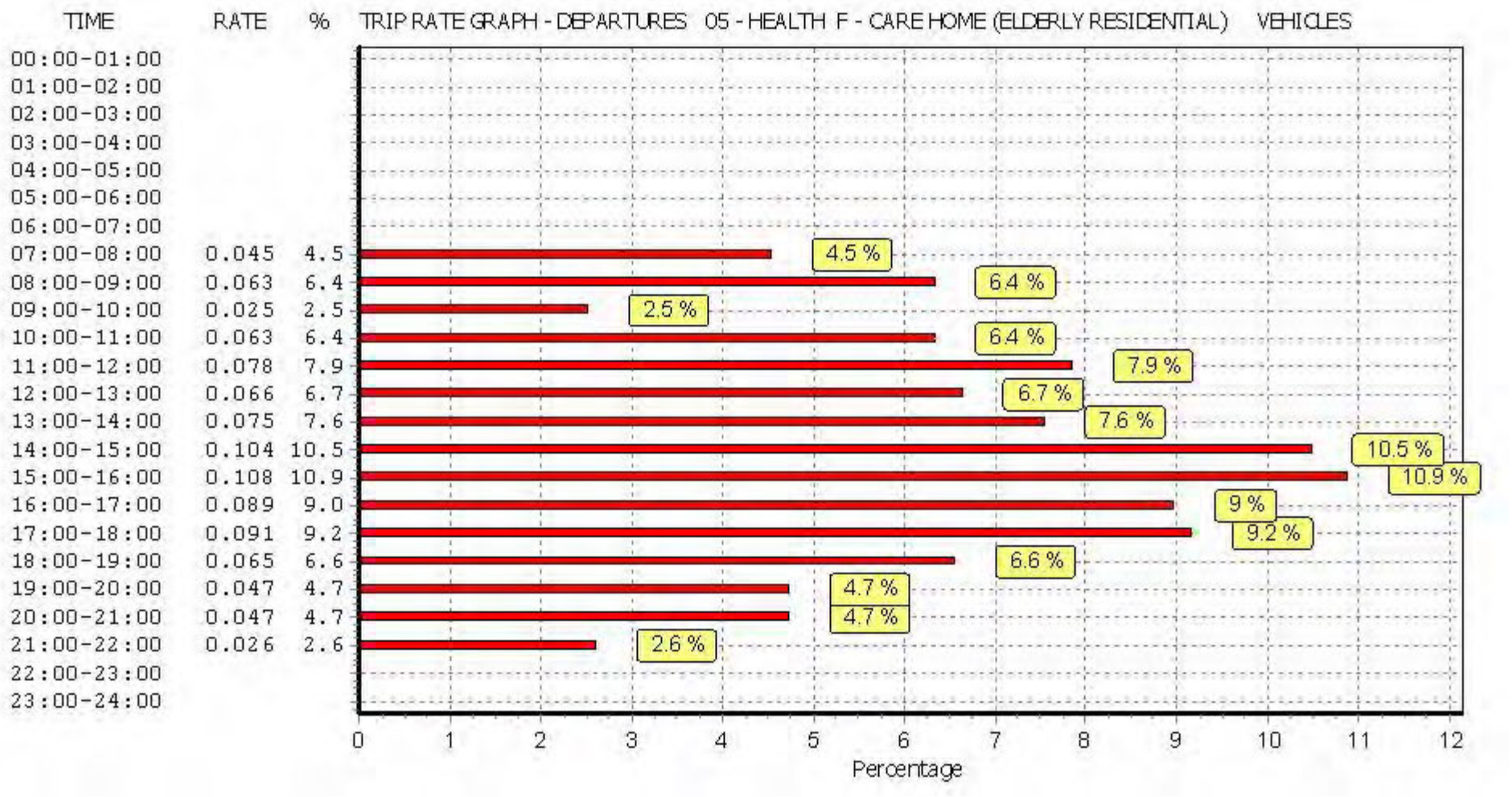
Parameter summary

Trip rate parameter range selected:	17 - 120 (units:)
Survey date date range:	01/01/08 - 24/11/15
Number of weekdays (Monday-Friday):	14
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

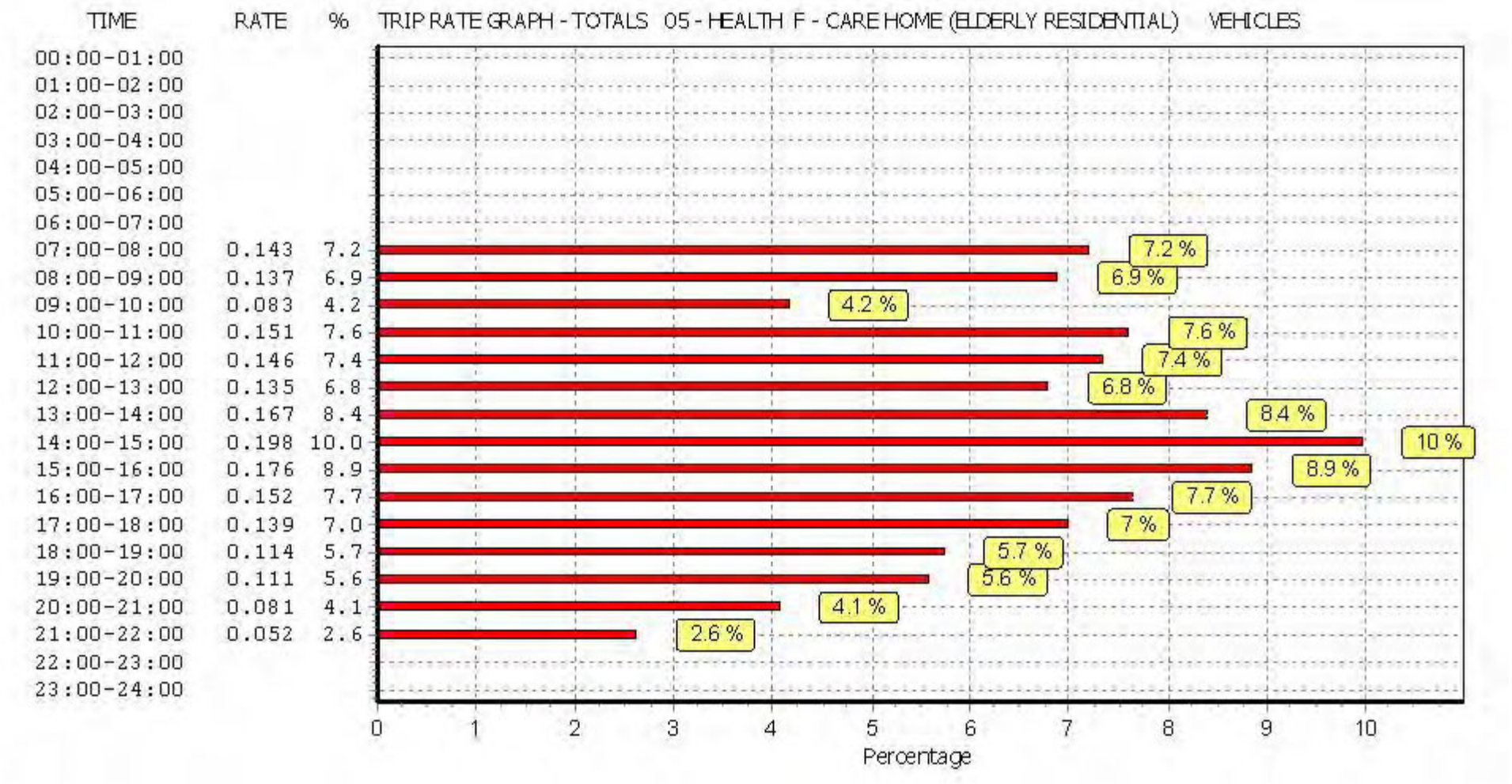
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



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Calculation Reference: AUDIT-243601-170124-0145

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : D - NURSERY
VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	KC	KENT	1 days
04	EAST ANGLIA		
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	LE	LEICESTERSHIRE	1 days
	NR	NORTHAMPTONSHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
08	NORTH WEST		
	CH	CHESHIRE	1 days
	GM	GREATER MANCHESTER	1 days
09	NORTH		
	DH	DURHAM	1 days
	TW	TYNE & WEAR	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
Actual Range: 182 to 750 (units: sqm)
Range Selected by User: 120 to 987 (units: sqm)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/08 to 10/12/14

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	2 days
Wednesday	5 days
Thursday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	9 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	3
Suburban Area (PPS6 Out of Centre)	5
Edge of Town	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	8
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

D1	9 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	1 days
10,001 to 15,000	1 days
15,001 to 20,000	1 days
20,001 to 25,000	2 days
25,001 to 50,000	4 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

75,001 to 100,000	5 days
100,001 to 125,000	1 days
250,001 to 500,000	2 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	4 days
1.1 to 1.5	5 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	9 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	9 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 CH-04-D-01 NURSERY CHESHIRE
CHESTER ROAD

MACCLESFIELD
Edge of Town Centre
No Sub Category
Total Gross floor area: 500 sqm
Survey date: MONDAY 24/11/14 Survey Type: MANUAL

2 DH-04-D-02 NURSERY DURHAM
PRIORY ROAD
FRAMWELLGATE MOOR
DURHAM
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 382 sqm
Survey date: THURSDAY 27/11/08 Survey Type: MANUAL

3 GM-04-D-01 NURSERY GREATER MANCHESTER
RUFFORD ROAD
WHALLEY RANGE
MANCHESTER
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 200 sqm
Survey date: MONDAY 16/11/09 Survey Type: MANUAL

4 KC-04-D-01 NURSERY KENT
PEMBURY ROAD

TONBRIDGE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 210 sqm
Survey date: WEDNESDAY 09/12/09 Survey Type: MANUAL

5 LE-04-D-01 NURSERY LEICESTERSHIRE
WIGSTON ROAD
OADBY
LEICESTER
Edge of Town
Residential Zone
Total Gross floor area: 375 sqm
Survey date: THURSDAY 30/10/14 Survey Type: MANUAL

6 NR-04-D-02 NURSERY NORTHAMPTONSHIRE
PARK AVENUE

KETTERING
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 182 sqm
Survey date: WEDNESDAY 26/09/12 Survey Type: MANUAL

7 SF-04-D-03 NURSERY SUFFOLK
CAMP ROAD

LOWESTOFT
Edge of Town Centre
Residential Zone
Total Gross floor area: 750 sqm
Survey date: WEDNESDAY 10/12/14 Survey Type: MANUAL

8 SH-04-D-01 NURSERY SHROPSHIRE
OLD COLEHAM

SHREWSBURY
Edge of Town Centre
Residential Zone
Total Gross floor area: 326 sqm
Survey date: WEDNESDAY 28/05/14 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

9 TW-04-D-02 NURSERY TYNE & WEAR
ETTRICK GROVE
HIGH BARNES
SUNDERLAND
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 500 sqm
Survey date: WEDNESDAY 28/11/12 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	380	1.939	8	380	1.084	8	380	3.023
08:00 - 09:00	9	381	4.350	9	381	3.971	9	381	8.321
09:00 - 10:00	9	381	1.839	9	381	1.781	9	381	3.620
10:00 - 11:00	9	381	0.496	9	381	0.380	9	381	0.876
11:00 - 12:00	9	381	0.701	9	381	0.672	9	381	1.373
12:00 - 13:00	9	381	0.759	9	381	0.847	9	381	1.606
13:00 - 14:00	9	381	1.022	9	381	1.168	9	381	2.190
14:00 - 15:00	9	381	0.672	9	381	0.555	9	381	1.227
15:00 - 16:00	9	381	1.168	9	381	1.255	9	381	2.423
16:00 - 17:00	9	381	2.131	9	381	2.073	9	381	4.204
17:00 - 18:00	9	381	3.358	9	381	3.737	9	381	7.095
18:00 - 19:00	9	381	0.438	9	381	1.139	9	381	1.577
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			18.873			18.662			37.535

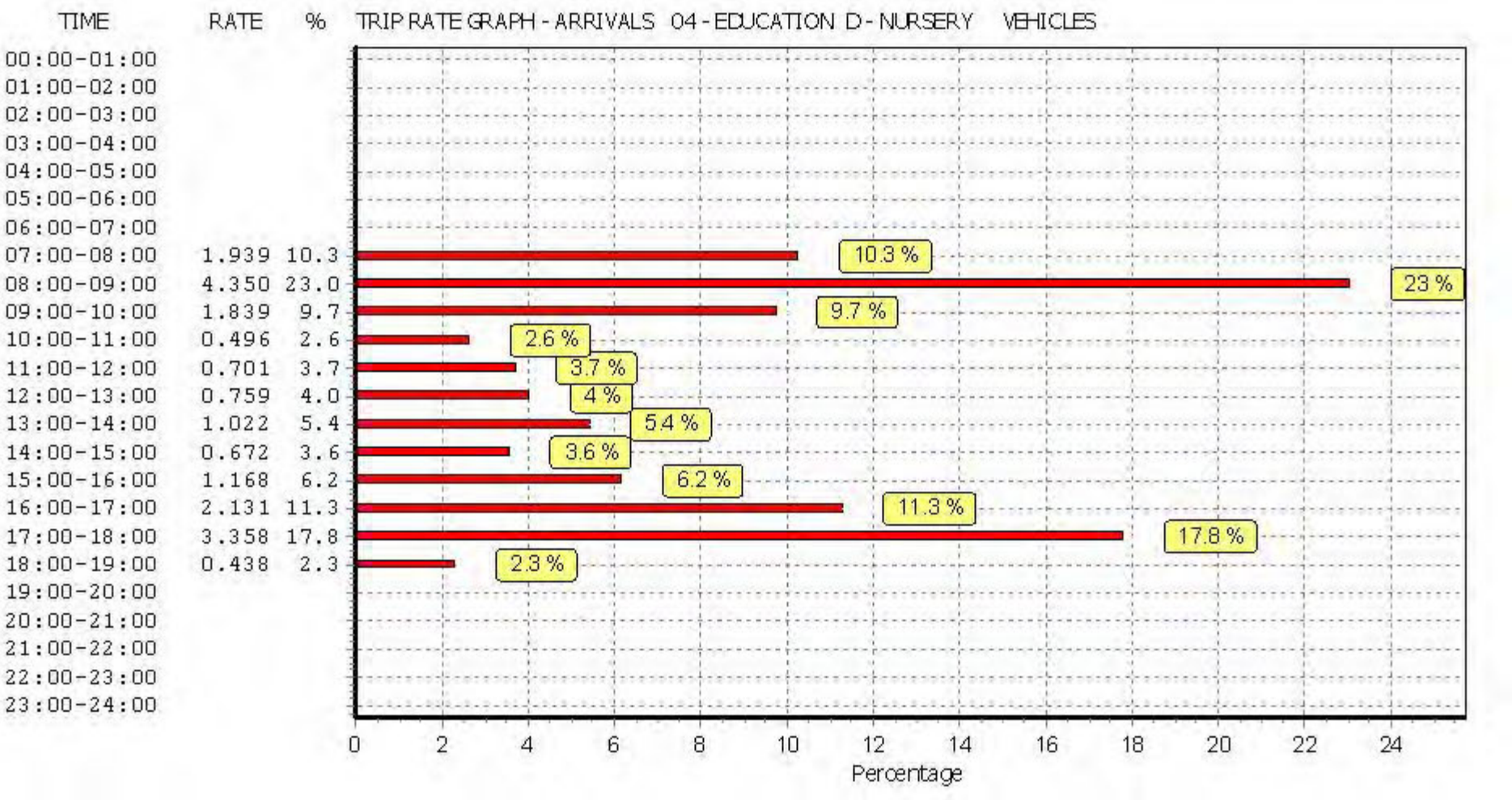
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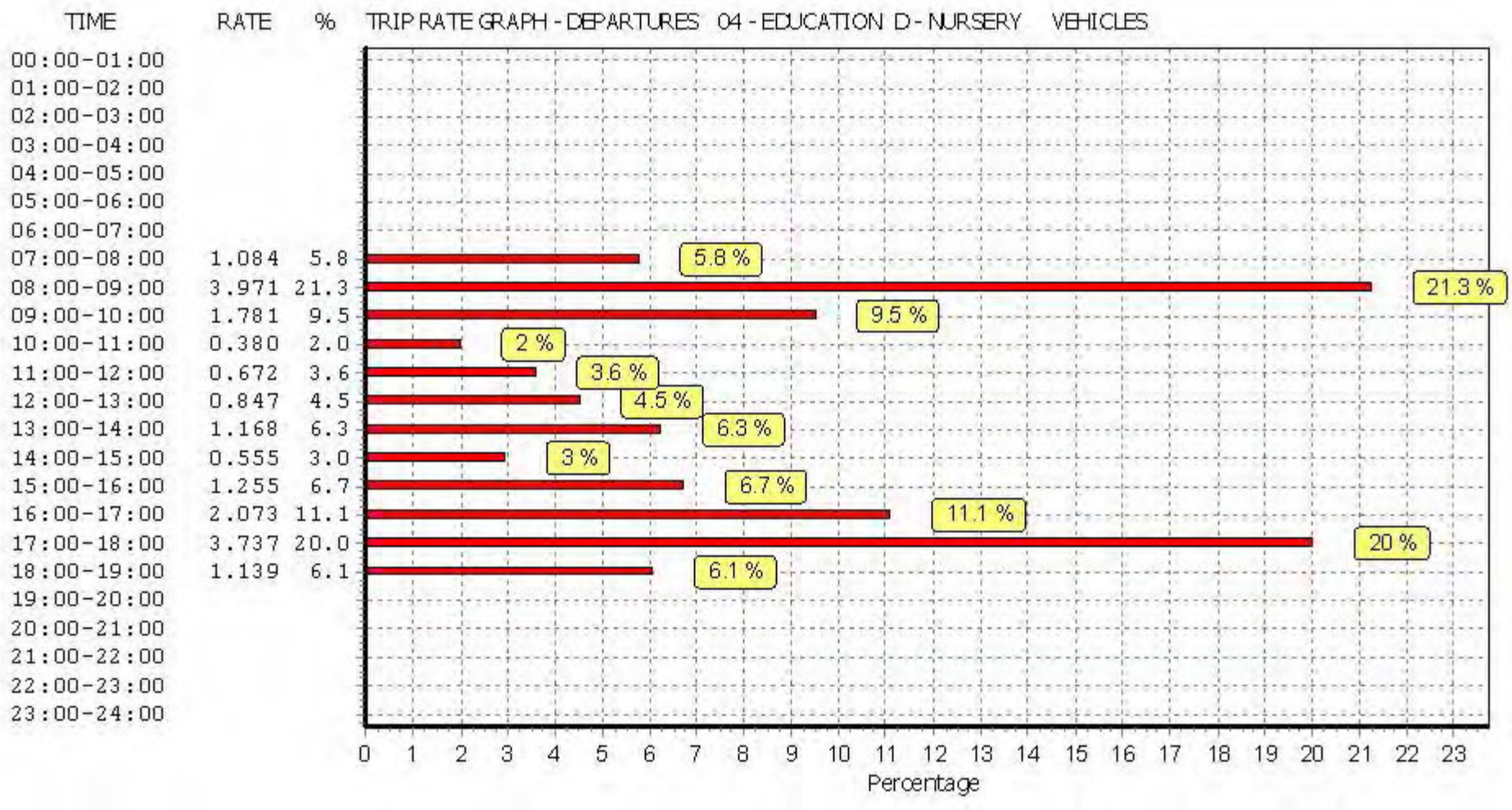
Parameter summary

Trip rate parameter range selected:	182 - 750 (units: sqm)
Survey date date range:	01/01/08 - 10/12/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

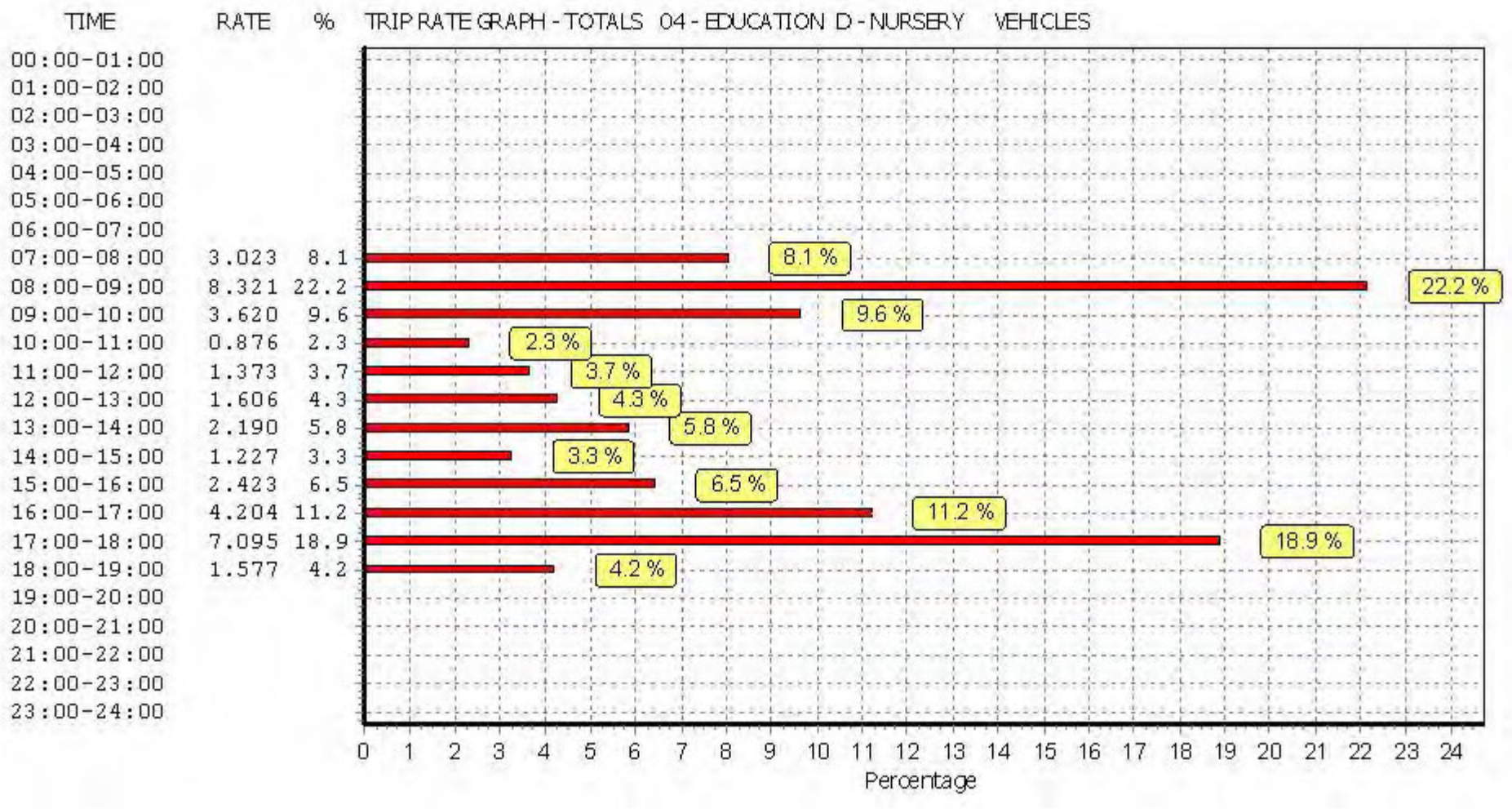
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



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TRICS 7.7.2
Trip Rate P: Filling bays

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 13 - PETROL FILLING STATIONS
Category B - PFS - WITH RETAIL
VEHICLES

Selected regions and areas:

3	SOUTH WEST		
	DC	DORSET	2 days
	DV	DEVON	1 days
4	EAST ANGLIA		
	CA	CAMBRIDG	1 days
	SF	SUFFOLK	2 days
5	EAST MIDLANDS		
	DS	DERBYSHIR	1 days
	LE	LEICESTERS	1 days
	LN	LINCOLNSH	1 days
	NT	NOTTINGH	1 days
6	WEST MIDLANDS		
	ST	STAFFORDS	1 days
	WM	WEST MIDI	1 days
7	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YO	3 days
8	NORTH WEST		
	GM	GREATER M	1 days
	LC	LANCASHIR	1 days
	MS	MERSEYSID	1 days
9	NORTH		
	TW	TYNE & WE	1 days
10	WALES		
	DB	DENBIGHSH	1 days
	MM	MONMOU	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Filling bays
Actual Ran 6 to 16 (units:)
Range Sele 4 to 16 (units:)

Public Transport Provision:
Selection b Include all surveys

Date Range 01/01/12 to 27/09/19

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Monday 2 days
Tuesday 8 days
Wednesday 4 days
Friday 7 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual co 21 days
Directional 0 days
This data d the total a whilst ATC surveys are undertaking using machines.

Selected Locations:

Town Cent	0
Edge of To	2
Suburban A	12
Edge of To	4
Neighbourh	3
Free Standi	0
Not Known	0

This data d Edge of To Suburban , Neighbour Edge of To Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Z	1
Commercia	0
Developme	1
Residential	15
Retail Zone	0
Built-Up Zo	1
Village	0
Out of Tow	0
High Street	1
No Sub Cat	2

This data d Industrial Z Developm Residentia Retail Zon Built-Up Z Village Out of Tow High Street and No Sub Category.

Secondary Filtering selection:

Use Class:
n/a 21 days
This data d which can be found within the Library module of TRICS®.

Population within 1 mile:
1,001 to 5, 4 days
5,001 to 1(1 days
10,001 to 1 6 days
15,001 to 2 2 days
20,001 to 2 2 days
25,001 to 5 5 days
50,001 to 1 1 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
25,001 to : 3 days
50,001 to : 4 days
75,001 to : 1 days
125,001 to 7 days
250,001 to 5 days
500,001 or 1 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.5 or Less 1 days
0.6 to 1.0 7 days
1.1 to 1.5 11 days
1.6 to 2.0 2 days
This data d within a radius of 5-miles of selected survey sites.

Travel Plan:
No 21 days
This data d and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:
No PTAL Pr 21 days
This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters
1 CA-13-B-02 MURCO & (CAMBRIDGESHIRE
LINCOLN ROAD

PETERBOROUGH
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Filling bays: 8
Survey date TUESDAY ######## Survey Typ MANUAL
2 DB-13-B-02 TEXACO & (DENBIGHSHIRE
RHYL ROAD

RHUDDLAN
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Filling bays: 8
Survey date TUESDAY ######## Survey Typ MANUAL
3 DC-13-B-01 ESSO & TES DORSET
271 BARRACK ROAD

CHRISTCHURCH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 6
Survey date MONDAY ######## Survey Typ MANUAL
4 DC-13-B-02 M&S & BP DORSET
71-75 SOMERFORD ROAD

CHRISTCHURCH
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Filling bays: 8
Survey date FRIDAY ######## Survey Typ MANUAL
5 DS-13-B-01 ESSO & TES DERBYSHIRE
NOTTINGHAM ROAD
CHADDESDEN
DERBY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 8
Survey date FRIDAY ######## Survey Typ MANUAL
6 DV-13-B-01 BP & COSTI DEVON
TORBAY ROAD

PAIGNTON
Edge of Town
Residential Zone
Total Filling bays: 8
Survey date TUESDAY ######## Survey Typ MANUAL
7 GM-13-B-0 BP & SPAR GREATER MANCHESTER
NEW STREET
MILNROW
ROCHDALE
Edge of Town
Residential Zone
Total Filling bays: 8
Survey date WEDNESDA ######## Survey Typ MANUAL
8 LC-13-B-03 TEXACO & LANCASHIRE
GARSTANG ROAD
FULWOOD
PRESTON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 8
Survey date TUESDAY ######## Survey Typ MANUAL
9 LE-13-B-02 TESCO EXP LEICESTERSHIRE
FOSSE ROAD NORTH

LEICESTER
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 8
Survey date TUESDAY ######## Survey Typ MANUAL
10 LN-13-B-01 GULF & CO LINCOLNSHIRE
CARHOLME ROAD

LINCOLN
Edge of Town
Residential Zone
Total Filling bays: 8
Survey date WEDNESDA ######## Survey Typ MANUAL
11 MM-13-B-0 BP & M&S S MONMOUTHSHIRE
MALPAS ROAD
MALPAS
NEWPORT
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Filling bays: 8
Survey date FRIDAY ######## Survey Typ MANUAL
12 MS-13-B-0 ESSO & SPA MERSEYSIDE
ULLET ROAD
SEFTON PARK
LIVERPOOL
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 6
Survey date TUESDAY ######## Survey Typ MANUAL
13 NT-13-B-03 SAINSBURY NOTTINGHAMSHIRE
CASTLE BRIDGE ROAD

NOTTINGHAM
Suburban Area (PPS6 Out of Centre)
Development Zone
Total Filling bays: 16
Survey date FRIDAY ######## Survey Typ MANUAL
14 NY-13-B-02 BP & SPAR NORTH YORKSHIRE
NORTH STREET

RIPON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 6
Survey date MONDAY ######## Survey Typ MANUAL
15 NY-13-B-03 ESSO & CO NORTH YORKSHIRE
WETHERBY ROAD NORTH

KNARESBOROUGH
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Filling bays: 8
Survey date FRIDAY ######## Survey Typ MANUAL
16 NY-13-B-04 HARVEST E NORTH YORKSHIRE
VICTORIA ROAD

RICHMOND
Edge of Town Centre
No Sub Category
Total Filling bays: 8
Survey date WEDNESDA ######## Survey Typ MANUAL
17 SF-13-B-01 TOTAL SUFFOLK
HILLSIDE ROAD EAST

BUNGAY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 8
Survey date: TUESDAY ######## Survey Typ MANUAL
18 SF-13-B-02 BP CONNEC SUFFOLK
ROUGHAM ROAD

BURY ST EDMUNDS
Edge of Town
Residential Zone
Total Filling bays: 8
Survey date: FRIDAY ######## Survey Typ MANUAL
19 ST-13-B-01 BP & HURS STAFFORDSHIRE
FOREGATE STREET

STAFFORD
Edge of Town Centre
Built-Up Zone
Total Filling bays: 10
Survey date: WEDNESDA ######## Survey Typ MANUAL
20 TW-13-B-01 SHELL & SP TYNE & WEAR
THE BROADWAY

SUNDERLAND
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 6
Survey date: FRIDAY ######## Survey Typ MANUAL
21 WM-13-B-(TEXACO & (WEST MIDLANDS
HIGH STREET
HARBORNE
BIRMINGHAM
Suburban Area (PPS6 Out of Centre)
High Street
Total Filling bays: 8
Survey date: TUESDAY ######## Survey Typ MANUAL

This sectior it displays the selecte the day of and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	21	8	4.635	21	8	4.312	21	8	8.947
07:00-08:0	21	8	7.694	21	8	7.365	21	8	15.059
08:00-09:0	21	8	8.265	21	8	7.912	21	8	16.177
09:00-10:0	21	8	8.529	21	8	8.565	21	8	17.094
10:00-11:0	21	8	7.512	21	8	7.465	21	8	14.977
11:00-12:0	21	8	7.318	21	8	7.306	21	8	14.624
12:00-13:0	21	8	8.594	21	8	8.694	21	8	17.288
13:00-14:0	21	8	8.459	21	8	8.447	21	8	16.906
14:00-15:0	21	8	8.447	21	8	8.341	21	8	16.788
15:00-16:0	21	8	8.376	21	8	8.459	21	8	16.835
16:00-17:0	21	8	8.8	21	8	9.018	21	8	17.818
17:00-18:0	21	8	9.476	21	8	9.382	21	8	18.858
18:00-19:0	21	8	8.965	21	8	9.012	21	8	17.977
19:00-20:0	21	8	7.512	21	8	7.8	21	8	15.312
20:00-21:0	21	8	5.094	21	8	5.224	21	8	10.318
21:00-22:0	21	8	3.924	21	8	4.094	21	8	8.018
22:00-23:0	2	8	1.063	2	8	1.438	2	8	2.5
23:00-24:0	1	8	0	1	8	0.25	1	8	0.25
Daily Trip Rates:			122.662			123.084			245.746

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: TAXIS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	21	8	0.059	21	8	0.047	21	8	0.106
07:00-08:0	21	8	0.088	21	8	0.1	21	8	0.188
08:00-09:0	21	8	0.135	21	8	0.118	21	8	0.253
09:00-10:0	21	8	0.188	21	8	0.2	21	8	0.388
10:00-11:0	21	8	0.153	21	8	0.153	21	8	0.306
11:00-12:0	21	8	0.141	21	8	0.135	21	8	0.276
12:00-13:0	21	8	0.147	21	8	0.147	21	8	0.294
13:00-14:0	21	8	0.135	21	8	0.141	21	8	0.276
14:00-15:0	21	8	0.147	21	8	0.129	21	8	0.276
15:00-16:0	21	8	0.129	21	8	0.147	21	8	0.276
16:00-17:0	21	8	0.182	21	8	0.188	21	8	0.37
17:00-18:0	21	8	0.147	21	8	0.147	21	8	0.294
18:00-19:0	21	8	0.094	21	8	0.094	21	8	0.188
19:00-20:0	21	8	0.153	21	8	0.153	21	8	0.306
20:00-21:0	21	8	0.176	21	8	0.165	21	8	0.341
21:00-22:0	21	8	0.082	21	8	0.088	21	8	0.17
22:00-23:0	2	8	0	2	8	0	2	8	0
23:00-24:0	1	8	0	1	8	0	1	8	0
Daily Trip Rates:			2.156			2.152			4.308

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: OGVS

	ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	BAYS	Rate	Days	BAYS	Rate	Days	BAYS	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	21	8	0.106	21	8	0.1	21	8	0.206
07:00-08:0	21	8	0.194	21	8	0.218	21	8	0.412
08:00-09:0	21	8	0.124	21	8	0.124	21	8	0.248
09:00-10:0	21	8	0.129	21	8	0.129	21	8	0.258
10:00-11:0	21	8	0.106	21	8	0.112	21	8	0.218
11:00-12:0	21	8	0.112	21	8	0.088	21	8	0.2
12:00-13:0	21	8	0.129	21	8	0.112	21	8	0.241
13:00-14:0	21	8	0.094	21	8	0.094	21	8	0.188
14:00-15:0	21	8	0.094	21	8	0.088	21	8	0.182
15:00-16:0	21	8	0.088	21	8	0.1	21	8	0.188
16:00-17:0	21	8	0.047	21	8	0.041	21	8	0.088
17:00-18:0	21	8	0.053	21	8	0.047	21	8	0.1
18:00-19:0	21	8	0.024	21	8	0.041	21	8	0.065
19:00-20:0	21	8	0.059	21	8	0.053	21	8	0.112
20:00-21:0	21	8	0.018	21	8	0.024	21	8	0.042
21:00-22:0	21	8	0.006	21	8	0.012	21	8	0.018
22:00-23:0	2	8	0	2	8	0	2	8	0
23:00-24:0	1	8	0	1	8	0	1	8	0
Daily Trip Rates:			1.383			1.383			2.766

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: PSVS

	ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	BAYS	Rate	Days	BAYS	Rate	Days	BAYS	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	21	8	0.012	21	8	0.012	21	8	0.024
07:00-08:0	21	8	0.006	21	8	0.006	21	8	0.012
08:00-09:0	21	8	0.024	21	8	0.018	21	8	0.042
09:00-10:0	21	8	0.029	21	8	0.024	21	8	0.053
10:00-11:0	21	8	0.029	21	8	0.035	21	8	0.064
11:00-12:0	21	8	0.012	21	8	0.018	21	8	0.03
12:00-13:0	21	8	0	21	8	0	21	8	0
13:00-14:0	21	8	0.006	21	8	0.006	21	8	0.012
14:00-15:0	21	8	0	21	8	0	21	8	0
15:00-16:0	21	8	0.006	21	8	0.006	21	8	0.012
16:00-17:0	21	8	0.018	21	8	0.012	21	8	0.03
17:00-18:0	21	8	0.029	21	8	0.035	21	8	0.064
18:00-19:0	21	8	0.018	21	8	0.006	21	8	0.024
19:00-20:0	21	8	0	21	8	0.012	21	8	0.012
20:00-21:0	21	8	0	21	8	0	21	8	0
21:00-22:0	21	8	0	21	8	0	21	8	0
22:00-23:0	2	8	0	2	8	0	2	8	0
23:00-24:0	1	8	0	1	8	0	1	8	0
Daily Trip Rates:			0.189			0.19			0.379

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: CYCLISTS

	ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	BAYS	Rate	Days	BAYS	Rate	Days	BAYS	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	21	8	0.053	21	8	0.059	21	8	0.112
07:00-08:0	21	8	0.088	21	8	0.088	21	8	0.176
08:00-09:0	21	8	0.059	21	8	0.047	21	8	0.106
09:00-10:0	21	8	0.029	21	8	0.029	21	8	0.058
10:00-11:0	21	8	0.029	21	8	0.024	21	8	0.053
11:00-12:0	21	8	0.053	21	8	0.053	21	8	0.106
12:00-13:0	21	8	0.024	21	8	0.024	21	8	0.048
13:00-14:0	21	8	0.041	21	8	0.053	21	8	0.094
14:00-15:0	21	8	0.035	21	8	0.024	21	8	0.059
15:00-16:0	21	8	0.059	21	8	0.053	21	8	0.112
16:00-17:0	21	8	0.1	21	8	0.1	21	8	0.2
17:00-18:0	21	8	0.047	21	8	0.065	21	8	0.112
18:00-19:0	21	8	0.071	21	8	0.082	21	8	0.153
19:00-20:0	21	8	0.029	21	8	0.024	21	8	0.053
20:00-21:0	21	8	0.065	21	8	0.071	21	8	0.136
21:00-22:0	21	8	0.024	21	8	0.024	21	8	0.048
22:00-23:0	2	8	0	2	8	0	2	8	0
23:00-24:0	1	8	0	1	8	0	1	8	0
Daily Trip Rates:			0.806			0.82			1.626

Parameter summary

Trip rate pa 6 - 16 (units:)
Survey dat 01/01/12 - 27/09/19
Number of 21
Number of 0
Number of 0
Surveys au 0
Surveys ma 0
This sectior followed b the total n the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRICS 7.7.2
Trip Rate P. Filling bays

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 13 - PETROL FILLING STATIONS
Category B - PFS - WITH RETAIL
VEHICLES

Selected regions and areas:

3	SOUTH WEST		
	DC	DORSET	1 days
	DV	DEVON	1 days
6	WEST MIDLANDS		
	WM	WEST MIDL	1 days
8	NORTH WEST		
	CH	CHESHIRE	1 days
9	NORTH		
	TW	TYNE & WE	3 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Filling bays
Actual Ran 6 to 12 (units:)
Range Sele 4 to 16 (units:)

Public Transport Provision:
Selection b Include all surveys

Date Range 01/01/12 to 27/09/19

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Saturday 5 days
Sunday 2 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual co 7 days
Directional 0 days
This data d the total a whilst ATC surveys are undertaking using machines.

Selected Locations:
Town Centı 0
Edge of Tov 1
Suburban A 4
Edge of Tov 1
Neighbourh 1
Free Standi 0
Not Known 0
This data d Edge of To Suburban , Neighbour Edge of To Town Centre and Not Known.

Selected Location Sub Categories:
Industrial Z 1
Commercia 0
Developme 1
Residential 3
Retail Zone 0
Built-Up Zo 1
Village 0
Out of Tow 0
High Street 1
No Sub Cat 0
This data d Industrial ; Developm Residentia Retail Zone Built-Up Zc Village Out of Tov High Street and No Sub Category.

Secondary Filtering selection:

Use Class:
n/a 7 days
This data d which can be found within the Library module of TRICS®.

Population within 1 mile:
10,001 to 1 3 days
25,001 to 5 4 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
25,001 to : 1 days
75,001 to : 1 days
125,001 to 2 days
250,001 to 2 days
500,001 or 1 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.6 to 1.0 4 days
1.1 to 1.5 3 days
This data d within a radius of 5-miles of selected survey sites.

Travel Plan:
No 7 days
This data d and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:
No PTAL Pr 7 days
This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters
1 CH-13-B-01 ESSO & SPA CHESHIRE
CHURCHILL WAY

MACCLESFIELD
Edge of Town Centre
Built-Up Zone
Total Filling bays: 8
Survey date SATURDAY ######## Survey Typ MANUAL
2 DC-13-B-03 BP & SPAR DORSET
THE GROVE

DORCHESTER
Edge of Town
Industrial Zone
Total Filling bays: 9
Survey date SATURDAY ######## Survey Typ MANUAL
3 DV-13-B-02 SHELL & LO DEVON
TORQUAY ROAD

PAIGNTON
Neighbourhood Centre (PPS6 Local Centre)
High Street
Total Filling bays: 8
Survey date SATURDAY ######## Survey Typ MANUAL
4 TW-13-B-0: TESCO EXPI TYNE & WEAR
BENTON ROAD

NEWCASTLE UPON TYNE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 8
Survey date SATURDAY ######## Survey Typ MANUAL
5 TW-13-B-0: SAINSBURY TYNE & WEAR
RIVERSIDE ROAD

SUNDERLAND
Suburban Area (PPS6 Out of Centre)
Development Zone
Total Filling bays: 12
Survey date SATURDAY ######## Survey Typ MANUAL
6 TW-13-B-0- BP & NISA I TYNE & WEAR
GREAT NORTH ROAD
GOSFORTH
NEWCASTLE UPON TYNE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 8
Survey date SUNDAY ######## Survey Typ MANUAL
7 WM-13-B-(ESSO & TES WEST MIDLANDS
LINDEN ROAD

BIRMINGHAM
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Filling bays: 6
Survey date SUNDAY ######## Survey Typ MANUAL

This sectior it displays the selecte the day of and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	7	8	1.136	7	8	0.932	7	8	2.068
07:00-08:0	7	8	3.678	7	8	3.39	7	8	7.068
08:00-09:0	7	8	5.22	7	8	5.085	7	8	10.305
09:00-10:0	7	8	6.661	7	8	6.508	7	8	13.169
10:00-11:0	7	8	6.932	7	8	6.78	7	8	13.712
11:00-12:0	7	8	8.678	7	8	8.797	7	8	17.475
12:00-13:0	7	8	8.288	7	8	7.915	7	8	16.203
13:00-14:0	7	8	7.407	7	8	7.424	7	8	14.831
14:00-15:0	7	8	7.186	7	8	7.322	7	8	14.508
15:00-16:0	7	8	7.356	7	8	7.153	7	8	14.509
16:00-17:0	7	8	7.169	7	8	7.661	7	8	14.83
17:00-18:0	7	8	6.746	7	8	7.169	7	8	13.915
18:00-19:0	7	8	6.102	7	8	5.881	7	8	11.983
19:00-20:0	7	8	4.983	7	8	5.203	7	8	10.186
20:00-21:0	7	8	4.271	7	8	4.271	7	8	8.542
21:00-22:0	7	8	2.898	7	8	3.017	7	8	5.915
22:00-23:0	3	9	1.75	3	9	2.036	3	9	3.786
23:00-24:0	1	8	0.25	1	8	0.375	1	8	0.625
Daily Trip Rates:			96.711			96.919			193.63

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: TAXIS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	7	8	0.136	7	8	0.119	7	8	0.255
07:00-08:0	7	8	0.153	7	8	0.169	7	8	0.322
08:00-09:0	7	8	0.068	7	8	0.068	7	8	0.136
09:00-10:0	7	8	0.136	7	8	0.119	7	8	0.255
10:00-11:0	7	8	0.085	7	8	0.085	7	8	0.17
11:00-12:0	7	8	0.136	7	8	0.136	7	8	0.272
12:00-13:0	7	8	0.119	7	8	0.102	7	8	0.221
13:00-14:0	7	8	0.085	7	8	0.119	7	8	0.204
14:00-15:0	7	8	0.068	7	8	0.068	7	8	0.136
15:00-16:0	7	8	0.119	7	8	0.119	7	8	0.238
16:00-17:0	7	8	0.136	7	8	0.119	7	8	0.255
17:00-18:0	7	8	0.22	7	8	0.237	7	8	0.457
18:00-19:0	7	8	0.136	7	8	0.136	7	8	0.272
19:00-20:0	7	8	0.085	7	8	0.068	7	8	0.153
20:00-21:0	7	8	0.186	7	8	0.186	7	8	0.372
21:00-22:0	7	8	0.051	7	8	0.051	7	8	0.102
22:00-23:0	3	9	0.214	3	9	0.214	3	9	0.428
23:00-24:0	1	8	0	1	8	0	1	8	0
Daily Trip Rates:			2.133			2.115			4.248

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: OGVS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	7	8	0.017	7	8	0	7	8	0.017
07:00-08:0	7	8	0.068	7	8	0.068	7	8	0.136
08:00-09:0	7	8	0.068	7	8	0.068	7	8	0.136
09:00-10:0	7	8	0.051	7	8	0.034	7	8	0.085
10:00-11:0	7	8	0.034	7	8	0.051	7	8	0.085
11:00-12:0	7	8	0.051	7	8	0.051	7	8	0.102
12:00-13:0	7	8	0.051	7	8	0.051	7	8	0.102
13:00-14:0	7	8	0.034	7	8	0.034	7	8	0.068
14:00-15:0	7	8	0.017	7	8	0.034	7	8	0.051
15:00-16:0	7	8	0.017	7	8	0.017	7	8	0.034
16:00-17:0	7	8	0.017	7	8	0.017	7	8	0.034
17:00-18:0	7	8	0.034	7	8	0.017	7	8	0.051
18:00-19:0	7	8	0.051	7	8	0.051	7	8	0.102
19:00-20:0	7	8	0	7	8	0	7	8	0
20:00-21:0	7	8	0.017	7	8	0.034	7	8	0.051
21:00-22:0	7	8	0	7	8	0	7	8	0
22:00-23:0	3	9	0	3	9	0	3	9	0
23:00-24:0	1	8	0	1	8	0	1	8	0
Daily Trip Rates:			0.527			0.527			1.054

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: PSVS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	7	8	0	7	8	0	7	8	0
07:00-08:0	7	8	0	7	8	0	7	8	0
08:00-09:0	7	8	0	7	8	0	7	8	0
09:00-10:0	7	8	0	7	8	0	7	8	0
10:00-11:0	7	8	0	7	8	0	7	8	0
11:00-12:0	7	8	0	7	8	0	7	8	0
12:00-13:0	7	8	0	7	8	0	7	8	0
13:00-14:0	7	8	0.017	7	8	0	7	8	0.017
14:00-15:0	7	8	0	7	8	0.017	7	8	0.017
15:00-16:0	7	8	0	7	8	0	7	8	0
16:00-17:0	7	8	0	7	8	0	7	8	0
17:00-18:0	7	8	0.017	7	8	0.017	7	8	0.034
18:00-19:0	7	8	0	7	8	0	7	8	0
19:00-20:0	7	8	0	7	8	0	7	8	0
20:00-21:0	7	8	0	7	8	0	7	8	0
21:00-22:0	7	8	0	7	8	0	7	8	0
22:00-23:0	3	9	0	3	9	0	3	9	0
23:00-24:0	1	8	0	1	8	0	1	8	0
Daily Trip Rates:			0.034			0.034			0.068

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: CYCLISTS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	7	8	0.017	7	8	0.017	7	8	0.034
07:00-08:0	7	8	0	7	8	0	7	8	0
08:00-09:0	7	8	0	7	8	0	7	8	0
09:00-10:0	7	8	0	7	8	0	7	8	0
10:00-11:0	7	8	0	7	8	0	7	8	0
11:00-12:0	7	8	0	7	8	0	7	8	0
12:00-13:0	7	8	0.017	7	8	0.017	7	8	0.034
13:00-14:0	7	8	0.017	7	8	0.017	7	8	0.034
14:00-15:0	7	8	0	7	8	0	7	8	0
15:00-16:0	7	8	0.017	7	8	0	7	8	0.017
16:00-17:0	7	8	0.034	7	8	0.034	7	8	0.068
17:00-18:0	7	8	0.017	7	8	0.017	7	8	0.034
18:00-19:0	7	8	0.068	7	8	0.068	7	8	0.136
19:00-20:0	7	8	0.017	7	8	0.017	7	8	0.034
20:00-21:0	7	8	0	7	8	0	7	8	0
21:00-22:0	7	8	0	7	8	0	7	8	0
22:00-23:0	3	9	0	3	9	0	3	9	0
23:00-24:0	1	8	0	1	8	0	1	8	0
Daily Trip Rates:			0.204			0.187			0.391

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: CARS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	7	8	0.797	7	8	0.644	7	8	1.441
07:00-08:0	7	8	2.203	7	8	2.034	7	8	4.237
08:00-09:0	7	8	3.407	7	8	3.271	7	8	6.678
09:00-10:0	7	8	4.559	7	8	4.525	7	8	9.084
10:00-11:0	7	8	4.627	7	8	4.559	7	8	9.186
11:00-12:0	7	8	5.627	7	8	5.695	7	8	11.322
12:00-13:0	7	8	5.746	7	8	5.492	7	8	11.238
13:00-14:0	7	8	5.186	7	8	5.136	7	8	10.322
14:00-15:0	7	8	5	7	8	5.102	7	8	10.102
15:00-16:0	7	8	5.39	7	8	5.237	7	8	10.627
16:00-17:0	7	8	5.186	7	8	5.576	7	8	10.762
17:00-18:0	7	8	4.373	7	8	4.729	7	8	9.102
18:00-19:0	7	8	3.966	7	8	3.797	7	8	7.763
19:00-20:0	7	8	3.712	7	8	3.746	7	8	7.458
20:00-21:0	7	8	3.017	7	8	3.051	7	8	6.068
21:00-22:0	7	8	1.949	7	8	2.068	7	8	4.017
22:00-23:0	3	9	0.643	3	9	0.714	3	9	1.357
23:00-24:0	1	8	0.25	1	8	0.25	1	8	0.5
Daily Trip Rates:			65.638			65.626			131.264

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: LGVS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	7	8	0.153	7	8	0.153	7	8	0.306
07:00-08:0	7	8	0.542	7	8	0.508	7	8	1.05
08:00-09:0	7	8	0.627	7	8	0.61	7	8	1.237
09:00-10:0	7	8	0.559	7	8	0.525	7	8	1.084
10:00-11:0	7	8	0.475	7	8	0.508	7	8	0.983
11:00-12:0	7	8	0.729	7	8	0.695	7	8	1.424
12:00-13:0	7	8	0.661	7	8	0.661	7	8	1.322
13:00-14:0	7	8	0.508	7	8	0.525	7	8	1.033
14:00-15:0	7	8	0.525	7	8	0.525	7	8	1.05
15:00-16:0	7	8	0.407	7	8	0.339	7	8	0.746
16:00-17:0	7	8	0.339	7	8	0.39	7	8	0.729
17:00-18:0	7	8	0.305	7	8	0.339	7	8	0.644
18:00-19:0	7	8	0.356	7	8	0.356	7	8	0.712
19:00-20:0	7	8	0.22	7	8	0.288	7	8	0.508
20:00-21:0	7	8	0.169	7	8	0.169	7	8	0.338
21:00-22:0	7	8	0.136	7	8	0.119	7	8	0.255
22:00-23:0	3	9	0.179	3	9	0.179	3	9	0.358
23:00-24:0	1	8	0	1	8	0	1	8	0
Daily Trip Rates:			6.89			6.889			13.779

TRIP RATE for Land Use 13 - PETROL FILLING STATIONS/B - PFS - WITH RETAIL
Calculation Factor: 1 BAYS
Count Type: MOTOR CYCLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	7	8	0.034	7	8	0.017	7	8	0.051
07:00-08:0	7	8	0.051	7	8	0.068	7	8	0.119
08:00-09:0	7	8	0.051	7	8	0.051	7	8	0.102
09:00-10:0	7	8	0.153	7	8	0.153	7	8	0.306
10:00-11:0	7	8	0.203	7	8	0.186	7	8	0.389
11:00-12:0	7	8	0.373	7	8	0.39	7	8	0.763
12:00-13:0	7	8	0.136	7	8	0.136	7	8	0.272
13:00-14:0	7	8	0.119	7	8	0.119	7	8	0.238
14:00-15:0	7	8	0.22	7	8	0.22	7	8	0.44
15:00-16:0	7	8	0.153	7	8	0.136	7	8	0.289
16:00-17:0	7	8	0.203	7	8	0.186	7	8	0.389
17:00-18:0	7	8	0.271	7	8	0.288	7	8	0.559
18:00-19:0	7	8	0.153	7	8	0.153	7	8	0.306
19:00-20:0	7	8	0.102	7	8	0.102	7	8	0.204
20:00-21:0	7	8	0.068	7	8	0.051	7	8	0.119
21:00-22:0	7	8	0.034	7	8	0.051	7	8	0.085
22:00-23:0	3	9	0.036	3	9	0.036	3	9	0.072
23:00-24:0	1	8	0	1	8	0.125	1	8	0.125
Daily Trip Rates:			2.36			2.468			4.828

Parameter summary

Trip rate pa 6 - 12 (units:)
Survey dat 01/01/12 - 27/09/19
Number of 0
Number of 5
Number of 2
Surveys au 0
Surveys ma 0
This sectior followed b the total n the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Appendix K

Foresters Leisure Park Information (Costa Examples)

5 Trip Attraction and Parking Demand

Trip attraction

Overview

5.1 The subject of trip attraction and the degree to which a Costa drive –thru can be expected to generate new trips was covered in the Scoping Note issued to Derby City Council on 7 October 2020. As set out in the Scoping Note, Costa drive-thru sites do not generate many 'primary' vehicle trips, with the vast majority (around 90%) of customer trips being "pass by" or diverted trips.

5.2 This has been challenged by the City Council in its pre-application response, where it is suggested that it would be better to adopt the use of 40% pass-by, 40% diverted and 20% new trips (with a 10% reduction for linked trips) based on the City Council's own surveys of Cost drive thru sites. In practice, the end result would be similar as pass-by and diverted trips will still be traffic already on the network and a 10% reduction in linked trips would reduce the new trips to the same level as set out in the Scoping Note.

5.3 The only difference between the two approaches would be the derivation of the diverted trips and the need to identify the extent to which such diversions would apply. Given the inability to undertake traffic surveys at present due to the ongoing COVID-19 pandemic, it is suggested that the approach set out in the Scoping Note would be more appropriate in the circumstances.

Trip attraction

5.4 To expand upon the above, the 90% pass-by figure was derived from traffic surveys undertaken at 6 Costa drive-thru sites in England in May 2016 to determine:

- Peak hour traffic flows;
- The pass-by and diverted trips to the site;
- Maximum queues at drive thru;
- Vehicle occupants; and,
- Age range of visitors.

5.5 The sites were generally in similar locations and all were of the same, circa 165 m^2, floor area. The pass-by figure derived from the surveys is reproduced below and a report summarising the baseline surveys is reproduced at **Appendix E**.

Table 5.1 Derived pass-by rate for Costa drive-thru sites

Site	Pass-by and Diverted Trips (%)	
	Weekday	Saturday
Didcot	89.59	81.45
Cambridge	94.62	89.11
Bedford	82.81	95.11
Warrington	98.44	93.91
Sheffield	79.23	77.94
Banbury	98.03	90.10
Average	**90**	**88**

Source: TPA document reference 1604-09/TN01 dated July 2016 – Table 5 contained in **Appendix E**

5.6 For the purpose of this assessment, and in reflection of the means of accessing the site, it has been assumed that pass-by and diverted trips have been split 50:50, with 45% of total trips classified as pass-by trips and 45% of trips classified as diverted trips.

5.7 The baseline surveys undertaken for the sites identified above provide an average trip attraction for a Costa Drive-through as set out in Table 5.2.

Table 5.2 Total Peak Hour Traffic Generation

Site	Weekday				Saturday			
	AM Peak		PM Peak		AM Peak		PM Peak	
	In	Out	In	Out	In	Out	In	Out
Didcot	100	93	75	79	108	101	102	97
Bedford	72	71	59	66	72	70	69	62
Sheffield	87	83	79	79	57	60	58	54
Banbury	84	72	71	65	104	79	89	110
Average	***86***	***80***	***71***	***72***	***85***	***78***	***80***	***81***

Source: TPA document reference 1604-09/TN01 dated July 2016 – Table 2 contained in **Appendix E**

5.8 As shown, the traffic attractiveness of a Costa drive-through does not vary significantly between the weekday and the weekend, and as such, only a weekday assessment has been undertaken. This is considered robust as it compares trip attraction of the site with the traditional network peak hours.

5.9 Focusing on the weekday, a breakdown of arrivals between trips to the car park and trips through the drive-through is provided within **Appendix E** and summarised below in Table 5.3.

Table 5.3 Car Park Peak Hour Traffic Generation

Site	AM Peak		PM Peak	
	Drive-Through	Car Park	Drive-Through	Car Park
Didcot	27	68	23	52
Bedford	32	40	17	42
Sheffield	16	71	16	63
Banbury	33	51	26	45
Average	***27***	***58***	***21***	***51***

Source: TPA document reference 1604-09/TN01 dated July 2016 – Table 3 and Table 4 contained in **Appendix E**
Notes: Any arithmetic error due to rounding

5.10 As shown in Table 5.3, the use of the drive-through facility typically equates to 32% of trips in the morning peak hour and 24% of trips in the evening peak hour. The total number of trips anticipated to be attracted to the site equates to circa 86 in the morning peak hour and circa 72 in the evening peak hour.

5.11 Based on the above, and using the 45% pass-by and 45% diverted trips gives the following development flows:

Table 5.4 Development Trips by Type

Trip Type	AM Peak Hour		PM Peak Hour	
	Arrivals	Departures	Arrivals	Departures
Total Trips*	***86***	***80***	***71***	***72***
New Trips (10%)	9	8	7	7
Pass-by Trips (45%)	39	36	32	32
Diverted Trips (45%)	39	36	32	32

*Source: * = based on Table 5.2*

Distribution

5.12 As stated previously, trips attracted to the Costa drive-through vary in type, with the vast majority typically categorised either pass-by or diverted. In this instance the following assumptions have been made.

Table 5.5 Trip Type

Trip type		Description	Proportion
New Trips		Trips which were not on the network before and are entirely related to the proposed development. These have been applied based on the existing turning counts at the Balaclava Road / Osmaston Park Road / Sinfin Lane / Newdigate Street junction.	10%
Existing Trips	**Pass-by**	Trips travelling westbound on Osmaston Park Road that react to the presence of the site and divert via Foresters Way. These trips will then return to the wider road network via Sinfin Lane / Foresters Way junction to continue their original journey	45%
	Diverted	Trips approaching from Balaclava Road / Newdigate Street / Sinfin Lane that divert from their original route to access the site	45%

*Source: Proportions on the data contained in **Appendix E** and summarised in Table 5.1*

5.13 Applying the distribution set out above to the trip attraction of the proposed development set out in Table 5.4 results in the flow diagrams set out below:

- **Figure 5.1** - Pass-by Trips;
- **Figure 5.2** - Diverted Trips; and
- **Figure 5.3** - New Trips.

Appendix L

Junction 2 – Chellaston Lane / Shardlow Road ARCADY output files

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
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Filename: Junction 1 - Shardlow Road Chellaston Existing.j9
Path: M:\E702 Boulton Moor, DERBYSHIRE_\TECHNICAL\TRAFFIC\ARCADY\District Centre
Report generation date: 22/10/2021 13:23:43

»(Default Analysis Set) - 2023 + BM1, AM
»(Default Analysis Set) - 2023 + BM1, PM
»(Default Analysis Set) - 2023 + BM1, Sat
»(Default Analysis Set) - 2023 + BM1 + Dev , AM
»(Default Analysis Set) - 2023 + BM1 + Dev , PM
»(Default Analysis Set) - 2023 + BM1 + Dev, Sat
»(Default Analysis Set) - 2028 + CD, AM
»(Default Analysis Set) - 2028 + CD, PM
»(Default Analysis Set) - 2028 + CD, Sat
»(Default Analysis Set) - 2028 + CD + Dev, AM
»(Default Analysis Set) - 2028 + CD + Dev, PM
»(Default Analysis Set) - 2028 + CD + Dev, Sat

Summary of junction performance

	AM					PM					Sat				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2023 + BM1														
Arm 1	D5	0.0	0.00	0.00	A	D6	0.0	0.00	0.00	A	D9	0.0	0.00	0.00	A
Arm 2		0.3	1.49	0.25	A		0.6	1.87	0.39	A		0.4	1.62	0.30	A
Arm 3		0.6	4.07	0.39	A		0.5	3.93	0.32	A		0.4	3.69	0.30	A
Arm 4		0.5	2.48	0.32	A		0.5	2.55	0.36	A		0.5	2.48	0.34	A
	A1 - 2023 + BM1 + Dev														
Arm 1	D10	0.0	0.00	0.00	A	D11	0.0	0.00	0.00	A	D12	0.0	0.00	0.00	A
Arm 2		0.4	1.58	0.26	A		0.7	1.99	0.41	A		0.5	1.82	0.33	A
Arm 3		1.0	4.66	0.49	A		1.1	5.58	0.53	A		0.9	4.86	0.49	A
Arm 4		0.5	2.62	0.34	A		0.6	2.80	0.39	A		0.6	2.66	0.36	A
	A1 - 2028 + CD														
Arm 1	D13	0.0	0.00	0.00	A	D14	0.0	0.00	0.00	A	D15	0.0	0.00	0.00	A
Arm 2		0.5	1.67	0.31	A		1.2	2.65	0.55	A		0.5	1.71	0.33	A
Arm 3		4.7	14.76	0.83	B		1.4	6.64	0.58	A		1.1	5.53	0.53	A
Arm 4		0.8	3.43	0.44	A		0.9	3.38	0.48	A		0.6	2.77	0.38	A
	A1 - 2028 + CD + Dev														
Arm 1	D16	0.0	0.00	0.00	A	D17	0.0	0.00	0.00	A	D18	0.0	0.00	0.00	A
Arm 2		0.5	1.78	0.33	A		1.4	2.90	0.58	A		0.6	1.92	0.36	A
Arm 3		9.2	25.84	0.91	D		3.7	13.18	0.79	B		2.4	8.60	0.71	A
Arm 4		0.9	3.69	0.47	A		1.1	3.83	0.52	A		0.7	3.00	0.41	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Junction 1 - Shardlow Road Chellaston
Location	
Site number	
Date	19/06/2015
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Dean
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2023 + BM1	AM	ONE HOUR	07:45	09:15	15
D6	2023 + BM1	PM	ONE HOUR	16:45	18:15	15
D9	2023 + BM1	Sat	ONE HOUR	11:45	13:15	15
D10	2023 + BM1 + Dev	AM	ONE HOUR	07:45	09:15	15
D11	2023 + BM1 + Dev	PM	ONE HOUR	16:45	18:15	15
D12	2023 + BM1 + Dev	Sat	ONE HOUR	11:45	13:15	15
D13	2028 + CD	AM	ONE HOUR	07:45	09:15	15
D14	2028 + CD	PM	ONE HOUR	16:45	18:15	15
D15	2028 + CD	Sat	ONE HOUR	11:45	13:15	15
D16	2028 + CD + Dev	AM	ONE HOUR	07:45	09:15	15
D17	2028 + CD + Dev	PM	ONE HOUR	16:45	18:15	15
D18	2028 + CD + Dev	Sat	ONE HOUR	11:45	13:15	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

(Default Analysis Set) - 2023 + BM1, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.55	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Allotments	
2	A6 Link	
3	Chellaston	
4	Shardlow Road	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	2.70	5.40	6.9	17.7	70.0	23.0	
2	10.50	10.50	0.0	39.3	69.9	29.0	
3	3.60	7.50	10.6	43.9	69.9	17.5	
4	3.90	8.50	56.7	22.2	69.9	21.5	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.432	1203
2	0.760	3269
3	0.530	1748
4	0.619	2367

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2023 + BM1	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	715	100.000
3		✓	523	100.000
4		✓	613	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	224	491
	3	0	354	0	169
	4	0	526	87	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.25	1.49	0.3	A
3	0.39	4.07	0.6	A
4	0.32	2.48	0.5	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	726	889	0.000	0	0.0	0.000	A
2	538	65	3219	0.167	537	0.2	1.342	A
3	394	369	1552	0.254	392	0.3	3.102	A
4	461	266	2202	0.210	460	0.3	2.066	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	869	828	0.000	0	0.0	0.000	A
2	643	78	3210	0.200	643	0.2	1.401	A
3	470	441	1514	0.311	470	0.4	3.445	A
4	551	318	2170	0.254	551	0.3	2.223	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1064	743	0.000	0	0.0	0.000	A
2	787	96	3196	0.246	787	0.3	1.493	A
3	576	540	1461	0.394	575	0.6	4.058	A
4	675	389	2126	0.317	674	0.5	2.480	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1065	743	0.000	0	0.0	0.000	A
2	787	96	3196	0.246	787	0.3	1.493	A
3	576	541	1461	0.394	576	0.6	4.065	A
4	675	390	2125	0.318	675	0.5	2.481	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	870	827	0.000	0	0.0	0.000	A
2	643	78	3209	0.200	643	0.3	1.404	A
3	470	442	1514	0.311	471	0.5	3.454	A
4	551	319	2169	0.254	552	0.3	2.225	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	729	888	0.000	0	0.0	0.000	A
2	538	66	3219	0.167	538	0.2	1.342	A
3	394	370	1552	0.254	394	0.3	3.112	A
4	461	267	2202	0.210	462	0.3	2.070	A

(Default Analysis Set) - 2023 + BM1, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.45	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2023 + BM1	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	1107	100.000
3		✓	386	100.000
4		✓	706	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	411	696
	3	0	262	0	124
	4	0	557	149	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.39	1.87	0.6	A
3	0.32	3.93	0.5	A
4	0.36	2.55	0.5	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	727	889	0.000	0	0.0	0.000	A
2	833	112	3184	0.262	832	0.4	1.530	A
3	291	523	1471	0.198	290	0.2	3.045	A
4	532	197	2245	0.237	530	0.3	2.098	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	870	827	0.000	0	0.0	0.000	A
2	995	134	3167	0.314	995	0.5	1.656	A
3	347	625	1416	0.245	347	0.3	3.366	A
4	635	235	2221	0.286	634	0.4	2.268	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1065	743	0.000	0	0.0	0.000	A
2	1219	164	3144	0.388	1218	0.6	1.868	A
3	425	766	1342	0.317	424	0.5	3.921	A
4	777	288	2188	0.355	777	0.5	2.548	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1066	743	0.000	0	0.0	0.000	A
2	1219	164	3144	0.388	1219	0.6	1.868	A
3	425	766	1342	0.317	425	0.5	3.927	A
4	777	288	2188	0.355	777	0.5	2.551	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	871	827	0.000	0	0.0	0.000	A
2	995	134	3167	0.314	996	0.5	1.657	A
3	347	626	1416	0.245	348	0.3	3.373	A
4	635	236	2221	0.286	635	0.4	2.271	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	729	888	0.000	0	0.0	0.000	A
2	833	112	3184	0.262	834	0.4	1.531	A
3	291	524	1470	0.198	291	0.2	3.056	A
4	532	197	2245	0.237	532	0.3	2.103	A

(Default Analysis Set) - 2023 + BM1, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.33	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2023 + BM1	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	873	100.000
3		✓	385	100.000
4		✓	677	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	274	599
	3	0	246	0	139
	4	0	565	112	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.30	1.62	0.4	A
3	0.30	3.69	0.4	A
4	0.34	2.48	0.5	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	693	903	0.000	0	0.0	0.000	A
2	657	84	3205	0.205	656	0.3	1.412	A
3	290	450	1509	0.192	289	0.2	2.950	A
4	510	185	2253	0.226	509	0.3	2.063	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	829	845	0.000	0	0.0	0.000	A
2	785	101	3193	0.246	785	0.3	1.494	A
3	346	538	1462	0.237	346	0.3	3.224	A
4	609	221	2230	0.273	608	0.4	2.219	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1015	764	0.000	0	0.0	0.000	A
2	961	123	3175	0.303	961	0.4	1.625	A
3	424	659	1398	0.303	423	0.4	3.690	A
4	745	271	2199	0.339	745	0.5	2.475	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1016	764	0.000	0	0.0	0.000	A
2	961	123	3175	0.303	961	0.4	1.625	A
3	424	660	1398	0.303	424	0.4	3.694	A
4	745	271	2199	0.339	745	0.5	2.475	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	831	844	0.000	0	0.0	0.000	A
2	785	101	3192	0.246	785	0.3	1.495	A
3	346	539	1462	0.237	347	0.3	3.227	A
4	609	221	2230	0.273	609	0.4	2.223	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	695	902	0.000	0	0.0	0.000	A
2	657	84	3205	0.205	658	0.3	1.412	A
3	290	451	1509	0.192	290	0.2	2.956	A
4	510	185	2252	0.226	510	0.3	2.068	A

(Default Analysis Set) - 2023 + BM1 + Dev , AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.91	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2023 + BM1 + Dev	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	745	100.000
3		✓	675	100.000
4		✓	632	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	347	398
	3	0	436	0	239
	4	0	433	199	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.26	1.58	0.4	A
3	0.49	4.66	1.0	A
4	0.34	2.62	0.5	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	802	857	0.000	0	0.0	0.000	A
2	561	149	3155	0.178	560	0.2	1.386	A
3	508	299	1589	0.320	506	0.5	3.318	A
4	476	327	2164	0.220	475	0.3	2.130	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	959	788	0.000	0	0.0	0.000	A
2	670	179	3133	0.214	670	0.3	1.460	A
3	607	358	1558	0.389	606	0.6	3.779	A
4	568	392	2124	0.267	568	0.4	2.312	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1175	696	0.000	0	0.0	0.000	A
2	820	219	3103	0.264	820	0.4	1.576	A
3	743	438	1516	0.490	742	1.0	4.645	A
4	696	479	2070	0.336	695	0.5	2.617	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1176	695	0.000	0	0.0	0.000	A
2	820	219	3103	0.264	820	0.4	1.576	A
3	743	438	1516	0.490	743	1.0	4.660	A
4	696	480	2070	0.336	696	0.5	2.620	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	961	788	0.000	0	0.0	0.000	A
2	670	179	3133	0.214	670	0.3	1.463	A
3	607	358	1558	0.389	608	0.6	3.793	A
4	568	393	2124	0.268	569	0.4	2.317	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	805	855	0.000	0	0.0	0.000	A
2	561	150	3155	0.178	561	0.2	1.389	A
3	508	300	1589	0.320	509	0.5	3.334	A
4	476	329	2163	0.220	476	0.3	2.135	A

(Default Analysis Set) - 2023 + BM1 + Dev , PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	3.14	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D11	2023 + BM1 + Dev	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	1164	100.000
3		✓	653	100.000
4		✓	733	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	507	657
	3	0	403	0	250
	4	0	517	216	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.41	1.99	0.7	A
3	0.53	5.58	1.1	A
4	0.39	2.80	0.6	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	853	835	0.000	0	0.0	0.000	A
2	876	162	3146	0.279	875	0.4	1.585	A
3	492	494	1486	0.331	490	0.5	3.605	A
4	552	302	2180	0.253	550	0.3	2.207	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1020	762	0.000	0	0.0	0.000	A
2	1046	194	3122	0.335	1046	0.5	1.733	A
3	587	590	1435	0.409	586	0.7	4.239	A
4	659	362	2143	0.308	659	0.4	2.425	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1249	663	0.000	0	0.0	0.000	A
2	1282	238	3088	0.415	1281	0.7	1.990	A
3	719	723	1365	0.527	717	1.1	5.547	A
4	807	443	2093	0.386	806	0.6	2.797	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1251	663	0.000	0	0.0	0.000	A
2	1282	238	3088	0.415	1282	0.7	1.992	A
3	719	723	1364	0.527	719	1.1	5.577	A
4	807	444	2092	0.386	807	0.6	2.800	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1023	761	0.000	0	0.0	0.000	A
2	1046	194	3121	0.335	1047	0.5	1.738	A
3	587	591	1434	0.409	589	0.7	4.264	A
4	659	363	2142	0.308	660	0.4	2.429	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	856	833	0.000	0	0.0	0.000	A
2	876	163	3145	0.279	877	0.4	1.586	A
3	492	495	1485	0.331	492	0.5	3.627	A
4	552	304	2179	0.253	552	0.3	2.213	A

(Default Analysis Set) - 2023 + BM1 + Dev, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.95	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D12	2023 + BM1 + Dev	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	896	100.000
3		✓	642	100.000
4		✓	694	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	382	514
	3	0	366	0	276
	4	0	330	364	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.33	1.82	0.5	A
3	0.49	4.86	0.9	A
4	0.36	2.66	0.6	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	796	859	0.000	0	0.0	0.000	A
2	675	273	3061	0.220	673	0.3	1.507	A
3	483	386	1543	0.313	482	0.5	3.385	A
4	522	275	2197	0.238	521	0.3	2.148	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	952	792	0.000	0	0.0	0.000	A
2	805	327	3021	0.267	805	0.4	1.624	A
3	577	462	1503	0.384	576	0.6	3.883	A
4	624	329	2163	0.288	624	0.4	2.338	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1166	699	0.000	0	0.0	0.000	A
2	987	400	2965	0.333	986	0.5	1.818	A
3	707	566	1448	0.488	706	0.9	4.840	A
4	764	402	2118	0.361	763	0.6	2.656	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1167	699	0.000	0	0.0	0.000	A
2	987	401	2965	0.333	987	0.5	1.819	A
3	707	566	1448	0.488	707	0.9	4.858	A
4	764	403	2117	0.361	764	0.6	2.659	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	954	791	0.000	0	0.0	0.000	A
2	805	328	3020	0.267	806	0.4	1.625	A
3	577	462	1503	0.384	578	0.6	3.901	A
4	624	330	2163	0.288	625	0.4	2.342	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	799	858	0.000	0	0.0	0.000	A
2	675	274	3061	0.220	675	0.3	1.510	A
3	483	387	1543	0.313	484	0.5	3.402	A
4	522	276	2196	0.238	523	0.3	2.153	A

(Default Analysis Set) - 2028 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	7.37	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D13	2028 + CD	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	886	100.000
3		✓	1088	100.000
4		✓	760	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	357	529
	3	0	704	0	384
	4	0	592	168	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.31	1.67	0.5	A
3	0.83	14.76	4.7	B
4	0.44	3.43	0.8	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1098	729	0.000	0	0.0	0.000	A
2	667	126	3173	0.210	666	0.3	1.435	A
3	819	398	1537	0.533	815	1.1	4.953	A
4	572	527	2040	0.280	571	0.4	2.447	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1314	636	0.000	0	0.0	0.000	A
2	796	151	3154	0.253	796	0.3	1.526	A
3	978	475	1496	0.654	975	1.8	6.876	A
4	683	631	1976	0.346	683	0.5	2.781	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1604	510	0.000	0	0.0	0.000	A
2	976	185	3129	0.312	975	0.5	1.671	A
3	1198	582	1439	0.832	1187	4.6	13.722	B
4	837	768	1891	0.442	836	0.8	3.407	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1611	507	0.000	0	0.0	0.000	A
2	976	185	3128	0.312	976	0.5	1.671	A
3	1198	582	1439	0.832	1197	4.7	14.762	B
4	837	775	1887	0.443	837	0.8	3.426	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1324	631	0.000	0	0.0	0.000	A
2	796	151	3154	0.253	797	0.3	1.526	A
3	978	476	1496	0.654	989	1.9	7.264	A
4	683	640	1970	0.347	684	0.5	2.800	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1105	726	0.000	0	0.0	0.000	A
2	667	127	3173	0.210	667	0.3	1.436	A
3	819	398	1537	0.533	822	1.2	5.060	A
4	572	532	2037	0.281	573	0.4	2.460	A

(Default Analysis Set) - 2028 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	3.74	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D14	2028 + CD	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	1527	100.000
3		✓	687	100.000
4		✓	883	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	757	770
	3	0	482	0	205
	4	0	609	274	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.55	2.65	1.2	A
3	0.58	6.64	1.4	A
4	0.48	3.38	0.9	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1024	760	0.000	0	0.0	0.000	A
2	1150	206	3113	0.369	1147	0.6	1.830	A
3	517	579	1441	0.359	515	0.6	3.877	A
4	665	361	2143	0.310	663	0.4	2.429	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1226	673	0.000	0	0.0	0.000	A
2	1373	246	3082	0.445	1372	0.8	2.104	A
3	618	692	1381	0.447	617	0.8	4.703	A
4	794	433	2099	0.378	793	0.6	2.755	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1500	555	0.000	0	0.0	0.000	A
2	1681	301	3040	0.553	1680	1.2	2.642	A
3	756	847	1299	0.582	754	1.4	6.581	A
4	972	529	2039	0.477	971	0.9	3.367	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1503	554	0.000	0	0.0	0.000	A
2	1681	302	3040	0.553	1681	1.2	2.649	A
3	756	848	1298	0.583	756	1.4	6.641	A
4	972	531	2038	0.477	972	0.9	3.376	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1230	672	0.000	0	0.0	0.000	A
2	1373	247	3082	0.445	1374	0.8	2.112	A
3	618	693	1380	0.447	620	0.8	4.749	A
4	794	435	2098	0.378	795	0.6	2.765	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1029	758	0.000	0	0.0	0.000	A
2	1150	206	3112	0.369	1150	0.6	1.835	A
3	517	580	1440	0.359	518	0.6	3.908	A
4	665	364	2142	0.310	665	0.5	2.441	A

(Default Analysis Set) - 2028 + CD, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	3.12	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D15	2028 + CD	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	945	100.000
3		✓	663	100.000
4		✓	736	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	317	628
	3	0	379	0	284
	4	0	593	143	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.33	1.71	0.5	A
3	0.53	5.53	1.1	A
4	0.38	2.77	0.6	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	837	841	0.000	0	0.0	0.000	A
2	711	107	3187	0.223	710	0.3	1.453	A
3	499	472	1498	0.333	497	0.5	3.590	A
4	554	284	2191	0.253	553	0.3	2.195	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1001	770	0.000	0	0.0	0.000	A
2	850	128	3171	0.268	849	0.4	1.549	A
3	596	564	1449	0.411	595	0.7	4.215	A
4	662	340	2156	0.307	661	0.4	2.408	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1226	673	0.000	0	0.0	0.000	A
2	1040	157	3149	0.330	1040	0.5	1.706	A
3	730	691	1381	0.528	728	1.1	5.497	A
4	810	416	2109	0.384	810	0.6	2.769	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1228	673	0.000	0	0.0	0.000	A
2	1040	157	3149	0.330	1040	0.5	1.706	A
3	730	691	1381	0.528	730	1.1	5.527	A
4	810	417	2108	0.384	810	0.6	2.772	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1004	769	0.000	0	0.0	0.000	A
2	850	129	3171	0.268	850	0.4	1.550	A
3	596	565	1448	0.412	598	0.7	4.239	A
4	662	342	2155	0.307	662	0.4	2.413	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	840	840	0.000	0	0.0	0.000	A
2	711	108	3187	0.223	712	0.3	1.453	A
3	499	473	1497	0.333	500	0.5	3.612	A
4	554	286	2190	0.253	555	0.3	2.203	A

(Default Analysis Set) - 2028 + CD + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	12.45	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D16	2028 + CD + Dev	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	917	100.000
3		✓	1240	100.000
4		✓	780	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	481	436
	3	0	785	0	455
	4	0	500	280	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.33	1.78	0.5	A
3	0.91	25.84	9.2	D
4	0.47	3.69	0.9	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1173	696	0.000	0	0.0	0.000	A
2	690	210	3109	0.222	689	0.3	1.487	A
3	934	328	1574	0.593	928	1.4	5.522	A
4	587	587	2003	0.293	586	0.4	2.538	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1403	597	0.000	0	0.0	0.000	A
2	824	251	3078	0.268	824	0.4	1.596	A
3	1115	392	1540	0.724	1110	2.5	8.290	A
4	701	703	1932	0.363	701	0.6	2.922	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1707	466	0.000	0	0.0	0.000	A
2	1010	308	3035	0.333	1009	0.5	1.776	A
3	1365	480	1493	0.914	1342	8.3	21.161	C
4	859	850	1841	0.467	858	0.9	3.656	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1721	460	0.000	0	0.0	0.000	A
2	1010	308	3035	0.333	1010	0.5	1.776	A
3	1365	480	1493	0.914	1362	9.2	25.842	D
4	859	862	1833	0.469	859	0.9	3.694	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1425	588	0.000	0	0.0	0.000	A
2	824	252	3077	0.268	825	0.4	1.597	A
3	1115	392	1540	0.724	1141	2.7	9.568	A
4	701	722	1920	0.365	702	0.6	2.961	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1182	692	0.000	0	0.0	0.000	A
2	690	211	3109	0.222	691	0.3	1.490	A
3	934	328	1574	0.593	938	1.5	5.711	A
4	587	594	1999	0.294	588	0.4	2.553	A

(Default Analysis Set) - 2028 + CD + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	5.99	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D17	2028 + CD + Dev	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	1583	100.000
3		✓	954	100.000
4		✓	911	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	853	730
	3	0	623	0	331
	4	0	570	341	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.58	2.90	1.4	A
3	0.79	13.18	3.7	B
4	0.52	3.83	1.1	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1150	706	0.000	0	0.0	0.000	A
2	1192	256	3075	0.388	1189	0.6	1.908	A
3	718	548	1457	0.493	714	1.0	4.822	A
4	686	467	2078	0.330	684	0.5	2.579	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1377	608	0.000	0	0.0	0.000	A
2	1423	306	3036	0.469	1422	0.9	2.229	A
3	858	656	1400	0.613	855	1.6	6.577	A
4	819	559	2021	0.405	818	0.7	2.991	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1682	477	0.000	0	0.0	0.000	A
2	1743	375	2984	0.584	1741	1.4	2.890	A
3	1050	803	1322	0.794	1042	3.6	12.495	B
4	1003	681	1945	0.516	1002	1.1	3.806	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1689	474	0.000	0	0.0	0.000	A
2	1743	375	2984	0.584	1743	1.4	2.900	A
3	1050	804	1322	0.795	1050	3.7	13.184	B
4	1003	686	1942	0.516	1003	1.1	3.831	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1386	604	0.000	0	0.0	0.000	A
2	1423	307	3036	0.469	1425	0.9	2.237	A
3	858	657	1399	0.613	866	1.6	6.854	A
4	819	566	2017	0.406	820	0.7	3.012	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1157	703	0.000	0	0.0	0.000	A
2	1192	257	3074	0.388	1193	0.6	1.913	A
3	718	550	1456	0.493	721	1.0	4.912	A
4	686	471	2075	0.330	687	0.5	2.593	A

(Default Analysis Set) - 2028 + CD + Dev, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	4.56	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D18	2028 + CD + Dev	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	968	100.000
3		✓	920	100.000
4		✓	752	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	425	543
	3	0	499	0	421
	4	0	358	394	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.36	1.92	0.6	A
3	0.71	8.60	2.4	A
4	0.41	3.00	0.7	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	939	797	0.000	0	0.0	0.000	A
2	729	296	3044	0.239	728	0.3	1.554	A
3	693	408	1531	0.452	689	0.8	4.259	A
4	566	374	2135	0.265	565	0.4	2.290	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1123	718	0.000	0	0.0	0.000	A
2	870	354	3000	0.290	870	0.4	1.689	A
3	827	488	1489	0.555	825	1.2	5.411	A
4	676	448	2090	0.324	676	0.5	2.546	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1374	609	0.000	0	0.0	0.000	A
2	1066	433	2940	0.363	1065	0.6	1.920	A
3	1013	597	1431	0.708	1008	2.3	8.429	A
4	828	547	2028	0.408	827	0.7	2.996	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1377	608	0.000	0	0.0	0.000	A
2	1066	434	2939	0.363	1066	0.6	1.921	A
3	1013	598	1431	0.708	1013	2.4	8.603	A
4	828	549	2027	0.409	828	0.7	3.002	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1128	716	0.000	0	0.0	0.000	A
2	870	355	3000	0.290	871	0.4	1.690	A
3	827	489	1489	0.556	832	1.3	5.512	A
4	676	451	2088	0.324	677	0.5	2.554	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	943	795	0.000	0	0.0	0.000	A
2	729	297	3043	0.239	729	0.3	1.557	A
3	693	409	1531	0.452	694	0.8	4.311	A
4	566	377	2134	0.265	567	0.4	2.297	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
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Filename: Junction 1 - Shardlow Road Chellaston Minor Improved.j9
Path: M:\E702 Boulton Moor, DERBYSHIRE_\TECHNICAL\TRAFFIC\ARCADY\District Centre
Report generation date: 22/10/2021 13:24:47

»(Default Analysis Set) - 2023 + BM1, AM
»(Default Analysis Set) - 2023 + BM1, PM
»(Default Analysis Set) - 2023 + BM1, Sat
»(Default Analysis Set) - 2023 + BM1 + Dev , AM
»(Default Analysis Set) - 2023 + BM1 + Dev , PM
»(Default Analysis Set) - 2023 + BM1 + Dev, Sat
»(Default Analysis Set) - 2028 + CD, AM
»(Default Analysis Set) - 2028 + CD, PM
»(Default Analysis Set) - 2028 + CD, Sat
»(Default Analysis Set) - 2028 + CD + Dev, AM
»(Default Analysis Set) - 2028 + CD + Dev, PM
»(Default Analysis Set) - 2028 + CD + Dev, Sat

Summary of junction performance

	AM					PM					Sat				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2023 + BM1														
Arm 1	D5	0.0	0.00	0.00	A	D6	0.0	0.00	0.00	A	D9	0.0	0.00	0.00	A
Arm 2		0.3	1.49	0.25	A		0.6	1.87	0.39	A		0.4	1.62	0.30	A
Arm 3		0.4	2.55	0.29	A		0.3	2.53	0.23	A		0.3	2.42	0.22	A
Arm 4		0.5	2.48	0.32	A		0.5	2.55	0.36	A		0.5	2.48	0.34	A
	A1 - 2023 + BM1 + Dev														
Arm 1	D10	0.0	0.00	0.00	A	D11	0.0	0.00	0.00	A	D12	0.0	0.00	0.00	A
Arm 2		0.4	1.58	0.26	A		0.7	1.99	0.41	A		0.5	1.82	0.33	A
Arm 3		0.6	2.75	0.36	A		0.6	3.11	0.38	A		0.6	2.85	0.36	A
Arm 4		0.5	2.62	0.34	A		0.6	2.80	0.39	A		0.6	2.66	0.36	A
	A1 - 2028 + CD														
Arm 1	D13	0.0	0.00	0.00	A	D14	0.0	0.00	0.00	A	D15	0.0	0.00	0.00	A
Arm 2		0.5	1.67	0.31	A		1.2	2.65	0.55	A		0.5	1.71	0.33	A
Arm 3		1.6	4.72	0.61	A		0.7	3.46	0.42	A		0.6	3.09	0.39	A
Arm 4		0.8	3.43	0.44	A		0.9	3.38	0.48	A		0.6	2.77	0.38	A
	A1 - 2028 + CD + Dev														
Arm 1	D16	0.0	0.00	0.00	A	D17	0.0	0.00	0.00	A	D18	0.0	0.00	0.00	A
Arm 2		0.5	1.78	0.33	A		1.4	2.90	0.58	A		0.6	1.92	0.36	A
Arm 3		2.1	5.46	0.67	A		1.3	4.65	0.58	A		1.1	3.83	0.52	A
Arm 4		0.9	3.70	0.47	A		1.1	3.83	0.52	A		0.7	3.00	0.41	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Junction 1 - Shardlow Road Chellaston
Location	
Site number	
Date	19/06/2015
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Dean
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2023 + BM1	AM	ONE HOUR	07:45	09:15	15
D6	2023 + BM1	PM	ONE HOUR	16:45	18:15	15
D9	2023 + BM1	Sat	ONE HOUR	11:45	13:15	15
D10	2023 + BM1 + Dev	AM	ONE HOUR	07:45	09:15	15
D11	2023 + BM1 + Dev	PM	ONE HOUR	16:45	18:15	15
D12	2023 + BM1 + Dev	Sat	ONE HOUR	11:45	13:15	15
D13	2028 + CD	AM	ONE HOUR	07:45	09:15	15
D14	2028 + CD	PM	ONE HOUR	16:45	18:15	15
D15	2028 + CD	Sat	ONE HOUR	11:45	13:15	15
D16	2028 + CD + Dev	AM	ONE HOUR	07:45	09:15	15
D17	2028 + CD + Dev	PM	ONE HOUR	16:45	18:15	15
D18	2028 + CD + Dev	Sat	ONE HOUR	11:45	13:15	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

(Default Analysis Set) - 2023 + BM1, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.12	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Allotments	
2	A6 Link	
3	Chellaston	
4	Shardlow Road	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	2.70	5.40	6.9	17.7	70.0	23.0	
2	10.50	10.50	0.0	39.3	69.9	29.0	
3	7.30	7.30	0.0	20.0	69.9	16.0	
4	3.90	8.50	56.7	22.2	69.9	21.5	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.432	1203
2	0.760	3269
3	0.615	2319
4	0.619	2367

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2023 + BM1	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	715	100.000
3		✓	523	100.000
4		✓	613	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	224	491
	3	0	354	0	169
	4	0	526	87	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.25	1.49	0.3	A
3	0.29	2.55	0.4	A
4	0.32	2.48	0.5	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	726	889	0.000	0	0.0	0.000	A
2	538	65	3219	0.167	537	0.2	1.342	A
3	394	369	2092	0.188	393	0.2	2.117	A
4	461	266	2202	0.210	460	0.3	2.066	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	869	828	0.000	0	0.0	0.000	A
2	643	78	3210	0.200	643	0.2	1.401	A
3	470	441	2048	0.230	470	0.3	2.281	A
4	551	318	2170	0.254	551	0.3	2.223	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1064	743	0.000	0	0.0	0.000	A
2	787	96	3196	0.246	787	0.3	1.493	A
3	576	540	1987	0.290	575	0.4	2.550	A
4	675	389	2126	0.318	674	0.5	2.481	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1065	743	0.000	0	0.0	0.000	A
2	787	96	3196	0.246	787	0.3	1.493	A
3	576	541	1987	0.290	576	0.4	2.550	A
4	675	390	2125	0.318	675	0.5	2.481	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	870	827	0.000	0	0.0	0.000	A
2	643	78	3209	0.200	643	0.3	1.404	A
3	470	442	2048	0.230	471	0.3	2.282	A
4	551	319	2170	0.254	552	0.3	2.225	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	728	888	0.000	0	0.0	0.000	A
2	538	66	3219	0.167	538	0.2	1.344	A
3	394	370	2092	0.188	394	0.2	2.121	A
4	461	267	2202	0.210	462	0.3	2.069	A

(Default Analysis Set) - 2023 + BM1, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.20	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2023 + BM1	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	1107	100.000
3		✓	386	100.000
4		✓	706	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	411	696
	3	0	262	0	124
	4	0	557	149	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.39	1.87	0.6	A
3	0.23	2.53	0.3	A
4	0.36	2.55	0.5	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	727	889	0.000	0	0.0	0.000	A
2	833	112	3184	0.262	832	0.4	1.530	A
3	291	523	1998	0.145	290	0.2	2.106	A
4	532	197	2245	0.237	530	0.3	2.099	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	870	827	0.000	0	0.0	0.000	A
2	995	134	3167	0.314	995	0.5	1.656	A
3	347	625	1935	0.179	347	0.2	2.267	A
4	635	235	2221	0.286	634	0.4	2.268	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1065	743	0.000	0	0.0	0.000	A
2	1219	164	3144	0.388	1218	0.6	1.868	A
3	425	766	1848	0.230	425	0.3	2.528	A
4	777	288	2188	0.355	777	0.5	2.548	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1066	743	0.000	0	0.0	0.000	A
2	1219	164	3144	0.388	1219	0.6	1.868	A
3	425	766	1848	0.230	425	0.3	2.529	A
4	777	288	2188	0.355	777	0.5	2.551	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	871	827	0.000	0	0.0	0.000	A
2	995	134	3167	0.314	996	0.5	1.657	A
3	347	626	1934	0.179	347	0.2	2.270	A
4	635	236	2221	0.286	635	0.4	2.270	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	729	888	0.000	0	0.0	0.000	A
2	833	112	3184	0.262	834	0.4	1.533	A
3	291	524	1997	0.146	291	0.2	2.109	A
4	532	197	2245	0.237	532	0.3	2.103	A

(Default Analysis Set) - 2023 + BM1, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.08	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2023 + BM1	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	873	100.000
3		✓	385	100.000
4		✓	677	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	274	599
	3	0	246	0	139
	4	0	565	112	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.30	1.62	0.4	A
3	0.22	2.42	0.3	A
4	0.34	2.48	0.5	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	693	903	0.000	0	0.0	0.000	A
2	657	84	3205	0.205	656	0.3	1.412	A
3	290	450	2042	0.142	289	0.2	2.053	A
4	510	185	2252	0.226	509	0.3	2.063	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	829	845	0.000	0	0.0	0.000	A
2	785	101	3193	0.246	785	0.3	1.494	A
3	346	538	1988	0.174	346	0.2	2.191	A
4	609	221	2230	0.273	608	0.4	2.220	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1016	764	0.000	0	0.0	0.000	A
2	961	123	3175	0.303	961	0.4	1.625	A
3	424	659	1914	0.221	424	0.3	2.415	A
4	745	271	2199	0.339	745	0.5	2.475	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1016	764	0.000	0	0.0	0.000	A
2	961	123	3175	0.303	961	0.4	1.625	A
3	424	660	1914	0.222	424	0.3	2.415	A
4	745	271	2199	0.339	745	0.5	2.475	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	830	844	0.000	0	0.0	0.000	A
2	785	101	3192	0.246	785	0.3	1.497	A
3	346	539	1988	0.174	346	0.2	2.193	A
4	609	221	2230	0.273	609	0.4	2.221	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	695	902	0.000	0	0.0	0.000	A
2	657	84	3205	0.205	658	0.3	1.414	A
3	290	451	2042	0.142	290	0.2	2.054	A
4	510	185	2252	0.226	510	0.3	2.066	A

(Default Analysis Set) - 2023 + BM1 + Dev , AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.28	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2023 + BM1 + Dev	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	745	100.000
3		✓	675	100.000
4		✓	632	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	347	398
	3	0	436	0	239
	4	0	433	199	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.26	1.58	0.4	A
3	0.36	2.75	0.6	A
4	0.34	2.62	0.5	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	802	856	0.000	0	0.0	0.000	A
2	561	149	3155	0.178	560	0.2	1.386	A
3	508	299	2135	0.238	507	0.3	2.210	A
4	476	327	2164	0.220	475	0.3	2.130	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	960	788	0.000	0	0.0	0.000	A
2	670	179	3133	0.214	670	0.3	1.460	A
3	607	358	2099	0.289	606	0.4	2.411	A
4	568	392	2124	0.267	568	0.4	2.313	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1175	695	0.000	0	0.0	0.000	A
2	820	219	3103	0.264	820	0.4	1.576	A
3	743	438	2050	0.363	743	0.6	2.752	A
4	696	480	2070	0.336	695	0.5	2.617	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1176	695	0.000	0	0.0	0.000	A
2	820	219	3103	0.264	820	0.4	1.576	A
3	743	438	2050	0.363	743	0.6	2.754	A
4	696	480	2070	0.336	696	0.5	2.620	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	961	788	0.000	0	0.0	0.000	A
2	670	179	3133	0.214	670	0.3	1.461	A
3	607	358	2099	0.289	607	0.4	2.415	A
4	568	392	2124	0.268	569	0.4	2.317	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	805	855	0.000	0	0.0	0.000	A
2	561	150	3155	0.178	561	0.2	1.387	A
3	508	300	2135	0.238	509	0.3	2.215	A
4	476	328	2163	0.220	476	0.3	2.133	A

(Default Analysis Set) - 2023 + BM1 + Dev , PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.51	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D11	2023 + BM1 + Dev	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	1164	100.000
3		✓	653	100.000
4		✓	733	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	507	657
	3	0	403	0	250
	4	0	517	216	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.41	1.99	0.7	A
3	0.38	3.11	0.6	A
4	0.39	2.80	0.6	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	853	834	0.000	0	0.0	0.000	A
2	876	162	3146	0.279	875	0.4	1.585	A
3	492	494	2016	0.244	490	0.3	2.358	A
4	552	303	2179	0.253	550	0.3	2.208	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1021	762	0.000	0	0.0	0.000	A
2	1046	194	3122	0.335	1046	0.5	1.733	A
3	587	590	1956	0.300	587	0.4	2.628	A
4	659	362	2143	0.308	659	0.4	2.425	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1250	663	0.000	0	0.0	0.000	A
2	1282	238	3088	0.415	1281	0.7	1.990	A
3	719	723	1875	0.384	718	0.6	3.111	A
4	807	443	2092	0.386	806	0.6	2.798	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1251	663	0.000	0	0.0	0.000	A
2	1282	238	3088	0.415	1282	0.7	1.992	A
3	719	723	1874	0.384	719	0.6	3.114	A
4	807	444	2092	0.386	807	0.6	2.800	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1022	761	0.000	0	0.0	0.000	A
2	1046	194	3121	0.335	1047	0.5	1.738	A
3	587	591	1956	0.300	588	0.4	2.634	A
4	659	363	2142	0.308	660	0.4	2.430	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	856	833	0.000	0	0.0	0.000	A
2	876	163	3145	0.279	877	0.4	1.586	A
3	492	495	2015	0.244	492	0.3	2.364	A
4	552	304	2179	0.253	552	0.3	2.215	A

(Default Analysis Set) - 2023 + BM1 + Dev, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.38	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D12	2023 + BM1 + Dev	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	896	100.000
3		✓	642	100.000
4		✓	694	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	382	514
	3	0	366	0	276
	4	0	330	364	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.33	1.82	0.5	A
3	0.36	2.85	0.6	A
4	0.36	2.66	0.6	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	796	859	0.000	0	0.0	0.000	A
2	675	273	3061	0.220	673	0.3	1.507	A
3	483	386	2082	0.232	482	0.3	2.250	A
4	522	275	2197	0.238	521	0.3	2.148	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	952	791	0.000	0	0.0	0.000	A
2	805	327	3021	0.267	805	0.4	1.624	A
3	577	462	2035	0.284	577	0.4	2.468	A
4	624	329	2163	0.288	624	0.4	2.338	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1166	699	0.000	0	0.0	0.000	A
2	987	400	2965	0.333	986	0.5	1.818	A
3	707	566	1971	0.359	706	0.6	2.843	A
4	764	403	2118	0.361	763	0.6	2.657	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1167	699	0.000	0	0.0	0.000	A
2	987	401	2965	0.333	987	0.5	1.819	A
3	707	566	1971	0.359	707	0.6	2.846	A
4	764	403	2117	0.361	764	0.6	2.659	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	954	791	0.000	0	0.0	0.000	A
2	805	328	3020	0.267	806	0.4	1.625	A
3	577	462	2035	0.284	578	0.4	2.471	A
4	624	329	2163	0.288	625	0.4	2.342	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	799	858	0.000	0	0.0	0.000	A
2	675	274	3061	0.220	675	0.3	1.510	A
3	483	387	2081	0.232	484	0.3	2.255	A
4	522	276	2196	0.238	523	0.3	2.151	A

(Default Analysis Set) - 2028 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	3.37	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D13	2028 + CD	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	886	100.000
3		✓	1088	100.000
4		✓	760	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	357	529
	3	0	704	0	384
	4	0	592	168	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.31	1.67	0.5	A
3	0.61	4.72	1.6	A
4	0.44	3.43	0.8	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1099	728	0.000	0	0.0	0.000	A
2	667	126	3173	0.210	666	0.3	1.435	A
3	819	398	2075	0.395	817	0.6	2.855	A
4	572	528	2040	0.281	571	0.4	2.448	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1315	635	0.000	0	0.0	0.000	A
2	796	151	3154	0.253	796	0.3	1.526	A
3	978	475	2027	0.483	977	0.9	3.426	A
4	683	632	1975	0.346	683	0.5	2.783	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1609	508	0.000	0	0.0	0.000	A
2	976	185	3129	0.312	975	0.5	1.671	A
3	1198	582	1961	0.611	1195	1.5	4.686	A
4	837	774	1888	0.443	836	0.8	3.418	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1612	507	0.000	0	0.0	0.000	A
2	976	185	3128	0.312	976	0.5	1.671	A
3	1198	582	1961	0.611	1198	1.6	4.716	A
4	837	775	1887	0.443	837	0.8	3.427	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1319	633	0.000	0	0.0	0.000	A
2	796	151	3154	0.253	797	0.3	1.526	A
3	978	476	2027	0.483	981	0.9	3.448	A
4	683	634	1974	0.346	684	0.5	2.793	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1103	726	0.000	0	0.0	0.000	A
2	667	127	3173	0.210	667	0.3	1.436	A
3	819	398	2074	0.395	820	0.7	2.872	A
4	572	531	2038	0.281	573	0.4	2.457	A

(Default Analysis Set) - 2028 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	3.03	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D14	2028 + CD	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	1527	100.000
3		✓	687	100.000
4		✓	883	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	757	770
	3	0	482	0	205
	4	0	609	274	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.55	2.65	1.2	A
3	0.42	3.46	0.7	A
4	0.48	3.38	0.9	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1025	760	0.000	0	0.0	0.000	A
2	1150	206	3113	0.369	1147	0.6	1.830	A
3	517	579	1964	0.263	516	0.4	2.484	A
4	665	362	2143	0.310	663	0.4	2.429	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1226	673	0.000	0	0.0	0.000	A
2	1373	246	3082	0.445	1372	0.8	2.104	A
3	618	692	1894	0.326	617	0.5	2.817	A
4	794	433	2099	0.378	793	0.6	2.756	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1501	555	0.000	0	0.0	0.000	A
2	1681	301	3040	0.553	1680	1.2	2.642	A
3	756	847	1798	0.421	755	0.7	3.448	A
4	972	530	2039	0.477	971	0.9	3.369	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1503	554	0.000	0	0.0	0.000	A
2	1681	302	3040	0.553	1681	1.2	2.649	A
3	756	848	1798	0.421	756	0.7	3.455	A
4	972	531	2038	0.477	972	0.9	3.376	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1229	672	0.000	0	0.0	0.000	A
2	1373	247	3082	0.445	1374	0.8	2.110	A
3	618	693	1893	0.326	619	0.5	2.826	A
4	794	434	2098	0.378	795	0.6	2.764	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1029	759	0.000	0	0.0	0.000	A
2	1150	206	3112	0.369	1150	0.6	1.837	A
3	517	580	1963	0.264	518	0.4	2.492	A
4	665	363	2142	0.310	665	0.5	2.440	A

(Default Analysis Set) - 2028 + CD, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.43	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D15	2028 + CD	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	945	100.000
3		✓	663	100.000
4		✓	736	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	317	628
	3	0	379	0	284
	4	0	593	143	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.33	1.71	0.5	A
3	0.39	3.09	0.6	A
4	0.38	2.77	0.6	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	837	841	0.000	0	0.0	0.000	A
2	711	107	3187	0.223	710	0.3	1.453	A
3	499	472	2029	0.246	498	0.3	2.349	A
4	554	285	2191	0.253	553	0.3	2.196	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1002	770	0.000	0	0.0	0.000	A
2	850	128	3171	0.268	849	0.4	1.549	A
3	596	564	1972	0.302	596	0.4	2.615	A
4	662	340	2156	0.307	661	0.4	2.408	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1226	673	0.000	0	0.0	0.000	A
2	1040	157	3149	0.330	1040	0.5	1.706	A
3	730	691	1894	0.385	729	0.6	3.088	A
4	810	417	2109	0.384	810	0.6	2.769	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1228	673	0.000	0	0.0	0.000	A
2	1040	157	3149	0.330	1040	0.5	1.706	A
3	730	691	1894	0.385	730	0.6	3.091	A
4	810	417	2108	0.384	810	0.6	2.772	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1004	769	0.000	0	0.0	0.000	A
2	850	129	3171	0.268	850	0.4	1.553	A
3	596	565	1972	0.302	597	0.4	2.618	A
4	662	341	2156	0.307	662	0.4	2.413	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	840	840	0.000	0	0.0	0.000	A
2	711	108	3187	0.223	712	0.3	1.456	A
3	499	473	2028	0.246	500	0.3	2.354	A
4	554	286	2190	0.253	555	0.3	2.203	A

(Default Analysis Set) - 2028 + CD + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	3.84	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D16	2028 + CD + Dev	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	917	100.000
3		✓	1240	100.000
4		✓	780	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	481	436
	3	0	785	0	455
	4	0	500	280	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.33	1.78	0.5	A
3	0.67	5.46	2.1	A
4	0.47	3.70	0.9	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1175	696	0.000	0	0.0	0.000	A
2	690	210	3109	0.222	689	0.3	1.487	A
3	934	328	2118	0.441	930	0.8	3.024	A
4	587	589	2002	0.293	586	0.4	2.539	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1405	596	0.000	0	0.0	0.000	A
2	824	251	3078	0.268	824	0.4	1.596	A
3	1115	392	2078	0.536	1113	1.1	3.726	A
4	701	705	1930	0.363	701	0.6	2.925	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1720	460	0.000	0	0.0	0.000	A
2	1010	308	3035	0.333	1009	0.5	1.776	A
3	1365	480	2024	0.674	1362	2.0	5.404	A
4	859	862	1833	0.469	858	0.9	3.685	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1723	459	0.000	0	0.0	0.000	A
2	1010	308	3035	0.333	1010	0.5	1.776	A
3	1365	480	2024	0.675	1365	2.1	5.461	A
4	859	864	1832	0.469	859	0.9	3.699	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1410	594	0.000	0	0.0	0.000	A
2	824	252	3077	0.268	825	0.4	1.600	A
3	1115	392	2078	0.536	1118	1.2	3.763	A
4	701	708	1928	0.364	702	0.6	2.940	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1180	693	0.000	0	0.0	0.000	A
2	690	211	3109	0.222	691	0.3	1.490	A
3	934	328	2117	0.441	935	0.8	3.050	A
4	587	592	2000	0.294	588	0.4	2.551	A

(Default Analysis Set) - 2028 + CD + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	3.63	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D17	2028 + CD + Dev	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	1583	100.000
3		✓	954	100.000
4		✓	911	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	853	730
	3	0	623	0	331
	4	0	570	341	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.58	2.90	1.4	A
3	0.58	4.65	1.3	A
4	0.52	3.83	1.1	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1151	706	0.000	0	0.0	0.000	A
2	1192	256	3075	0.388	1189	0.6	1.908	A
3	718	548	1982	0.362	716	0.6	2.839	A
4	686	468	2077	0.330	684	0.5	2.580	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1378	608	0.000	0	0.0	0.000	A
2	1423	306	3036	0.469	1422	0.9	2.229	A
3	858	656	1916	0.448	857	0.8	3.395	A
4	819	559	2020	0.405	818	0.7	2.993	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1686	475	0.000	0	0.0	0.000	A
2	1743	375	2984	0.584	1741	1.4	2.890	A
3	1050	803	1826	0.575	1048	1.3	4.618	A
4	1003	685	1943	0.516	1002	1.1	3.817	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1689	474	0.000	0	0.0	0.000	A
2	1743	375	2984	0.584	1743	1.4	2.900	A
3	1050	804	1825	0.576	1050	1.3	4.646	A
4	1003	686	1942	0.516	1003	1.1	3.832	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1382	606	0.000	0	0.0	0.000	A
2	1423	307	3036	0.469	1425	0.9	2.239	A
3	858	657	1915	0.448	860	0.8	3.417	A
4	819	561	2019	0.406	820	0.7	3.006	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1156	703	0.000	0	0.0	0.000	A
2	1192	257	3074	0.388	1193	0.6	1.916	A
3	718	550	1981	0.363	719	0.6	2.854	A
4	686	470	2076	0.330	687	0.5	2.591	A

(Default Analysis Set) - 2028 + CD + Dev, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	2.90	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D18	2028 + CD + Dev	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	0	100.000
2		✓	968	100.000
3		✓	920	100.000
4		✓	752	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	425	543
	3	0	499	0	421
	4	0	358	394	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.00	0.00	0.0	A
2	0.36	1.92	0.6	A
3	0.52	3.83	1.1	A
4	0.41	3.00	0.7	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	939	797	0.000	0	0.0	0.000	A
2	729	296	3044	0.239	728	0.3	1.554	A
3	693	408	2068	0.335	691	0.5	2.610	A
4	566	375	2135	0.265	565	0.4	2.290	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1124	718	0.000	0	0.0	0.000	A
2	870	354	3000	0.290	870	0.4	1.689	A
3	827	488	2019	0.410	826	0.7	3.016	A
4	676	448	2089	0.324	676	0.5	2.546	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1376	609	0.000	0	0.0	0.000	A
2	1066	433	2940	0.363	1065	0.6	1.920	A
3	1013	597	1952	0.519	1011	1.1	3.821	A
4	828	549	2027	0.408	827	0.7	2.999	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1377	608	0.000	0	0.0	0.000	A
2	1066	434	2939	0.363	1066	0.6	1.921	A
3	1013	598	1952	0.519	1013	1.1	3.834	A
4	828	549	2027	0.409	828	0.7	3.002	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	1126	716	0.000	0	0.0	0.000	A
2	870	355	3000	0.290	871	0.4	1.693	A
3	827	489	2019	0.410	829	0.7	3.029	A
4	676	449	2089	0.324	677	0.5	2.553	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	0	943	796	0.000	0	0.0	0.000	A
2	729	297	3043	0.239	729	0.3	1.555	A
3	693	409	2068	0.335	693	0.5	2.622	A
4	566	376	2134	0.265	567	0.4	2.298	A

Appendix M

Junction 1 and 2 – Committed Development LinSIG output files

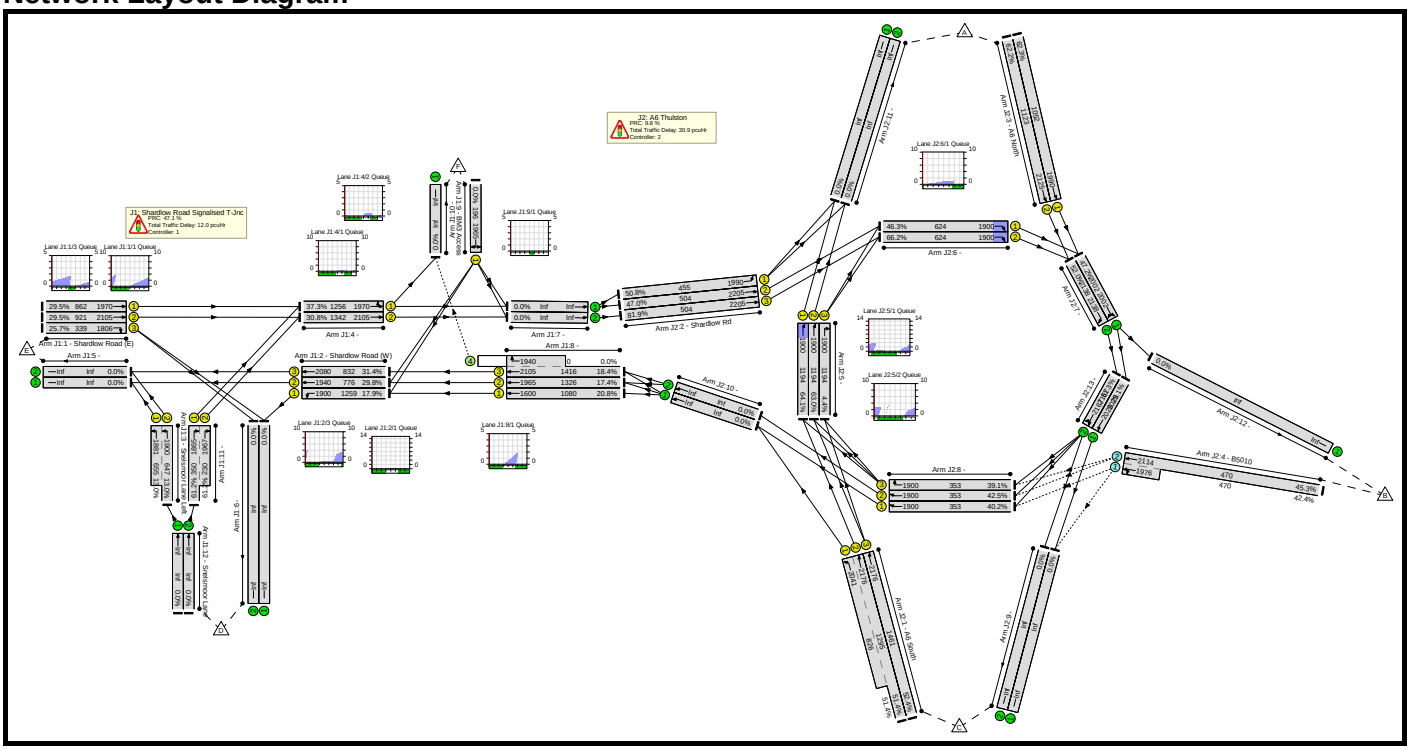
Basic Results Summary

User and Project Details

Project:	**EM 114 A6 Thulston Options Study**
Title:	**Shardlow Road Signalised T-Jnc**
Location:	
Additional detail:	
File name:	Junction 1 and 2 Committed Improvements.lsg3x
Author:	jonesch1
Company:	AECOM
Address:	

Scenario 1: '2023 + BM1 AM' (FG1: '2023 + BM1 AM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.9%**	**824**	**0**	**0**	**43.0**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**61.2%**	**0**	**0**	**0**	**12.0**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	34	-	254	1970	862	29.5%	-	-	-	1.2	17.5	3.8
1/2	Shardlow Road (E) Ahead	U	C1:A		1	34	-	272	2105	921	29.5%	-	-	-	1.3	17.3	4.1
1/3	Shardlow Road (E) Right	U	C1:D		1	14	-	87	1806	339	25.7%	-	-	-	0.8	34.9	1.8
2/1	Shardlow Road (W) Left	U	C1:M		1	52	-	225	1900	1259	17.9%	-	-	-	0.2	3.3	0.4
2/2	Shardlow Road (W) Ahead	U	C1:B		1	31	-	231	1940	776	29.8%	-	-	-	1.0	14.9	3.7
2/3	Shardlow Road (W) Ahead	U	C1:B		1	31	-	261	2080	832	31.4%	-	-	-	1.1	14.8	4.1
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	34	-	169	1900:1881	647+655	13.0 : 13.0%	-	-	-	0.7	14.8	1.2
4/1	Ahead Left	U	C1:I		2	49	-	468	1970	1256	37.3%	-	-	-	0.4	3.1	0.6
4/2	Ahead	U	C1:I		2	49	-	413	2105	1342	30.8%	-	-	-	0.3	2.8	0.6
8/1	Ahead	U	C1:J		1	53	-	225	1600	1080	20.8%	-	-	-	0.4	7.0	2.0
8/2	Ahead	U	C1:J		1	53	-	231	1965	1326	17.4%	-	-	-	0.4	6.4	2.0
8/3+8/4	Ahead Right	U+O	C1:J		1	53	-	261	2105:1940	1416+0	18.4 : 0.0%	0	0	0	0.5	6.4	2.2
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	14	-	355	1865:1967	350+230	61.2 : 61.2%	-	-	-	3.7	37.2	5.1
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.9%**	**824**	**0**	**0**	**30.9**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	46	-	1091	2176:2041	1295+826	51.4 : 51.4%	-	-	-	2.1	6.9	6.6
1/3	A6 South Ahead	U	C2:F		1	46	-	765	2176	1461	52.4%	-	-	-	1.8	8.4	8.0
2/1	Shardlow Rd Left	U	C2:B		1	15	-	231	1990	455	50.8%	-	-	-	2.0	31.6	4.4
2/2	Shardlow Rd Ahead	U	C2:B		1	15	-	237	2205	504	47.0%	-	-	-	2.0	30.1	4.4
2/3	Shardlow Rd Ahead	U	C2:B		1	15	-	413	2205	504	81.9%	-	-	-	5.1	44.5	9.7
3/1	A6 North Ahead	U	C2:D		1	36	-	655	1990	1052	62.3%	-	-	-	2.9	16.1	9.7
3/2	A6 North Ahead	U	C2:D		1	36	-	699	2125	1123	62.2%	-	-	-	3.1	15.8	10.3
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	412	2114:1976	470+470	45.3 : 42.4%	824	0	0	0.7	6.2	1.9
5/1	Ahead	U	C2:A		1	43	-	765	1900	1194	64.1%	-	-	-	1.9	9.1	4.7
5/2	Ahead	U	C2:A		1	43	-	752	1900	1194	63.0%	-	-	-	1.6	7.8	4.1
5/3	Right	U	C2:A		1	43	-	52	1900	1194	4.4%	-	-	-	0.1	4.6	0.2
6/1	Right	U	C2:C		1	22	-	289	1900	624	46.3%	-	-	-	0.9	11.1	1.6
6/2	Right	U	C2:C		1	22	-	413	1900	624	66.2%	-	-	-	1.4	12.0	1.6
7/1	Ahead Right	U	-		-	-	-	944	2002	2002	47.2%	-	-	-	0.4	1.7	0.4
7/2	Right	U	-		-	-	-	1112	2138	2138	52.0%	-	-	-	0.5	1.8	0.5
8/1	Ahead	U	C2:E		1	12	-	142	1900	353	40.2%	-	-	-	1.2	29.7	2.9
8/2	Ahead	U	C2:E		1	12	-	150	1900	353	42.5%	-	-	-	1.2	29.9	3.1
8/3	Right	U	C2:E		1	12	-	138	1900	353	39.1%	-	-	-	1.2	30.5	2.7
13/1	Ahead	U	-		-	-	-	589	2025	2025	29.1%	-	-	-	0.2	1.3	0.2
13/2	Right Ahead	U	-		-	-	-	1112	2167	2167	51.3%	-	-	-	0.5	1.7	0.5

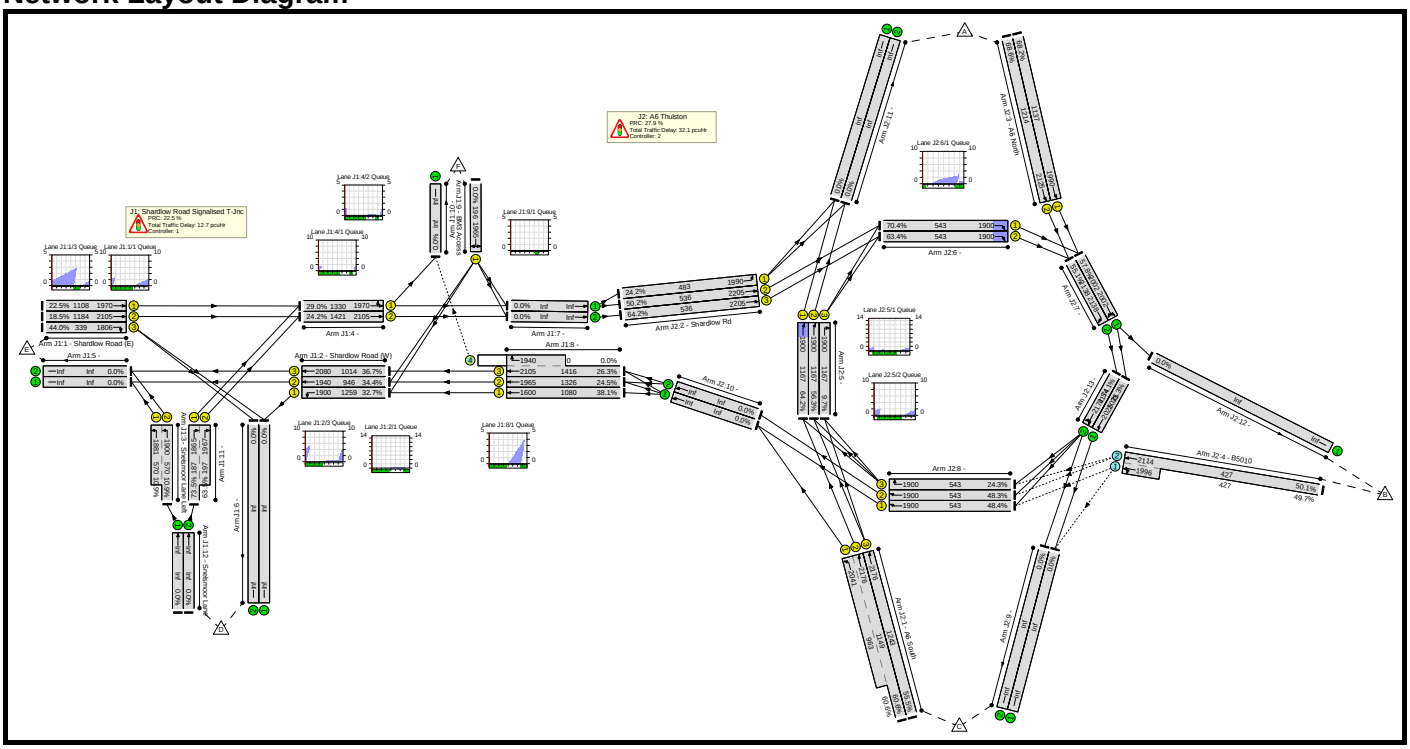
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	47.1	Total Delay for Signalled Lanes (pcuHr):	12.02	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	9.8	Total Delay for Signalled Lanes (pcuHr):	12.75	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	36.0	Total Delay for Signalled Lanes (pcuHr):	8.27	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	71.9	Total Delay for Signalled Lanes (pcuHr):	7.48	Cycle Time (s):	70
		PRC Over All Lanes (%):	9.8	Total Delay Over All Lanes(pcuHr):	42.96		

Basic Results Summary

Scenario 2: '2023 + Bm1 PM' (FG2: '2023 + BM1 PM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.5%**	**852**	**0**	**0**	**44.8**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.5%**	**0**	**0**	**0**	**12.7**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	44	-	249	1970	1108	22.5%	-	-	-	0.8	10.9	2.9
1/2	Shardlow Road (E) Ahead	U	C1:A		1	44	-	219	2105	1184	18.5%	-	-	-	0.6	10.4	2.5
1/3	Shardlow Road (E) Right	U	C1:D		1	14	-	149	1806	339	44.0%	-	-	-	1.6	38.2	3.3
2/1	Shardlow Road (W) Left	U	C1:M		1	52	-	412	1900	1259	32.7%	-	-	-	0.4	3.7	0.8
2/2	Shardlow Road (W) Ahead	U	C1:B		1	38	-	325	1940	946	34.4%	-	-	-	0.9	10.5	4.7
2/3	Shardlow Road (W) Ahead	U	C1:B		1	38	-	372	2080	1014	36.7%	-	-	-	1.1	10.5	5.4
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	27	-	124	1900:1881	570+570	10.9 : 10.9%	-	-	-	0.7	19.3	1.0
4/1	Ahead Left	U	C1:I		2	52	-	386	1970	1330	29.0%	-	-	-	0.4	3.9	1.7
4/2	Ahead	U	C1:I		2	52	-	344	2105	1421	24.2%	-	-	-	0.3	3.5	1.3
8/1	Ahead	U	C1:J		1	53	-	412	1600	1080	38.1%	-	-	-	1.0	8.4	4.3
8/2	Ahead	U	C1:J		1	53	-	325	1965	1326	24.5%	-	-	-	0.6	6.9	3.0
8/3+8/4	Ahead Right	U+O	C1:J		1	53	-	372	2105:1940	1416+0	26.3 : 0.0%	0	0	0	0.7	6.9	3.4
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	7	-	262	1865:1967	187+197	73.5 : 63.5%	-	-	-	3.6	49.4	4.0
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.4%**	**852**	**0**	**0**	**32.1**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	39	-	1281	2176:2041	1149+963	60.6 : 60.6%	-	-	-	4.1	11.4	9.3
1/3	A6 South Ahead	U	C2:F		1	39	-	690	2176	1243	55.5%	-	-	-	2.4	12.7	8.9
2/1	Shardlow Rd Left	U	C2:B		1	16	-	117	1990	483	24.2%	-	-	-	0.9	26.3	2.0
2/2	Shardlow Rd Ahead	U	C2:B		1	16	-	269	2205	536	50.2%	-	-	-	2.2	29.6	5.0
2/3	Shardlow Rd Ahead	U	C2:B		1	16	-	344	2205	536	64.2%	-	-	-	3.2	33.1	6.8
3/1	A6 North Ahead	U	C2:D		1	39	-	775	1990	1137	68.2%	-	-	-	3.3	15.5	11.6
3/2	A6 North Ahead	U	C2:D		1	39	-	833	2125	1214	68.6%	-	-	-	3.5	15.3	12.4
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	426	2114:1996	427+427	50.1 : 49.7%	852	0	0	1.0	8.6	2.5
5/1	Ahead	U	C2:A		1	42	-	749	1900	1167	64.2%	-	-	-	1.3	6.3	2.3
5/2	Ahead	U	C2:A		1	42	-	657	1900	1167	56.3%	-	-	-	1.1	6.2	2.5
5/3	Right	U	C2:A		1	42	-	113	1900	1167	9.7%	-	-	-	0.1	2.5	0.1
6/1	Right	U	C2:C		1	19	-	382	1900	543	70.4%	-	-	-	2.3	21.3	4.1
6/2	Right	U	C2:C		1	19	-	344	1900	543	63.4%	-	-	-	0.9	9.8	1.2
7/1	Ahead Right	U	-		-	-	-	1157	2002	2002	57.8%	-	-	-	0.7	2.1	0.7
7/2	Right	U	-		-	-	-	1177	2138	2138	55.1%	-	-	-	0.6	1.9	0.6
8/1	Ahead	U	C2:E		1	19	-	263	1900	543	48.4%	-	-	-	1.5	20.0	4.3
8/2	Ahead	U	C2:E		1	19	-	262	1900	543	48.3%	-	-	-	1.4	19.3	4.4
8/3	Right	U	C2:E		1	19	-	132	1900	543	24.3%	-	-	-	0.8	20.6	1.5
13/1	Ahead	U	-		-	-	-	675	2025	2025	33.3%	-	-	-	0.2	1.3	0.2
13/2	Right Ahead	U	-		-	-	-	1177	2174	2174	54.1%	-	-	-	0.6	1.8	0.6

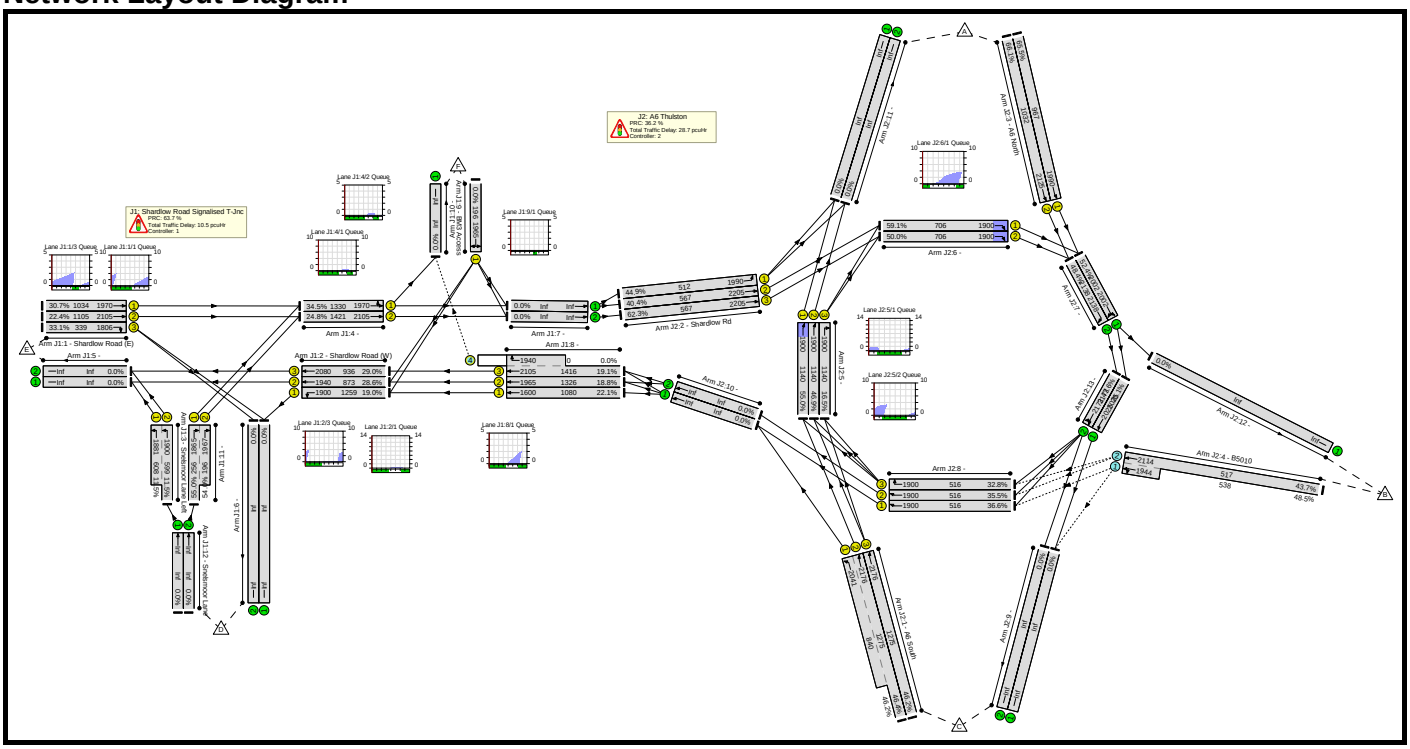
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	22.5	Total Delay for Signalled Lanes (pcuHr):	12.71	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	40.1	Total Delay for Signalled Lanes (pcuHr):	8.74	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	27.9	Total Delay for Signalled Lanes (pcuHr):	10.06	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	48.4	Total Delay for Signalled Lanes (pcuHr):	10.11	Cycle Time (s):	70
		PRC Over All Lanes (%):	22.5	Total Delay Over All Lanes(pcuHr):	44.78		

Basic Results Summary

Scenario 3: '2023 + Bm1 Weekend' (FG3: '2023 + BM1 Weekend', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.1%**	**974**	**0**	**0**	**39.3**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**55.0%**	**0**	**0**	**0**	**10.5**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	41	-	318	1970	1034	30.7%	-	-	-	1.2	13.3	4.2
1/2	Shardlow Road (E) Ahead	U	C1:A		1	41	-	247	2105	1105	22.4%	-	-	-	0.8	12.3	3.1
1/3	Shardlow Road (E) Right	U	C1:D		1	14	-	112	1806	339	33.1%	-	-	-	1.1	36.1	2.4
2/1	Shardlow Road (W) Left	U	C1:M		1	52	-	239	1900	1259	19.0%	-	-	-	0.2	3.3	0.4
2/2	Shardlow Road (W) Ahead	U	C1:B		1	35	-	250	1940	873	28.6%	-	-	-	0.8	11.9	3.7
2/3	Shardlow Road (W) Ahead	U	C1:B		1	35	-	271	2080	936	29.0%	-	-	-	0.9	11.8	4.0
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	30	-	139	1900:1881	599+608	11.5 : 11.5%	-	-	-	0.7	17.3	1.0
4/1	Ahead Left	U	C1:I		2	52	-	459	1970	1330	34.5%	-	-	-	0.4	2.9	0.7
4/2	Ahead	U	C1:I		2	52	-	353	2105	1421	24.8%	-	-	-	0.2	2.5	0.5
8/1	Ahead	U	C1:J		1	53	-	239	1600	1080	22.1%	-	-	-	0.5	7.1	2.1
8/2	Ahead	U	C1:J		1	53	-	250	1965	1326	18.8%	-	-	-	0.5	6.5	2.1
8/3+8/4	Ahead Right	U+O	C1:J		1	53	-	271	2105:1940	1416+0	19.1 : 0.0%	0	0	0	0.5	6.4	2.3
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	10	-	247	1865:1967	256+196	55.0 : 54.0%	-	-	-	2.8	40.6	3.5
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.1%**	**974**	**0**	**0**	**28.7**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	40	-	980	2176:2041	1275+840	46.4 : 46.2%	-	-	-	2.6	9.5	6.8
1/3	A6 South Ahead	U	C2:F		1	40	-	589	2176	1275	46.2%	-	-	-	1.8	10.9	6.8
2/1	Shardlow Rd Left	U	C2:B		1	17	-	230	1990	512	44.9%	-	-	-	1.8	28.2	4.1
2/2	Shardlow Rd Ahead	U	C2:B		1	17	-	229	2205	567	40.4%	-	-	-	1.7	26.9	4.0
2/3	Shardlow Rd Ahead	U	C2:B		1	17	-	353	2205	567	62.3%	-	-	-	3.1	31.3	6.8
3/1	A6 North Ahead	U	C2:D		1	33	-	633	1990	967	65.5%	-	-	-	3.3	18.9	10.1
3/2	A6 North Ahead	U	C2:D		1	33	-	682	2125	1032	66.1%	-	-	-	3.6	18.7	11.0
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	487	2114:1944	517+538	43.7 : 48.5%	974	0	0	0.8	5.9	2.5
5/1	Ahead	U	C2:A		1	41	-	627	1900	1140	55.0%	-	-	-	1.1	6.5	2.3
5/2	Ahead	U	C2:A		1	41	-	535	1900	1140	46.9%	-	-	-	1.3	8.7	3.9
5/3	Right	U	C2:A		1	41	-	188	1900	1140	16.5%	-	-	-	0.2	4.1	0.4
6/1	Right	U	C2:C		1	25	-	417	1900	706	59.1%	-	-	-	2.1	18.3	4.4
6/2	Right	U	C2:C		1	25	-	353	1900	706	50.0%	-	-	-	0.6	5.9	0.9
7/1	Ahead Right	U	-		-	-	-	1050	2002	2002	52.4%	-	-	-	0.6	1.9	0.6
7/2	Right	U	-		-	-	-	1035	2138	2138	48.4%	-	-	-	0.5	1.6	0.5
8/1	Ahead	U	C2:E		1	18	-	189	1900	516	36.6%	-	-	-	1.1	20.1	3.6
8/2	Ahead	U	C2:E		1	18	-	183	1900	516	35.5%	-	-	-	1.0	20.3	3.4
8/3	Right	U	C2:E		1	18	-	169	1900	516	32.8%	-	-	-	1.1	23.0	2.8
13/1	Ahead	U	-		-	-	-	407	2025	2025	20.1%	-	-	-	0.1	1.1	0.1
13/2	Right Ahead	U	-		-	-	-	1035	2173	2173	47.6%	-	-	-	0.5	1.6	0.5

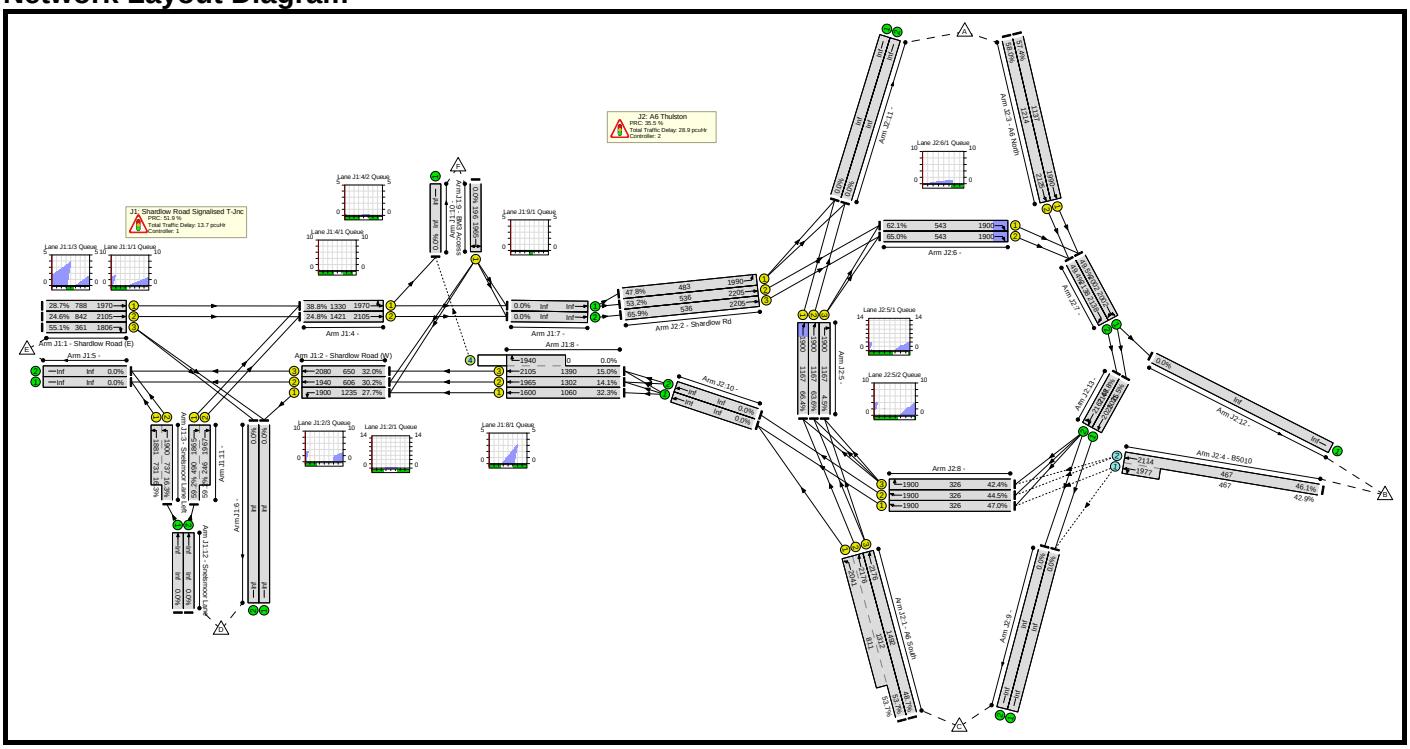
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	63.7	Total Delay for Signalled Lanes (pcuHr):	10.55	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	44.6	Total Delay for Signalled Lanes (pcuHr):	9.22	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	36.2	Total Delay for Signalled Lanes (pcuHr):	9.57	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	93.8	Total Delay for Signalled Lanes (pcuHr):	7.54	Cycle Time (s):	70
		PRC Over All Lanes (%):	36.2	Total Delay Over All Lanes(pcuHr):	39.29		

Basic Results Summary

Scenario 4: '2023 + BM1 + dev AM' (FG4: '2023 + BM1 + Dev AM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.4%**	**830**	**0**	**0**	**42.6**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.2%**	**0**	**0**	**0**	**13.7**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	31	-	226	1970	788	28.7%	-	-	-	1.2	19.5	3.6
1/2	Shardlow Road (E) Ahead	U	C1:A		1	31	-	207	2105	842	24.6%	-	-	-	1.1	18.8	3.2
1/3	Shardlow Road (E) Right	U	C1:D		1	15	-	199	1806	361	55.1%	-	-	-	2.2	39.8	4.5
2/1	Shardlow Road (W) Left	U	C1:M		1	51	-	342	1900	1235	27.7%	-	-	-	0.3	3.6	0.7
2/2	Shardlow Road (W) Ahead	U	C1:B		1	24	-	183	1940	606	30.2%	-	-	-	1.0	20.1	3.3
2/3	Shardlow Road (W) Ahead	U	C1:B		1	24	-	208	2080	650	32.0%	-	-	-	1.2	20.0	3.8
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	41	-	239	1900:1881	737+731	16.3 : 16.3%	-	-	-	0.7	11.1	1.4
4/1	Ahead Left	U	C1:I		2	52	-	516	1970	1330	38.8%	-	-	-	0.4	2.9	0.7
4/2	Ahead	U	C1:I		2	52	-	353	2105	1421	24.8%	-	-	-	0.2	2.4	0.5
8/1	Ahead	U	C1:J		1	52	-	342	1600	1060	32.3%	-	-	-	0.8	8.3	3.5
8/2	Ahead	U	C1:J		1	52	-	183	1965	1302	14.1%	-	-	-	0.3	6.6	1.6
8/3+8/4	Ahead Right	U+O	C1:J		1	52	-	208	2105:1940	1390+0	15.0 : 0.0%	0	0	0	0.4	6.6	1.8
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	20	-	436	1865:1967	490+246	59.2 : 59.2%	-	-	-	3.8	31.0	6.3
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.4%**	**830**	**0**	**0**	**28.9**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	47	-	1139	2176:2041	1312+811	53.7 : 53.7%	-	-	-	2.1	6.7	6.8
1/3	A6 South Ahead	U	C2:F		1	47	-	727	2176	1492	48.7%	-	-	-	1.5	7.5	7.1
2/1	Shardlow Rd Left	U	C2:B		1	16	-	231	1990	483	47.8%	-	-	-	1.9	29.8	4.2
2/2	Shardlow Rd Ahead	U	C2:B		1	16	-	285	2205	536	53.2%	-	-	-	2.4	30.2	5.3
2/3	Shardlow Rd Ahead	U	C2:B		1	16	-	353	2205	536	65.9%	-	-	-	3.3	33.7	7.1
3/1	A6 North Ahead	U	C2:D		1	39	-	653	1990	1137	57.4%	-	-	-	2.4	13.3	8.7
3/2	A6 North Ahead	U	C2:D		1	39	-	704	2125	1214	58.0%	-	-	-	2.6	13.1	9.3
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	415	2114:1977	467+467	46.1 : 42.9%	830	0	0	0.7	5.8	1.8
5/1	Ahead	U	C2:A		1	42	-	775	1900	1167	66.4%	-	-	-	2.1	9.8	5.1
5/2	Ahead	U	C2:A		1	42	-	742	1900	1167	63.6%	-	-	-	1.9	9.3	4.8
5/3	Right	U	C2:A		1	42	-	52	1900	1167	4.5%	-	-	-	0.1	5.7	0.2
6/1	Right	U	C2:C		1	19	-	337	1900	543	62.1%	-	-	-	1.3	13.9	1.9
6/2	Right	U	C2:C		1	19	-	353	1900	543	65.0%	-	-	-	1.0	10.3	1.3
7/1	Ahead Right	U	-		-	-	-	990	2002	2002	49.5%	-	-	-	0.5	1.8	0.5
7/2	Right	U	-		-	-	-	1057	2138	2138	49.4%	-	-	-	0.5	1.7	0.5
8/1	Ahead	U	C2:E		1	11	-	153	1900	326	47.0%	-	-	-	1.4	32.5	3.2
8/2	Ahead	U	C2:E		1	11	-	145	1900	326	44.5%	-	-	-	1.3	31.9	3.0
8/3	Right	U	C2:E		1	11	-	138	1900	326	42.4%	-	-	-	1.3	33.1	2.7
13/1	Ahead	U	-		-	-	-	638	2025	2025	31.5%	-	-	-	0.2	1.3	0.2
13/2	Right Ahead	U	-		-	-	-	1057	2167	2167	48.8%	-	-	-	0.5	1.6	0.5

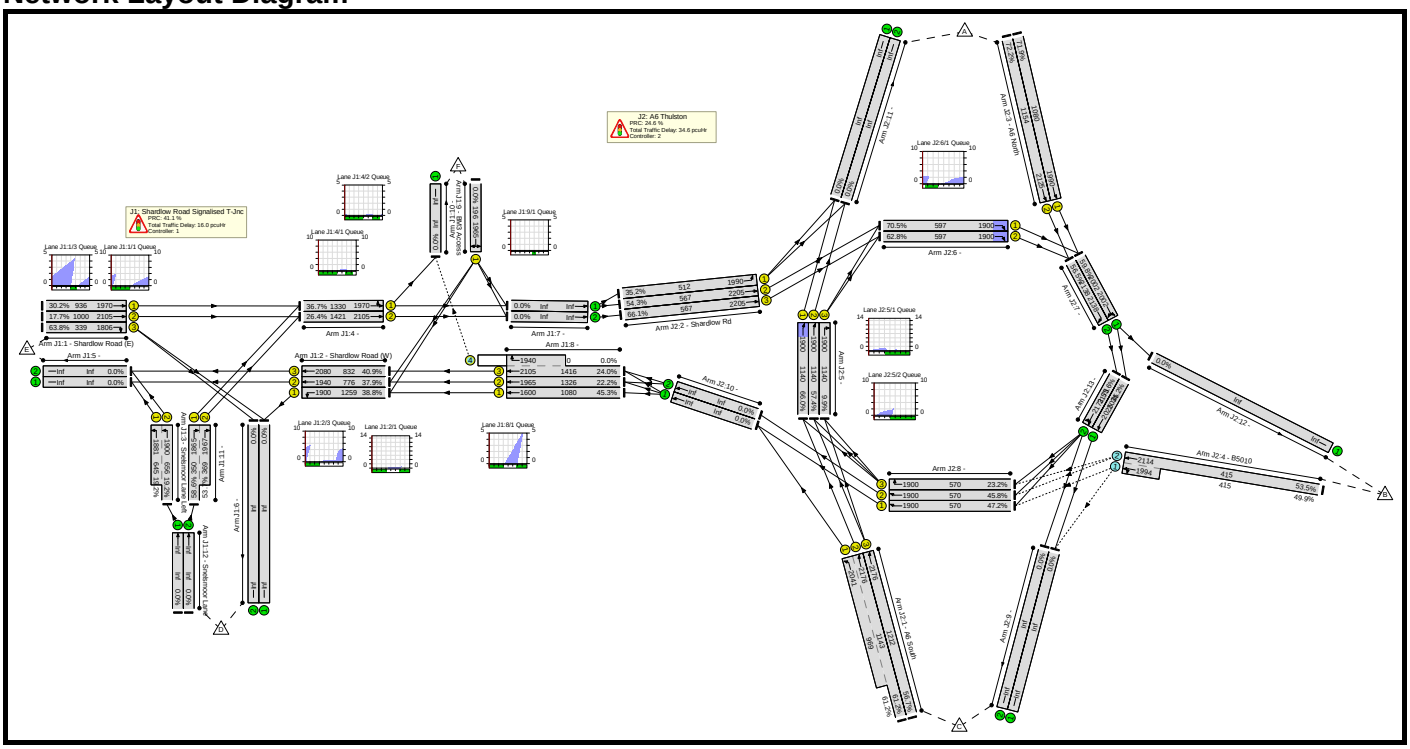
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	51.9	Total Delay for Signalled Lanes (pcuHr):	13.67	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	35.5	Total Delay for Signalled Lanes (pcuHr):	11.71	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	38.4	Total Delay for Signalled Lanes (pcuHr):	7.29	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	67.7	Total Delay for Signalled Lanes (pcuHr):	7.57	Cycle Time (s):	70
		PRC Over All Lanes (%):	35.5	Total Delay Over All Lanes(pcuHr):	42.59		

Basic Results Summary

Scenario 5: '2023 + Bm1 + dev PM' (FG5: '2023 + BM1 + Dev PM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.2%**	**858**	**0**	**0**	**50.6**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**63.8%**	**0**	**0**	**0**	**16.0**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	37	-	283	1970	936	30.2%	-	-	-	1.2	15.6	4.1
1/2	Shardlow Road (E) Ahead	U	C1:A		1	37	-	177	2105	1000	17.7%	-	-	-	0.7	14.2	2.3
1/3	Shardlow Road (E) Right	U	C1:D		1	14	-	216	1806	339	63.8%	-	-	-	2.7	44.5	5.2
2/1	Shardlow Road (W) Left	U	C1:M		1	52	-	489	1900	1259	38.8%	-	-	-	0.5	3.9	1.0
2/2	Shardlow Road (W) Ahead	U	C1:B		1	31	-	294	1940	776	37.9%	-	-	-	1.3	15.7	4.9
2/3	Shardlow Road (W) Ahead	U	C1:B		1	31	-	340	2080	832	40.9%	-	-	-	1.5	15.8	5.7
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	34	-	250	1900:1881	656+645	19.2 : 19.2%	-	-	-	1.1	15.3	1.8
4/1	Ahead Left	U	C1:I		2	52	-	488	1970	1330	36.7%	-	-	-	0.4	2.9	0.7
4/2	Ahead	U	C1:I		2	52	-	375	2105	1421	26.4%	-	-	-	0.2	2.4	0.5
8/1	Ahead	U	C1:J		1	53	-	489	1600	1080	45.3%	-	-	-	1.2	9.1	5.4
8/2	Ahead	U	C1:J		1	53	-	294	1965	1326	22.2%	-	-	-	0.5	6.7	2.6
8/3+8/4	Ahead Right	U+O	C1:J		1	53	-	340	2105:1940	1416+0	24.0 : 0.0%	0	0	0	0.6	6.7	3.1
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	14	-	403	1865:1967	350+369	58.6 : 53.7%	-	-	-	3.9	35.2	4.8
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.2%**	**858**	**0**	**0**	**34.6**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	38	-	1293	2176:2041	1143+969	61.2 : 61.2%	-	-	-	4.4	12.1	9.5
1/3	A6 South Ahead	U	C2:F		1	38	-	687	2176	1212	56.7%	-	-	-	2.6	13.5	9.2
2/1	Shardlow Rd Left	U	C2:B		1	17	-	180	1990	512	35.2%	-	-	-	1.3	26.7	3.1
2/2	Shardlow Rd Ahead	U	C2:B		1	17	-	308	2205	567	54.3%	-	-	-	2.5	29.4	5.7
2/3	Shardlow Rd Ahead	U	C2:B		1	17	-	375	2205	567	66.1%	-	-	-	3.4	32.6	7.4
3/1	A6 North Ahead	U	C2:D		1	37	-	777	1990	1080	71.9%	-	-	-	3.9	17.9	12.5
3/2	A6 North Ahead	U	C2:D		1	37	-	833	2125	1154	72.2%	-	-	-	4.1	17.6	13.3
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	429	2114:1994	415+415	53.5 : 49.9%	858	0	0	1.1	9.6	2.8
5/1	Ahead	U	C2:A		1	41	-	752	1900	1140	66.0%	-	-	-	1.4	6.5	2.2
5/2	Ahead	U	C2:A		1	41	-	654	1900	1140	57.4%	-	-	-	1.1	6.3	2.9
5/3	Right	U	C2:A		1	41	-	113	1900	1140	9.9%	-	-	-	0.1	2.3	0.1
6/1	Right	U	C2:C		1	21	-	421	1900	597	70.5%	-	-	-	2.2	18.4	3.5
6/2	Right	U	C2:C		1	21	-	375	1900	597	62.8%	-	-	-	1.0	9.4	1.3
7/1	Ahead Right	U	-		-	-	-	1198	2002	2002	59.8%	-	-	-	0.7	2.2	0.7
7/2	Right	U	-		-	-	-	1208	2138	2138	56.5%	-	-	-	0.6	1.9	0.6
8/1	Ahead	U	C2:E		1	20	-	269	1900	570	47.2%	-	-	-	1.4	18.4	4.3
8/2	Ahead	U	C2:E		1	20	-	261	1900	570	45.8%	-	-	-	1.3	17.8	4.2
8/3	Right	U	C2:E		1	20	-	132	1900	570	23.2%	-	-	-	0.7	20.0	1.4
13/1	Ahead	U	-		-	-	-	692	2025	2025	34.2%	-	-	-	0.3	1.3	0.3
13/2	Right Ahead	U	-		-	-	-	1208	2173	2173	55.6%	-	-	-	0.6	1.9	0.6

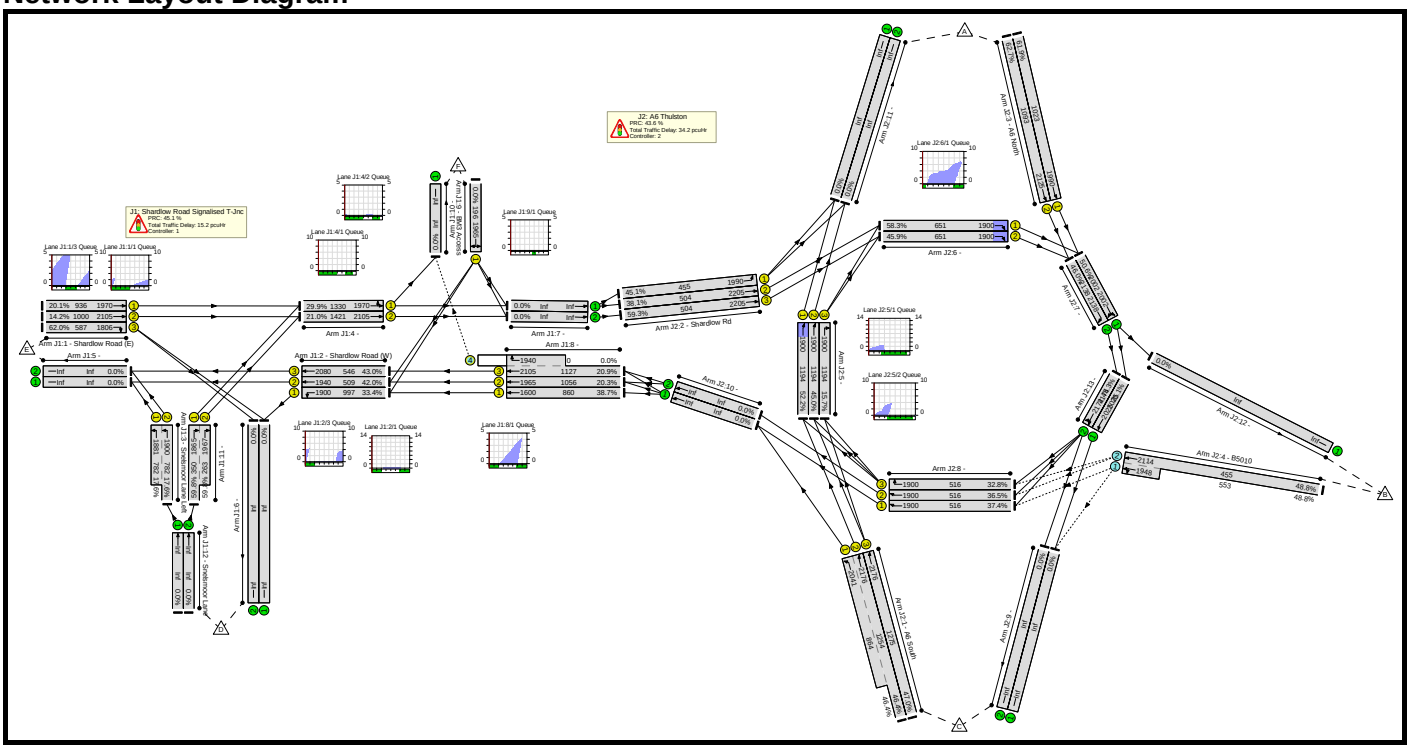
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	41.1	Total Delay for Signalled Lanes (pcuHr):	15.97	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	36.1	Total Delay for Signalled Lanes (pcuHr):	9.81	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	24.6	Total Delay for Signalled Lanes (pcuHr):	11.06	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	47.0	Total Delay for Signalled Lanes (pcuHr):	10.32	Cycle Time (s):	70
		PRC Over All Lanes (%):	24.6	Total Delay Over All Lanes(pcuHr):	50.58		

Basic Results Summary

Scenario 6: '2023 + Bm1 + dev Weekend' (FG6: '2023 + BM1 + Dev Weekend', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**62.7%**	**984**	**0**	**0**	**49.3**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**62.0%**	**0**	**0**	**0**	**15.2**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	37	-	188	1970	936	20.1%	-	-	-	0.8	14.6	2.5
1/2	Shardlow Road (E) Ahead	U	C1:A		1	37	-	142	2105	1000	14.2%	-	-	-	0.5	13.9	1.9
1/3	Shardlow Road (E) Right	U	C1:D		1	25	-	364	1806	587	62.0%	-	-	-	3.1	30.8	7.6
2/1	Shardlow Road (W) Left	U	C1:M		1	41	-	333	1900	997	33.4%	-	-	-	0.5	5.0	0.7
2/2	Shardlow Road (W) Ahead	U	C1:B		1	20	-	214	1940	509	42.0%	-	-	-	1.2	20.9	4.3
2/3	Shardlow Road (W) Ahead	U	C1:B		1	20	-	235	2080	546	43.0%	-	-	-	1.3	20.7	4.7
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	45	-	276	1900:1881	782+782	17.6 : 17.6%	-	-	-	0.7	9.2	1.5
4/1	Ahead Left	U	C1:I		2	52	-	397	1970	1330	29.9%	-	-	-	0.3	2.6	0.5
4/2	Ahead	U	C1:I		2	52	-	299	2105	1421	21.0%	-	-	-	0.2	2.3	0.4
8/1	Ahead	U	C1:J		1	42	-	333	1600	860	38.7%	-	-	-	1.3	14.2	4.6
8/2	Ahead	U	C1:J		1	42	-	214	1965	1056	20.3%	-	-	-	0.7	11.8	2.6
8/3+8/4	Ahead Right	U+O	C1:J		1	42	-	235	2105:1940	1127+0	20.9 : 0.0%	0	0	0	0.8	11.7	2.8
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	14	-	366	1865:1967	350+263	59.8 : 59.8%	-	-	-	3.7	36.6	5.0
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**62.7%**	**984**	**0**	**0**	**34.2**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	40	-	983	2176:2041	1254+864	46.4 : 46.4%	-	-	-	2.6	9.5	6.7
1/3	A6 South Ahead	U	C2:F		1	40	-	599	2176	1275	47.0%	-	-	-	1.8	11.0	7.1
2/1	Shardlow Rd Left	U	C2:B		1	15	-	205	1990	455	45.1%	-	-	-	1.7	30.4	3.8
2/2	Shardlow Rd Ahead	U	C2:B		1	15	-	192	2205	504	38.1%	-	-	-	1.5	28.6	3.5
2/3	Shardlow Rd Ahead	U	C2:B		1	15	-	299	2205	504	59.3%	-	-	-	2.7	32.8	5.9
3/1	A6 North Ahead	U	C2:D		1	35	-	634	1990	1023	61.9%	-	-	-	2.9	16.7	9.4
3/2	A6 North Ahead	U	C2:D		1	35	-	685	2125	1093	62.7%	-	-	-	3.2	16.6	10.4
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	492	2114:1948	455+553	48.8 : 48.8%	984	0	0	0.8	6.0	2.5
5/1	Ahead	U	C2:A		1	43	-	624	1900	1194	52.2%	-	-	-	1.2	7.1	3.1
5/2	Ahead	U	C2:A		1	43	-	538	1900	1194	45.0%	-	-	-	1.2	7.8	4.0
5/3	Right	U	C2:A		1	43	-	188	1900	1194	15.7%	-	-	-	0.3	5.1	0.7
6/1	Right	U	C2:C		1	23	-	380	1900	651	58.3%	-	-	-	3.7	35.4	7.5
6/2	Right	U	C2:C		1	23	-	299	1900	651	45.9%	-	-	-	4.0	48.6	6.0
7/1	Ahead Right	U	-		-	-	-	1014	2002	2002	50.6%	-	-	-	0.5	1.8	0.5
7/2	Right	U	-		-	-	-	984	2138	2138	46.0%	-	-	-	0.4	1.6	0.4
8/1	Ahead	U	C2:E		1	18	-	193	1900	516	37.4%	-	-	-	2.0	36.5	3.9
8/2	Ahead	U	C2:E		1	18	-	188	1900	516	36.5%	-	-	-	1.9	36.3	3.8
8/3	Right	U	C2:E		1	18	-	169	1900	516	32.8%	-	-	-	1.1	23.3	2.8
13/1	Ahead	U	-		-	-	-	407	2025	2025	20.1%	-	-	-	0.1	1.1	0.1
13/2	Right Ahead	U	-		-	-	-	984	2174	2174	45.3%	-	-	-	0.4	1.5	0.4

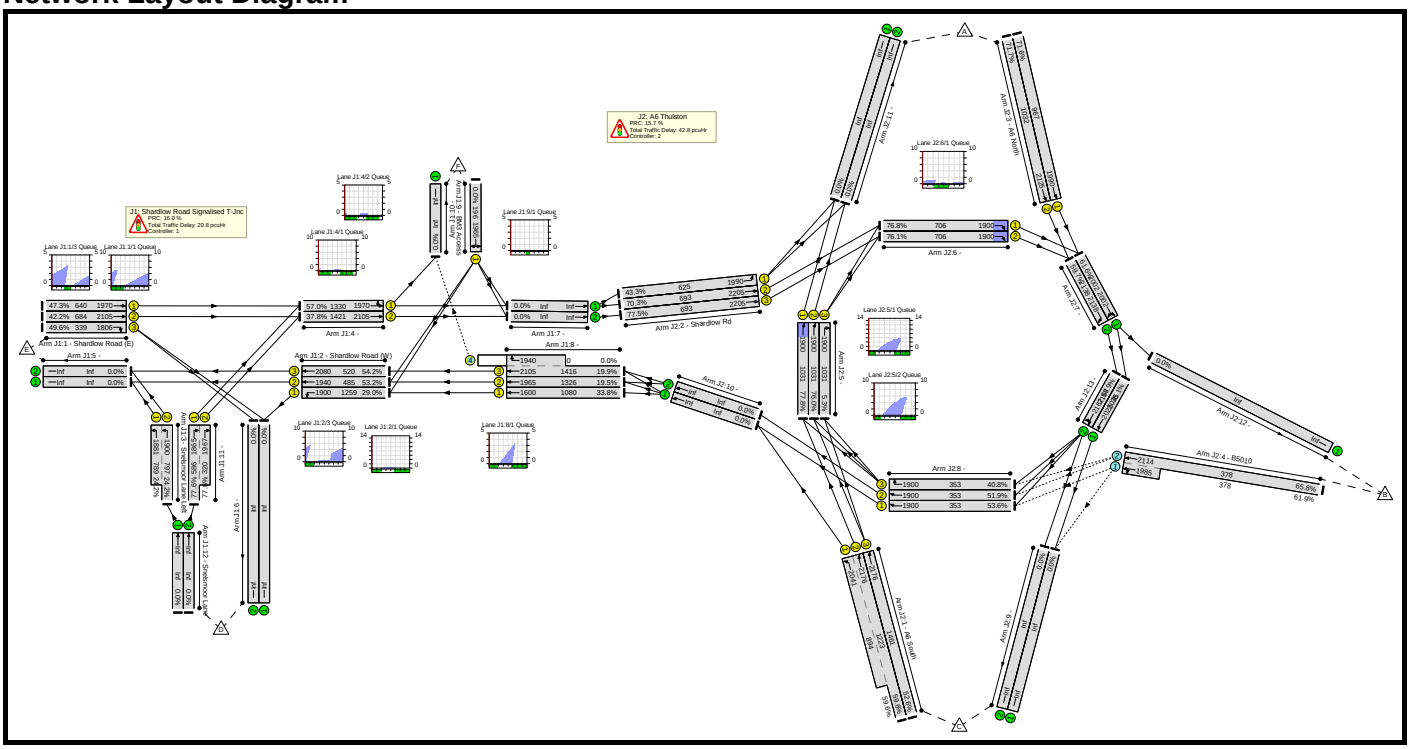
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	45.1	Total Delay for Signalled Lanes (pcuHr):	15.16	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	51.7	Total Delay for Signalled Lanes (pcuHr):	8.64	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	43.6	Total Delay for Signalled Lanes (pcuHr):	13.87	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	91.5	Total Delay for Signalled Lanes (pcuHr):	9.36	Cycle Time (s):	70
		PRC Over All Lanes (%):	43.6	Total Delay Over All Lanes(pcuHr):	49.33		

Basic Results Summary

Scenario 7: '2028 + CD AM' (FG7: '2028 + Com Dev AM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.8%**	**966**	**0**	**0**	**63.6**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.6%**	**0**	**0**	**0**	**20.8**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	25	-	303	1970	640	47.3%	-	-	-	2.3	26.9	5.8
1/2	Shardlow Road (E) Ahead	U	C1:A		1	25	-	289	2105	684	42.2%	-	-	-	2.1	25.7	5.3
1/3	Shardlow Road (E) Right	U	C1:D		1	14	-	168	1806	339	49.6%	-	-	-	1.8	39.6	3.8
2/1	Shardlow Road (W) Left	U	C1:M		1	52	-	365	1900	1259	29.0%	-	-	-	0.4	3.6	0.7
2/2	Shardlow Road (W) Ahead	U	C1:B		1	19	-	258	1940	485	53.2%	-	-	-	2.1	29.0	5.5
2/3	Shardlow Road (W) Ahead	U	C1:B		1	19	-	282	2080	520	54.2%	-	-	-	2.2	28.7	6.0
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	46	-	384	1900:1881	797+789	24.2 : 24.2%	-	-	-	1.0	9.1	2.1
4/1	Ahead Left	U	C1:I		2	52	-	758	1970	1330	57.0%	-	-	-	0.8	3.8	1.3
4/2	Ahead	U	C1:I		2	52	-	537	2105	1421	37.8%	-	-	-	0.4	2.7	0.7
8/1	Ahead	U	C1:J		1	53	-	365	1600	1080	33.8%	-	-	-	0.8	8.0	3.6
8/2	Ahead	U	C1:J		1	53	-	258	1965	1326	19.5%	-	-	-	0.5	6.6	2.2
8/3+8/4	Ahead Right	U+O	C1:J		1	53	-	282	2105:1940	1416+0	19.9 : 0.0%	0	0	0	0.5	6.5	2.5
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	26	-	703	1865:1967	586+320	77.6 : 77.6%	-	-	-	6.0	30.8	10.6
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.8%**	**966**	**0**	**0**	**42.8**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	46	-	1262	2176:2041	1223+894	59.6 : 59.6%	-	-	-	2.6	7.5	7.6
1/3	A6 South Ahead	U	C2:F		1	46	-	768	2176	1461	52.6%	-	-	-	1.8	8.4	8.0
2/1	Shardlow Rd Left	U	C2:B		1	21	-	271	1990	625	43.3%	-	-	-	1.8	24.1	4.5
2/2	Shardlow Rd Ahead	U	C2:B		1	21	-	487	2205	693	70.3%	-	-	-	4.0	29.8	9.4
2/3	Shardlow Rd Ahead	U	C2:B		1	21	-	537	2205	693	77.5%	-	-	-	4.9	33.1	11.1
3/1	A6 North Ahead	U	C2:D		1	33	-	692	1990	967	71.6%	-	-	-	4.0	20.7	11.8
3/2	A6 North Ahead	U	C2:D		1	33	-	740	2125	1032	71.7%	-	-	-	4.2	20.3	12.6
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	483	2114:1985	378+378	65.8 : 61.9%	966	0	0	1.5	11.4	3.2
5/1	Ahead	U	C2:A		1	37	-	802	1900	1031	77.8%	-	-	-	3.5	15.9	7.4
5/2	Ahead	U	C2:A		1	37	-	784	1900	1031	76.0%	-	-	-	3.3	15.2	7.1
5/3	Right	U	C2:A		1	37	-	55	1900	1031	5.3%	-	-	-	0.1	8.4	0.4
6/1	Right	U	C2:C		1	25	-	542	1900	706	76.8%	-	-	-	2.1	14.2	2.8
6/2	Right	U	C2:C		1	25	-	537	1900	706	76.1%	-	-	-	1.7	11.4	2.4
7/1	Ahead Right	U	-		-	-	-	1234	2002	2002	61.6%	-	-	-	0.8	2.3	0.8
7/2	Right	U	-		-	-	-	1277	2138	2138	59.7%	-	-	-	0.7	2.1	0.7
8/1	Ahead	U	C2:E		1	12	-	189	1900	353	53.6%	-	-	-	1.7	32.7	4.0
8/2	Ahead	U	C2:E		1	12	-	183	1900	353	51.9%	-	-	-	1.6	32.1	3.9
8/3	Right	U	C2:E		1	12	-	144	1900	353	40.8%	-	-	-	1.1	28.7	2.8
13/1	Ahead	U	-		-	-	-	732	2025	2025	36.1%	-	-	-	0.3	1.4	0.3
13/2	Right Ahead	U	-		-	-	-	1277	2167	2167	58.9%	-	-	-	0.7	2.0	0.7

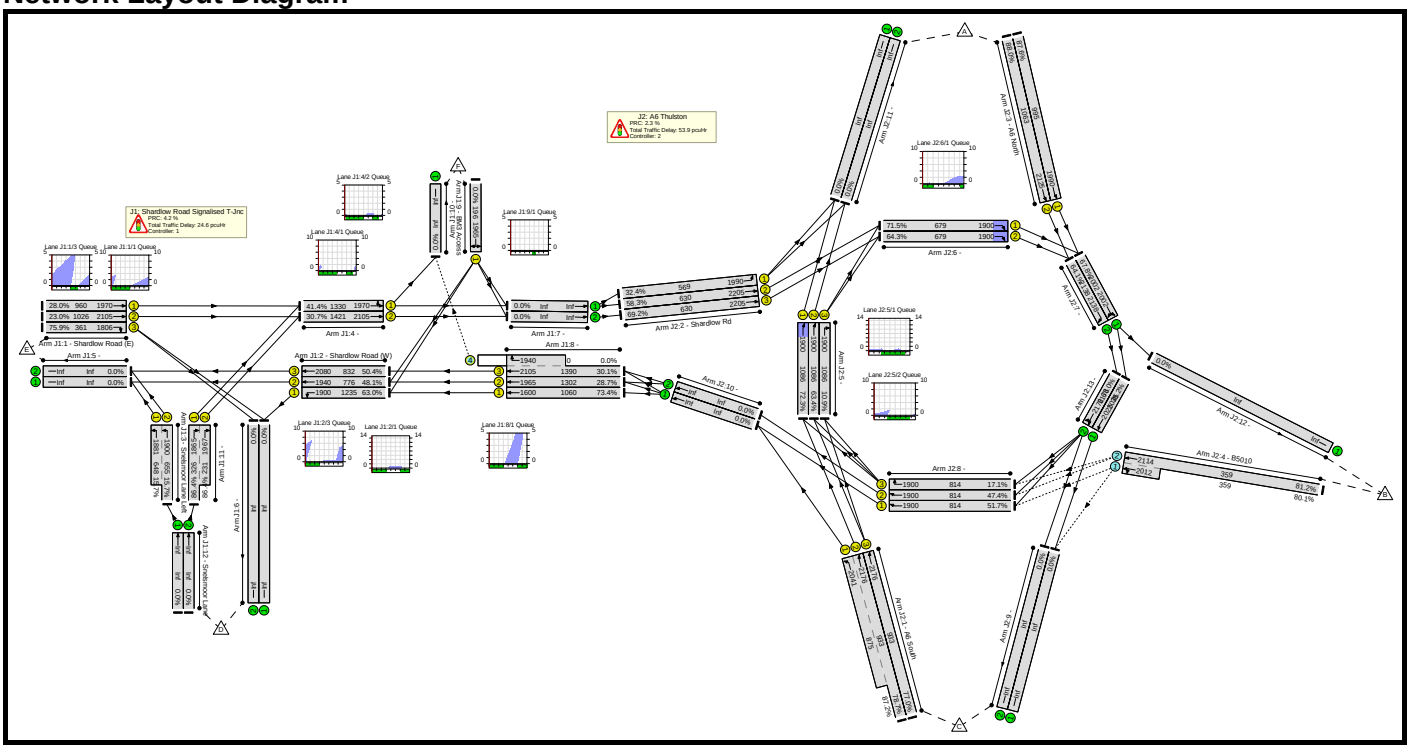
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	16.0	Total Delay for Signalled Lanes (pcuHr):	20.84	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	15.7	Total Delay for Signalled Lanes (pcuHr):	17.76	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	17.2	Total Delay for Signalled Lanes (pcuHr):	12.00	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	51.0	Total Delay for Signalled Lanes (pcuHr):	8.94	Cycle Time (s):	70
		PRC Over All Lanes (%):	15.7	Total Delay Over All Lanes(pcuHr):	63.61		

Basic Results Summary

Scenario 8: '2028 + CD PM' (FG8: '2028 + Com Dev PM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.0%**	**1160**	**0**	**0**	**78.5**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.4%**	**0**	**0**	**0**	**24.6**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	38	-	269	1970	960	28.0%	-	-	-	1.1	14.8	3.7
1/2	Shardlow Road (E) Ahead	U	C1:A		1	38	-	236	2105	1026	23.0%	-	-	-	0.9	14.1	3.2
1/3	Shardlow Road (E) Right	U	C1:D		1	15	-	274	1806	361	75.9%	-	-	-	3.8	50.1	7.2
2/1	Shardlow Road (W) Left	U	C1:M		1	51	-	778	1900	1235	63.0%	-	-	-	1.2	5.6	1.9
2/2	Shardlow Road (W) Ahead	U	C1:B		1	31	-	373	1940	776	48.1%	-	-	-	1.7	16.7	6.6
2/3	Shardlow Road (W) Ahead	U	C1:B		1	31	-	419	2080	832	50.4%	-	-	-	1.9	16.7	7.5
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	34	-	205	1900:1881	655+648	15.7 : 15.7%	-	-	-	0.9	15.0	1.4
4/1	Ahead Left	U	C1:I		2	52	-	551	1970	1330	41.4%	-	-	-	0.6	3.8	2.0
4/2	Ahead	U	C1:I		2	52	-	436	2105	1421	30.7%	-	-	-	0.3	2.5	0.5
8/1	Ahead	U	C1:J		1	52	-	778	1600	1060	73.4%	-	-	-	3.3	15.2	12.6
8/2	Ahead	U	C1:J		1	52	-	373	1965	1302	28.7%	-	-	-	0.8	7.6	3.6
8/3+8/4	Ahead Right	U+O	C1:J		1	52	-	419	2105:1940	1390+0	30.1 : 0.0%	0	0	0	0.9	7.5	4.1
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	13	-	482	1865:1967	326+231	86.4 : 86.4%	-	-	-	7.1	53.4	9.0
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.0%**	**1160**	**0**	**0**	**53.9**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	29	-	1497	2176:2041	933+875	78.7 : 87.2%	-	-	-	9.8	23.5	15.7
1/3	A6 South Ahead	U	C2:F		1	29	-	718	2176	933	77.0%	-	-	-	5.1	25.3	13.4
2/1	Shardlow Rd Left	U	C2:B		1	19	-	184	1990	569	32.4%	-	-	-	1.2	24.4	3.1
2/2	Shardlow Rd Ahead	U	C2:B		1	19	-	367	2205	630	58.3%	-	-	-	2.9	28.2	6.7
2/3	Shardlow Rd Ahead	U	C2:B		1	19	-	436	2205	630	69.2%	-	-	-	3.8	31.4	8.6
3/1	A6 North Ahead	U	C2:D		1	34	-	872	1990	995	87.6%	-	-	-	7.1	29.5	18.4
3/2	A6 North Ahead	U	C2:D		1	34	-	935	2125	1063	88.0%	-	-	-	7.5	29.0	19.6
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	580	2114:2012	359+359	81.2 : 80.1%	1160	0	0	3.6	22.2	6.7
5/1	Ahead	U	C2:A		1	39	-	785	1900	1086	72.3%	-	-	-	1.7	7.8	2.3
5/2	Ahead	U	C2:A		1	39	-	688	1900	1086	63.4%	-	-	-	1.3	6.6	2.6
5/3	Right	U	C2:A		1	39	-	118	1900	1086	10.9%	-	-	-	0.1	2.3	0.1
6/1	Right	U	C2:C		1	24	-	485	1900	679	71.5%	-	-	-	2.0	15.1	3.7
6/2	Right	U	C2:C		1	24	-	436	1900	679	64.3%	-	-	-	1.1	8.7	1.5
7/1	Ahead Right	U	-		-	-	-	1357	2002	2002	67.8%	-	-	-	1.0	2.8	1.0
7/2	Right	U	-		-	-	-	1371	2138	2138	64.1%	-	-	-	0.9	2.3	0.9
8/1	Ahead	U	C2:E		1	29	-	421	1900	814	51.7%	-	-	-	1.7	14.2	5.6
8/2	Ahead	U	C2:E		1	29	-	386	1900	814	47.4%	-	-	-	1.4	13.5	5.3
8/3	Right	U	C2:E		1	29	-	139	1900	814	17.1%	-	-	-	0.6	14.9	1.2
13/1	Ahead	U	-		-	-	-	773	2025	2025	38.2%	-	-	-	0.3	1.4	0.3
13/2	Right Ahead	U	-		-	-	-	1371	2176	2176	63.0%	-	-	-	0.8	2.2	0.8

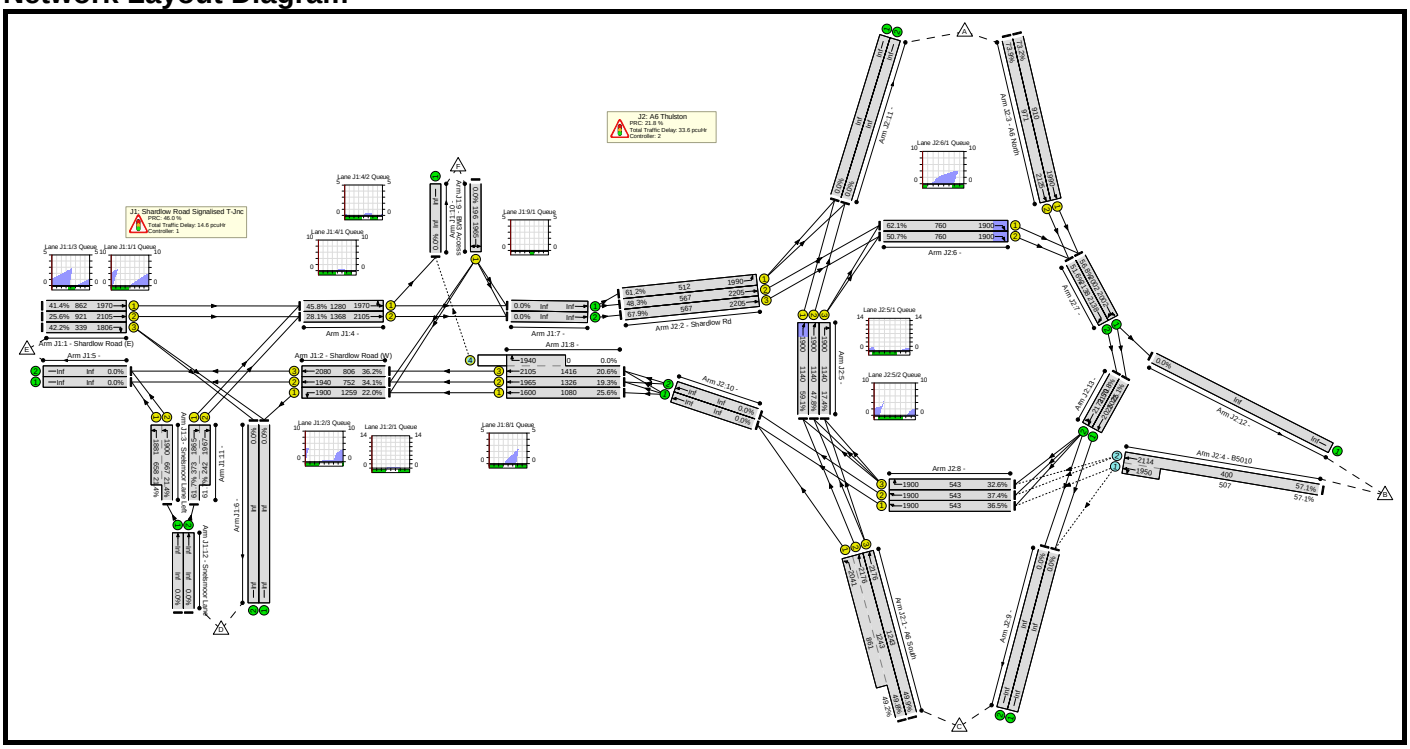
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	4.2	Total Delay for Signalled Lanes (pcuHr):	24.56	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	24.5	Total Delay for Signalled Lanes (pcuHr):	10.96	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	2.3	Total Delay for Signalled Lanes (pcuHr):	17.76	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	3.2	Total Delay for Signalled Lanes (pcuHr):	18.49	Cycle Time (s):	70
		PRC Over All Lanes (%):	2.3	Total Delay Over All Lanes(pcuHr):	78.46		

Basic Results Summary

Scenario 9: '2028 + CD Weekend' (FG9: '2028 + com Dev Weekend', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.9%**	**1034**	**0**	**0**	**48.1**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**61.7%**	**0**	**0**	**0**	**14.6**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	34	-	357	1970	862	41.4%	-	-	-	1.9	19.0	5.7
1/2	Shardlow Road (E) Ahead	U	C1:A		1	34	-	236	2105	921	25.6%	-	-	-	1.1	16.9	3.4
1/3	Shardlow Road (E) Right	U	C1:D		1	14	-	143	1806	339	42.2%	-	-	-	1.5	37.9	3.1
2/1	Shardlow Road (W) Left	U	C1:M		1	52	-	277	1900	1259	22.0%	-	-	-	0.3	3.4	0.5
2/2	Shardlow Road (W) Ahead	U	C1:B		1	30	-	256	1940	752	34.1%	-	-	-	1.1	16.1	4.2
2/3	Shardlow Road (W) Ahead	U	C1:B		1	30	-	292	2080	806	36.2%	-	-	-	1.3	16.0	4.9
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	35	-	284	1900:1881	667+658	21.4 : 21.4%	-	-	-	1.2	14.8	2.0
4/1	Ahead Left	U	C1:I		2	50	-	587	1970	1280	45.8%	-	-	-	0.6	3.4	0.9
4/2	Ahead	U	C1:I		2	50	-	385	2105	1368	28.1%	-	-	-	0.3	2.6	0.5
8/1	Ahead	U	C1:J		1	53	-	277	1600	1080	25.6%	-	-	-	0.6	7.4	2.6
8/2	Ahead	U	C1:J		1	53	-	256	1965	1326	19.3%	-	-	-	0.5	6.5	2.2
8/3+8/4	Ahead Right	U+O	C1:J		1	53	-	292	2105:1940	1416+0	20.6 : 0.0%	0	0	0	0.5	6.5	2.6
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	15	-	379	1865:1967	373+242	61.7 : 61.7%	-	-	-	3.8	36.2	5.5
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.9%**	**1034**	**0**	**0**	**33.6**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	39	-	1043	2176:2041	1243+861	49.8 : 49.2%	-	-	-	3.0	10.3	7.5
1/3	A6 South Ahead	U	C2:F		1	39	-	621	2176	1243	49.9%	-	-	-	2.0	11.9	7.6
2/1	Shardlow Rd Left	U	C2:B		1	17	-	313	1990	512	61.2%	-	-	-	2.8	31.9	6.1
2/2	Shardlow Rd Ahead	U	C2:B		1	17	-	274	2205	567	48.3%	-	-	-	2.1	28.2	5.0
2/3	Shardlow Rd Ahead	U	C2:B		1	17	-	385	2205	567	67.9%	-	-	-	3.5	33.2	7.8
3/1	A6 North Ahead	U	C2:D		1	31	-	666	1990	910	73.2%	-	-	-	4.2	22.8	11.9
3/2	A6 North Ahead	U	C2:D		1	31	-	718	2125	971	73.9%	-	-	-	4.5	22.6	12.8
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	517	2114:1950	400+507	57.1 : 57.1%	1034	0	0	1.2	8.6	3.3
5/1	Ahead	U	C2:A		1	41	-	674	1900	1140	59.1%	-	-	-	1.1	6.1	2.1
5/2	Ahead	U	C2:A		1	41	-	545	1900	1140	47.8%	-	-	-	1.2	7.8	4.8
5/3	Right	U	C2:A		1	41	-	198	1900	1140	17.4%	-	-	-	0.1	2.7	0.2
6/1	Right	U	C2:C		1	27	-	472	1900	760	62.1%	-	-	-	2.3	17.6	4.7
6/2	Right	U	C2:C		1	27	-	385	1900	760	50.7%	-	-	-	0.6	5.3	1.0
7/1	Ahead Right	U	-		-	-	-	1138	2002	2002	56.8%	-	-	-	0.7	2.1	0.7
7/2	Right	U	-		-	-	-	1103	2138	2138	51.6%	-	-	-	0.5	1.7	0.5
8/1	Ahead	U	C2:E		1	19	-	198	1900	543	36.5%	-	-	-	0.9	16.4	3.2
8/2	Ahead	U	C2:E		1	19	-	203	1900	543	37.4%	-	-	-	0.9	16.0	3.3
8/3	Right	U	C2:E		1	19	-	177	1900	543	32.6%	-	-	-	1.1	22.3	2.1
13/1	Ahead	U	-		-	-	-	447	2025	2025	22.1%	-	-	-	0.1	1.1	0.1
13/2	Right Ahead	U	-		-	-	-	1103	2173	2173	50.8%	-	-	-	0.5	1.7	0.5

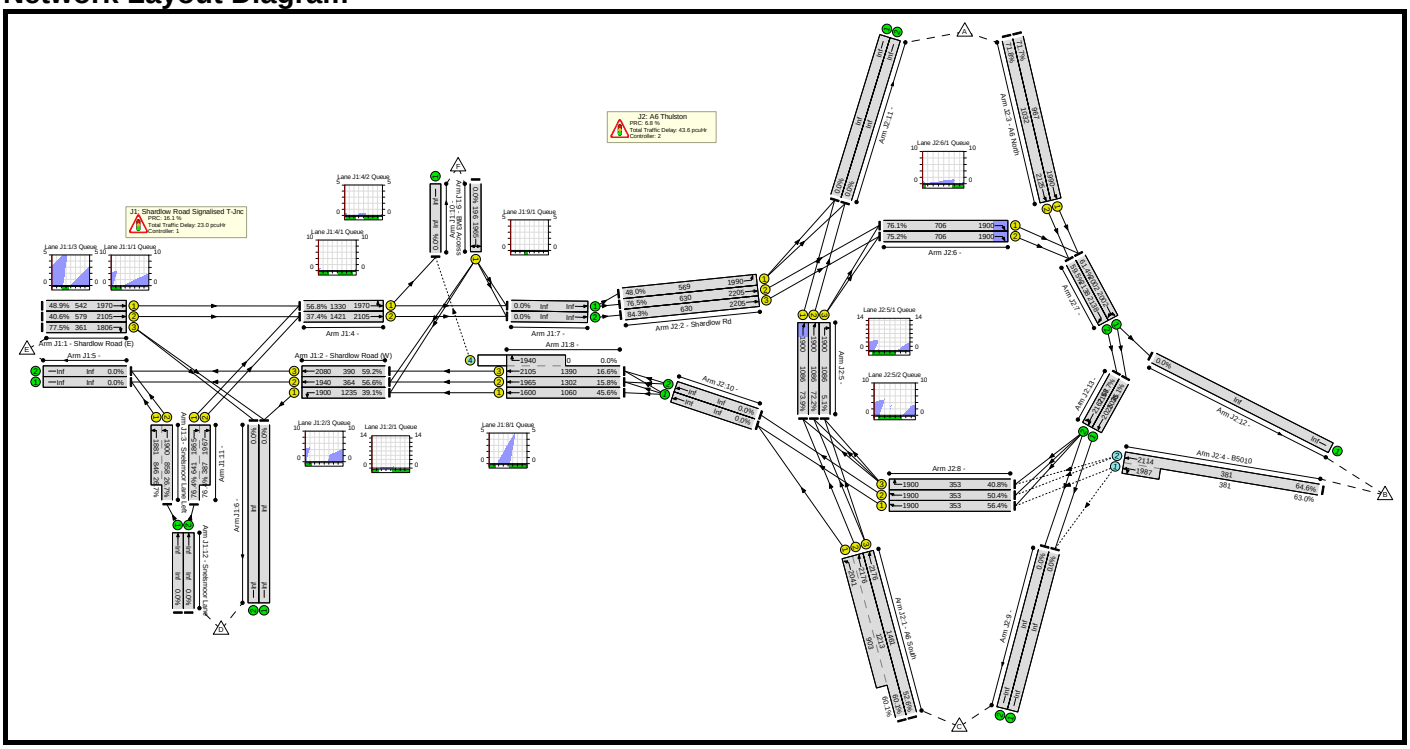
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	46.0	Total Delay for Signalled Lanes (pcuHr):	14.58	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	32.5	Total Delay for Signalled Lanes (pcuHr):	10.93	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	21.8	Total Delay for Signalled Lanes (pcuHr):	11.61	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	80.2	Total Delay for Signalled Lanes (pcuHr):	7.94	Cycle Time (s):	70
		PRC Over All Lanes (%):	21.8	Total Delay Over All Lanes(pcuHr):	48.14		

Basic Results Summary

Scenario 10: '2028 + CD + dev AM' (FG10: '2028 + Com Dev + Dev AM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.3%**	**972**	**0**	**0**	**66.7**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.5%**	**0**	**0**	**0**	**23.0**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	21	-	265	1970	542	48.9%	-	-	-	2.3	30.8	5.4
1/2	Shardlow Road (E) Ahead	U	C1:A		1	21	-	235	2105	579	40.6%	-	-	-	1.9	28.9	4.6
1/3	Shardlow Road (E) Right	U	C1:D		1	15	-	280	1806	361	77.5%	-	-	-	4.0	51.6	7.5
2/1	Shardlow Road (W) Left	U	C1:M		1	51	-	483	1900	1235	39.1%	-	-	-	0.5	4.0	1.0
2/2	Shardlow Road (W) Ahead	U	C1:B		1	14	-	206	1940	364	56.6%	-	-	-	2.0	35.8	4.8
2/3	Shardlow Road (W) Ahead	U	C1:B		1	14	-	231	2080	390	59.2%	-	-	-	2.3	35.8	5.4
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	51	-	455	1900:1881	858+846	26.7 : 26.7%	-	-	-	0.9	7.0	2.2
4/1	Ahead Left	U	C1:I		2	52	-	755	1970	1330	56.8%	-	-	-	0.8	3.7	1.3
4/2	Ahead	U	C1:I		2	52	-	531	2105	1421	37.4%	-	-	-	0.4	2.7	0.7
8/1	Ahead	U	C1:J		1	52	-	483	1600	1060	45.6%	-	-	-	1.3	9.6	5.5
8/2	Ahead	U	C1:J		1	52	-	206	1965	1302	15.8%	-	-	-	0.4	6.7	1.8
8/3+8/4	Ahead Right	U+O	C1:J		1	52	-	231	2105:1940	1390+0	16.6 : 0.0%	0	0	0	0.4	6.7	2.0
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	30	-	786	1865:1967	641+387	76.4 : 76.4%	-	-	-	5.8	26.7	10.6
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.3%**	**972**	**0**	**0**	**43.6**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	46	-	1272	2176:2041	1213+903	60.1 : 60.1%	-	-	-	2.7	7.6	7.6
1/3	A6 South Ahead	U	C2:F		1	46	-	768	2176	1461	52.6%	-	-	-	1.8	8.4	8.0
2/1	Shardlow Rd Left	U	C2:B		1	19	-	273	1990	569	48.0%	-	-	-	2.0	26.8	4.8
2/2	Shardlow Rd Ahead	U	C2:B		1	19	-	482	2205	630	76.5%	-	-	-	4.7	34.8	10.0
2/3	Shardlow Rd Ahead	U	C2:B		1	19	-	531	2205	630	84.3%	-	-	-	6.0	40.8	12.1
3/1	A6 North Ahead	U	C2:D		1	33	-	693	1990	967	71.7%	-	-	-	4.0	20.7	11.8
3/2	A6 North Ahead	U	C2:D		1	33	-	741	2125	1032	71.8%	-	-	-	4.2	20.3	12.6
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	486	2114:1987	381+381	64.6 : 63.0%	972	0	0	1.6	11.5	3.1
5/1	Ahead	U	C2:A		1	39	-	802	1900	1086	73.9%	-	-	-	2.9	13.0	6.3
5/2	Ahead	U	C2:A		1	39	-	784	1900	1086	72.2%	-	-	-	2.7	12.5	6.2
5/3	Right	U	C2:A		1	39	-	55	1900	1086	5.1%	-	-	-	0.1	7.1	0.3
6/1	Right	U	C2:C		1	25	-	537	1900	706	76.1%	-	-	-	2.1	14.3	2.8
6/2	Right	U	C2:C		1	25	-	531	1900	706	75.2%	-	-	-	1.8	12.0	2.4
7/1	Ahead Right	U	-		-	-	-	1230	2002	2002	61.4%	-	-	-	0.8	2.3	0.8
7/2	Right	U	-		-	-	-	1272	2138	2138	59.5%	-	-	-	0.7	2.1	0.7
8/1	Ahead	U	C2:E		1	12	-	199	1900	353	56.4%	-	-	-	1.8	33.4	4.3
8/2	Ahead	U	C2:E		1	12	-	178	1900	353	50.4%	-	-	-	1.6	31.6	3.8
8/3	Right	U	C2:E		1	12	-	144	1900	353	40.8%	-	-	-	1.1	28.7	2.8
13/1	Ahead	U	-		-	-	-	731	2025	2025	36.1%	-	-	-	0.3	1.4	0.3
13/2	Right Ahead	U	-		-	-	-	1272	2167	2167	58.7%	-	-	-	0.7	2.0	0.7

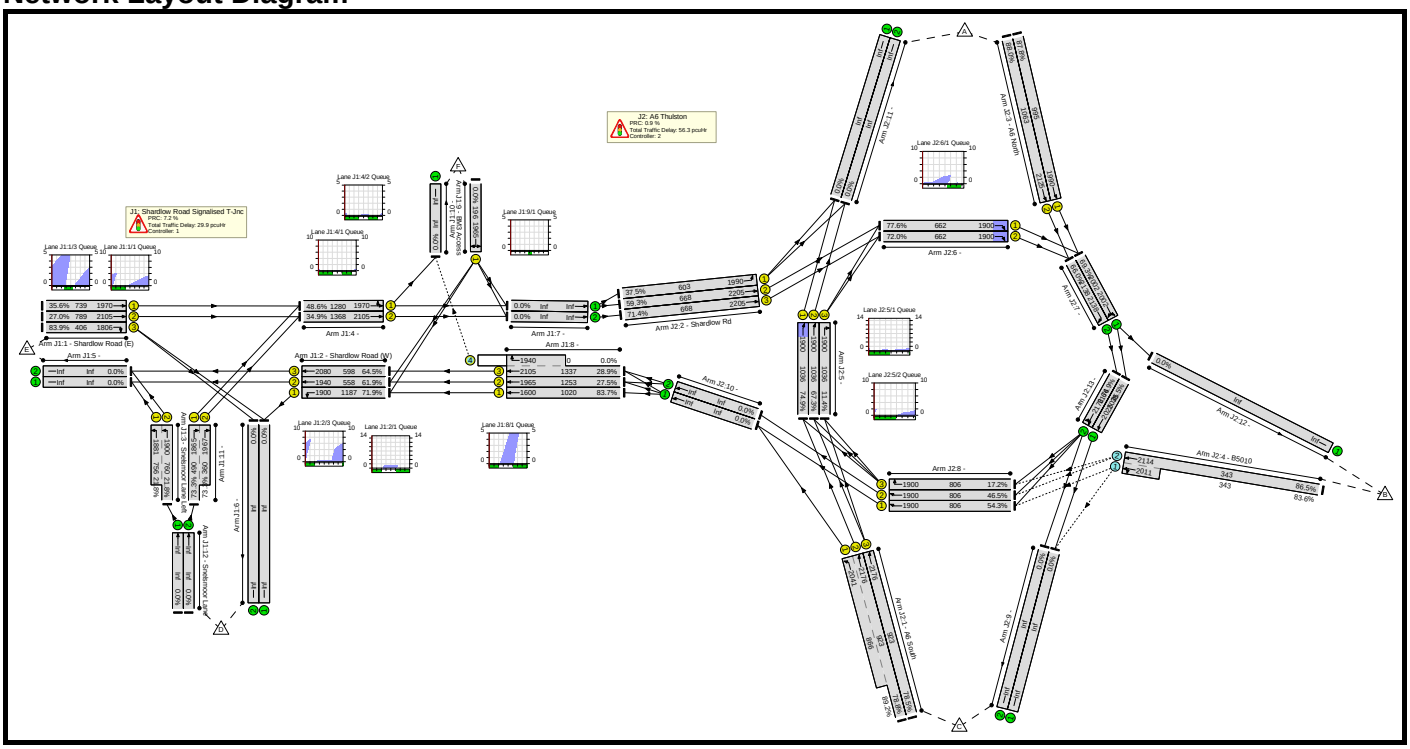
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	16.1	Total Delay for Signalled Lanes (pcuHr):	23.04	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	6.8	Total Delay for Signalled Lanes (pcuHr):	18.44	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	18.3	Total Delay for Signalled Lanes (pcuHr):	12.08	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	49.7	Total Delay for Signalled Lanes (pcuHr):	9.04	Cycle Time (s):	70
		PRC Over All Lanes (%):	6.8	Total Delay Over All Lanes(pcuHr):	66.67		

Basic Results Summary

Scenario 11: '2028 + CD + dev PM' (FG11: '2028 + Com Dev + Dev PM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.2%**	**1168**	**0**	**0**	**86.2**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.9%**	**0**	**0**	**0**	**29.9**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	29	-	263	1970	739	35.6%	-	-	-	1.6	21.8	4.4
1/2	Shardlow Road (E) Ahead	U	C1:A		1	29	-	213	2105	789	27.0%	-	-	-	1.2	20.5	3.4
1/3	Shardlow Road (E) Right	U	C1:D		1	17	-	341	1806	406	83.9%	-	-	-	5.2	55.3	9.6
2/1	Shardlow Road (W) Left	U	C1:M		1	49	-	854	1900	1187	71.9%	-	-	-	1.7	7.1	2.5
2/2	Shardlow Road (W) Ahead	U	C1:B		1	22	-	345	1940	558	61.9%	-	-	-	2.6	26.7	7.4
2/3	Shardlow Road (W) Ahead	U	C1:B		1	22	-	386	2080	598	64.5%	-	-	-	2.9	26.9	8.3
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	43	-	331	1900:1881	760+756	21.8 : 21.8%	-	-	-	1.0	10.4	1.9
4/1	Ahead Left	U	C1:I		2	50	-	622	1970	1280	48.6%	-	-	-	0.6	3.4	1.0
4/2	Ahead	U	C1:I		2	50	-	477	2105	1368	34.9%	-	-	-	0.4	2.7	0.6
8/1	Ahead	U	C1:J		1	50	-	854	1600	1020	83.7%	-	-	-	5.2	21.8	17.2
8/2	Ahead	U	C1:J		1	50	-	345	1965	1253	27.5%	-	-	-	0.8	8.4	3.5
8/3+8/4	Ahead Right	U+O	C1:J		1	50	-	386	2105:1940	1337+0	28.9 : 0.0%	0	0	0	0.9	8.3	4.0
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	20	-	623	1865:1967	490+360	73.3 : 73.3%	-	-	-	5.9	34.0	8.6
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.2%**	**1168**	**0**	**0**	**56.3**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	27	-	1499	2176:2041	923+866	78.8 : 89.2%	-	-	-	9.6	23.1	15.6
1/3	A6 South Ahead	U	C2:F		1	27	-	725	2176	923	78.5%	-	-	-	5.1	25.3	13.1
2/1	Shardlow Rd Left	U	C2:B		1	19	-	226	1990	603	37.5%	-	-	-	1.4	22.9	3.5
2/2	Shardlow Rd Ahead	U	C2:B		1	19	-	396	2205	668	59.3%	-	-	-	2.9	26.1	6.9
2/3	Shardlow Rd Ahead	U	C2:B		1	19	-	477	2205	668	71.4%	-	-	-	3.9	29.8	8.9
3/1	A6 North Ahead	U	C2:D		1	32	-	874	1990	995	87.8%	-	-	-	7.0	28.8	17.5
3/2	A6 North Ahead	U	C2:D		1	32	-	935	2125	1063	88.0%	-	-	-	7.3	28.1	18.5
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	584	2114:2011	343+343	86.5 : 83.6%	1168	0	0	4.2	26.1	7.6
5/1	Ahead	U	C2:A		1	35	-	776	1900	1036	74.9%	-	-	-	2.0	9.1	2.6
5/2	Ahead	U	C2:A		1	35	-	697	1900	1036	67.3%	-	-	-	1.5	7.8	2.9
5/3	Right	U	C2:A		1	35	-	118	1900	1036	11.4%	-	-	-	0.1	2.9	0.1
6/1	Right	U	C2:C		1	22	-	514	1900	662	77.6%	-	-	-	2.6	18.0	4.2
6/2	Right	U	C2:C		1	22	-	477	1900	662	72.0%	-	-	-	1.6	12.3	1.9
7/1	Ahead Right	U	-		-	-	-	1388	2002	2002	69.3%	-	-	-	1.1	2.9	1.1
7/2	Right	U	-		-	-	-	1412	2138	2138	66.0%	-	-	-	1.0	2.5	1.0
8/1	Ahead	U	C2:E		1	27	-	438	1900	806	54.3%	-	-	-	1.8	14.4	5.9
8/2	Ahead	U	C2:E		1	27	-	375	1900	806	46.5%	-	-	-	1.4	13.5	4.8
8/3	Right	U	C2:E		1	27	-	139	1900	806	17.2%	-	-	-	0.6	14.5	1.2
13/1	Ahead	U	-		-	-	-	779	2025	2025	38.5%	-	-	-	0.3	1.4	0.3
13/2	Right Ahead	U	-		-	-	-	1412	2176	2176	64.9%	-	-	-	0.9	2.4	0.9

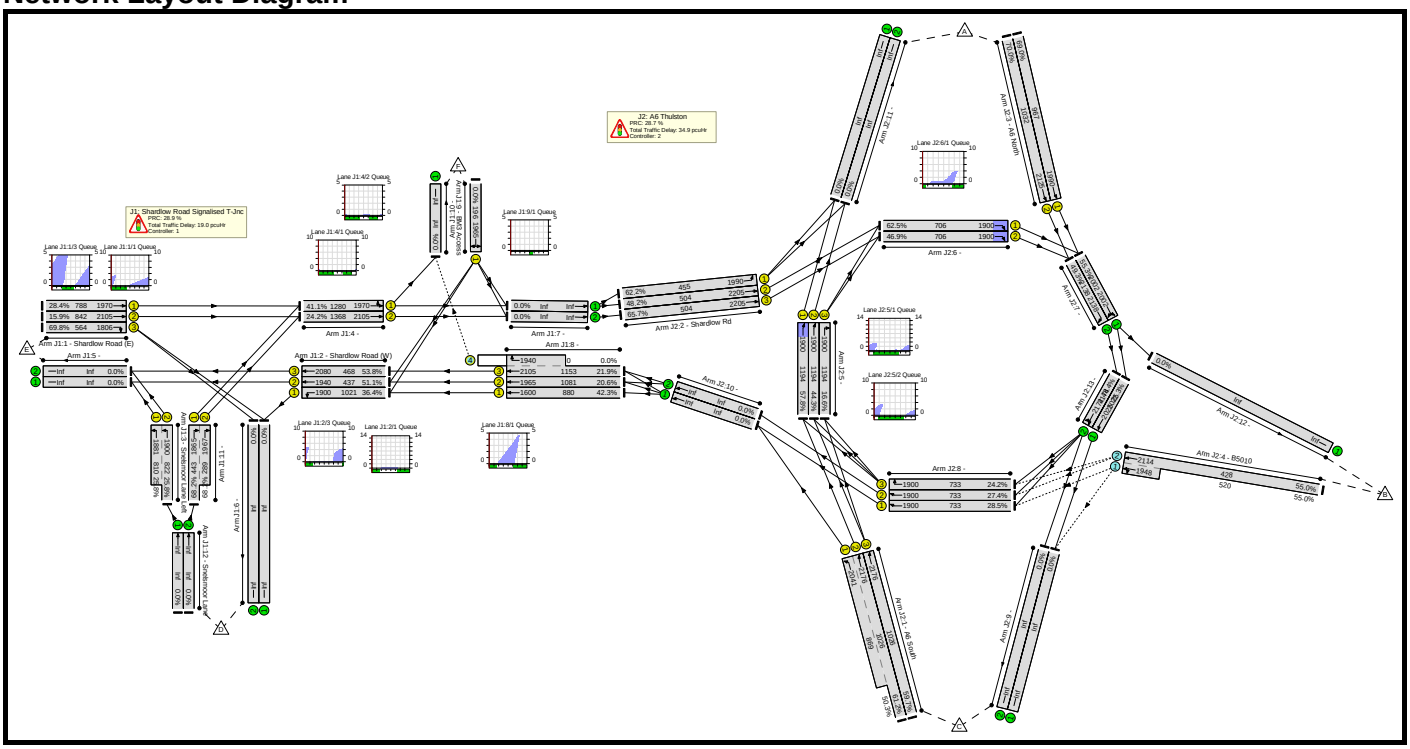
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	7.2	Total Delay for Signalled Lanes (pcuHr):	29.85	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	20.2	Total Delay for Signalled Lanes (pcuHr):	11.81	Cycle Time (s):	66
C2	Stream: 2	PRC for Signalled Lanes (%):	2.3	Total Delay for Signalled Lanes (pcuHr):	18.50	Cycle Time (s):	66
C2	Stream: 3	PRC for Signalled Lanes (%):	0.9	Total Delay for Signalled Lanes (pcuHr):	18.46	Cycle Time (s):	66
		PRC Over All Lanes (%):	0.9	Total Delay Over All Lanes(pcuHr):	86.18		

Basic Results Summary

Scenario 12: '2028 + CD + dev Weekend' (FG12: '2028 + Com Dev + Dev Weekend', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.0%**	**1042**	**0**	**0**	**54.0**	**-**	**-**
J1: Shardlow Road Signalised T-Jnc	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**69.8%**	**0**	**0**	**0**	**19.0**	**-**	**-**
1/1	Shardlow Road (E) Ahead	U	C1:A		1	31	-	224	1970	788	28.4%	-	-	-	1.2	19.4	3.6
1/2	Shardlow Road (E) Ahead	U	C1:A		1	31	-	134	2105	842	15.9%	-	-	-	0.7	17.9	2.0
1/3	Shardlow Road (E) Right	U	C1:D		1	24	-	394	1806	564	69.8%	-	-	-	3.8	34.6	8.8
2/1	Shardlow Road (W) Left	U	C1:M		1	42	-	372	1900	1021	36.4%	-	-	-	0.5	5.0	0.8
2/2	Shardlow Road (W) Ahead	U	C1:B		1	17	-	223	1940	437	51.1%	-	-	-	1.6	26.4	4.9
2/3	Shardlow Road (W) Ahead	U	C1:B		1	17	-	252	2080	468	53.8%	-	-	-	1.9	26.4	5.5
3/2+3/1	Snelsmoor Lane Left Left	U	C1:E		1	48	-	421	1900:1881	822+810	25.8 : 25.8%	-	-	-	1.0	8.2	2.2
4/1	Ahead Left	U	C1:I		2	50	-	526	1970	1280	41.1%	-	-	-	0.5	3.1	0.8
4/2	Ahead	U	C1:I		2	50	-	331	2105	1368	24.2%	-	-	-	0.2	2.4	0.4
8/1	Ahead	U	C1:J		1	43	-	372	1600	880	42.3%	-	-	-	1.5	14.1	5.1
8/2	Ahead	U	C1:J		1	43	-	223	1965	1081	20.6%	-	-	-	0.7	11.2	2.6
8/3+8/4	Ahead Right	U+O	C1:J		1	43	-	252	2105:1940	1153+0	21.9 : 0.0%	0	0	0	0.8	11.2	2.9
9/1	BM3 Access Right Left	U	C1:H		1	7	-	0	1965	196	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

11/1+11/2	Right	U	C1:C		1	18	-	499	1865:1967	443+289	68.2 : 68.2%	-	-	-	4.8	34.7	7.1
J2: A6 Thulston	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.0%**	**1042**	**0**	**0**	**34.9**	**-**	**-**
1/2+1/1	A6 South Ahead Left	U	C2:F		1	32	-	1065	2176:2041	1026+869	61.2 : 50.3%	-	-	-	4.5	15.4	9.7
1/3	A6 South Ahead	U	C2:F		1	32	-	612	2176	1026	59.7%	-	-	-	3.1	17.9	9.4
2/1	Shardlow Rd Left	U	C2:B		1	15	-	283	1990	455	62.2%	-	-	-	2.7	34.7	5.7
2/2	Shardlow Rd Ahead	U	C2:B		1	15	-	243	2205	504	48.2%	-	-	-	2.0	30.3	4.5
2/3	Shardlow Rd Ahead	U	C2:B		1	15	-	331	2205	504	65.7%	-	-	-	3.2	34.8	6.7
3/1	A6 North Ahead	U	C2:D		1	33	-	667	1990	967	69.0%	-	-	-	3.7	19.9	11.1
3/2	A6 North Ahead	U	C2:D		1	33	-	722	2125	1032	70.0%	-	-	-	4.0	19.8	12.0
4/2+4/1	B5010 Ahead Left	O	-		-	-	-	521	2114:1948	428+520	55.0 : 55.0%	1042	0	0	1.1	7.9	3.2
5/1	Ahead	U	C2:A		1	43	-	690	1900	1194	57.8%	-	-	-	1.6	8.6	4.1
5/2	Ahead	U	C2:A		1	43	-	529	1900	1194	44.3%	-	-	-	1.1	7.5	3.8
5/3	Right	U	C2:A		1	43	-	198	1900	1194	16.6%	-	-	-	0.3	5.9	0.9
6/1	Right	U	C2:C		1	25	-	441	1900	706	62.5%	-	-	-	1.8	14.7	4.8
6/2	Right	U	C2:C		1	25	-	331	1900	706	46.9%	-	-	-	0.6	6.0	0.8
7/1	Ahead Right	U	-		-	-	-	1108	2002	2002	55.3%	-	-	-	0.6	2.0	0.6
7/2	Right	U	-		-	-	-	1053	2138	2138	49.3%	-	-	-	0.5	1.7	0.5
8/1	Ahead	U	C2:E		1	26	-	209	1900	733	28.5%	-	-	-	1.4	23.9	3.9
8/2	Ahead	U	C2:E		1	26	-	201	1900	733	27.4%	-	-	-	1.3	23.8	3.7
8/3	Right	U	C2:E		1	26	-	177	1900	733	24.2%	-	-	-	0.7	14.5	2.5
13/1	Ahead	U	-		-	-	-	451	2025	2025	22.3%	-	-	-	0.1	1.1	0.1
13/2	Right Ahead	U	-		-	-	-	1053	2174	2174	48.4%	-	-	-	0.5	1.6	0.5

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	28.9	Total Delay for Signalled Lanes (pcuHr):	19.05	Cycle Time (s):	80
C2	Stream: 1	PRC for Signalled Lanes (%):	37.0	Total Delay for Signalled Lanes (pcuHr):	11.04	Cycle Time (s):	70
C2	Stream: 2	PRC for Signalled Lanes (%):	28.7	Total Delay for Signalled Lanes (pcuHr):	10.01	Cycle Time (s):	70
C2	Stream: 3	PRC for Signalled Lanes (%):	47.0	Total Delay for Signalled Lanes (pcuHr):	11.03	Cycle Time (s):	70
		PRC Over All Lanes (%):	28.7	Total Delay Over All Lanes(pcuHr):	53.98		

Appendix N

Junction 3 – Proposed District Centre Roundabout ARCADY output files

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
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Filename: Junction 3 - District Centre Access.j9
Path: M:\E702 Boulton Moor, DERBYSHIRE_\TECHNICAL\TRAFFIC\ARCADY\District Centre
Report generation date: 22/10/2021 13:25:48

»1 - 2023 + BM1 + Dev, AM
»1 - 2023 + BM1 + Dev, PM
»1 - 2023 + BM1 + Dev, Sat
»1 - 2028 + BM1 + Dev, AM
»1 - 2028 + BM1 + Dev, PM
»1 - 2028 + BM1 + Dev, Sat

Summary of junction performance

	AM					PM					Sat				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
	1 - 2023 + BM1 + Dev														
Arm 1	D4	0.3	1.94	0.22	A	D5	0.5	2.27	0.33	A	D6	0.4	2.14	0.29	A
Arm 2		0.1	2.74	0.13	A		0.3	3.55	0.22	A		0.3	3.31	0.24	A
Arm 3		0.5	2.66	0.33	A		0.3	2.52	0.26	A		0.4	2.58	0.27	A
Arm 4		0.1	6.26	0.08	A		0.0	5.59	0.02	A		0.0	5.76	0.02	A
	1 - 2028 + BM1 + Dev														
Arm 1	D10	0.5	2.26	0.33	A	D11	1.2	3.41	0.55	A	D12	0.5	2.25	0.32	A
Arm 2		0.2	3.17	0.14	A		0.4	5.46	0.31	A		0.3	3.48	0.25	A
Arm 3		1.8	4.92	0.64	A		0.7	3.18	0.42	A		0.8	3.30	0.43	A
Arm 4		0.2	13.55	0.15	B		0.0	0.00	0.00	A		0.0	7.66	0.03	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	E702 - Proposed DS Roundabout
Location	Boulton Moor
Site number	
Date	30/09/2020
Version	PL001
Status	Planning
Identifier	
Client	
Jobnumber	E702
Enumerator	CANNON\dsmy
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2023 + BM1 + Dev	AM	ONE HOUR	07:15	08:45	15
D5	2023 + BM1 + Dev	PM	ONE HOUR	16:30	18:00	15
D6	2023 + BM1 + Dev	Sat	ONE HOUR	12:00	13:30	15
D10	2028 + BM1 + Dev	AM	ONE HOUR	07:15	08:45	15
D11	2028 + BM1 + Dev	PM	ONE HOUR	16:30	18:00	15
D12	2028 + BM1 + Dev	Sat	ONE HOUR	12:00	13:30	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	1	100.000

1 - 2023 + BM1 + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 3 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	2.53	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Snelsmoor (N)	
2	Site Access	
3	Snelsmoor (S)	
4	Woods Meadow	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	7.30	8.20	7.2	18.8	38.8	27.0	
2	3.65	6.30	15.8	20.0	38.8	14.0	
3	3.65	8.10	46.0	14.0	38.8	25.0	
4	3.00	3.80	3.8	12.0	38.8	30.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.792	2424
2	0.665	1719
3	0.729	2128
4	0.498	1019

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2023 + BM1 + Dev	AM	ONE HOUR	07:15	08:45	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	475	100.000
2		✓	172	100.000
3		✓	613	100.000
4		✓	43	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	177	284	14
	2	111	0	61	0
	3	562	51	0	0
	4	43	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.22	1.94	0.3	A
2	0.13	2.74	0.1	A
3	0.33	2.66	0.5	A
4	0.08	6.26	0.1	A

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	358	38	2394	0.149	357	0.2	1.767	A
2	129	224	1570	0.082	129	0.1	2.498	A
3	461	94	2059	0.224	460	0.3	2.250	A
4	32	544	749	0.043	32	0.0	5.023	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	427	46	2388	0.179	427	0.2	1.834	A
2	155	268	1541	0.100	155	0.1	2.596	A
3	551	112	2046	0.269	551	0.4	2.407	A
4	39	650	695	0.056	39	0.1	5.481	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	523	56	2380	0.220	523	0.3	1.938	A
2	189	328	1501	0.126	189	0.1	2.744	A
3	675	138	2028	0.333	674	0.5	2.660	A
4	47	797	623	0.076	47	0.1	6.257	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	523	56	2380	0.220	523	0.3	1.938	A
2	189	328	1501	0.126	189	0.1	2.744	A
3	675	138	2027	0.333	675	0.5	2.661	A
4	47	797	622	0.076	47	0.1	6.260	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	427	46	2388	0.179	427	0.2	1.835	A
2	155	268	1541	0.100	155	0.1	2.597	A
3	551	112	2046	0.269	552	0.4	2.411	A
4	39	651	695	0.056	39	0.1	5.488	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	358	38	2394	0.149	358	0.2	1.767	A
2	129	224	1570	0.083	130	0.1	2.499	A
3	461	94	2059	0.224	462	0.3	2.253	A
4	32	545	748	0.043	32	0.0	5.034	A

1 - 2023 + BM1 + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 3 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	2.61	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2023 + BM1 + Dev	PM	ONE HOUR	16:30	18:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	710	100.000
2		✓	264	100.000
3		✓	455	100.000
4		✓	14	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	143	524	43
	2	202	0	62	0
	3	391	64	0	0
	4	14	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.33	2.27	0.5	A
2	0.22	3.55	0.3	A
3	0.26	2.52	0.3	A
4	0.02	5.59	0.0	A

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	535	48	2386	0.224	533	0.3	1.942	A
2	199	426	1436	0.138	198	0.2	2.907	A
3	343	184	1994	0.172	342	0.2	2.178	A
4	11	493	774	0.014	10	0.0	4.716	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	638	58	2379	0.268	638	0.4	2.068	A
2	237	509	1380	0.172	237	0.2	3.149	A
3	409	220	1967	0.208	409	0.3	2.309	A
4	13	590	725	0.017	13	0.0	5.050	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	782	70	2368	0.330	781	0.5	2.268	A
2	291	624	1304	0.223	290	0.3	3.552	A
3	501	269	1931	0.259	501	0.3	2.516	A
4	15	723	659	0.023	15	0.0	5.589	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	782	70	2368	0.330	782	0.5	2.268	A
2	291	624	1304	0.223	291	0.3	3.553	A
3	501	270	1931	0.259	501	0.3	2.516	A
4	15	723	659	0.023	15	0.0	5.592	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	638	58	2379	0.268	639	0.4	2.071	A
2	237	510	1380	0.172	238	0.2	3.155	A
3	409	221	1967	0.208	409	0.3	2.313	A
4	13	591	725	0.017	13	0.0	5.053	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	535	48	2386	0.224	535	0.3	1.944	A
2	199	427	1435	0.139	199	0.2	2.915	A
3	343	185	1993	0.172	343	0.2	2.182	A
4	11	495	773	0.014	11	0.0	4.722	A

1 - 2023 + BM1 + Dev, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 3 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	2.58	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2023 + BM1 + Dev	Sat	ONE HOUR	12:00	13:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	612	100.000
2		✓	314	100.000
3		✓	468	100.000
4		✓	12	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	223	346	43
	2	228	0	86	0
	3	385	83	0	0
	4	12	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.29	2.14	0.4	A
2	0.24	3.31	0.3	A
3	0.27	2.58	0.4	A
4	0.02	5.76	0.0	A

Main Results for each time segment

12:00 - 12:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	461	62	2375	0.194	460	0.2	1.879	A
2	236	292	1524	0.155	236	0.2	2.792	A
3	352	203	1980	0.178	351	0.2	2.210	A
4	9	523	759	0.012	9	0.0	4.799	A

12:15 - 12:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	550	75	2365	0.233	550	0.3	1.983	A
2	282	350	1486	0.190	282	0.2	2.989	A
3	421	243	1950	0.216	420	0.3	2.353	A
4	11	625	708	0.015	11	0.0	5.163	A

12:30 - 12:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	674	91	2352	0.287	673	0.4	2.144	A
2	346	428	1434	0.241	345	0.3	3.306	A
3	515	298	1910	0.270	515	0.4	2.579	A
4	13	766	638	0.021	13	0.0	5.761	A

12:45 - 13:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	674	91	2352	0.287	674	0.4	2.145	A
2	346	428	1434	0.241	346	0.3	3.307	A
3	515	298	1910	0.270	515	0.4	2.580	A
4	13	766	638	0.021	13	0.0	5.764	A

13:00 - 13:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	550	75	2365	0.233	551	0.3	1.985	A
2	282	350	1486	0.190	283	0.2	2.991	A
3	421	244	1950	0.216	421	0.3	2.354	A
4	11	626	707	0.015	11	0.0	5.167	A

13:15 - 13:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	461	63	2375	0.194	461	0.2	1.883	A
2	236	293	1524	0.155	237	0.2	2.796	A
3	352	204	1979	0.178	353	0.2	2.215	A
4	9	524	758	0.012	9	0.0	4.806	A

1 - 2028 + BM1 + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 3 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	4.05	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2028 + BM1 + Dev	AM	ONE HOUR	07:15	08:45	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	715	100.000
2		✓	172	100.000
3		✓	1177	100.000
4		✓	43	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	177	524	14
	2	111	0	61	0
	3	1126	51	0	0
	4	43	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.33	2.26	0.5	A
2	0.14	3.17	0.2	A
3	0.64	4.92	1.8	A
4	0.15	13.55	0.2	B

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	538	38	2394	0.225	537	0.3	1.938	A
2	129	404	1450	0.089	129	0.1	2.725	A
3	886	94	2059	0.430	883	0.8	3.053	A
4	32	966	538	0.060	32	0.1	7.113	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	643	46	2388	0.269	642	0.4	2.062	A
2	155	483	1397	0.111	155	0.1	2.896	A
3	1058	112	2046	0.517	1057	1.1	3.634	A
4	39	1157	443	0.087	39	0.1	8.892	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	787	56	2380	0.331	787	0.5	2.260	A
2	189	592	1325	0.143	189	0.2	3.169	A
3	1296	138	2028	0.639	1293	1.7	4.883	A
4	47	1415	314	0.151	47	0.2	13.451	B

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	787	56	2380	0.331	787	0.5	2.260	A
2	189	592	1325	0.143	189	0.2	3.169	A
3	1296	138	2027	0.639	1296	1.8	4.920	A
4	47	1418	313	0.151	47	0.2	13.553	B

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	643	46	2388	0.269	643	0.4	2.065	A
2	155	484	1397	0.111	155	0.1	2.900	A
3	1058	112	2046	0.517	1061	1.1	3.663	A
4	39	1161	441	0.088	39	0.1	8.957	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	538	38	2394	0.225	539	0.3	1.942	A
2	129	405	1449	0.089	130	0.1	2.729	A
3	886	94	2059	0.430	887	0.8	3.077	A
4	32	971	536	0.060	33	0.1	7.155	A

1 - 2028 + BM1 + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 3 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.58	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D11	2028 + BM1 + Dev	PM	ONE HOUR	16:30	18:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	1193	100.000
2		✓	264	100.000
3		✓	757	100.000
4		✓	0	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	143	1050	0
	2	202	0	62	0
	3	693	64	0	0
	4	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.55	3.41	1.2	A
2	0.31	5.46	0.4	A
3	0.42	3.18	0.7	A
4	0.00	0.00	0.0	A

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	898	48	2386	0.376	896	0.6	2.411	A
2	199	788	1194	0.166	198	0.2	3.609	A
3	570	151	2017	0.283	568	0.4	2.482	A
4	0	720	661	0.000	0	0.0	0.000	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1072	57	2379	0.451	1072	0.8	2.753	A
2	237	943	1091	0.217	237	0.3	4.212	A
3	681	181	1996	0.341	680	0.5	2.736	A
4	0	861	590	0.000	0	0.0	0.000	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1314	70	2368	0.555	1312	1.2	3.400	A
2	291	1155	951	0.306	290	0.4	5.444	A
3	833	222	1966	0.424	833	0.7	3.175	A
4	0	1055	494	0.000	0	0.0	0.000	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1314	70	2368	0.555	1313	1.2	3.411	A
2	291	1156	950	0.306	291	0.4	5.460	A
3	833	222	1966	0.424	833	0.7	3.178	A
4	0	1056	493	0.000	0	0.0	0.000	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	1072	58	2379	0.451	1074	0.8	2.764	A
2	237	945	1090	0.218	238	0.3	4.229	A
3	681	182	1995	0.341	681	0.5	2.741	A
4	0	863	589	0.000	0	0.0	0.000	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	898	48	2386	0.376	899	0.6	2.421	A
2	199	791	1193	0.167	199	0.2	3.624	A
3	570	152	2017	0.283	570	0.4	2.489	A
4	0	723	659	0.000	0	0.0	0.000	A

1 - 2028 + BM1 + Dev, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 3 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	2.96	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D12	2028 + BM1 + Dev	Sat	ONE HOUR	12:00	13:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	685	100.000
2		✓	314	100.000
3		✓	746	100.000
4		✓	14	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1	2	3	4
From	1	0	223	419	43
	2	228	0	86	0
	3	663	83	0	0
	4	14	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.32	2.25	0.5	A
2	0.25	3.48	0.3	A
3	0.43	3.30	0.8	A
4	0.03	7.66	0.0	A

Main Results for each time segment

12:00 - 12:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	516	62	2375	0.217	515	0.3	1.934	A
2	236	347	1488	0.159	236	0.2	2.873	A
3	562	203	1980	0.284	560	0.4	2.534	A
4	11	731	655	0.016	10	0.0	5.583	A

12:15 - 12:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	616	75	2365	0.260	616	0.4	2.057	A
2	282	415	1443	0.196	282	0.2	3.101	A
3	671	243	1950	0.344	670	0.5	2.810	A
4	13	875	584	0.022	13	0.0	6.304	A

12:30 - 12:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	754	91	2352	0.321	754	0.5	2.252	A
2	346	508	1381	0.250	345	0.3	3.477	A
3	821	298	1910	0.430	820	0.7	3.299	A
4	15	1071	486	0.032	15	0.0	7.653	A

12:45 - 13:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	754	91	2352	0.321	754	0.5	2.252	A
2	346	509	1380	0.250	346	0.3	3.478	A
3	821	298	1910	0.430	821	0.8	3.305	A
4	15	1072	485	0.032	15	0.0	7.662	A

13:00 - 13:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	616	75	2365	0.260	616	0.4	2.060	A
2	282	416	1442	0.196	283	0.2	3.104	A
3	671	244	1950	0.344	672	0.5	2.817	A
4	13	877	583	0.022	13	0.0	6.317	A

13:15 - 13:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	516	63	2375	0.217	516	0.3	1.936	A
2	236	348	1487	0.159	237	0.2	2.880	A
3	562	204	1979	0.284	562	0.4	2.541	A
4	11	734	654	0.016	11	0.0	5.598	A

Appendix O

Junction 4 – Existing PHL Roundabout ARCADY output files.

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
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Filename: Junction 3 - PHL roundabout Site Access.j9
Path: M:\E702 Boulton Moor, DERBYSHIRE_\TECHNICAL\TRAFFIC\ARCADY\District Centre
Report generation date: 22/10/2021 13:26:53

»(Default Analysis Set) - 2023 + BM1, AM
»(Default Analysis Set) - 2023 + BM1, PM
»(Default Analysis Set) - 2023 + BM1, Sat
»(Default Analysis Set) - 2023 + BM1 + DEV, AM
»(Default Analysis Set) - 2023 + BM1 + DEV, PM
»(Default Analysis Set) - 2023 + BM1 + DEV, Sat
»(Default Analysis Set) - 2028 + CD, AM
»(Default Analysis Set) - 2028 + CD, PM
»(Default Analysis Set) - 2028 + CD, Sat
»(Default Analysis Set) - 2028 + CD + DEV, AM
»(Default Analysis Set) - 2028 + CD + DEV, PM
»(Default Analysis Set) - 2028 + CD + DEV, Sat

Summary of junction performance

	AM					PM					Sat				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2023 + BM1														
Arm 1	D1	0.3	2.98	0.22	A	D2	0.7	3.86	0.40	A	D3	0.4	3.20	0.27	A
Arm 2		0.2	4.20	0.14	A		0.1	4.69	0.12	A		0.0	4.07	0.05	A
Arm 3		0.5	4.31	0.34	A		0.3	3.70	0.25	A		0.4	3.79	0.29	A
	A1 - 2023 + BM1 + DEV														
Arm 1	D4	0.3	3.07	0.24	A	D5	0.8	4.15	0.44	A	D6	0.4	3.25	0.29	A
Arm 2		0.3	4.62	0.22	A		0.2	5.01	0.18	A		0.1	4.37	0.11	A
Arm 3		0.6	4.56	0.36	A		0.3	3.82	0.25	A		0.4	3.94	0.30	A
	A1 - 2028 + CD														
Arm 1	D7	0.6	3.71	0.37	A	D8	2.7	8.69	0.73	A	D9	0.5	3.45	0.33	A
Arm 2		0.2	4.95	0.16	A		0.2	7.48	0.18	A		0.1	4.49	0.09	A
Arm 3		4.7	16.65	0.83	C		0.4	3.76	0.26	A		1.0	5.46	0.49	A
	A1 - 2028 + CD + DEV														
Arm 1	D10	0.7	3.85	0.40	A	D11	3.4	10.29	0.77	B	D12	0.5	3.51	0.34	A
Arm 2		0.3	5.55	0.25	A		0.4	8.34	0.26	A		0.2	4.86	0.16	A
Arm 3		5.9	20.96	0.86	C		0.4	3.88	0.27	A		1.0	5.77	0.51	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	Junction 6 - BM1 Northern Access
Location	
Site number	
Date	18/06/2015
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	E702
Enumerator	Dean
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2023 + BM1	AM	ONE HOUR	07:45	09:15	15
D2	2023 + BM1	PM	ONE HOUR	16:45	18:15	15
D3	2023 + BM1	Sat	ONE HOUR	11:45	13:15	15
D4	2023 + BM1 + DEV	AM	ONE HOUR	07:45	09:15	15
D5	2023 + BM1 + DEV	PM	ONE HOUR	16:45	18:15	15
D6	2023 + BM1 + DEV	Sat	ONE HOUR	11:45	13:15	15
D7	2028 + CD	AM	ONE HOUR	07:45	09:15	15
D8	2028 + CD	PM	ONE HOUR	16:45	18:15	15
D9	2028 + CD	Sat	ONE HOUR	11:45	13:15	15
D10	2028 + CD + DEV	AM	ONE HOUR	07:45	09:15	15
D11	2028 + CD + DEV	PM	ONE HOUR	16:45	18:15	15
D12	2028 + CD + DEV	Sat	ONE HOUR	11:45	13:15	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	(Default Analysis Set)	100.000

(Default Analysis Set) - 2023 + BM1, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	3.80	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Chellaston Link (N)	
2	Site Access	
3	Chellaston Link (S)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.80	6.20	10.0	18.0	33.0	31.0	
2	3.70	3.70	0.0	25.0	33.0	24.0	
3	3.65	4.50	10.0	29.0	33.0	24.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.621	1549
2	0.553	1155
3	0.595	1356

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2023 + BM1	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	310	100.000
2		✓	125	100.000
3		✓	398	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	47	263
	2	125	0	0
	3	398	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.22	2.98	0.3	A
2	0.14	4.20	0.2	A
3	0.34	4.31	0.5	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	233	0	1549	0.151	233	0.2	2.734	A
2	94	197	1046	0.090	94	0.1	3.777	A
3	300	94	1300	0.231	298	0.3	3.590	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	279	0	1549	0.180	279	0.2	2.833	A
2	112	236	1025	0.110	112	0.1	3.945	A
3	358	112	1289	0.278	357	0.4	3.865	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	341	0	1549	0.220	341	0.3	2.980	A
2	138	289	995	0.138	137	0.2	4.196	A
3	438	137	1274	0.344	438	0.5	4.303	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	341	0	1549	0.220	341	0.3	2.980	A
2	138	290	995	0.138	138	0.2	4.197	A
3	438	138	1274	0.344	438	0.5	4.309	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	279	0	1549	0.180	279	0.2	2.837	A
2	112	237	1025	0.110	113	0.1	3.947	A
3	358	113	1289	0.278	358	0.4	3.872	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	233	0	1549	0.151	234	0.2	2.736	A
2	94	198	1046	0.090	94	0.1	3.785	A
3	300	94	1299	0.231	300	0.3	3.605	A

(Default Analysis Set) - 2023 + BM1, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	3.89	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2023 + BM1	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	560	100.000
2		✓	94	100.000
3		✓	292	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	93	467
	2	94	0	0
	3	292	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.40	3.86	0.7	A
2	0.12	4.69	0.1	A
3	0.25	3.70	0.3	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	422	0	1549	0.272	420	0.4	3.185	A
2	71	350	962	0.074	70	0.1	4.039	A
3	220	70	1314	0.167	219	0.2	3.288	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	503	0	1549	0.325	503	0.5	3.440	A
2	85	419	923	0.092	84	0.1	4.290	A
3	263	84	1305	0.201	262	0.3	3.451	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	617	0	1549	0.398	616	0.7	3.856	A
2	103	514	871	0.119	103	0.1	4.687	A
3	321	103	1294	0.248	321	0.3	3.700	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	617	0	1549	0.398	617	0.7	3.861	A
2	103	514	871	0.119	103	0.1	4.689	A
3	321	103	1294	0.248	321	0.3	3.701	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	503	0	1549	0.325	504	0.5	3.447	A
2	85	420	923	0.092	85	0.1	4.294	A
3	263	85	1305	0.201	263	0.3	3.454	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	422	0	1549	0.272	422	0.4	3.197	A
2	71	352	961	0.074	71	0.1	4.046	A
3	220	71	1313	0.167	220	0.2	3.295	A

(Default Analysis Set) - 2023 + BM1, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	3.51	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2023 + BM1	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	386	100.000
2		✓	38	100.000
3		✓	347	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	8	378
	2	38	0	0
	3	347	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.27	3.20	0.4	A
2	0.05	4.07	0.0	A
3	0.29	3.79	0.4	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	291	0	1549	0.188	290	0.2	2.858	A
2	29	284	999	0.029	28	0.0	3.710	A
3	261	28	1339	0.195	260	0.2	3.335	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	347	0	1549	0.224	347	0.3	2.994	A
2	34	340	968	0.035	34	0.0	3.856	A
3	312	34	1335	0.234	312	0.3	3.517	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	425	0	1549	0.274	425	0.4	3.202	A
2	42	416	925	0.045	42	0.0	4.073	A
3	382	42	1331	0.287	382	0.4	3.791	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	425	0	1549	0.274	425	0.4	3.202	A
2	42	416	925	0.045	42	0.0	4.074	A
3	382	42	1331	0.287	382	0.4	3.794	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	347	0	1549	0.224	347	0.3	2.996	A
2	34	340	967	0.035	34	0.0	3.858	A
3	312	34	1335	0.234	312	0.3	3.520	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	291	0	1549	0.188	291	0.2	2.863	A
2	29	285	998	0.029	29	0.0	3.716	A
3	261	29	1338	0.195	261	0.2	3.345	A

(Default Analysis Set) - 2023 + BM1 + DEV, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	4.03	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2023 + BM1 + DEV	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	342	100.000
2		✓	196	100.000
3		✓	398	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	79	263
	2	196	0	0
	3	398	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.24	3.07	0.3	A
2	0.22	4.62	0.3	A
3	0.36	4.56	0.6	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	257	0	1549	0.166	257	0.2	2.785	A
2	148	197	1046	0.141	147	0.2	4.000	A
3	300	147	1268	0.236	298	0.3	3.707	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	307	0	1549	0.199	307	0.2	2.899	A
2	176	236	1025	0.172	176	0.2	4.240	A
3	358	176	1251	0.286	357	0.4	4.028	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	377	0	1549	0.243	376	0.3	3.070	A
2	216	289	995	0.217	216	0.3	4.615	A
3	438	216	1227	0.357	438	0.6	4.552	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	377	0	1549	0.243	377	0.3	3.070	A
2	216	290	995	0.217	216	0.3	4.618	A
3	438	216	1227	0.357	438	0.6	4.563	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	307	0	1549	0.199	308	0.2	2.903	A
2	176	237	1025	0.172	176	0.2	4.247	A
3	358	176	1250	0.286	358	0.4	4.039	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	257	0	1549	0.166	258	0.2	2.788	A
2	148	198	1046	0.141	148	0.2	4.010	A
3	300	148	1268	0.236	300	0.3	3.724	A

(Default Analysis Set) - 2023 + BM1 + DEV, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	4.17	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2023 + BM1 + DEV	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	619	100.000
2		✓	139	100.000
3		✓	292	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	152	467
	2	139	0	0
	3	292	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.44	4.15	0.8	A
2	0.18	5.01	0.2	A
3	0.25	3.82	0.3	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	466	0	1549	0.301	464	0.4	3.309	A
2	105	350	962	0.109	104	0.1	4.196	A
3	220	104	1294	0.170	219	0.2	3.349	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	556	0	1549	0.359	556	0.6	3.624	A
2	125	419	923	0.135	125	0.2	4.508	A
3	263	125	1281	0.205	262	0.3	3.533	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	682	0	1549	0.440	681	0.8	4.142	A
2	153	514	871	0.176	153	0.2	5.008	A
3	321	153	1265	0.254	321	0.3	3.816	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	682	0	1549	0.440	682	0.8	4.150	A
2	153	514	871	0.176	153	0.2	5.013	A
3	321	153	1264	0.254	321	0.3	3.816	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	556	0	1549	0.359	557	0.6	3.636	A
2	125	420	923	0.135	125	0.2	4.513	A
3	263	125	1281	0.205	263	0.3	3.538	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	466	0	1549	0.301	467	0.4	3.329	A
2	105	352	961	0.109	105	0.1	4.206	A
3	220	105	1293	0.170	220	0.2	3.354	A

(Default Analysis Set) - 2023 + BM1 + DEV, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	3.66	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2023 + BM1 + DEV	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	401	100.000
2		✓	93	100.000
3		✓	347	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	23	378
	2	93	0	0
	3	347	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.29	3.25	0.4	A
2	0.11	4.37	0.1	A
3	0.30	3.94	0.4	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	302	0	1549	0.195	301	0.2	2.884	A
2	70	284	999	0.070	70	0.1	3.875	A
3	261	70	1314	0.199	260	0.2	3.413	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	360	0	1549	0.233	360	0.3	3.028	A
2	84	340	968	0.086	84	0.1	4.072	A
3	312	84	1306	0.239	312	0.3	3.621	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	442	0	1549	0.285	441	0.4	3.250	A
2	102	416	925	0.111	102	0.1	4.373	A
3	382	102	1295	0.295	382	0.4	3.941	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	442	0	1549	0.285	442	0.4	3.250	A
2	102	416	925	0.111	102	0.1	4.374	A
3	382	102	1295	0.295	382	0.4	3.944	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	360	0	1549	0.233	361	0.3	3.033	A
2	84	340	967	0.086	84	0.1	4.074	A
3	312	84	1306	0.239	312	0.3	3.627	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	302	0	1549	0.195	302	0.2	2.889	A
2	70	285	998	0.070	70	0.1	3.881	A
3	261	70	1314	0.199	262	0.2	3.421	A

(Default Analysis Set) - 2028 + CD, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	11.53	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2028 + CD	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	525	100.000
2		✓	125	100.000
3		✓	963	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	47	478
	2	125	0	0
	3	963	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.37	3.71	0.6	A
2	0.16	4.95	0.2	A
3	0.83	16.65	4.7	C

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	395	0	1549	0.255	394	0.3	3.112	A
2	94	359	957	0.098	94	0.1	4.168	A
3	725	94	1300	0.558	720	1.2	6.160	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	472	0	1549	0.305	472	0.4	3.342	A
2	112	429	918	0.122	112	0.1	4.468	A
3	866	112	1289	0.672	863	2.0	8.391	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	578	0	1549	0.373	577	0.6	3.704	A
2	138	526	865	0.159	137	0.2	4.949	A
3	1060	137	1274	0.832	1050	4.5	15.440	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	578	0	1549	0.373	578	0.6	3.707	A
2	138	526	864	0.159	138	0.2	4.953	A
3	1060	138	1274	0.833	1059	4.7	16.646	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	472	0	1549	0.305	473	0.4	3.348	A
2	112	430	917	0.122	113	0.1	4.473	A
3	866	113	1289	0.672	876	2.1	8.942	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	395	0	1549	0.255	396	0.3	3.122	A
2	94	360	956	0.098	94	0.1	4.178	A
3	725	94	1299	0.558	728	1.3	6.338	A

(Default Analysis Set) - 2028 + CD, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	7.56	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2028 + CD	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1031	100.000
2		✓	94	100.000
3		✓	306	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	93	938
	2	94	0	0
	3	306	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.73	8.69	2.7	A
2	0.18	7.48	0.2	A
3	0.26	3.76	0.4	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	776	0	1549	0.501	772	1.0	4.613	A
2	71	703	767	0.092	70	0.1	5.167	A
3	230	70	1314	0.175	230	0.2	3.321	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	927	0	1549	0.598	925	1.5	5.753	A
2	85	842	690	0.122	84	0.1	5.942	A
3	275	84	1305	0.211	275	0.3	3.493	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1135	0	1549	0.733	1130	2.7	8.507	A
2	103	1028	587	0.176	103	0.2	7.441	A
3	337	103	1294	0.260	337	0.4	3.760	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1135	0	1549	0.733	1135	2.7	8.689	A
2	103	1033	584	0.177	103	0.2	7.485	A
3	337	103	1294	0.260	337	0.4	3.760	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	927	0	1549	0.598	932	1.5	5.878	A
2	85	848	687	0.123	85	0.1	5.983	A
3	275	85	1305	0.211	275	0.3	3.496	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	776	0	1549	0.501	778	1.0	4.685	A
2	71	708	764	0.093	71	0.1	5.195	A
3	230	71	1313	0.175	231	0.2	3.327	A

(Default Analysis Set) - 2028 + CD, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	4.57	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2028 + CD	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	460	100.000
2		✓	76	100.000
3		✓	587	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	16	444
	2	76	0	0
	3	587	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.33	3.45	0.5	A
2	0.09	4.49	0.1	A
3	0.49	5.46	1.0	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	346	0	1549	0.224	345	0.3	2.988	A
2	57	333	971	0.059	57	0.1	3.937	A
3	442	57	1322	0.334	440	0.5	4.074	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	414	0	1549	0.267	413	0.4	3.170	A
2	68	399	935	0.073	68	0.1	4.154	A
3	528	68	1315	0.401	527	0.7	4.565	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	506	0	1549	0.327	506	0.5	3.450	A
2	84	488	885	0.095	84	0.1	4.490	A
3	646	84	1306	0.495	645	1.0	5.439	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	506	0	1549	0.327	506	0.5	3.452	A
2	84	489	885	0.095	84	0.1	4.491	A
3	646	84	1306	0.495	646	1.0	5.458	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	414	0	1549	0.267	414	0.4	3.175	A
2	68	400	934	0.073	68	0.1	4.158	A
3	528	68	1315	0.401	529	0.7	4.589	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	346	0	1549	0.224	347	0.3	2.997	A
2	57	335	970	0.059	57	0.1	3.944	A
3	442	57	1321	0.334	443	0.5	4.100	A

(Default Analysis Set) - 2028 + CD + DEV, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	13.65	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2028 + CD + DEV	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	557	100.000
2		✓	196	100.000
3		✓	963	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	79	478
	2	196	0	0
	3	963	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.40	3.85	0.7	A
2	0.25	5.55	0.3	A
3	0.86	20.96	5.9	C

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	419	0	1549	0.271	418	0.4	3.179	A
2	148	359	957	0.154	147	0.2	4.439	A
3	725	147	1268	0.572	720	1.3	6.506	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	501	0	1549	0.323	500	0.5	3.431	A
2	176	429	918	0.192	176	0.2	4.850	A
3	866	176	1251	0.692	862	2.2	9.183	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	613	0	1549	0.396	613	0.7	3.843	A
2	216	526	865	0.250	215	0.3	5.542	A
3	1060	215	1227	0.864	1047	5.5	18.698	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	613	0	1549	0.396	613	0.7	3.847	A
2	216	526	864	0.250	216	0.3	5.550	A
3	1060	216	1227	0.864	1059	5.9	20.961	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	501	0	1549	0.323	501	0.5	3.438	A
2	176	430	917	0.192	177	0.2	4.863	A
3	866	177	1250	0.692	880	2.3	10.068	B

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	419	0	1549	0.271	420	0.4	3.189	A
2	148	360	956	0.154	148	0.2	4.454	A
3	725	148	1268	0.572	729	1.4	6.729	A

(Default Analysis Set) - 2028 + CD + DEV, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	8.84	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D11	2028 + CD + DEV	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1090	100.000
2		✓	139	100.000
3		✓	306	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	152	938
	2	139	0	0
	3	306	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.77	10.29	3.4	B
2	0.26	8.34	0.4	A
3	0.27	3.88	0.4	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	821	0	1549	0.530	816	1.1	4.885	A
2	105	702	767	0.136	104	0.2	5.426	A
3	230	104	1294	0.178	230	0.2	3.379	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	980	0	1549	0.633	978	1.7	6.277	A
2	125	841	690	0.181	125	0.2	6.363	A
3	275	125	1281	0.215	275	0.3	3.576	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1200	0	1549	0.775	1194	3.3	9.960	A
2	153	1027	587	0.261	153	0.3	8.269	A
3	337	153	1265	0.266	337	0.4	3.879	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1200	0	1549	0.775	1200	3.4	10.291	B
2	153	1033	584	0.262	153	0.4	8.345	A
3	337	153	1264	0.266	337	0.4	3.881	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	980	0	1549	0.633	986	1.8	6.470	A
2	125	849	686	0.182	125	0.2	6.427	A
3	275	125	1281	0.215	275	0.3	3.581	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	821	0	1549	0.530	823	1.1	4.976	A
2	105	708	764	0.137	105	0.2	5.466	A
3	230	105	1293	0.178	231	0.2	3.390	A

(Default Analysis Set) - 2028 + CD + DEV, Sat

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3	4.77	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D12	2028 + CD + DEV	Sat	ONE HOUR	11:45	13:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	475	100.000
2		✓	131	100.000
3		✓	587	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	31	444
	2	131	0	0
	3	587	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.34	3.51	0.5	A
2	0.16	4.86	0.2	A
3	0.51	5.77	1.0	A

Main Results for each time segment

11:45 - 12:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	358	0	1549	0.231	356	0.3	3.016	A
2	99	333	971	0.102	98	0.1	4.122	A
3	442	98	1297	0.341	440	0.5	4.189	A

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	427	0	1549	0.276	427	0.4	3.208	A
2	118	399	935	0.126	118	0.1	4.405	A
3	528	118	1285	0.411	527	0.7	4.742	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	523	0	1549	0.338	522	0.5	3.505	A
2	144	488	885	0.163	144	0.2	4.855	A
3	646	144	1270	0.509	645	1.0	5.748	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	523	0	1549	0.338	523	0.5	3.508	A
2	144	489	885	0.163	144	0.2	4.858	A
3	646	144	1270	0.509	646	1.0	5.774	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	427	0	1549	0.276	428	0.4	3.211	A
2	118	400	934	0.126	118	0.1	4.411	A
3	528	118	1285	0.411	529	0.7	4.768	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	358	0	1549	0.231	358	0.3	3.025	A
2	99	335	970	0.102	99	0.1	4.130	A
3	442	99	1297	0.341	443	0.5	4.220	A

Appendix P

VISSIM Input Matrices

HGVs

	001	003	005	007	009	011	
06:00-06:15							
	A	B	C	D		E	Total
A	0	1	18	0	0	0	
B	2	0	0	0	0	0	
C	16	0	1	0	0	1	
D	0	0	0	0	0	0	
WM	0	0	0	0	0	0	
E	0	1	4	0	0	0	

06:15-06:30							
	A	B	C	D		E	Total
A	0	1	18	0	0	0	
B	2	0	0	0	0	0	
C	16	0	1	0	0	1	
D	0	0	0	0	0	0	
WM	0	0	0	0	0	0	
E	0	1	4	0	0	0	

06:30-06:45							
	A	B	C	D		E	Total
A	0	1	18	0	0	0	
B	2	0	0	0	0	0	
C	16	0	1	0	0	1	
D	0	0	0	0	0	0	
WM	0	0	0	0	0	0	
E	0	1	4	0	0	0	

06:45-07:00							
	A	B	C	D		E	Total
A	0	1	18	0	0	0	
B	2	0	0	0	0	0	
C	16	0	1	0	0	1	
D	0	0	0	0	0	0	
WM	0	0	0	0	0	0	
E	0	1	4	0	0	0	

07:00-07:15							
	A	B	C	D		E	Total
A	0	1	18	0	0	0	19
B	2	0	0	0	0	0	2
C	16	0	1	0	0	1	18
D	0	0	0	0	0	0	0
WM	0						0
E	0	1	4	0			5

07:15-07:30							
	A	B	C	D		E	Total
A	0	1	22	0	0	0	
B	0	0	1	0	0	0	
C	22	0	0	0	0	1	
D	1	0	0	0	0	0	
WM	0						
E	0	0	2	2			

07:30-07:45							
	A	B	C	D		E	Total
A	1	0	18	0	0	1	
B	2	0	0	0	0	1	
C	17	0	1	0	0	4	
D	0	1	0	0	0	0	
WM	0						
E	1	2	0	1			

07:45-08:00							
	A	B	C	D		E	Total
A	0	0	18	0	0	0	
B	0	0	0	0	0	0	
C	18	0	2	1	0	1	
D	0	0	0	0	0	0	
WM	0						
E	1	1	3	0			

08:00-08:15							
	A	B	C	D		E	Total
A	0	2	17	0	0	0	
B	0	0	1	0	0	1	
C	33	0	0	0	0	1	
D	0	0	0	0	0	1	
WM	0						
E	0	0	2	0			

08:15-08:30							
	A	B	C	D		E	Total
A	0	0	28	1	0	0	
B	2	0	2	0	0	1	
C	28	0	0	2	0	4	
D	0	0	2	0	0	0	
WM	0						
E	0	0	1	0			

08:30-08:45							
	A	B	C	D		E	Total
A	0	3	33	2	0	0	
B	1	0	0	0	0	0	
C	19	0	1	0	1	1	
D	2	1	0	0	0	0	
WM	1						
E	0	0	1	0			

08:45-09:00							
	A	B	C	D		E	Total
A	0	0	20	1	0	0	
B	1	0	0	0	0	0	
C	16	0	0	0	0	2	
D	0	0	1	0	0	1	
WM	0						
E	0	1	0	0			

CARS

	001	003	005	007	009	011	
06:00-06:15							
	A	B	C	D		E	Total
A	1	9	181	8	0	6	205
B	18	0	19	1	0	12	50
C	171	8	2	5	0	52	238
D	25	3	15	0	1	13	57
WM	0	0	1	0	0	1	2
E	15	17	83	8	0	0	123

06:15-06:30							
	A	B	C	D		E	Total
A	1	9	181	8	0	6	205
B	18	0	19	1	0	12	50
C	171	8	2	5	0	52	238
D	25	3	15	0	1	13	57
WM	0	0	1	0	0	1	2
E	15	17	83	8	0	0	123

06:30-06:45							
	A	B	C	D		E	Total
A	1	9	181	8	0	6	205
B	18	0	19	1	0	12	50
C	171	8	2	5	0	52	238
D	25	3	15	0	1	13	57
WM	0	0	1	0	0	1	2
E	15	17	83	8	0	0	123

06:45-07:00							
	A	B	C	D		E	Total
A	1	9	181	8	0	6	205
B	18	0	19	1	0	12	50
C	171	8	2	5	0	52	238
D	25	3	15	0	1	13	57
WM	0	0	1	0	0	1	2
E	15	17	83	8	0	0	123

07:00-07:15							
	A	B	C	D		E	Total
A	1	9	181	8	0	6	205
B	18	0	19	1	0	12	50
C	171	8	2	5	0	52	238
D	25	3	15	0	1	13	57
WM	0	0	1	0	0	1	2
E	15	17	83	8	0	0	123

07:15-07:30							
	A	B	C	D		E	Total
A	0	25	184	10	2	2	223
B	20	0	23	4	0	17	64
C	195	8	2	2	0	59	266
D	25	5	10	0	0	15	55
WM	1	0	2	0	0	0	3
E	14	15	89	5	0	0	123

07:30-07:45							
	A	B	C	D		E	Total
A	3	18	268	12	1	4	306
B	29	0	32	7	0	23	91
C	248	22	1	8	1	85	365
D	28	8	20	0	0	24	80
WM	2	1	3	1	0	4	11
E	21	15	102	13	0	0	151

07:45-08:00							
	A	B	C	D		E	Total
A	1	29	186	21	1	5	243
B	28	0	29	6	0	23	86
C	302	18	1	16	0	76	413
D	41	5	16	0	0	19	81
WM	1	2	2	1	0	3	9
E	16	15	70	14	1	1	117

08:00-08:15							
	A	B	C	D		E	Total
A	5	36	217	27	1	5	291
B	43	0	26	1	0	24	94
C	279	14	4	6	2	88	393
D	44	6	12	0	0	31	93
WM	3	2	0	2	0	6	13
E	18	19	65	17	1	1	121

08:15-08:30							
	A	B	C	D		E	Total
A	2	25	179	31	2	7	246
B	25	1	19	12	1	22	80
C	266	17	4	7	1	74	369
D	29	6	15	1	1	32	84
WM	1	0	1	0	0	3	5
E	14	32	72	20	1	2	141

08:30-08:45							
	A	B	C	D		E	Total
A	4	26	153	18	0	10	211
B	28	0	16	5	1	23	73
C	232	15	1	2	0	55	305
D	34	14	18	0	0	40	106
WM	1	0	2	0	0	2	5
E	12	54	63	14	0	2	145

08:45-09:00							
	A	B	C	D		E	Total
A	1	27	150	22	1	11	212
B	48	0	20	10	2	36	116
C	218	14	3	6	1	55	297
D	30	5	10	1	0	20	66
WM	4	2	0	0	0	0	6
E	14	28	45	27	1	0	115

Buses

	001	003	005	007	009	011	
06:00-06:15							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	2	2
C	0	0	1	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1

06:15-06:30							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	2	2
C	0	0	1	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1

06:30-06:45							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	2	2
C	0	0	1	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1

06:45-07:00							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	2	2
C	0	0	1	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1

07:00-07:15							
	A	B	C	D		E	Total
A		0	1	0		0	1
B			0	0		2	2
C	0		1			0	1
D							0
WM							0
E		1	0				1

07:15-07:30							
	A	B	C	D		E	Total
A		0	0	1		1	2
B			0	0		0	0
C	0					0	0
D							0
WM							0
E		0	1				1

07:30-07:45							
	A	B	C	D		E	Total
A		0	0	1		1	2
B			0	0		1	1
C	0					1	1
D							0
WM							0
E		1					1

07:45-08:00							
	A	B	C	D		E	Total
A		2	0			0	2
B			1	1		1	3
C	0					0	0
D	1						1
WM							0
E		1					1

08:00-08:15							
	A	B	C	D		E	Total
A		0	0			0	0
B			0	1		1	2
C	0					1	1
D							0
WM							0
E		1		1			2

08:15-08:30							
	A	B	C	D		E	Total
A		1	0			2	3
B			1			0	1
C	1			1		0	2
D							0
WM							0
E		0					0

08:30-08:45							
	A	B	C	D		E	Total
A		0	0				0
B			1			1	2
C						0	0
D							0
WM							0
E		1		1			2

08:45-09:00							
	A	B	C	D		E	Total
A		0	0				0
B						0	0
C						0	0
D							0
WM							0
E		0					0

All

	001		003		005		007		009		011		
06:00-06:15													
	A		B		C		D				E		Total
A	0		3		113		9						125
B	10		0		11		13						34
C	106		5		0		58						169
D	17						0				7		24
WM													0
E	76						2				0		78
06:15-06:30													
	A		B		C		D				E		Total
A	0		6		152		5						163
B	11		0		16		12						39
C	85		8		0		84						177
D	18						0				6		24
WM													0
E	73						4				0		77
06:30-06:45													
	A		B		C		D				E		Total
A	0		12		195		10						217
B	8		0		13		14						35
C	138		8		4		60						210
D	32						1				6		39
WM													0
E	119						6				0		125
06:45-07:00													
	A		B		C		D				E		Total
A	0		11		220		21						252
B	20		0		18		16						54
C	151		11		1		69						232
D	40						1				13		54
WM													0
E	122						15				0		137
07:00-07:15													
	A		B		C		D				E		Total
A	1		11		212		15						239
B	18		0		18		19						55
C	192		7		4		58						261
D	44						0				17		61
WM													0
E	129						12				0		141
07:15-07:30													
	A		B		C		D				E		Total
A	1		25		217		15						258
B	23		0		27		23						73
C	231		6		2		64						303
D	49						0				16		65
WM													0
E	132						7				0		139
07:30-07:45													
	A		B		C		D				E		Total
A	4		17		306		20						347
B	35		0		29		32						96
C	287		17		2		103						409
D	67						0				28		95
WM													0
E	151						14				0		165
07:45-08:00													
	A		B		C		D				E		Total
A	1		30		217		28						276
B	29		0		31		37						97
C	333		16		3		96						448
D	73						0				22		95
WM													0
E	113						15				0		128
08:00-08:15													
	A		B		C		D				E		Total
A	4		39		239		34						316
B	41		0		28		33						102
C	327		6		1		96						430
D	71						1				36		108
WM													0
E	113						18				1		132
08:15-08:30													
	A		B		C		D				E		Total
A	5		29		223		44						301
B	27		1		26		35						89
C	310		12		4		94						420
D	60						0				32		92
WM													0
E	129						19				1		149
08:30-08:45													
	A		B		C		D				E		Total
A	5		27		196		34						262
B	28		0		20		31						79
C	262		8		2		63						335
D	76						0				43		119
WM													0
E	138						17				1		156
08:45-09:00													
	A		B		C		D				E		Total
A	1		30		181		37						249
B	55		0		21		48						124
C	248		11		2		69						330
D	52						1				23		76
WM													0
E	99						26				1		126

HGVs

	001		003		005		007		009		011		
06:00-06:15													
	A		B		C		D				E		Total
A			2		24		0						
B	0				0		0						
C	11		2		0		1						
D	0												
WM													
E	3												
06:15-06:30													
	A		B		C		D				E		Total
A					21		2						
B	2				0		1						
C	7		0		0		2						
D	0												
WM													
E	3												
06:30-06:45													
	A		B		C		D				E		Total
A					18		4						
B	0				1		1						
C	17		2		2		1						
D	1												
WM													
E	3												
06:45-07:00													
	A		B		C		D				E		Total
A					21		3						
B	1				0		1						
C	15		0		2		3						
D	0												
WM													
E	3												2
07:00-07:15													
	A		B		C		D				E		Total
A			1		19		0						20
B	1				0		2						3
C	15				0		1						16
D	0												0
WM													0
E	5												5
07:15-07:30													
	A		B		C		D				E		Total
A			2		23		2						27
B	1				1		0						2
C	24				1		1						26
D	0												0
WM													0
E	2										2		4
07:30-07:45													
	A		B		C		D				E		Total
A	1				22		2						25
B	2				0		2						4
C	21				2		4						27
D	1												1
WM													0
E	5										1		6
07:45-08:00													
	A		B		C		D				E		Total
A			2		20		0						22
B	0				1		2						3
C	16				0		2						18
D	1												1
WM													0
E	6												6
08:00-08:15													
	A		B		C		D				E		Total
A			2		20		0						22
B	0				1		3						4
C	34				1		1						36
D	0										1		1
WM													0
E	3										1		4
08:15-08:30													
	A		B		C		D				E		Total
A			2		30		4						36
B	2				3		1						6
C	28		1		2		7						38
D	2												2
WM													0
E	1												1
08:30-08:45													
	A		B		C		D				E		Total
A			2		34		3						39
B	2				0		0						2
C	20		1		0		2						23
D	4												4
WM													0
E	3										1		4
08:45-09:00													
	A		B		C		D				E		Total
A			1		23		1						25
B	1				0		1						2
C	17						3						20
D	3										1		4
WM													0
E	1												1

Cars

	001		003		005		007		009		011		
06:00-06:15													
	A		B		C		D				E		Total
A	0		1		89		9						99
B	10		0		11		13						34
C	95		3		0		57						155
D	17						0				7		24
WM													0
E	73						2				0		75
06:15-06:30													
	A		B		C		D				E		Total
A	0		6		131		3						140
B	9		0		16		11						36
C	78		8		0		82						168
D	18						0				6		24
WM													0
E	70						4				0		74
06:30-06:45													
	A		B		C		D				E		Total
A	0		12		177		6						195
B	8		0		12		13						33
C	121		6		2		59						188
D	31						1				6		38
WM													0
E	116						6				0		122
06:45-07:00													
	A		B		C		D				E		Total
A	0		11		199		18						228
B	19		0		18		15						52
C	136		11		-1		66						212
D	40						1				13		54
WM													0
E	119						15				0		134
07:00-07:15													
	A		B		C		D				E		Total
A	1		10		193		15						219
B	17		0		18		17						52
C	177		7		4		57						245
D	44						0				17		61
WM													0
E	124						12				0		136
07:15-07:30													
	A		B		C		D				E		Total
A	1		23		194		13						231
B	22		0		26		23						71
C	207		6		1		63						277
D	49						0				16		65
WM													0
E	130						7				-2		135
07:30-07:45													
	A		B		C		D				E		Total
A	3		17		284		18						322
B	33		0		29		30						92
C	266		17		0		99						382
D	66						0				28		94
WM													0
E	146						14				-1		159
07:45-08:00													
	A		B		C		D				E		Total
A	1		28		197		28						254
B	29		0		30		35						94
C	317		16		3		94						430
D	72						0				22		94
WM													0
E	107						15				0		122
08:00-08:15													
	A		B		C		D				E		Total
A	4		37		219		34						294
B	41		0		27		30						98
C	293		6		0		95						394
D	71						1				35		107
WM													0
E	110						18				0		128
08:15-08:30													
	A		B		C		D				E		Total
A	5		27		193		40						265
B	25		1		23		34						83
C	282		11		2		87						382
D	58						0				32		90
WM													0
E	128						19				1		148
08:30-08:45													
	A		B		C		D				E		Total
A	5		25		162		31						223
B	26		0		20		31						77
C	242		7		2		61						312
D	72						0				43		115
WM													0
E	135						17				0		152
08:45-09:00													
	A		B		C		D				E		Total
A	1		29		158		36						224
B	54		0		21		47						122
C	231		11		2		66						310
D	49						1				22		72
WM													0
E	98						26				1		125

Adjusted Cars

001 003 005 007 009 011

06:00-06:15

	A	B	C	D		E	Total	Total All
A	1	9	181	8	0	6	205	206
B	18	0	19	1	0	12	50	52
C	171	8	2	5	0	52	238	239
D	25	3	15	0	1	13	57	57
WM	0	0	1	0	0	1	2	2
E	15	17	83	8	0	0	123	124

06:15-06:30

	A	B	C	D		E	Total	Total All
A	1	9	181	8	0	6	205	206
B	18	0	19	1	0	12	50	52
C	171	8	2	5	0	79	265	266
D	25	3	15	0	1	13	57	57
WM	0	0	1	0	0	1	2	2
E	15	17	83	8	0	0	123	124

06:30-06:45

	A	B	C	D		E	Total	Total All
A	1	12	181	8	0	6	208	209
B	18	0	19	1	0	12	50	52
C	171	8	2	5	0	54	240	241
D	25	3	15	1	1	13	58	58
WM	0	0	1	0	0	1	2	2
E	15	17	84	8	0	0	124	125

06:45-07:00

	A	B	C	D		E	Total	Total All
A	1	11	199	10	0	8	229	230
B	18	0	19	1	0	14	52	54
C	171	11	2	5	0	62	251	252
D	25	3	15	1	1	13	58	58
WM	0	0	1	0	0	1	2	2
E	16	18	86	15	0	0	134	135

07:00-07:15

	A	B	C	D		E	Total	Total All
A	1	10	193	9	0	6	219	239
B	18	0	19	1	0	16	54	58
C	177	8	4	5	0	52	246	265
D	25	3	15	0	1	16	60	60
WM	0	0	1	0	0	1	2	2
E	16	18	89	12	0	0	136	142

07:15-07:30

	A	B	C	D		E	Total	Total All
A	1	25	194	10	2	2	234	236
B	22	0	26	4	0	19	71	71
C	207	8	2	2	0	61	280	280
D	29	6	12	0	0	16	62	62
WM	1	0	2	0	0	0	3	3
E	15	17	98	7	0	0	137	138

07:30-07:45

	A	B	C	D		E	Total	Total All
A	3	18	284	13	1	4	323	325
B	29	0	32	7	0	23	91	92
C	266	22	1	8	1	90	388	389
D	30	9	21	0	0	24	84	84
WM	2	1	3	1	0	4	11	11
E	22	16	108	14	0	0	160	161

07:45-08:00

	A	B	C	D		E	Total	Total All
A	1	29	197	22	1	5	255	257
B	30	0	31	6	0	30	96	99
C	317	18	3	16	0	78	432	432
D	44	5	17	0	0	19	86	87
WM	1	2	2	1	0	3	9	9
E	17	16	74	15	1	1	124	125

08:00-08:15

	A	B	C	D		E	Total	Total All
A	5	37	219	28	1	5	295	295
B	43	0	26	1	0	29	99	101
C	293	14	4	6	2	88	407	408
D	47	6	13	0	0	31	97	97
WM	3	2	0	2	0	6	13	13
E	19	20	70	18	1	1	130	132

08:15-08:30

	A	B	C	D		E	Total	Total All
A	5	27	193	31	2	7	265	268
B	25	1	19	12	1	22	80	81
C	282	17	4	7	1	79	390	392
D	32	7	17	1	1	32	90	90
WM	1	0	1	0	0	3	5	5
E	15	35	78	20	1	2	151	151

08:30-08:45

	A	B	C	D		E	Total	Total All
A	5	26	162	20	0	11	224	224
B	28	0	16	5	1	25	75	77
C	242	15	2	2	0	59	320	320
D	36	15	19	0	0	41	110	110
WM	1	0	2	0	0	2	5	5
E	13	57	66	17	0	2	154	156

08:45-09:00

	A	B	C	D		E	Total	Total All
A	1	29	158	23	1	12	224	224
B	48	0	20	10	2	36	116	116
C	231	14	3	6	1	59	314	314
D	30	5	10	1	0	22	68	68
WM	4	2	0	0	0	0	6	6
E	16	32	51	27	1	1	127	127

Total All vehicles

001 003 005 007 009 011

06:00-06:15

	A	B	C	D		E	Total
A	1	10	200	8	0	6	225
B	20	0	19	1	0	14	54
C	187	8	4	5	0	53	257
D	25	3	15	0	1	13	57
WM	0	0	1	0	0	1	2
E	15	19	87	8	0	0	129

06:15-06:30

	A	B	C	D		E	Total
A	1	10	200	8	0	6	225
B	20	0	19	1	0	14	54
C	187	8	4	5	0	80	284
D	25	3	15	0	1	13	57
WM	0	0	1	0	0	1	2
E	15	19	87	8	0	0	129

06:30-06:45

	A	B	C	D		E	Total
A	1	13	200	8	0	6	228
B	20	0	19	1	0	14	54
C	187	8	4	5	0	55	259
D	25	3	15	1	1	13	58
WM	0	0	1	0	0	1	2
E	15	19	88	8	0	0	130

06:45-07:00

	A	B	C	D		E	Total
A	1	12	218	10	0	8	249
B	20	0	19	1	0	16	56
C	187	11	4	5	0	63	270
D	25	3	15	1	1	13	58
WM	0	0	1	0	0	1	2
E	16	20	90	15	0	0	140

07:00-07:15

	A	B	C	D		E	Total
A	1	11	212	9	0	6	239
B	20	0	19	1	0	18	58
C	193	8	6	5	0	53	265
D	25	3	15	0	1	16	60
WM	0	0	1	0	0	1	2
E	16	20	93	12	0	0	142

766

07:15-07:30

	A	B	C	D		E	Total
A	1	26	216	11	2	3	259
B	22	0	27	4	0	19	72
C	229	8	2	2	0	62	303
D	30	6	12	0	0	16	63
WM	1	0	2	0	0	0	3
E	15	17	101	9	0	0	142

842

07:30-07:45

	A	B	C	D		E	Total
A	4	18	302	14	1	6	345
B	31	0	32	7	0	25	95
C	283	22	2	8	1	95	411
D	30	10	21	0	0	24	85
WM	2	1	3	1	0	4	11
E	23	19	108	15	0	0	165

1112

07:45-08:00

	A	B	C	D		E	Total
A	1	31	215	22	1	5	275
B	30	0	32	7	0	31	99
C	335	18	5	17	0	79	454
D	45	5	17	0	0	19	87
WM	1	2	2	1	0	3	9
E	18	18	77	15	1	1	130

1055

08:00-08:15

	A	B	C	D		E	Total
A	5	39	236	28	1	5	314
B	43	0	27	2	0	31	103
C	326	14	4	6	2	90	442
D	47	6	13	0	0	32	98
WM	3	2	0	2	0	6	13
E	19	21	72	19	1	1	134

1104

08:15-08:30

	A	B	C	D		E	Total
A	5	28	221	32	2	9	297
B	27	1	22	12	1	23	86
C	311	17	4	10	1	83	426
D	32	7	19	1	1	32	92
WM	1	0	1	0	0	3	5
E	15	35	79	20	1	2	152

1059

08:30-08:45

	A	B	C	D		E	Total
A	5	29	195	22	0	11	262
B	29	0	17	5	1	26	78
C	261	15	3	2	1	60	342
D	38	16	19	0	0	41	113
WM	2	0	2	0	0	2	6
E	13	58	67	18	0	2	157

958

08:45-09:00

	A	B	C	D		E	Total
A	1	29	178	24	1	12	245
B	49	0	20	10	2	36	117
C	247	14	3	6	1	61	332
D	30	5	11	1	0	23	70
WM	4	2	0	0	0	0	6
E	16	33	51	27	1	1	128

0730-0830

	A	B	C	D		E	Total
A	15	116	974	95	5	26	1231
B	131	1	113	28	1	110	384
C	1255	71	15	41	4	348	1734
D	155	28	70	1	1	107	362
WM	7	5	6	4	0	16	38
E	76	93	336	69	3	4	581

2028 Growth CAR

0.0661	001	003	005	007	009	011	
06:00-06:15							
	A	B	C	D		E	Total
A	0	1	12	1	0	0	14
B	1	0	1	0	0	1	3
C	11	1	0	0	0	3	16
D	2	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	1	5	1	0	0	8

06:15-06:30							
	A	B	C	D		E	Total
A	0	1	12	1	0	0	14
B	1	0	1	0	0	1	3
C	11	1	0	0	0	5	18
D	2	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	1	5	1	0	0	8

06:30-06:45							
	A	B	C	D		E	Total
A	0	1	12	1	0	0	14
B	1	0	1	0	0	1	3
C	11	1	0	0	0	4	16
D	2	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	1	6	1	0	0	8

06:45-07:00							
	A	B	C	D		E	Total
A	0	1	13	1	0	1	15
B	1	0	1	0	0	1	3
C	11	1	0	0	0	4	17
D	2	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	1	6	1	0	0	9

07:00-07:15							
	A	B	C	D		E	Total
A	0	1	13	1	0	0	14
B	1	0	1	0	0	1	4
C	12	1	0	0	0	3	16
D	2	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	1	6	1	0	0	9

07:15-07:30							
	A	B	C	D		E	Total
A	0	2	13	1	0	0	15
B	1	0	2	0	0	1	5
C	14	1	0	0	0	4	19
D	2	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	1	6	0	0	0	9

07:30-07:45							
	A	B	C	D		E	Total
A	0	1	19	1	0	0	21
B	2	0	2	0	0	2	6
C	18	1	0	1	0	6	26
D	2	1	1	0	0	2	6
WM	0	0	0	0	0	0	1
E	1	1	7	1	0	0	11

07:45-08:00							
	A	B	C	D		E	Total
A	0	2	13	1	0	0	17
B	2	0	2	0	0	2	6
C	21	1	0	1	0	5	29
D	3	0	1	0	0	1	6
WM	0	0	0	0	0	0	1
E	1	1	5	1	0	0	8

08:00-08:15							
	A	B	C	D		E	Total
A	0	2	14	2	0	0	19
B	3	0	2	0	0	2	7
C	19	1	0	0	0	6	27
D	3	0	1	0	0	2	6
WM	0	0	0	0	0	0	1
E	1	1	5	1	0	0	9

08:15-08:30							
	A	B	C	D		E	Total
A	0	2	13	2	0	0	18
B	2	0	1	1	0	1	5
C	19	1	0	0	0	5	26
D	2	0	1	0	0	2	6
WM	0	0	0	0	0	0	0
E	1	2	5	1	0	0	10

08:30-08:45							
	A	B	C	D		E	Total
A	0	2	11	1	0	1	15
B	2	0	1	0	0	2	5
C	16	1	0	0	0	4	21
D	2	1	1	0	0	3	7
WM	0	0	0	0	0	0	0
E	1	4	4	1	0	0	10

08:45-09:00							
	A	B	C	D		E	Total
A	0	2	10	2	0	1	15
B	3	0	1	1	0	2	8
C	15	1	0	0	0	4	21
D	2	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	2	3	2	0	0	8

2028 Growth HGV

0.0661	001	003	005	007	009	011	
06:00-06:15							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

06:15-06:30							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

06:30-06:45							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

06:45-07:00							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

07:00-07:15							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

07:15-07:30							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	2
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	2
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

07:30-07:45							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

07:45-08:00							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

08:00-08:15							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	2	0	0	0	0	0	2
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

08:15-08:30							
	A	B	C	D		E	Total
A	0	0	2	0	0	0	2
B	0	0	0	0	0	0	0
C	2	0	0	0	0	0	2
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

08:30-08:45							
	A	B	C	D		E	Total
A	0	0	2	0	0	0	3
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

08:45-09:00							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

2023 Growth HGV

0.019	001	003	005	007	009	011	
06:00-06:15							
	A	B	C	D		E	Total
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

06:15-06:30							
	A	B	C	D		E	Total
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

06:30-06:45							
	A	B	C	D		E	Total
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

06:45-07:00							
	A	B	C	D		E	Total
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

07:00-07:15							
	A	B	C	D		E	Total
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

07:15-07:30							
	A	B	C	D		E	Total
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

07:30-07:45							
	A	B	C	D		E	Total
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

07:45-08:00							
	A	B	C	D		E	Total
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

08:00-08:15							
	A	B	C	D		E	Total
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

08:15-08:30							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	1	0	0	0	0	0	1
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

08:30-08:45							
	A	B	C	D		E	Total
A	0	0	1	0	0	0	1
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

08:45-09:00							
	A	B	C	D		E	Total
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

08:45-09:00							
	A	B	C	D		E	Total
A	0	0	2	0	0	0	2
B	0	0	0	0	0	0	0
C	2	0	0	0	0	0	2
D	0	0	0	0	0	0	0
WM	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0

2023 Growth CAR

0.019	001	003	005	007	
06:00-06:15					
	A	B	C	D	
A	0	0	3	0	
B	0	0	0	0	
C	3	0	0	0	
D	0	0	0	0	
WM	0	0	0	0	
E	0	0	2	0	

06:15-06:30					
	A	B	C	D	
A	0	0	3	0	
B	0	0	0	0	
C	3	0	0	0	
D	0	0	0	0	
WM	0	0	0	0	
E	0	0	2	0	

06:30-06:45					
	A	B	C	D	
A	0	0	3	0	
B	0	0	0	0	
C	3	0	0	0	
D	0	0	0	0	
WM	0	0	0	0	
E	0	0	2	0	

06:45-07:00					
	A	B	C	D	
A	0	0	4	0	
B	0	0	0	0	
C	3	0	0	0	
D	0	0	0	0	
WM	0	0	0	0	
E	0	0	2	0	

07:00-07:15					
	A	B	C	D	
A	0	0	4	0	
B	0	0	0	0	
C	3	0	0	0	
D	0	0	0	0	
WM	0	0	0	0	
E	0	0	2	0	114.1%

07:15-07:30					
	A	B	C	D	
A	0	0	4	0	
B	0	0	0	0	
C	4	0	0	0	
D	1	0	0	0	
WM	0	0	0	0	
E	0	0	2	0	113.5%

07:30-07:45					
	A	B	C	D	
A	0	0	5	0	
B	1	0	1	0	
C	5	0	0	0	
D	1	0	0	0	
WM	0	0	0	0	
E	0	0	2	0	116.2%

07:45-08:00					
	A	B	C	D	
A	0	1	4	0	
B	1	0	1	0	
C	6	0	0	0	
D	1	0	0	0	
WM	0	0	0	0	
E	0	0	1	0	115.1%

08:00-08:15					
	A	B	C	D	
A	0	1	4	1	
B	1	0	0	0	
C	6	0	0	0	
D	1	0	0	0	
WM	0	0	0	0	
E	0	0	1	0	117.6%

08:15-08:30					
	A	B	C	D	
A	0	1	4	1	
B	0	0	0	0	
C	5	0	0	0	
D	1	0	0	0	
WM	0	0	0	0	
E	0	1	1	0	116.8%

08:30-08:45					
	A	B	C	D	
A	0	0	3	0	
B	1	0	0	0	
C	5	0	0	0	
D	1	0	0	0	
WM	0	0	0	0	
E	0	1	1	0	117.5%

08:45-09:00					
	A	B	C	D	
A	0	1	3	0	
B	1	0	0	0	
C	4	0	0	0	
D	1	0	0	0	
WM	0	0	0	0	
E	0	1	1	1	115.8%

08:45-09:00					
	A	B	C	D	
A	0	2	17	2	
B	2	0	2	1	
C	22	1	0	1	
D	3	1	1	0	
WM	0	0	0	0	
E	1	2	6	1	

009 011

	E	Total
0	0	4
0	0	1
0	1	5
0	0	1
0	0	0
0	0	2

	E	Total
0	0	4
0	0	1
0	2	5
0	0	1
0	0	0
0	0	2

	E	Total
0	0	4
0	0	1
0	1	5
0	0	1
0	0	0
0	0	2

	E	Total
0	0	4
0	0	1
0	1	5
0	0	1
0	0	0
0	0	3

	E	Total
0	0	4
0	0	1
0	1	5
0	0	1
0	0	0
0	0	3

	E	Total
0	0	4
0	0	1
0	1	5
0	0	1
0	0	0
0	0	3

	E	Total
0	0	6
0	0	2
0	2	7
0	0	2
0	0	0
0	0	3

	E	Total
0	0	5
0	1	2
0	1	8
0	0	2
0	0	0
0	0	2

	E	Total
0	0	6
0	1	2
0	2	8
0	1	2
0	0	0
0	0	2

	E	Total
0	0	5
0	0	2
0	2	7
0	1	2
0	0	0
0	0	3

	E	Total
0	0	4
0	0	1
0	1	6
0	1	2
0	0	0
0	0	3

	E	Total
0	0	4
0	1	2
0	1	6
0	0	1
0	0	0
0	0	2

	E	Total
0	0	22
0	2	7
0	6	31
0	2	7
0	0	1
0	0	11

Committed Development Adjustment

	A	B	C	D		E
A	0	0	0	-1	0	-2
b	0	0	0	-1	0	-2
c	0	0	0	-3	0	-7
d	-3	-1	-1	0	0	0
	0	0	0	0	0	0
e	-1	0	-1	-2	0	0

	A	B	C	D		E
A	0	0	0	-1	0	-2
b	0	0	0	-1	0	-2
c	0	0	0	-3	0	-7
d	-3	-1	-1	0	0	0
	0	0	0	0	0	0
e	-1	0	-1	-2	0	0

	A	B	C	D		E
A	0	0	0	-1	0	-2
b	0	0	0	-1	0	-2
c	0	0	0	-3	0	-7
d	-3	-1	-1	0	0	0
	0	0	0	0	0	0
e	-1	0	-1	-2	0	0

	A	B	C	D		E
A	0	0	0	-1	0	-2
b	0	0	0	-1	0	-2
c	0	0	0	-3	0	-7
d	-3	-1	-1	0	0	0
	0	0	0	0	0	0
e	-1	0	-1	-2	0	0

	A	B	C	D		E
A	0	0	0	-1	0	-2
b	0	0	0	-1	0	-2
c	0	0	0	-3	0	-7
d	-3	-1	-1	0	0	0
	0	0	0	0	0	0
e	-1	0	-1	-2	0	0

	A	B	C	D		E
A	0	0	0	-1	0	-5
b	0	0	0	-1	0	-6
c	0	0	0	-3	0	-17
d	-5	-1	-2	0	0	0
	0	0	0	0	0	0
e	-2	0	-1	-3	0	-2

	A	B	C	D		E
A	0	0	0	-1	0	-2
b	0	0	0	-1	0	-2
c	0	0	0	-3	0	-7
d	-3	-1	-1	0	0	0
	0	0	0	0	0	0
e	-1	0	-1	-2	0	0

Adjusted Cars

	001	003	005	007	009	011	

06:00-06:15

	A	B	C	D		E	Total
A	1	9	181	7	0	4	201.92775
B	18	0	19	0	0	10	47
C	171	8	2	2	0	45	228
D	22	2	14	0	1	13	53
WM	0	0	1	0	0	1	2
E	14	17	82	6	0	0	119

06:15-06:30

	A	B	C	D		E	Total
A	1	9	181	7	0	4	201.92775
B	18	0	19	0	0	10	47
C	171	8	2	2	0	72	255
D	22	2	14	0	1	13	53
WM	0	0	1	0	0	1	2
E	14	17	82	6	0	0	119

06:30-06:45

	A	B	C	D		E	Total
A	1	12	181	7	0	4	204.92775
B	18	0	19	0	0	10	47
C	171	8	2	2	0	47	230
D	22	2	14	1	1	13	54
WM	0	0	1	0	0	1	2
E	14	17	83	6	0	0	120

06:45-07:00

	A	B	C	D		E	Total
A	1	11	199	9	0	5	225.92775
B	18	0	19	0	0	12	49
C	171	11	2	2	0	55	241
D	22	2	14	1	1	13	54
WM	0	0	1	0	0	1	2
E	14	17	85	13	0	0	130

07:00-07:15

	A	B	C	D		E	Total
A	1	10	193	8	0	4	215.92775
B	18	0	19	0	0	14	51
C	177	8	4	2	0	45	236
D	22	2	14	0	1	16	56
WM	0	0	1	0	0	1	2
E	15	18	89	10	0	0	132

07:15-07:30

	A	B	C	D		E	Total
A	1	25	194	9	2	0	230.92775
B	22	0	26	3	0	17	68
C	207	8	2	-1	0	54	270
D	26	5	10	0	0	16	58
WM	1	0	2	0	0	0	3
E	14	16	98	5	0	0	133

07:30-07:45

	A	B	C	D		E	Total
A	3	18	284	12	1	-1	316.44849
B	29	0	32	6	0	17	84
C	266	22	1	5	1	73	368
D	25	8	19	0	0	24	76
WM	2	1	3	1	0	4	11
E	21	16	107	11	0	-2	152

07:45-08:00

	A	B	C	D		E	Total
A	1	29	197	21	1	0	248.44849
B	30	0	31	5	0	24	90
C	317	18	3	13	0	61	412
D	40	4	15	0	0	19	78
WM	1	2	2	1	0	3	9
E	15	16	73	12	1	-1	116

08:00-08:15

	A	B	C	D		E	Total
A	5	37	219	27	1	0	288.44849
B	43	0	26	0	0	23	92
C	293	14	4	3	2	71	386
D	42	5	11	0	0	31	89
WM	3	2	0	2	0	6	13
E	18	20	69	15	1	-1	122

08:15-08:30

	A	B	C	D		E	Total
A	5	27	193	30	2	2	258.44849
B	25	1	19	11	1	16	73
C	282	17	4	4	1	62	370
D	28	6	15	1	1	32	82
WM	1	0	1	0	0	3	5
E	14	34	77	17	1	0	143

08:30-08:45

	A	B	C	D		E	Total
A	5	26	162	19	0	9	220.92775
B	28	0	16	4	1	23	72
C	242	15	2	-1	0	52	310
D	33	14	18	0	0	41	106
WM	1	0	2	0	0	2	5
E	11	56	65	15	0	2	150

08:45-09:00

	A	B	C	D		E	Total
A	36	0	0	224	0	0	260
B	47	0	0	122	0	0	169
C	66	0	0	310	0	0	376
D	1	0	22	72	0	0	95
WM	0	0	0	0	0	0	0
E	26	0	1	125	0	0	152

Car Growth 2023 with dev reduction

0.019

	001	003	005	007	009	011	

06:00-06:15

	A	B	C	D		E	Total
A	0	0	3	0	0	0	4
B	0	0	0	0	0	0	1
C	3	0	0	0	0	1	4
D	0	0	0	0	0	0	1
WM	0	0	0	0	0	0	0
E	0	0	2	0	0	0	2

06:15-06:30

	A	B	C	D		E	Total
A	0	0	3	0	0	0	3.836627
B	0	0	0	0	0	0	1
C	3	0	0	0	0	1	5
D	0	0	0	0	0	0	1
WM	0	0	0	0	0	0	0
E	0	0	2	0	0	0	2

06:30-06:45

	A	B	C	D		E	Total
A	0	0	3	0	0	0	3.893627
B	0	0	0	0	0	0	1
C	3	0	0	0	0	1	4
D	0	0	0	0	0	0	1
WM	0	0	0	0	0	0	0
E	0	0	2	0	0	0	2

06:45-07:00

	A	B	C	D		E	Total
A	0	0	4	0	0	0	4.292627
B	0	0	0	0	0	0	1
C	3	0	0	0	0	1	5
D	0	0	0	0	0	0	1
WM	0	0	0	0	0	0	0
E	0	0	2	0	0	0	2

07:00-07:15

	A	B	C	D		E	Total
A	0	0	4	0	0	0	4.102627
B	0	0	0	0	0	0	1
C	3	0	0	0	0	1	4
D	0	0	0	0	0	0	1
WM	0	0	0	0	0	0	0
E	0	0	2	0	0	0	3

07:15-07:30

	A	B	C	D		E	Total
A	0	0	4	0	0	0	4.387627
B	0	0	0	0	0	0	1
C	4	0	0	0	0	1	5
D	0	0	0	0	0	0	1
WM	0	0	0	0	0	0	0
E	0	0	2	0	0	0	3

07:30-07:45

	A	B	C	D		E	Total
A	0	0	5	0	0	0	6.012521
B	1	0	1	0	0	0	2
C	5	0	0	0	0	1	7
D	0	0	0	0	0	0	1
WM	0	0	0	0	0	0	0
E	0	0	2	0	0	0	3

07:45-08:00

	A	B	C	D		E	Total
A	0	1	4	0	0	0	4.720521
B	1	0	1	0	0	0	2
C	6	0	0	0	0	1	8
D	1	0	0	0	0	0	1
WM	0	0	0	0	0	0	0
E	0	0	1	0	0	0	2

08:00-08:15

	A	B	C	D		E	Total
A	0	1	4	1	0	0	5.480521
B	1	0	0	0	0	0	2
C	6	0	0	0	0	1	7
D	1	0	0	0	0	1	2
WM	0	0	0	0	0	0	0
E	0	0	1	0	0	0	2

08:15-08:30

	A	B	C	D		E	Total
A	0	1	4	1	0	0	4.910521
B	0	0	0	0	0	0	1
C	5	0	0	0	0	1	7
D	1	0	0	0	0	1	2
WM	0	0	0	0	0	0	0
E	0	1	1	0	0	0	3

08:30-08:45

	A	B	C	D		E	Total
A	0	0	3	0	0	0	4.197627
B	1	0	0	0	0	0	1
C	5	0	0	0	0	1	6
D	1	0	0	0	0	1	2
WM	0	0	0	0	0	0	0
E	0	1	1	0	0	0	3

08:45-09:00

	A	B	C	D		E	Total
A	1	0	0	4	0	0	4.94
B	1	0	0	2	0	0	3
C	1	0	0	6	0	0	7
D	0	0	0	1	0	0	2
WM	0	0	0	0	0	0	0
E	0	0	0	2	0	0	3

Car Growth 2028 with dev reduction

0.0661

001 003 005 007 009 011

06:00-06:15							
	A	B	C	D		E	Total
A	0	1	12	0	0	0	13
B	1	0	1	0	0	1	3
C	11	1	0	0	0	3	15
D	1	0	1	0	0	1	3
WM	0	0	0	0	0	0	0
E	1	1	5	0	0	0	8

06:15-06:30							
	A	B	C	D		E	Total
A	0	1	12	0	0	0	13.34742
B	1	0	1	0	0	1	3
C	11	1	0	0	0	5	17
D	1	0	1	0	0	1	3
WM	0	0	0	0	0	0	0
E	1	1	5	0	0	0	8

06:30-06:45							
	A	B	C	D		E	Total
A	0	1	12	0	0	0	13.54572
B	1	0	1	0	0	1	3
C	11	1	0	0	0	3	15
D	1	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	1	5	0	0	0	8

06:45-07:00							
	A	B	C	D		E	Total
A	0	1	13	1	0	0	14.93382
B	1	0	1	0	0	1	3
C	11	1	0	0	0	4	16
D	1	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	1	6	1	0	0	9

07:00-07:15							
	A	B	C	D		E	Total
A	0	1	13	1	0	0	14.27282
B	1	0	1	0	0	1	3
C	12	1	0	0	0	3	16
D	1	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	1	6	1	0	0	9

07:15-07:30							
	A	B	C	D		E	Total
A	0	2	13	1	0	0	15.26432
B	1	0	2	0	0	1	4
C	14	1	0	0	0	4	18
D	2	0	1	0	0	1	4
WM	0	0	0	0	0	0	0
E	1	1	6	0	0	0	9

07:30-07:45							
	A	B	C	D		E	Total
A	0	1	19	1	0	0	20.91725
B	2	0	2	0	0	1	6
C	18	1	0	0	0	5	24
D	2	1	1	0	0	2	5
WM	0	0	0	0	0	0	1
E	1	1	7	1	0	0	10

07:45-08:00							
	A	B	C	D		E	Total
A	0	2	13	1	0	0	16.42245
B	2	0	2	0	0	2	6
C	21	1	0	1	0	4	27
D	3	0	1	0	0	1	5
WM	0	0	0	0	0	0	1
E	1	1	5	1	0	0	8

08:00-08:15							
	A	B	C	D		E	Total
A	0	2	14	2	0	0	19.06645
B	3	0	2	0	0	2	6
C	19	1	0	0	0	5	26
D	3	0	1	0	0	2	6
WM	0	0	0	0	0	0	1
E	1	1	5	1	0	0	8

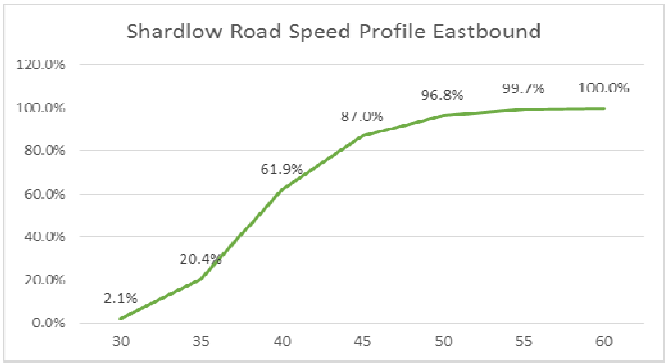
08:15-08:30							
	A	B	C	D		E	Total
A	0	2	13	2	0	0	17.08345
B	2	0	1	1	0	1	5
C	19	1	0	0	0	4	24
D	2	0	1	0	0	2	5
WM	0	0	0	0	0	0	0
E	1	2	5	1	0	0	9

08:30-08:45							
	A	B	C	D		E	Total
A	0	2	11	1	0	1	14.60332
B	2	0	1	0	0	2	5
C	16	1	0	0	0	3	21
D	2	1	1	0	0	3	7
WM	0	0	0	0	0	0	0
E	1	4	4	1	0	0	10

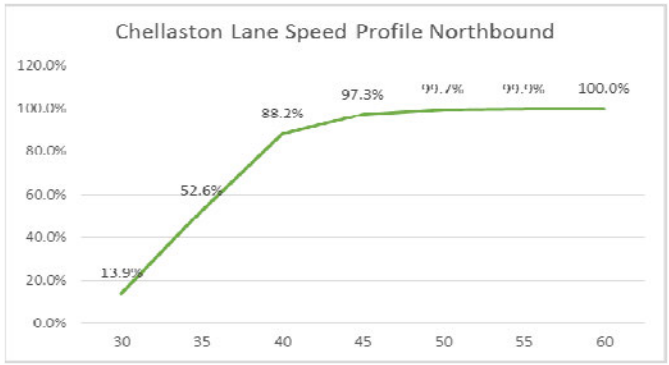
08:45-09:00							
	A	B	C	D		E	Total
A	2	0	0	15	0	0	17.186
B	3	0	0	8	0	0	11
C	4	0	0	20	0	0	25
D	0	0	1	5	0	0	6
WM	0	0	0	0	0	0	0
E	2	0	0	8	0	0	10

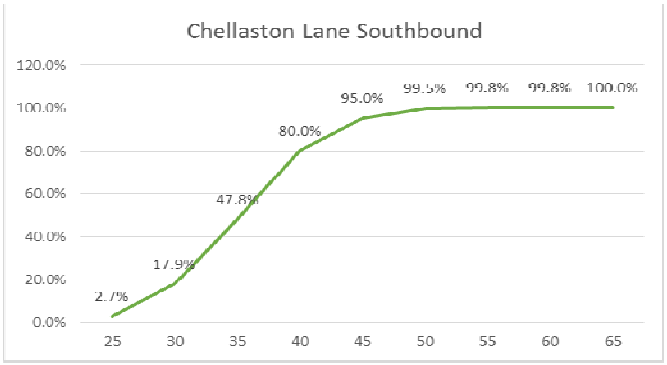
Appendix Q

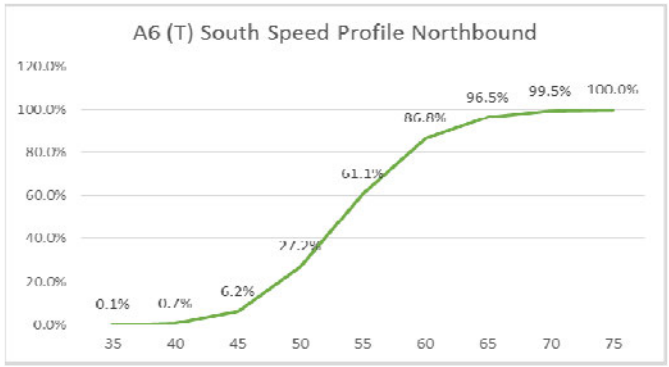
Proposed Speed Graphs

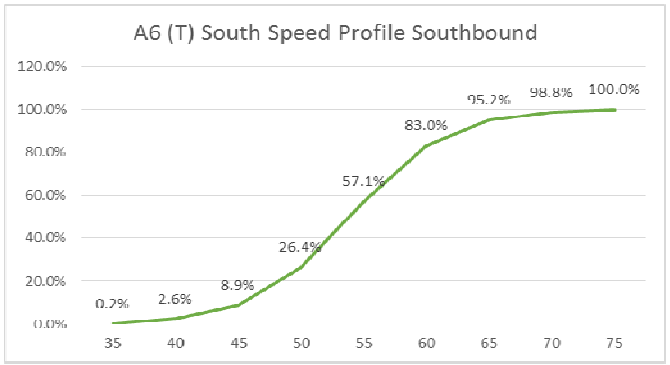

Shardlow Road Speed Profile Eastbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
2.1%
20.4%
61.9%
87.0%
96.8%
99.7%
100.0%
30
35
40
45
50
55
60

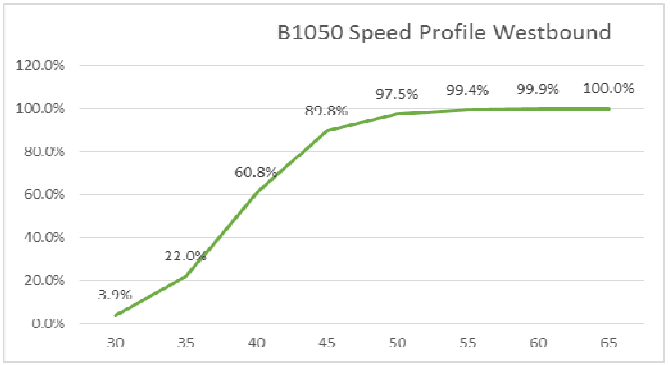

Shardlow Road Speed Profile Westbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
4.1%
24.7%
66.7%
91.8%
98.2%
100.0%
30
35
40
45
50
55

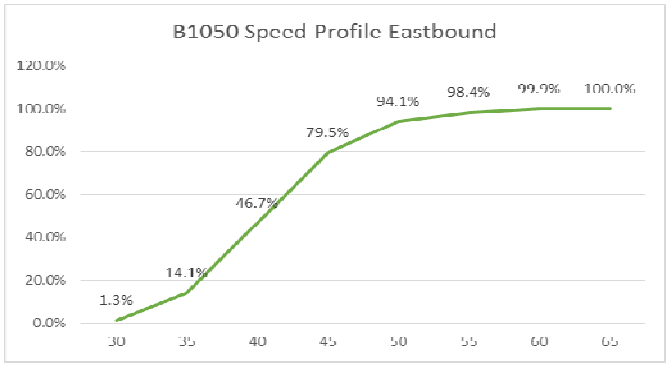

Chellaston Lane Speed Profile Northbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
13.9%
52.6%
88.2%
97.3%
99.7%
99.9%
100.0%
30
35
40
45
50
55
60

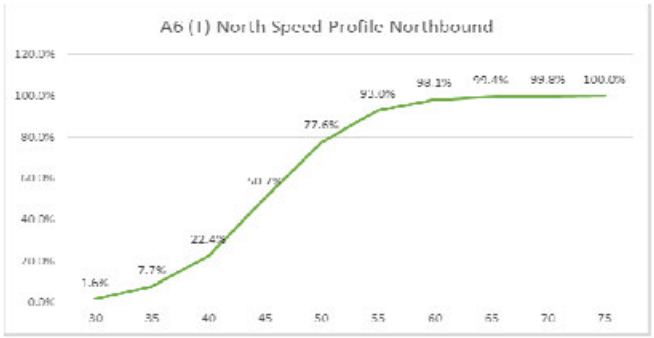

Chellaston Lane Southbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
2.7%
17.9%
47.8%
80.0%
95.0%
99.5%
99.8%
99.8%
100.0%
25
30
35
40
45
50
55
60
65

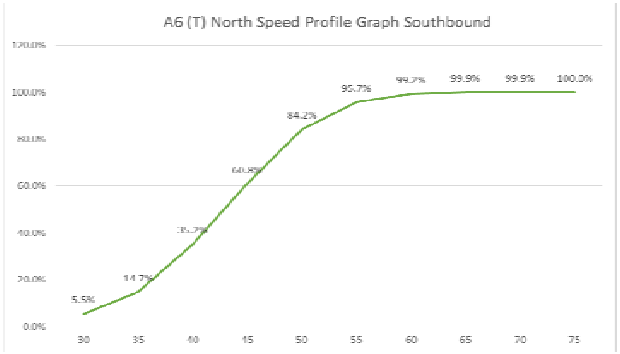

A6 (T) South Speed Profile Northbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
0.1%
0.7%
6.2%
27.2%
61.1%
86.8%
96.5%
99.5%
100.0%
35
40
45
50
55
60
65
70
75

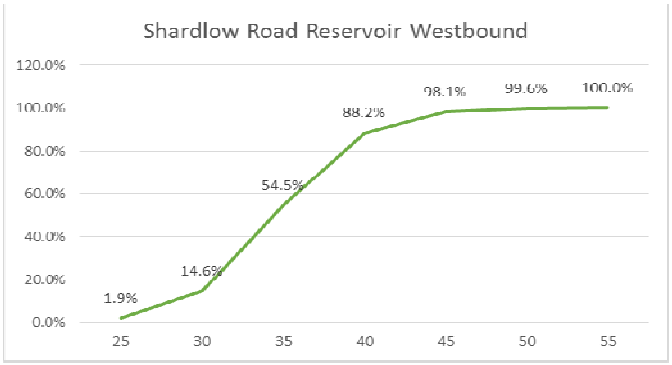

A6 (T) South Speed Profile Southbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
0.2%
2.6%
8.9%
26.4%
57.1%
83.0%
95.2%
98.8%
100.0%
35
40
45
50
55
60
65
70
75

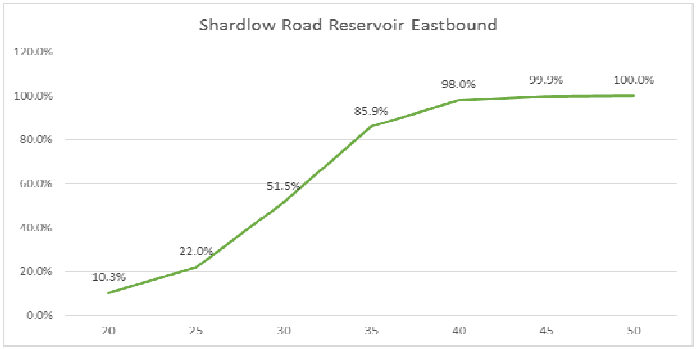

B1050 Speed Profile Westbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
3.9%
22.0%
60.8%
80.8%
97.5%
99.4%
99.9%
100.0%
30
35
40
45
50
55
60
65

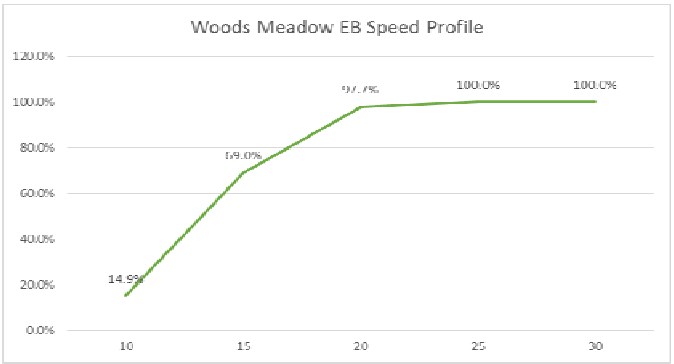

B1050 Speed Profile Eastbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
1.3%
14.1%
46.7%
79.5%
94.1%
98.4%
99.9%
100.0%
30
35
40
45
50
55
60
65

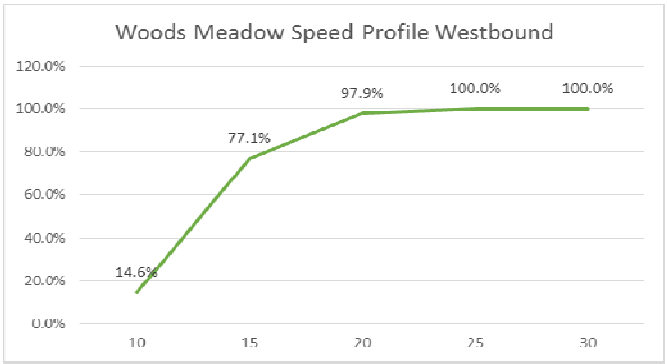

A6 (T) North Speed Profile Northbound
120.0%
100.0%
80.0%
40.0%
0.0%
1.6%
7.7%
22.4%
77.6%
93.0%
98.1%
99.4%
99.8%
100.0%
30
35
40
45
50
55
60
65
70
75


A6 (T) North Speed Profile Graph Southbound
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
5.5%
84.2%
95.7%
99.9%
99.9%
100.0%
30
35
40
45
50
55
60
65
70
75


Shardlow Road Reservoir Westbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
1.9%
14.6%
54.5%
88.2%
98.1%
99.6%
100.0%
25
30
35
40
45
50
55


Shardlow Road Reservoir Eastbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
10.3%
22.0%
51.5%
85.9%
98.0%
99.9%
100.0%
20
25
30
35
40
45
50


Woods Meadow EB Speed Profile
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
14.9%
69.0%
100.0%
100.0%
10
15
20
25
30


Woods Meadow Speed Profile Westbound
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
14.6%
77.1%
97.9%
100.0%
100.0%
10
15
20
25
30