WROTHAM PARISH COUNCIL, BOROUGH GREEN PARISH COUNCIL, PLATT PARISH COUNCIL & IGHTHAM PARISH COUNCIL

OBJECTION TO PROPOSED REDEVELOPMENT OF EXISTING AND FORMER QUARRY SITES TO PROVIDE A LARGE SCALE RESIDENTIAL DEVELOPMENT AT BOROUGH GREEN GARDENS

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Contents

1.0 Introduction

1.1 Les Henry Associates Limited have been instructed by Wrotham Parish Council, Borough Green Parish Council, Platt Parish Council and Ightham Parish Council (The Parish Councils) to provide this Technical Appraisal of the proposals for large scale redevelopment of existing and former quarry sites in Borough Green to provide approximately 3,500 homes between 2024 and 2031 known as Borough Green Gardens.

1.2 My name is Leslie James Henry. I am an Incorporated Engineer, a Fellow of the Institute of Highway Engineers and a Member of the Chartered Institution of Highways and Transportation.

1.3 I have been involved in highway and traffic engineering issues for over 35 years in connection with new development and road safety schemes within both the private and public sector.

1.4 I have assisted Wrotham Parish Council in respect many development proposals and highway improvement schemes since 2007 when I represented them and supported their objections at the Borough Green Bypass Public Inquiry. I have also assisted Borough Green Parish Council with some highway related proposals.

1.5 This Technical Appraisal identifies several problems associated with the proposed redevelopment in terms of highway capacity and is in support with the objections raised by the Parish Councils in respect of the large-scale redevelopment proposed.

2.0 Site, Highway and Transport Characteristics

2.1 The proposed redevelopment area lies on land bounded to the north by the M26, to the south by the existing village of Borough Green, to the east by the A20 London Road, and to the west by the Darkhill roundabout at the eastern end of Ightham bypass.

2.2 Borough Green is a large village situated on the A25 between Maidstone and Sevenoaks. The village has a range of shops, services and community facilities including a primary school and nearby secondary school.

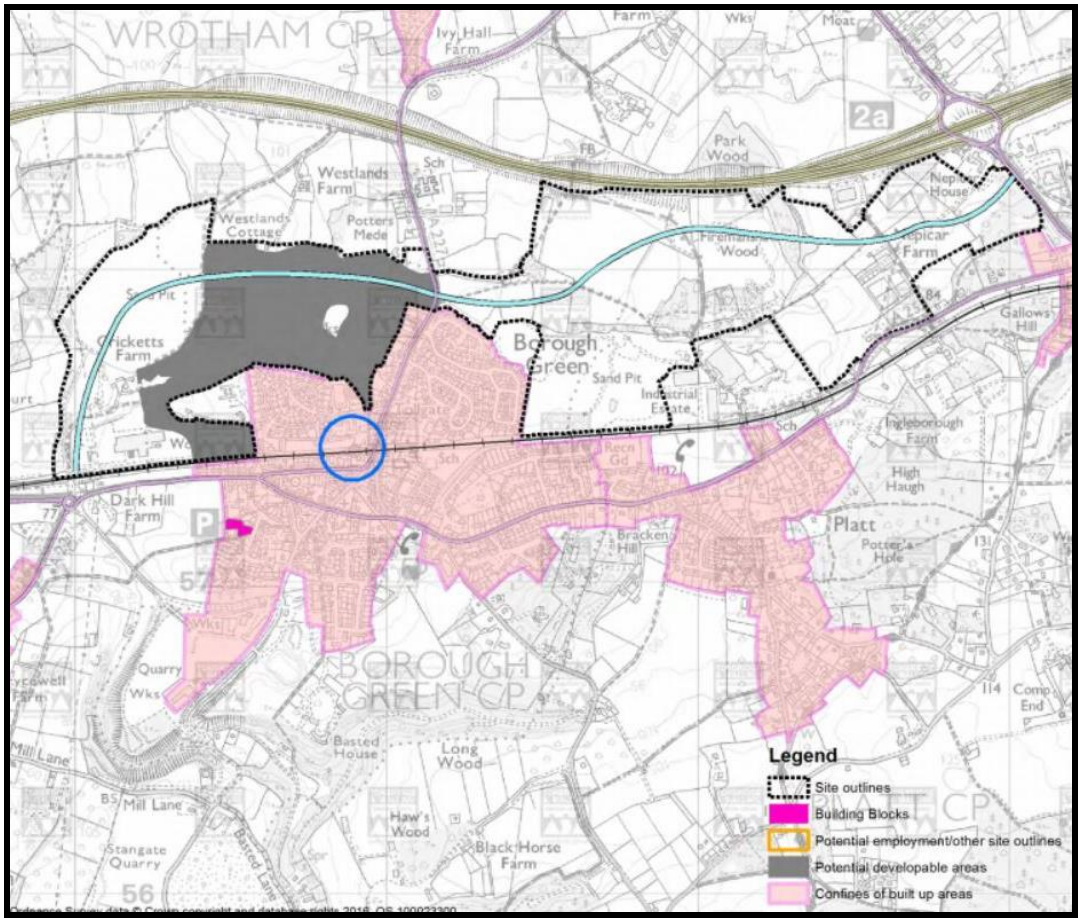


Figure 2: Site Location Plan

2.3 Borough Green is connected to the road network with access to the M20 and M26 via the A25, A227 and A20.

2.4 Additionally, Borough Green and Wrotham Railway Station provides services to London Victoria, London Blackfriars and east Kent.

2.5 It is possible to board 7 bus services close to Borough Green and Wrotham railway station which provide relatively limited services throughout the day to surrounding towns and villages as follows: -

Route 70 Borough Green, Wrotham Heath, Offham, West Malling, Maidstone.

Route 220 Addington, Trottiscliffe, Platt, Ightham, Plaxtol, Tonbridge, Culverden Down, Bennett Memorial School.

Route 221 Wrotham, Borough Green, Ightham, Shipbourne, Tonbridge, Culverden Down, Bennett Memorial School.

Route 222 Wrotham (peaks), Borough Green, Ightham, Plaxtol, Dunks Green, Shipbourne, Tonbridge, Tunbridge Wells.

Route 228 Tonbridge, Shipbourne, Ightham, Borough Green, West Kingsdown & Bluewater.

Route 306 Bluewater, Gravesend, Meopham, Vigo, Borough Green, Ightham, Seal, Sevenoaks.

Route 308 Sevenoaks, Riverhead, Borough Green, Vigo, Meopham, Istead Rise, Gravesend, Swanscombe & Bluewater.

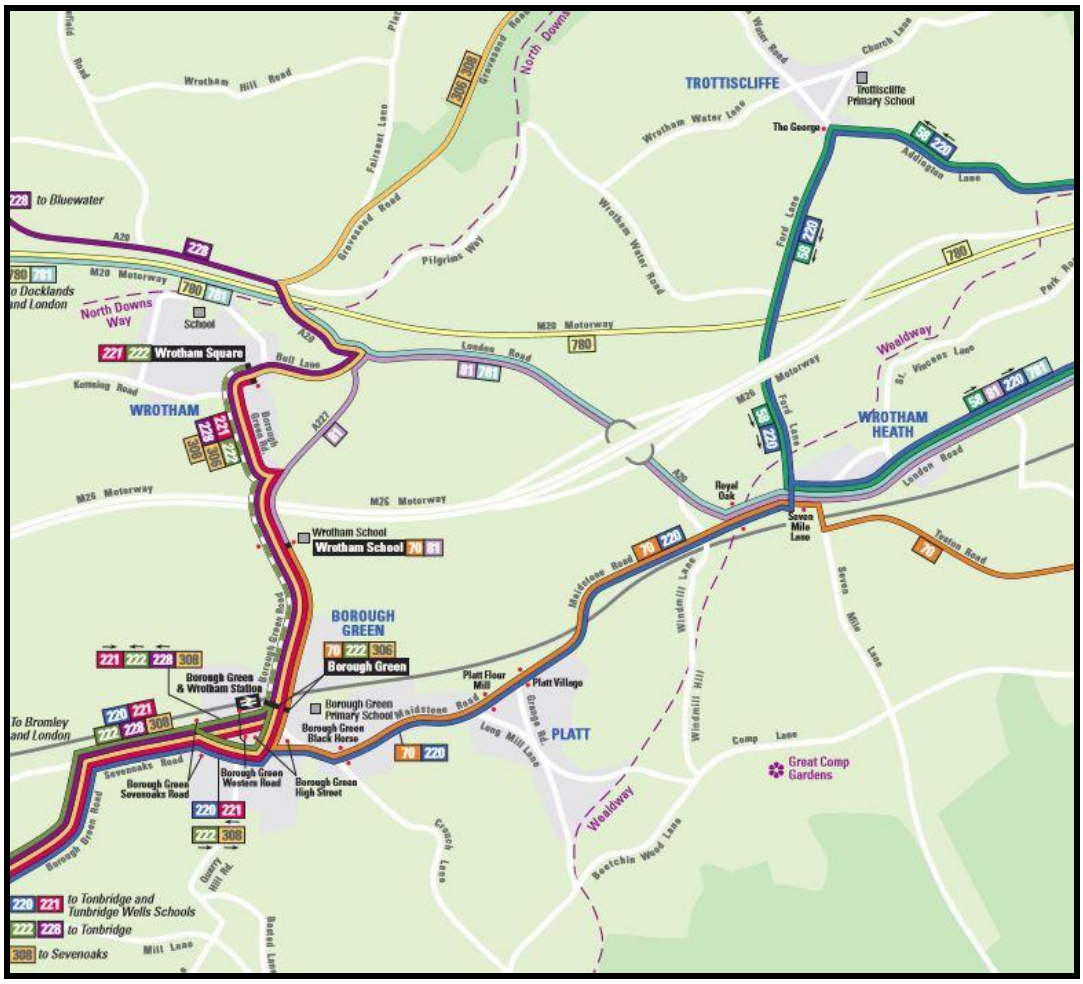


Figure 2: Local Bus Services

2.6 An Air Quality Management Area Order was made by Tonbridge and Malling Borough Council on 26th March 2013 for Borough Green (Appendix B) in accordance with the Environment Act 1995. The order came into

effect on 1st April 2013 and covers part of A25 Sevenoaks Road, Western Road and High Street Borough Green.

2.7 The area is designated in relation to a likely breach of the nitrogen dioxide (annual mean) objective as specified in the Air Quality (England) Regulation 2000.

Figure 3: Highway Context Plan

3.0 Planning Policy

3.1 In response to the publication of the National Planning Policy Framework in March 2012, Tonbridge and Malling Borough Council Members have agreed to the production of a new Local Plan.

3.2 This new Plan, once adopted, will form part of the Council's Development Plan and will replace the current suite of adopted local plans. The new Plan will have a time horizon up to 2031.

3.3 In the interim, the suite of adopted local plans and any adopted Neighbourhood Plans will continue to represent the core of the Council's Development Plan, having been prepared under the Planning and Compulsory Purchase Act 2004.

3.4 Tonbridge and Malling Borough Council carried out a public consultation in respect of the proposed new Local Plan which was entitled “The Way Forward”.

3.5 The Consultation ran between 30th September 2016 and 25th November 2016.

3.6 Whilst the whole of the Borough Green Gardens proposal site and the proposed Borough Green Bypass are identified in the draft Local Plan only phase one of the proposed development is stated as being a potential development area.

4.0 The Proposals

4.1 A group of local landowners and businesses have submitted preliminary proposals known as “Borough Green Gardens” to Tonbridge & Malling Borough Council as part of the consultation for the emerging Local Plan.

4.2 These proposals set out a proposal for a large-scale redevelopment of existing and redundant quarry sites to form an expansion to Borough Green that are purported to follow the principles of garden cities/villages.

4.3 Borough Green Gardens would be split into three phases as follows: -

Phase 1 of the development will deliver the 1st phase of the Borough Green Bypass, from the A25 to the A227, including a new roundabout;

Phase 2A of the development will deliver a key section of the Borough Green Bypass towards the A20; and

Phase 2B of the development will facilitate the completion of the Borough Green Bypass.

4.4 It is claimed this will remove 700- 900 vehicles from Borough Green at peak times and provide major improvements to air quality, noise and traffic congestion and significantly improve the quality of life of residents in the local area.

4.5 However, the delivery of the Borough Green Bypass is reliant on provision of the following residential development: -

Phase 1 - approximately 1,000 residential dwellings;

Phase 2A - approximately 1,250 residential dwellings; and

Phase 2B - approximately 1,250 residential dwellings.

4.6 The proposals also include the provision of up to 60,000m² of employment floor space that could create up to 600 new jobs.

4.7 The proposals themselves would therefore generate a considerable amount of vehicular traffic.

5.0 Highways Implications

5.1 An analysis of the industry standard TRICS database identified very few suitably comparable sites for mixed private and affordable housing to identify the traffic that could be generated by the development proposals.

5.2 However, I have selected 5 sites within Kent and Surrey to provide a reasonable assessment of the likely level of vehicular traffic that could be generated.

5.3 Trip rates for only the residential element have been considered at this stage as the land uses for employment is unknown and trips rates across employment sites vary considerably.

5.4 The trip rates and total vehicle numbers for each phase of the development are summarised in the Tables 1 and 2 below and the full TRICS data is provided in Appendix A.

AM 0800-0900hrs			PM 1700-1800hrs		
Arrivals	Departures	Total	Arrivals	Departures	Total
0.097	0.312	0.409	0.231	0.100	0.331

Table 1: Residential Trip Rates

	AM 0800-0900hrs			PM 1700-1800hrs		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Phase 1	97	312	409	231	100	331
Phase 2A	121	390	511	289	125	414
Phase 2B	121	390	511	289	125	414
Total	340	1092	1432	809	350	1159

Table 2: Generated Traffic

5.5 It can therefore be quite clearly seen that the residential development itself will generate a considerable amount of vehicular traffic.

5.6 The Parish Councils are therefore very concerned that any additional traffic generated by the proposed residential development would have significant impacts on the existing roundabout junctions at Darkhill at the eastern end of Ightham Bypass and Whitehill adjacent to the M20 westbound on slip.

5.7 It should be noted that at times considerable levels of congestion is already experienced at these junctions.

5.8 In addition, planning permission was granted for on 20th June 2013 under Tonbridge and Malling Borough Council reference: TM/11/01191/FL for the erection of 171 dwellings at the Isles Quarry site in Borough Green. The traffic generated by this development will also have some impact on the local highway network.

5.9 The Transport Assessment produced by URS in support of the planning application also took account of 3 committed developments at the FCC Environment site, Hornet Estate and Basted House Fitness & Health Spa.

5.10 The suggested vehicle trips generated by all of these proposals are summarised in Table 3 below.

AM 0800-0900hrs			PM 1700-1800hrs		
Arrivals	Departures	Total	Arrivals	Departures	Total
42	94	136	70	54	124

Table 3 - Committed Development Trips

5.11 The predicted trips were assigned to the highway network in the following proportions: -

32% - A25 (W)/Haul Road
30% - A25 (E)/Haul Road/Quarry Hill Road
25% - A227(S)/Haul Road
10% - A227 (N)/A25/Haul Road
3% - A25/Hal Road/Quarry Hill Road

6.0 Existing Traffic Flows

6.1 In the absence of any recently published traffic survey data for the Darkhill and Whitehill roundabout junctions and not wishing to put the Parish Councils to considerable expense of engaging specialist survey companies to carry out surveys at the junctions, I have reverted to the evidence provided at the Borough Green Bypass Public Inquiry.

6.2 The industry standard English Regional Traffic Forecasts and TEMPRO have been utilised to update the surveyed traffic figures presented at the inquiry.

6.3 The figures for the Darkhill roundabout date back to 2002 and therefore a traffic growth factor of 10.3% has been used to update the figures to the current time. Further growth factors of 5% and 7% have been used to progress the analyses to years 2024 and 2028 from the 2017 figures respectively.

6.4 It is accepted that this data is considerably old but the predicted flows are reasonably comparable with the traffic data provided within the Transport Assessment for the committed residential development at Isles Quarry and certainly within the expected daily variations for traffic flows.

6.5 The Parish Councils have asked me to assess the two roundabout junctions in two scenarios, in the year 2024 upon completion of phase 1 of the proposals with the first stage of the Bypass constructed and 1000 dwellings completed and in the year 2028 upon completion of phase 2A with the road continued east to serve a further 1250 dwellings.

6.6 The development traffic from the Isles Quarry site have also been assigned to the 2024 plus development and 2028 plus development scenarios.

6.6 I have, to provide a full picture, also included scenarios for the existing situation (i.e. 2017) and for the year 2024 without the phase 1 residential development traffic flows.

6.7 A series of traffic flow diagrams for the Darkhill and Whitehill roundabouts are provided at Appendix C and D respectively that detail the predicted flows used for the industry standard ARCADY junction analyses summarised in the next section.

7.0 ARCADY JUNCTION ANALYSES

7.1 As stated above I have carried out junction analyses using the industry standard "ARCADY" software. The name of the software is an acronym for **A**ssessment of **R**oundabout **CA**pacity and **D**ela**Y.**

7.2 The results are expressed as RFC which is an abbreviation for "Ratio of Flow to Capacity" and generally arms are deemed to operate at theoretical capacity when the RFC reaches 0.850 or 85% above this figure vehicle queues will develop quickly and increase delays exponentially.

7.3 The predicted queue of traffic is also quoted in the tables below and this is expressed in vehicles. The length of the vehicle for the purposes of the analyses is 5.75m and therefore a queue of 10 vehicles would measure 57.5m back from the roundabout give way line.

7.4 I have carried out analyses for both the assumed AM and PM highway network peak periods of 0800-0900hrs and 1700-1800hrs for each of the following 4 scenarios: -

1. 2017 predicted traffic flows;
2. 2024 predicted traffic flows without residential development;
3. 2024 predicted traffic flows with 1000 dwellings and committed development; and
4. 2028 predicted traffic flows with 2250 dwellings and committed development.

7.5 The results of the analyses for the Darkhill roundabout are summarised in Tables 4 to 7 below and the full set of results is provided at Appendix C.

7.6 As can be seen in scenarios 3 and 4 below the bypass arm onto the existing Darkhill roundabout junction will be saturated with traffic and extremely long queues will develop.

7.7 The roundabout will therefore be operated beyond its capacity; driver behaviour will become irrational and conditions prejudicial to highway safety will arise.

7.8 In addition, there will be increased levels of pollution as the traffic will not be moving to dissipate exhaust fumes.

	AM Peak		**PM Peak**	
Arm	Max RFC	Max Queue	Max RFC	Max Queue
Celcon	0.014	0	0.147	0
A25 East	0.597	2	0.266	0
Haul Road	0.082	0	0.038	0
A227 South	0.242	0	0.166	0
A25 West	0.342	1	0.581	2

Table 4: Darkhill Scenario 1

	AM Peak		**PM Peak**	
Arm	Max RFC	Max Queue	Max RFC	Max Queue
Celcon	0.016	0	0.166	0
A25 East	0.627	2	0.279	0
Haul Road	0.090	0	0.040	0
A227 South	0.262	0	0.175	0
A25 West	0.361	1	0.614	2

Table 5: Darkhill Scenario 2

	AM Peak		**PM Peak**	
Arm	Max RFC	Max Queue	Max RFC	Max Queue
Bypass	1.066	43	0.468	1
A25 East	0.395	1	0.149	0
Haul Road	0.213	0	0.081	0
A227 South	0.303	0	0.206	0
A25 West	0.387	1	0.729	3

Table 6: Darkhill Scenario 3

	AM Peak		**PM Peak**	
Arm	Max RFC	Max Queue	Max RFC	Max Queue
Bypass	1.381	204	0.519	1
A25 East	0.404	1	0.121	0
Haul Road	0.218	0	0.064	0
A227 South	0.314	0	0.235	0
A25 West	0.417	1	0.868	7

Table 7: Darkhill Scenario 4

7.9 The results of the analyses for the Whitehill roundabout are summarised in Tables 8 to 11 below and the full set of results is provided at Appendix D.

	AM Peak		**PM Peak**	
Arm	Max RFC	Max Queue	Max RFC	Max Queue
M20 On Slip	Exit Only	Exit Only	Exit Only	Exit Only
A20 East	0.768	4	0.836	5
A227 South	0.548	1	0.410	1
Bull Lane	0.177	0	0.131	0
A20 West	0.928	12	0.795	4

Table 8: Whitehill Scenario 1

7.10 It can be seen in Table 8 that the roundabout is already approaching capacity at peak times with queues begining to form on some arms and therefore with additional background traffic growth and additional development, delays will only continue to increase.

7.11 The predicted increase in traffic cannot therefore be sustained by the highway network and the increase in delays will lead to irrational driver behaviour that will give rise to conditions prejudicial to highway safety.

7.12 In addition, there will be increased levels of pollution as the traffic will not be moving to dissipate exhaust fumes.

	AM Peak		**PM Peak**	
Arm	Max RFC	Max Queue	Max RFC	Max Queue
M20 On Slip	Exit Only	Exit Only	Exit Only	Exit Only
A20 East	0.837	5	0.821	5
A227 South	0.581	2	0.663	2
Bull Lane	0.319	1	0.170	0
A20 West	1.035	43	0.781	4

Table 9 Whitehill Scenario 2

	AM Peak		**PM Peak**	
Arm	Max RFC	Max Queue	Max RFC	Max Queue
M20 On Slip	Exit Only	Exit Only	Exit Only	Exit Only
A20 East	0.838	5	0.943	14
A227 South	0.733	3	0.864	6
Bull Lane	0.225	0	0.208	0
A20 West	1.060	58	1.023	36

Table 10: Whitehill Scenario 3

	AM Peak		**PM Peak**	
Arm	Max RFC	Max Queue	Max RFC	Max Queue
M20 On Slip	Exit Only	Exit Only	Exit Only	Exit Only
A20 East	0.875	7	0.994	58
A227 South	0.885	7	0.995	72
Bull Lane	0.272	0	0.234	9
A20 West	1.199	146	1.107	173

Table 11: Whitehill Scenario 4

8.0 Assessment

8.1 The ARCADY analyses show the proposed large scale redevelopment at Borough Green Gardens would lead to large amounts of congestion at the existing Darkhill and Whitehill roundabout junctions with substantial queues forming at peak times.

8.2 The proposals do not provide any details of the proposed roundabout junction on the A227 where the by-pass meets Borough Green Road. The space required for the junction would be likely to be substantial given the traffic flows involved.

8.3 However, it is also likely that there will be considerable congestion at this junction similar to that that will be experienced at the Darkhill and Whitehill roundabout junctions.

8.4 The proposed junction would therefore be likely to give rise to condition prejudicial to highway safety in the proximity of Wrotham and Grange Hill schools.

8.5 Whilst the provision of the bypass would indeed remove large amount of traffic from the centre of Borough Green, the proposals would create an intensively used junction within close proximity of the above schools on a route that is extensively used by children and parents/carers on their journeys to and from school.

8.6 The proposals would also increase noise and pollution near the schools and existing residential properties on or adjacent to the A227 and A20. This includes the lower part of the Wrotham Conservation Area sandwiched between St Mary's Road and the A227.

9.0 Conclusions

9.1 The proposals for Borough Green Gardens include the provision of the Borough Green Bypass by redeveloping existing and redundant quarry sites and purportedly remove large amounts of vehicular traffic from the village of Borough Green.

9.2 However, to facilitate the provision of the Bypass approximately 3500 dwellings will need to be constructed, which will themselves lead to a substantial increase in vehicular traffic in the area.

9.3 Many of these additional vehicles may well use the newly created Bypass but the existing junctions at either end of the route are already approaching their theoretical capacity and the additional traffic generated by the new development will increase the considerable delays already experienced by drivers at peak times.

9.4 The additional delays will exacerbate the existing situation and lead to irrational driver behaviour and give rise to conditions prejudicial to highway safety. In addition, high levels of pollution and noise will be generated in the vicinity of existing schools and residential properties

9.5 The proposed development cannot be sustained by the new bypass and existing highway network.

9.6 Tonbridge and Malling Borough Council should therefore undertake a thorough study of the likely implications of the proposals for vehicular traffic, highway capacity and congestion including a detailed design of the junction of the proposed bypass with A227 Borough Green Road.

9.7 The study should also include analyses of pollution and noise on sensitive receptors such as Wrotham School and Grange Park School and existing residents on roads surrounding the proposal sites that would be significantly affected by the development proposals.

APPENDIX A

TRICS DATA

Calculation Reference: AUDIT-839401-170105-0151

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : M - MIXED PRIVATE/AFFORDABLE HOUSING
VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	KC	KENT	1 days
	SC	SURREY	4 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 dwellings
Actual Range:	52 to 500 (units:)
Range Selected by User:	52 to 500 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/08 to 11/12/13

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	1 days
Wednesday	2 days
Thursday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	5 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)	3
Edge of Town	1
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:

Residential Zone	4
Village	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:

C3	5 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
5,001 to 10,000	1 days
20,001 to 25,000	2 days
25,001 to 50,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

100,001 to 125,000	1 days
125,001 to 250,000	4 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	1 days
1.1 to 1.5	3 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:

Yes	3 days
No	2 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	5 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 KC-03-M-01 BLOCKS OF FLATS KENT
HIGH STREET

RAMSGATE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 103
Survey date: TUESDAY 08/12/09 Survey Type: MANUAL

2 SC-03-M-02 HOUSES & FLATS SURREY
DEEPCUT BRIDGE ROAD
DEEPCUT
NEAR FRIMLEY
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Number of dwellings: 342
Survey date: WEDNESDAY 10/02/10 Survey Type: MANUAL

3 SC-03-M-05 HOUSES & FLATS SURREY
HOLYWELL WAY
STANWELL
STAINES
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 52
Survey date: MONDAY 19/11/12 Survey Type: MANUAL

4 SC-03-M-06 HOUSES & FLATS SURREY
ST ANNE'S DRIVE

REDHILL
Edge of Town
Residential Zone
Total Number of dwellings: 500
Survey date: WEDNESDAY 11/12/13 Survey Type: MANUAL

5 SC-03-M-07 HOUSES/FLATS SURREY
EPSOM ROAD

GUILDFORD
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 199
Survey date: THURSDAY 24/10/13 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 03 - RESIDENTIAL/M - MIXED PRIVATE/AFFORDABLE HOUSING
VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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	5	239	0.043	5	239	0.159	5	239	0.202
08:00 - 09:00	5	239	0.097	5	239	0.312	5	239	0.409
09:00 - 10:00	5	239	0.106	5	239	0.151	5	239	0.257
10:00 - 11:00	5	239	0.084	5	239	0.115	5	239	0.199
11:00 - 12:00	5	239	0.071	5	239	0.110	5	239	0.181
12:00 - 13:00	5	239	0.091	5	239	0.105	5	239	0.196
13:00 - 14:00	5	239	0.099	5	239	0.097	5	239	0.196
14:00 - 15:00	5	239	0.086	5	239	0.114	5	239	0.200
15:00 - 16:00	5	239	0.176	5	239	0.130	5	239	0.306
16:00 - 17:00	5	239	0.188	5	239	0.113	5	239	0.301
17:00 - 18:00	5	239	0.231	5	239	0.100	5	239	0.331
18:00 - 19:00	5	239	0.231	5	239	0.089	5	239	0.320
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.503			1.595			3.098

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:	52 - 500 (units:)
Survey date date range:	01/01/08 - 11/12/13
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	3
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.

APPENDIX B

AIR QUALITY MANAGEMENT ORDER 2013

Environment Act 1995 Part IV Section 83(1)

Tonbridge and Malling Borough Council

Air Quality Management Area Order No. 7 (Borough Green) 2013

Tonbridge and Malling Borough Council, in exercise of the powers conferred upon it by Section 83(1) of the Environment Act 1995, hereby makes the following Order.

1. This Order may be referred to as the Tonbridge and Malling Borough Council Air Quality Management Area No7 (Borough Green) and shall come into effect on 1 April 2013.

2. The hatched area shown on the attached map is to be designated as an air quality management area (the designated area). The designated area incorporates part of Sevenoaks Road (A25), Western Road and the High Street in Borough Green.

3. This Area is designated in relation to a likely breach of the nitrogen dioxide (annual mean) objective as specified in the Air Quality (England) Regulations 2000.

4. This Order shall remain in force until it is varied or revoked by a subsequent order.

Given under the common Seal of the Tonbridge and Malling Borough Council on this 26th day of March 2013.

The Common Seal of the]
Tonbridge and Malling Borough Council]
was hereunto affixed in]
the presence of:]

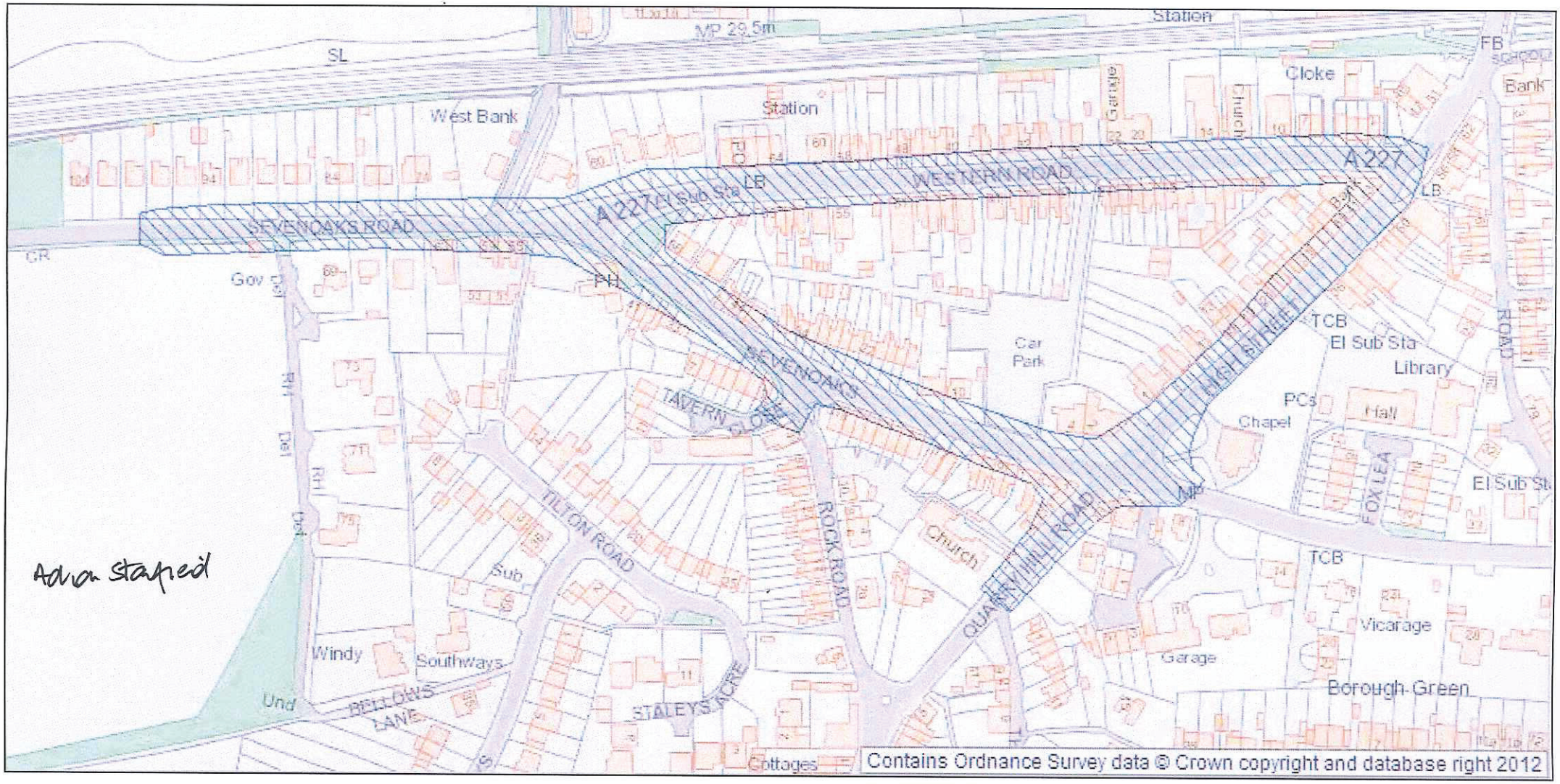
Adrian Stanford

Director of Central Services and Monitoring Officer on behalf of said Council.

Seal Book No:

1862

Proposed Borough Green AQMA

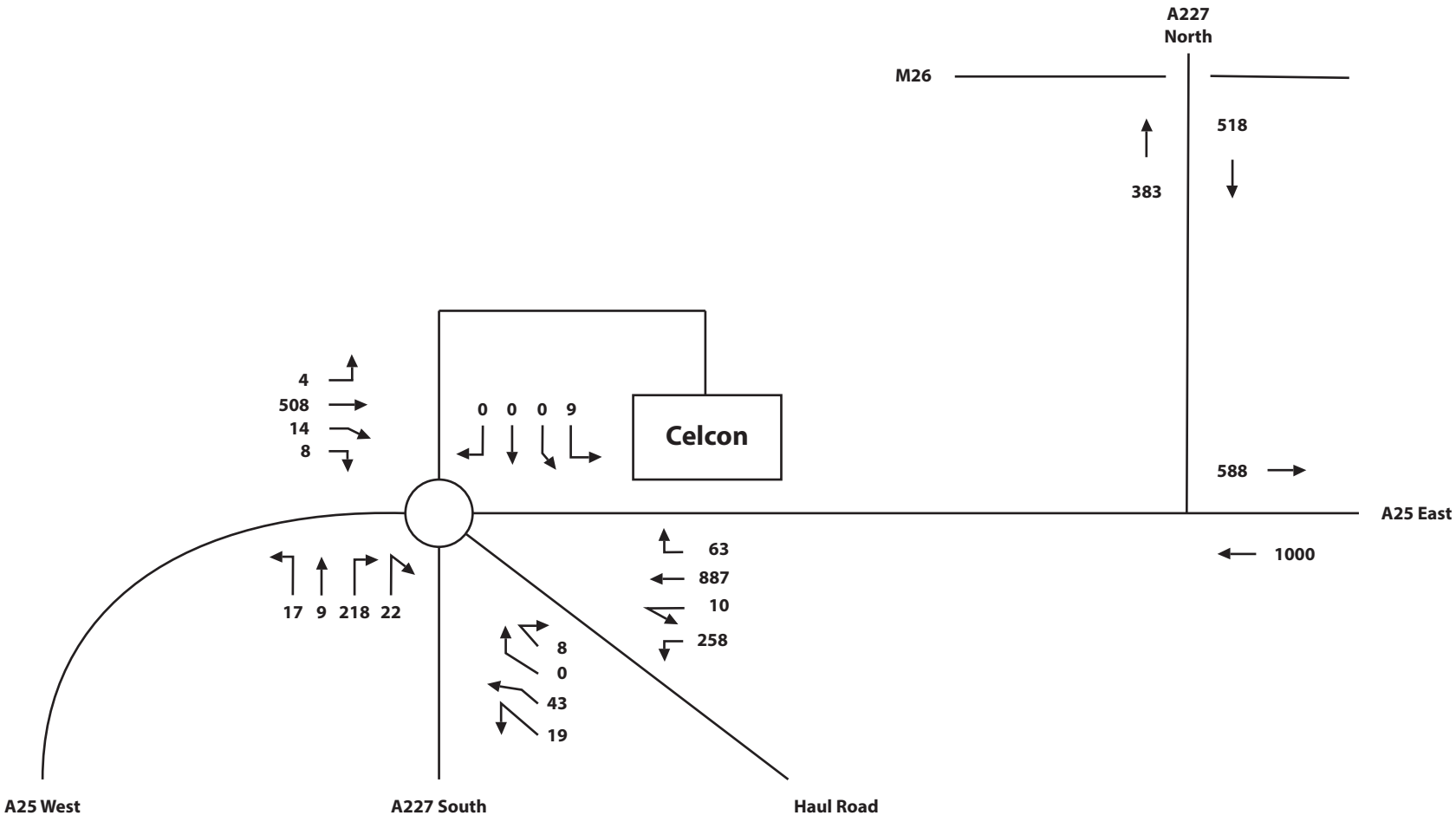


Adva stapled

Environmental Protection Team. December 2012

APPENDIX C

TRAFFIC DISTRIBUTION FIGURES – DARKHILL ROUNDABOUT



LES HENRY ASSOCIATES LIMITED

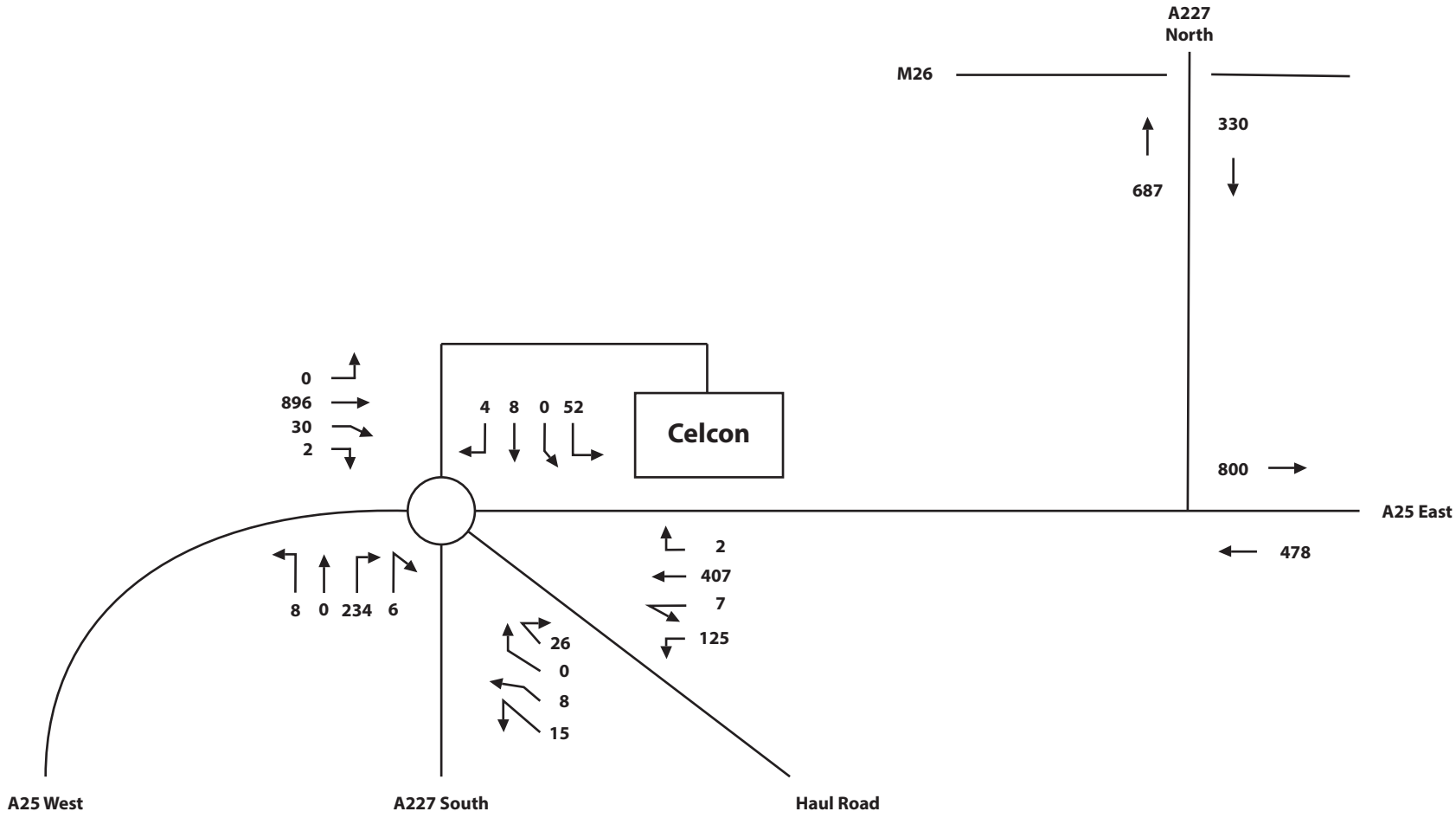
Project : Borough Green Gardens

2017 Predicted Traffic Flows - AM Peak (0800-0900)

Based upon Borough Green Bypass data 2002

Figure No.

1



LES HENRY ASSOCIATES LIMITED

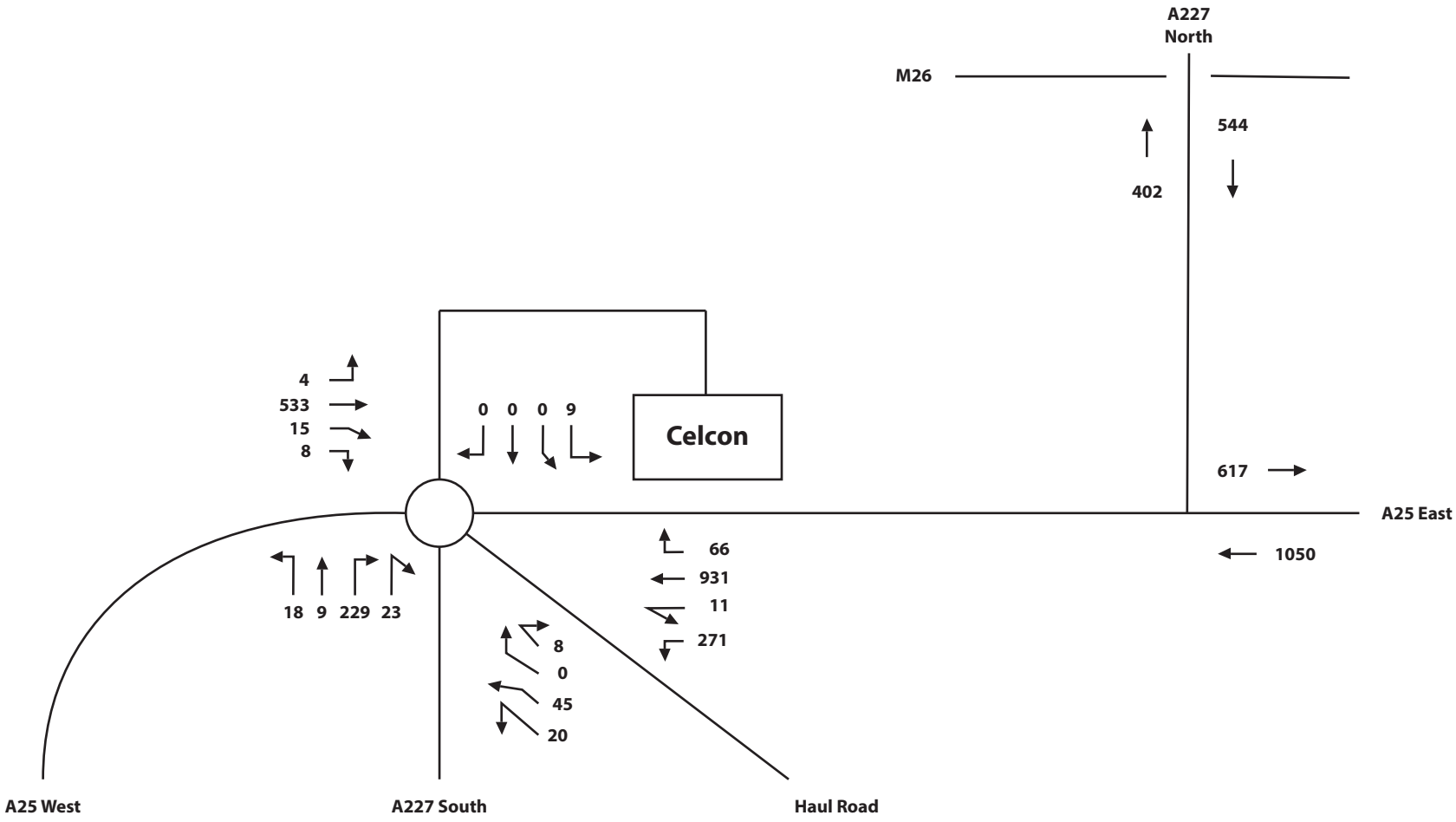
Project : Borough Green Gardens

2017 Predicted Traffic Flows - PM Peak (1700-1800)

Based upon Borough Green Bypass data 2002

Figure No.

2



LES HENRY ASSOCIATES LIMITED

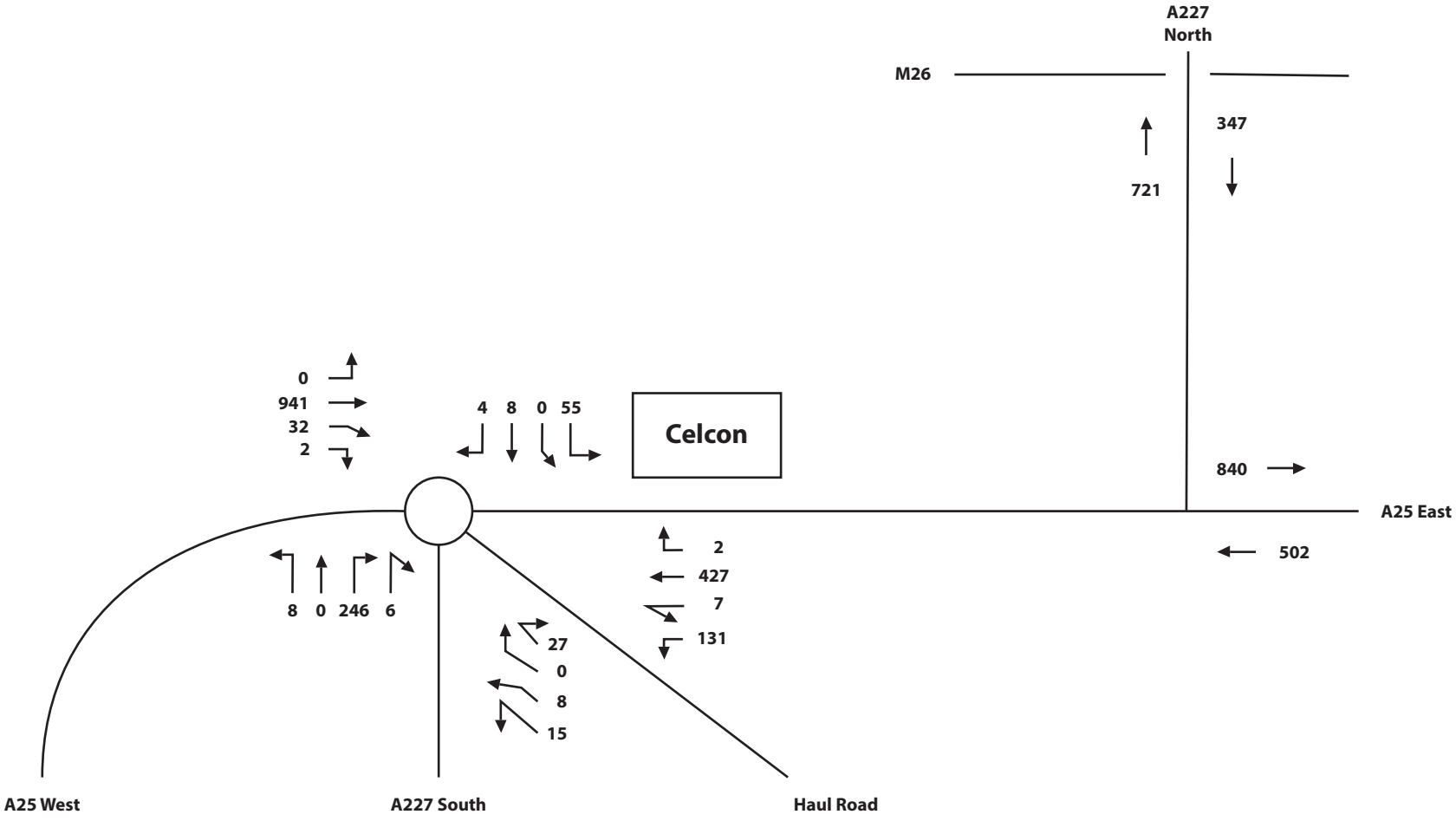
Project : Borough Green Gardens

2024 Predicted Traffic Flows - AM Peak (0800-0900)

Based upon Borough Green Bypass data 2002

Figure No.

3



LES HENRY ASSOCIATES LIMITED

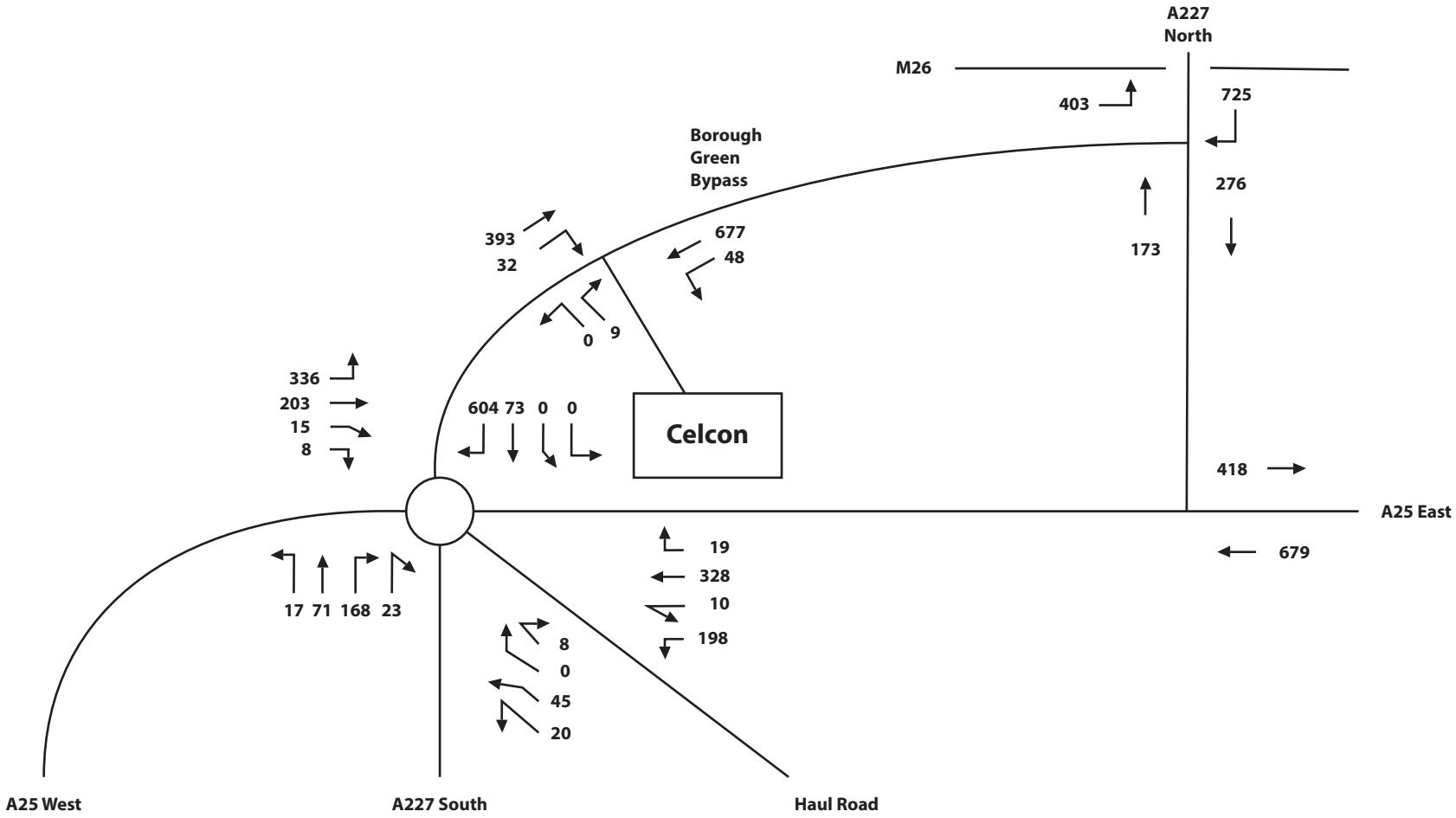
Project : Borough Green Gardens

2024 Predicted Traffic Flows - PM Peak (1700-1800)

Based upon Borough Green Bypass data 2002

Figure No.

4



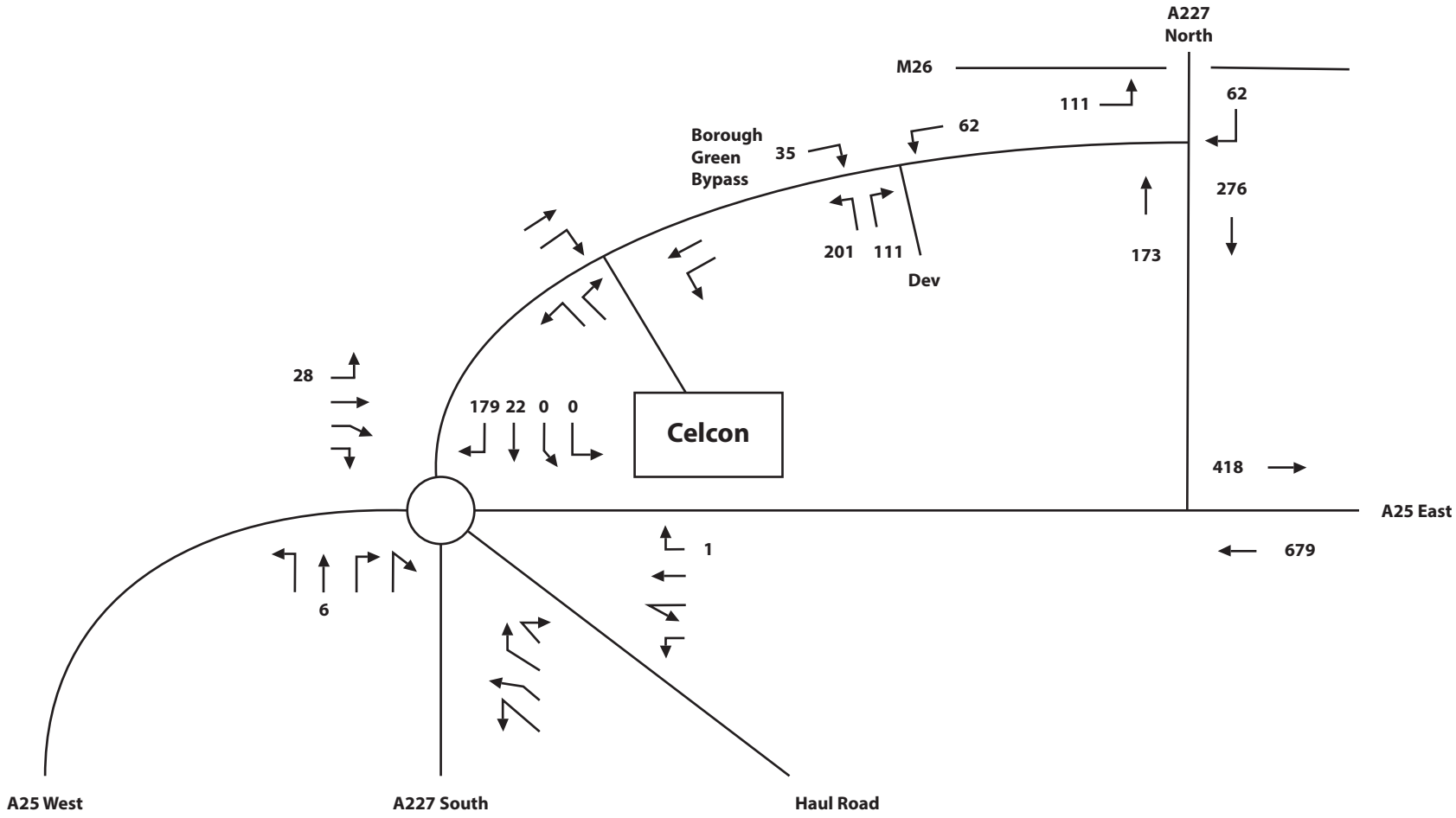
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

2024 No Development Predicted Flows Redistributed onto Bypass - AM Peak
Based upon Borough Green Bypass data 2002

Figure No.

5



LES HENRY ASSOCIATES LIMITED

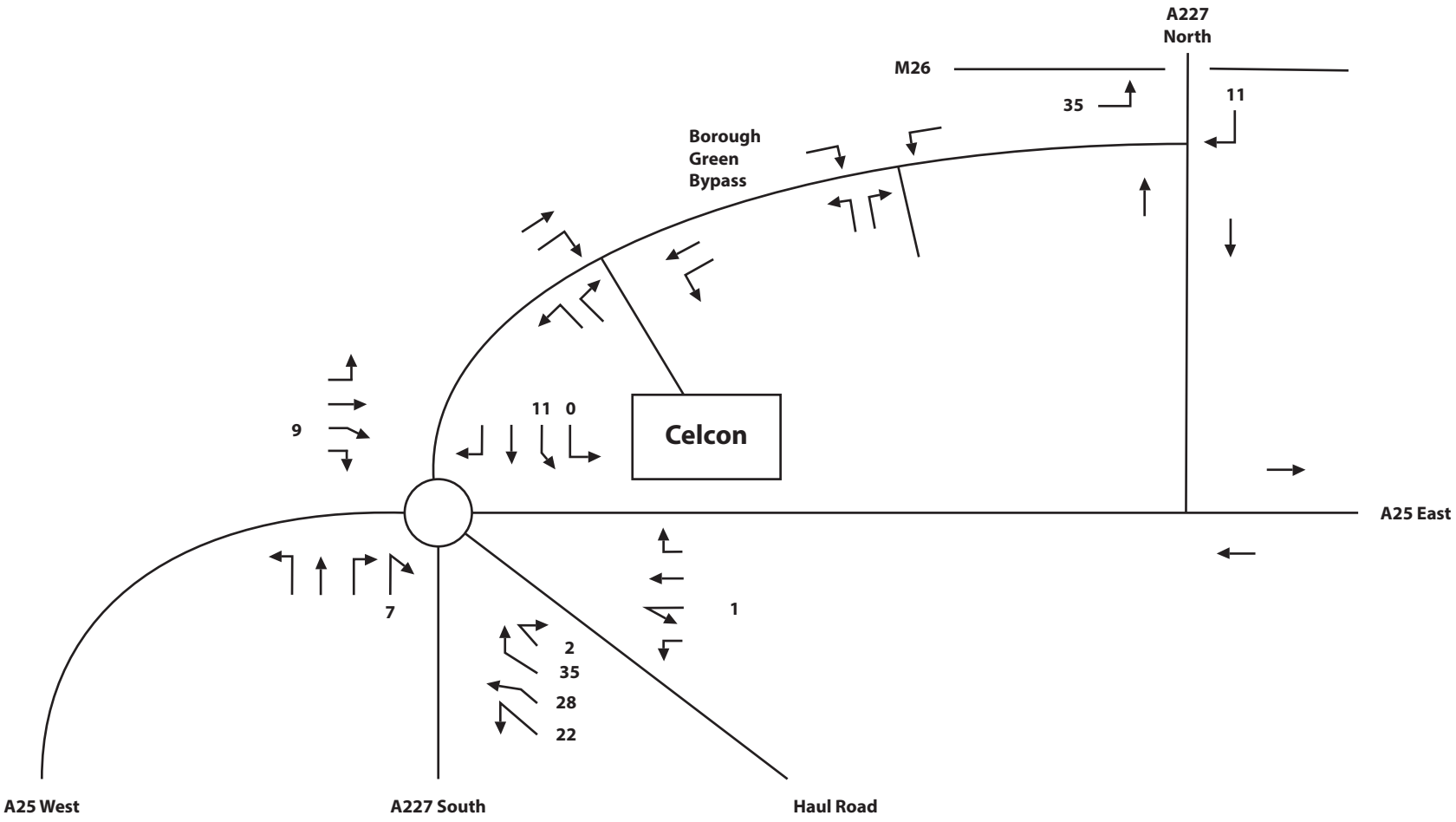
Project : Borough Green Gardens

Development 1000 homes 2024

Predicted Flows Redistributed onto Bypass - AM Peak

Figure No.

6



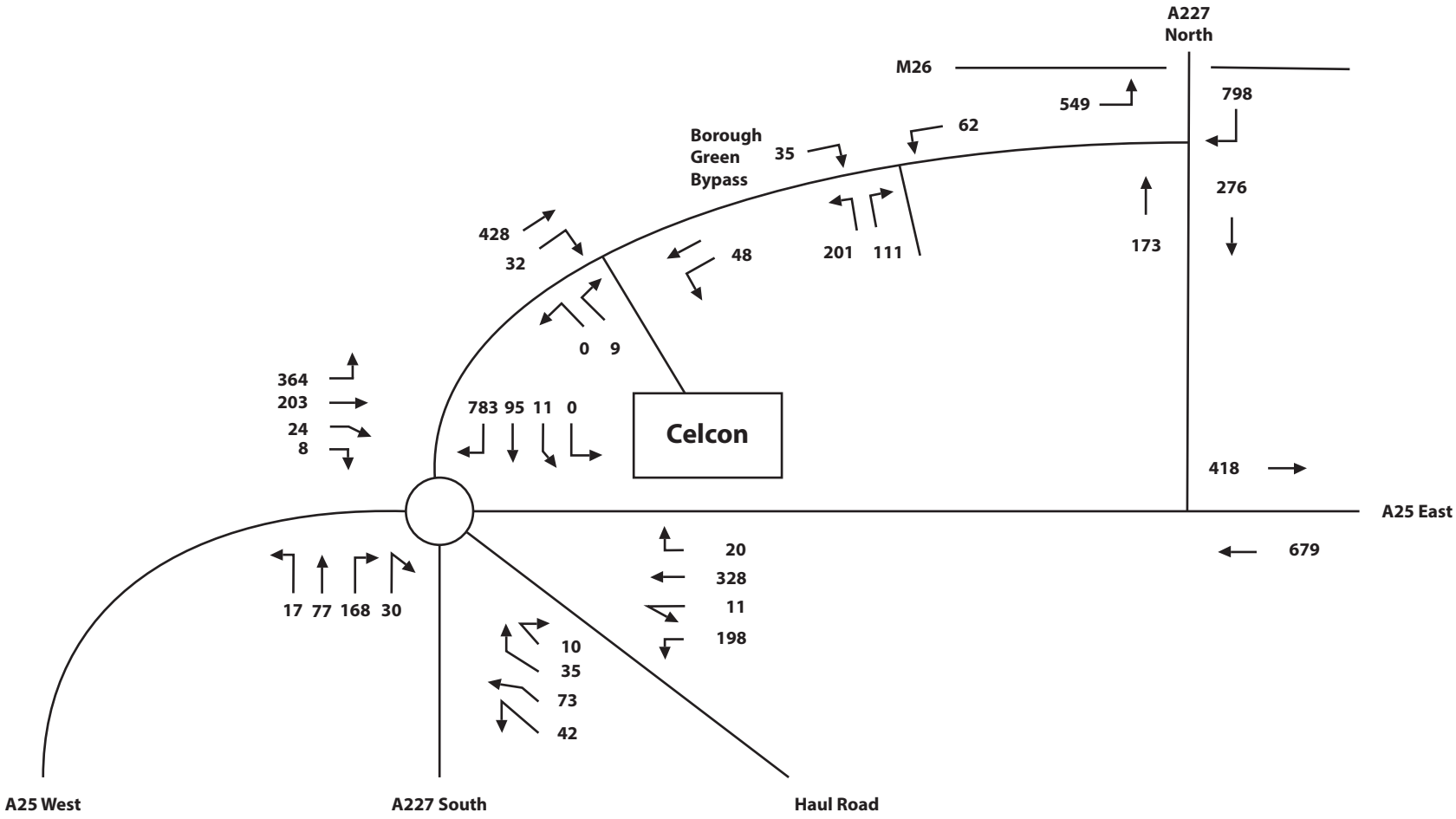
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Committed Development Predicted Flows Redistributed onto Bypass - AM Peak

Figure No.

7



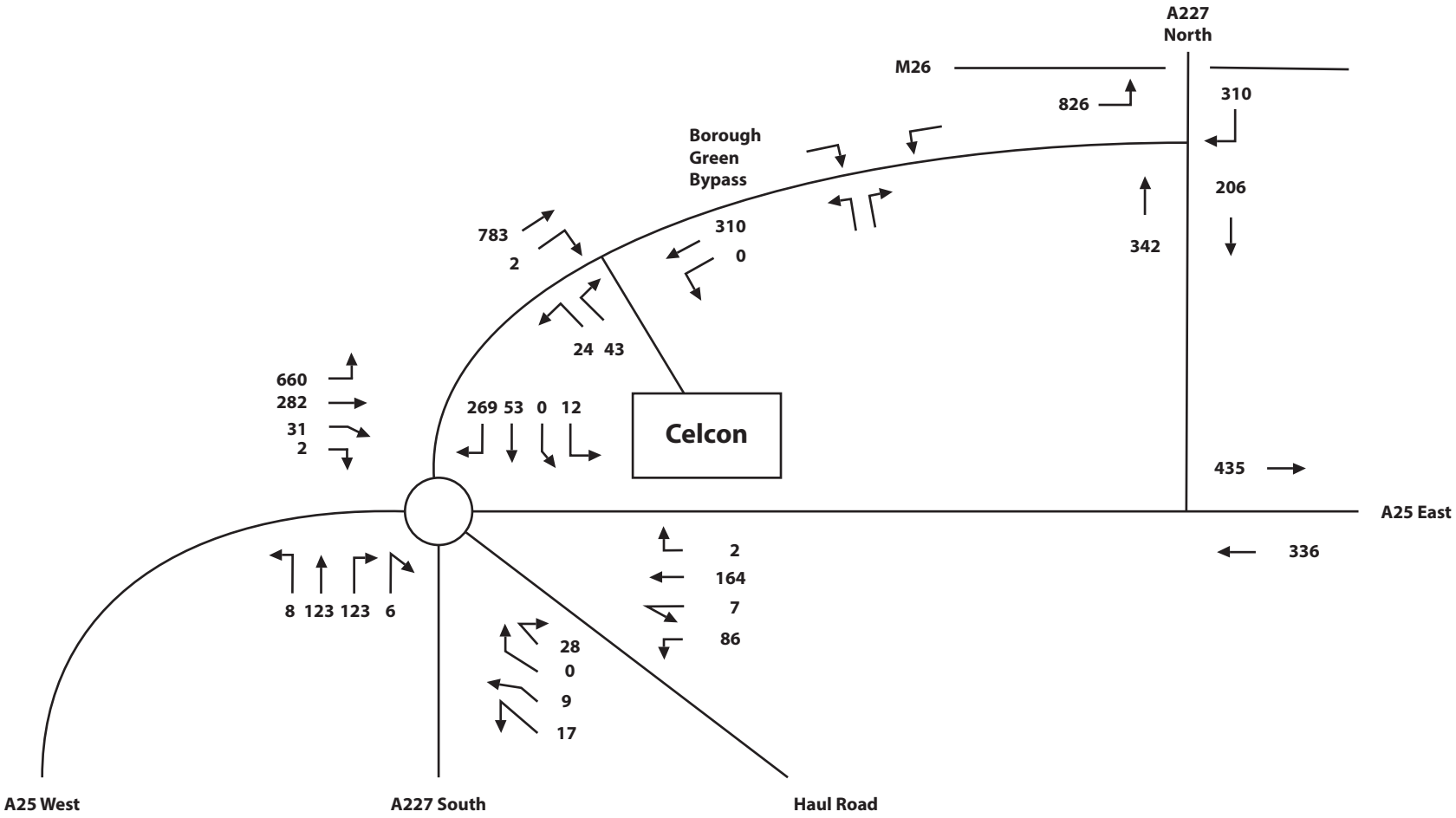
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

2024 + Development Predicted + Committed Development Predicted Flows Redistributed onto Bypass - AM Peak

Figure No.

8



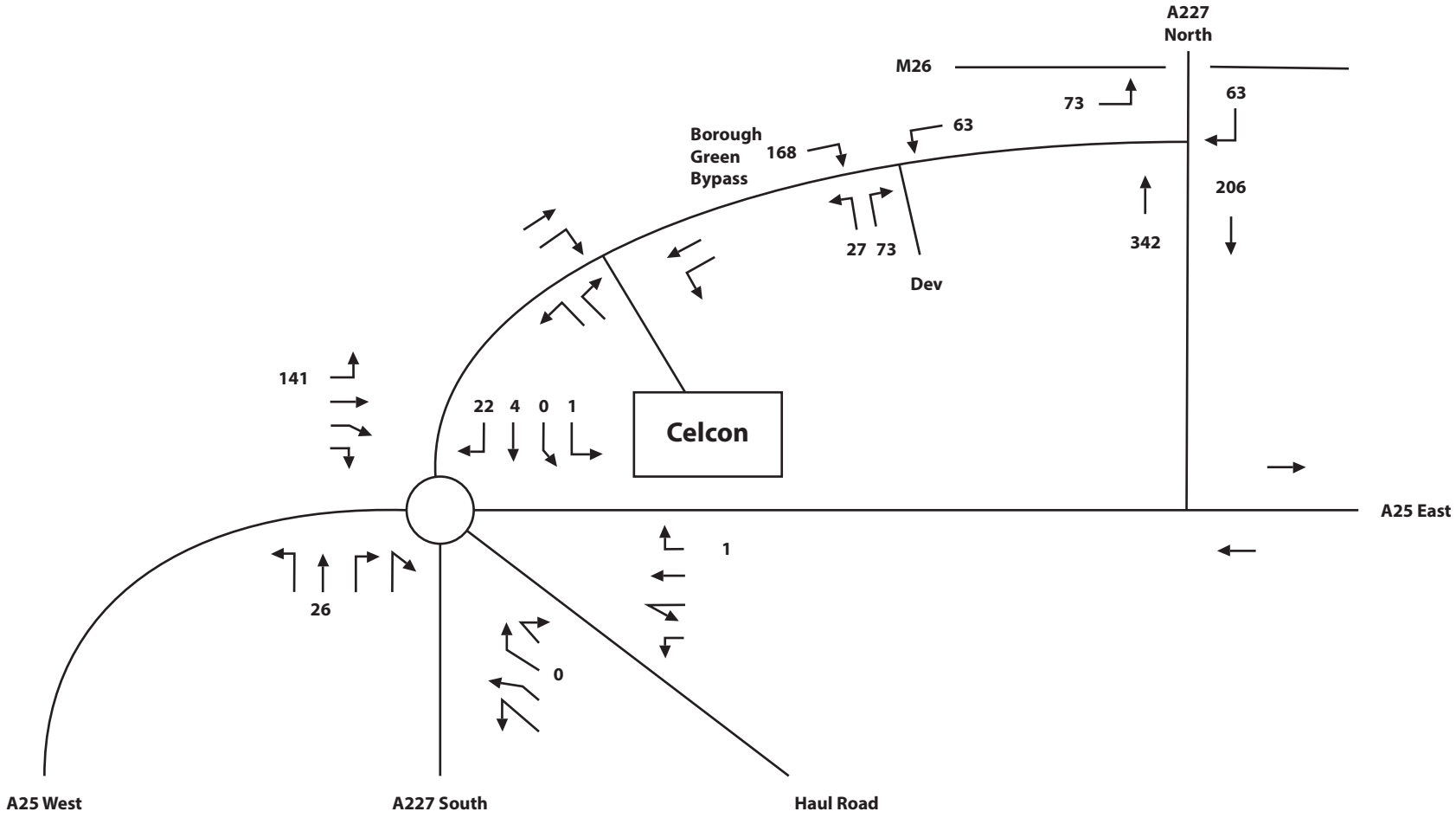
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

2024 No Development Predicted Flows Redistributed onto Bypass - PM Peak
Based upon Borough Green Bypass data 2002

Figure No.

9



LES HENRY ASSOCIATES LIMITED

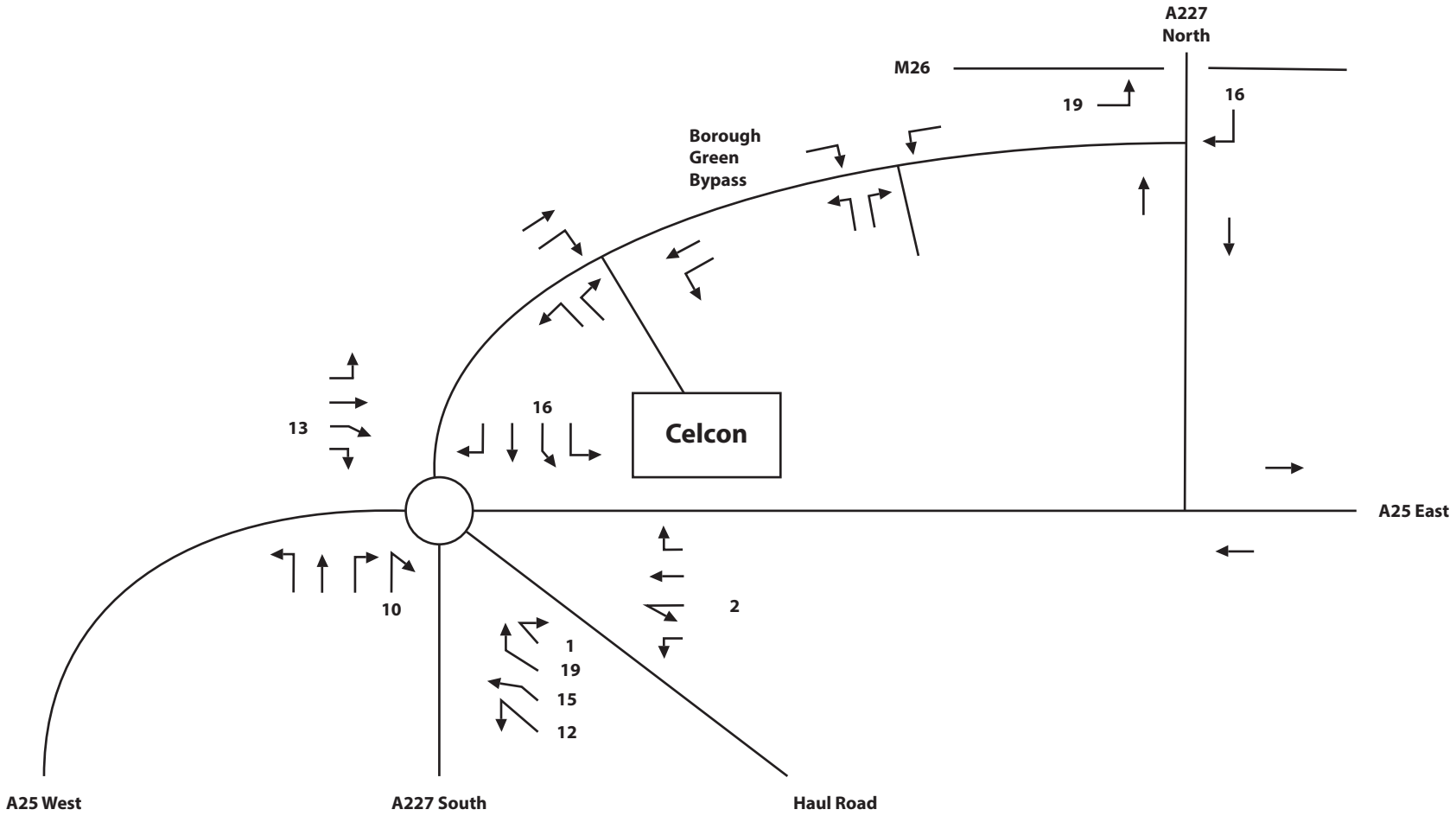
Project : Borough Green Gardens

Development 1000 homes 2024

Predicted Flows Redistributed onto Bypass - PM Peak

Figure No.

10



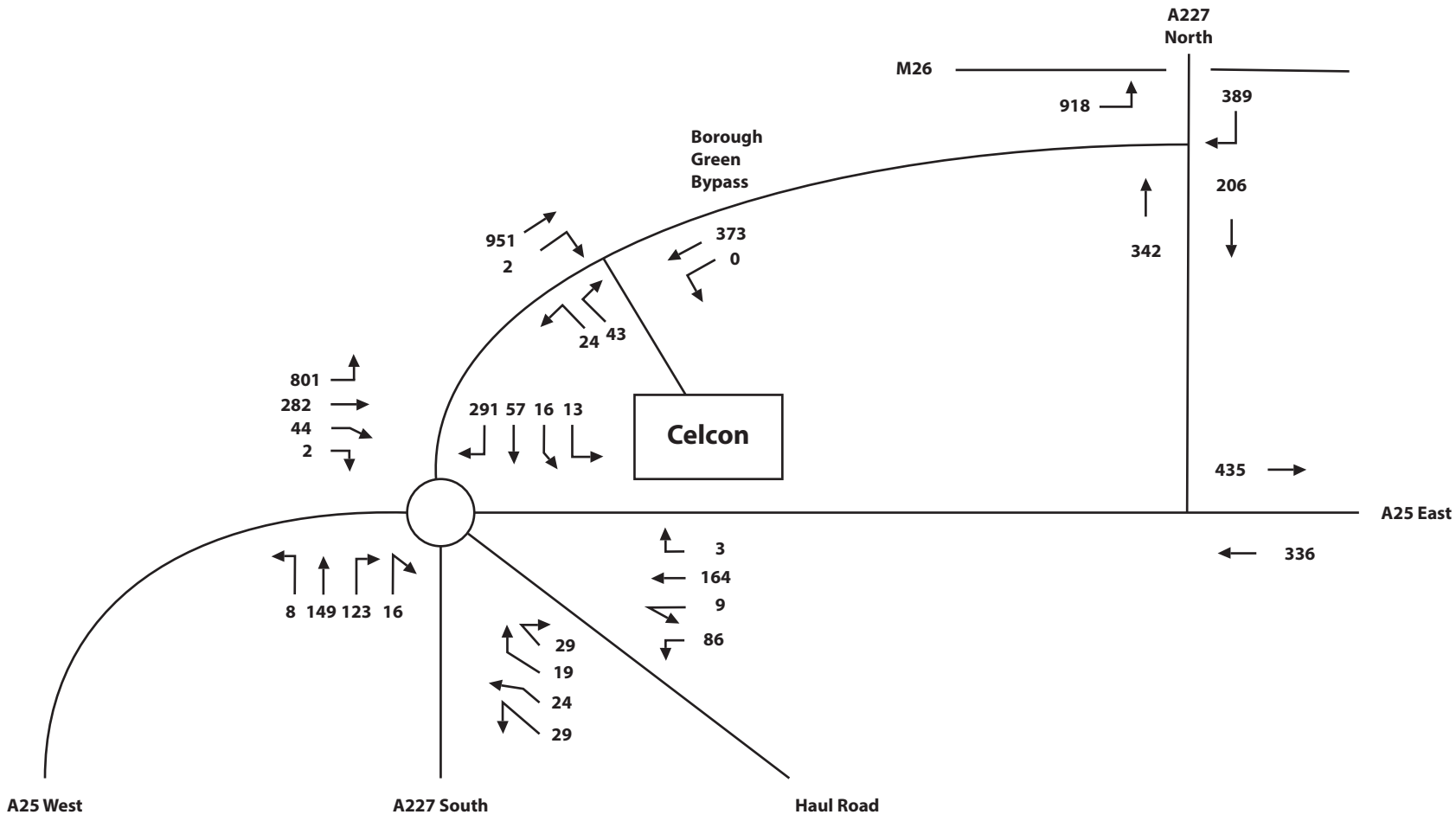
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Committed Development Predicted Flows Redistributed onto Bypass - PM Peak

Figure No.

11



LES HENRY ASSOCIATES LIMITED

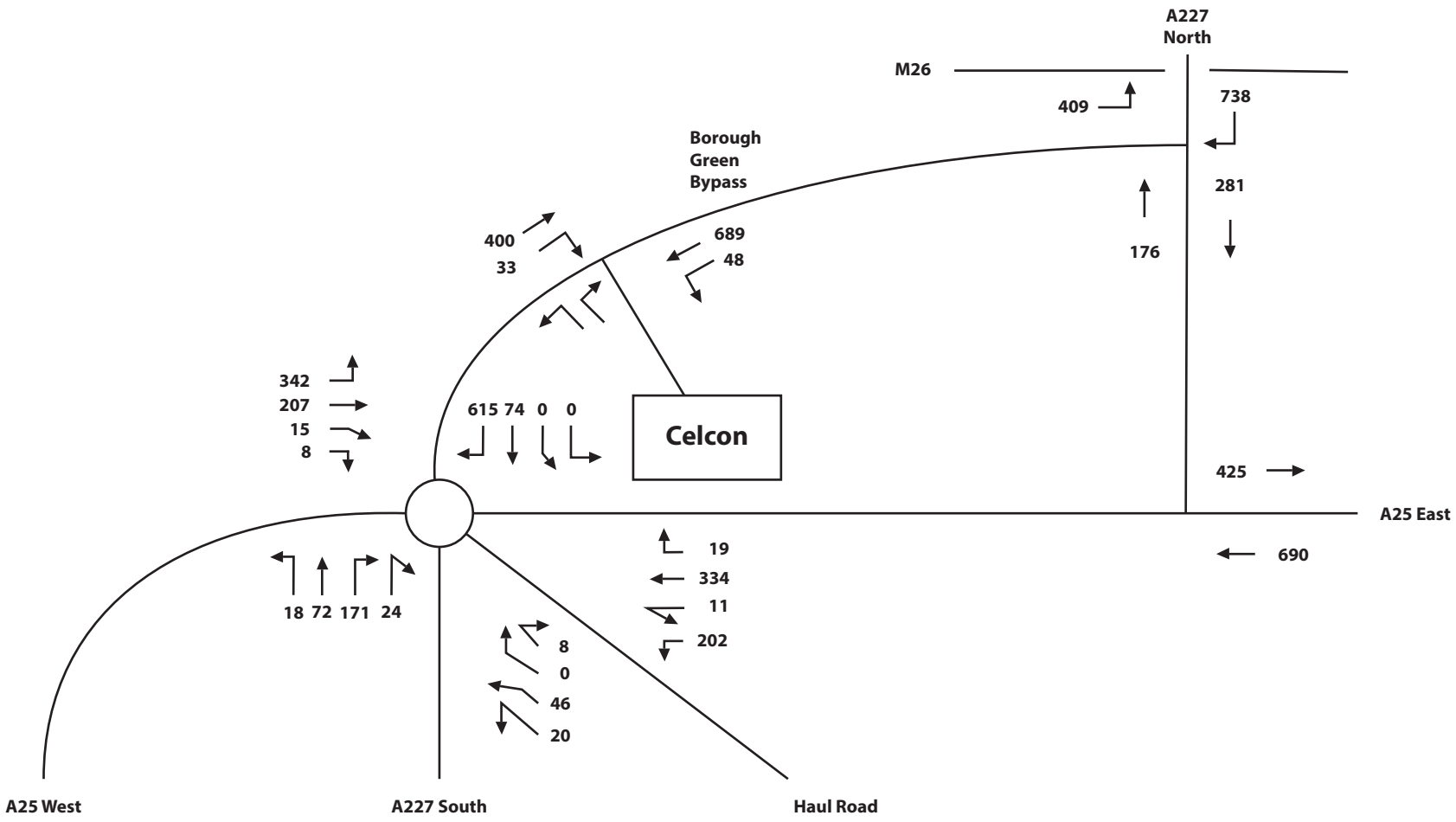
Project : Borough Green Gardens

2024 + Development + Committed Development

Predicted Flows Redistributed onto Bypass - PM Peak

Figure No.

12



LES HENRY ASSOCIATES LIMITED

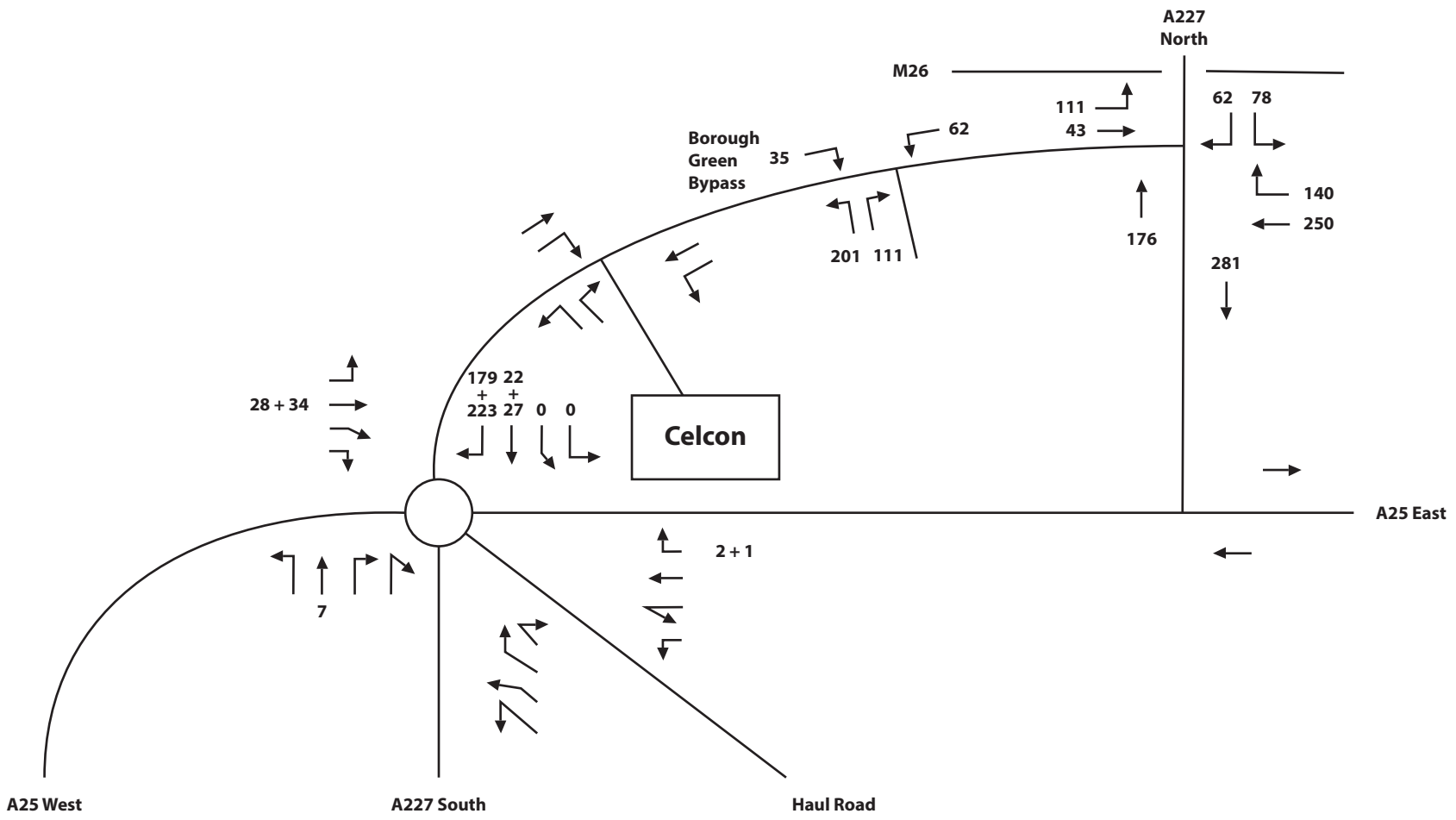
Project : Borough Green Gardens

2028 No Development

Predicted Flows Redistributed onto Bypass - AM Peak

Figure No.

13



LES HENRY ASSOCIATES LIMITED

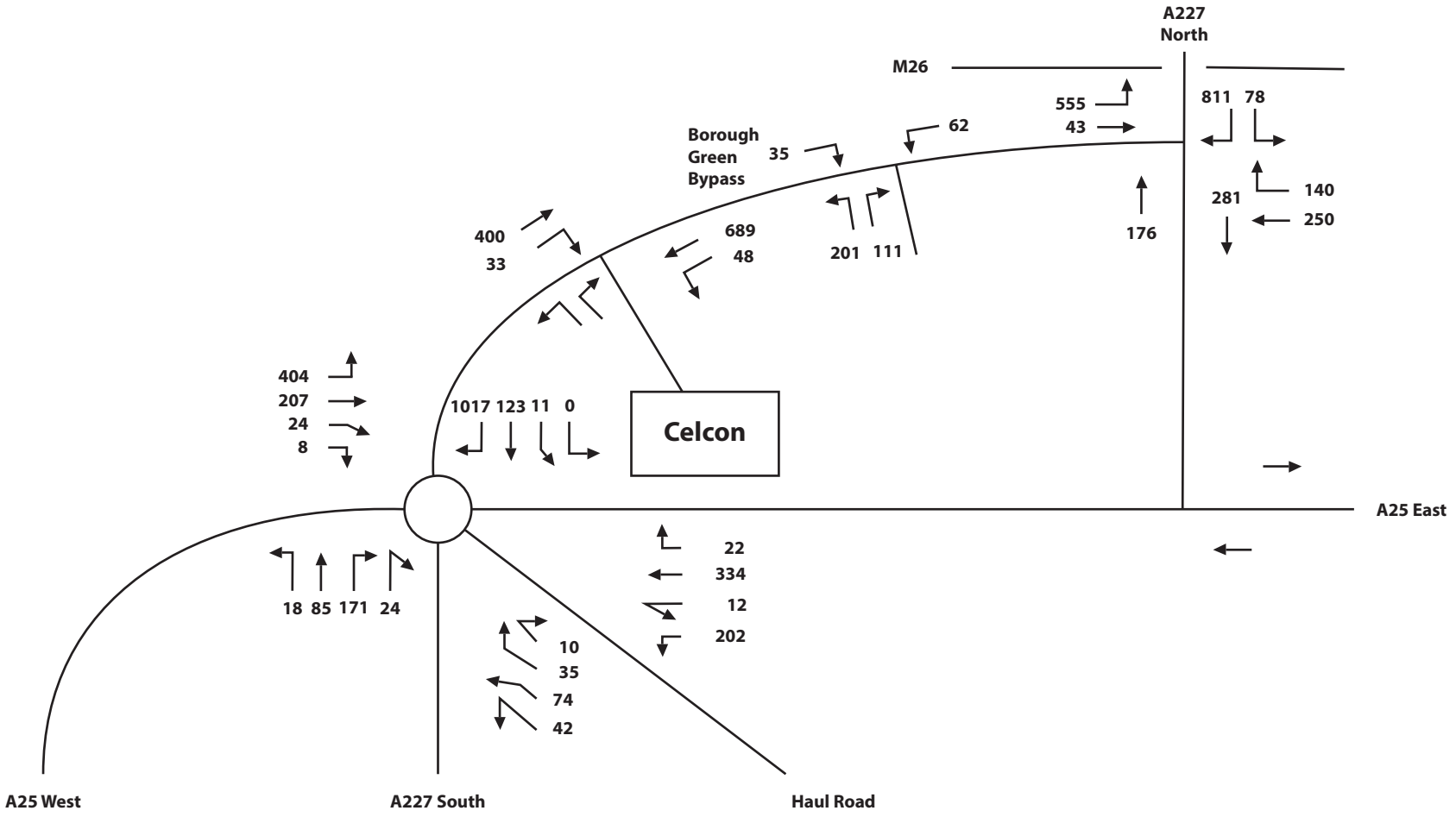
Project : Borough Green Gardens

Development 2250 Homes 2028

Predicted Flows Redistributed onto Bypass - AM Peak

Figure No.

14



LES HENRY ASSOCIATES LIMITED

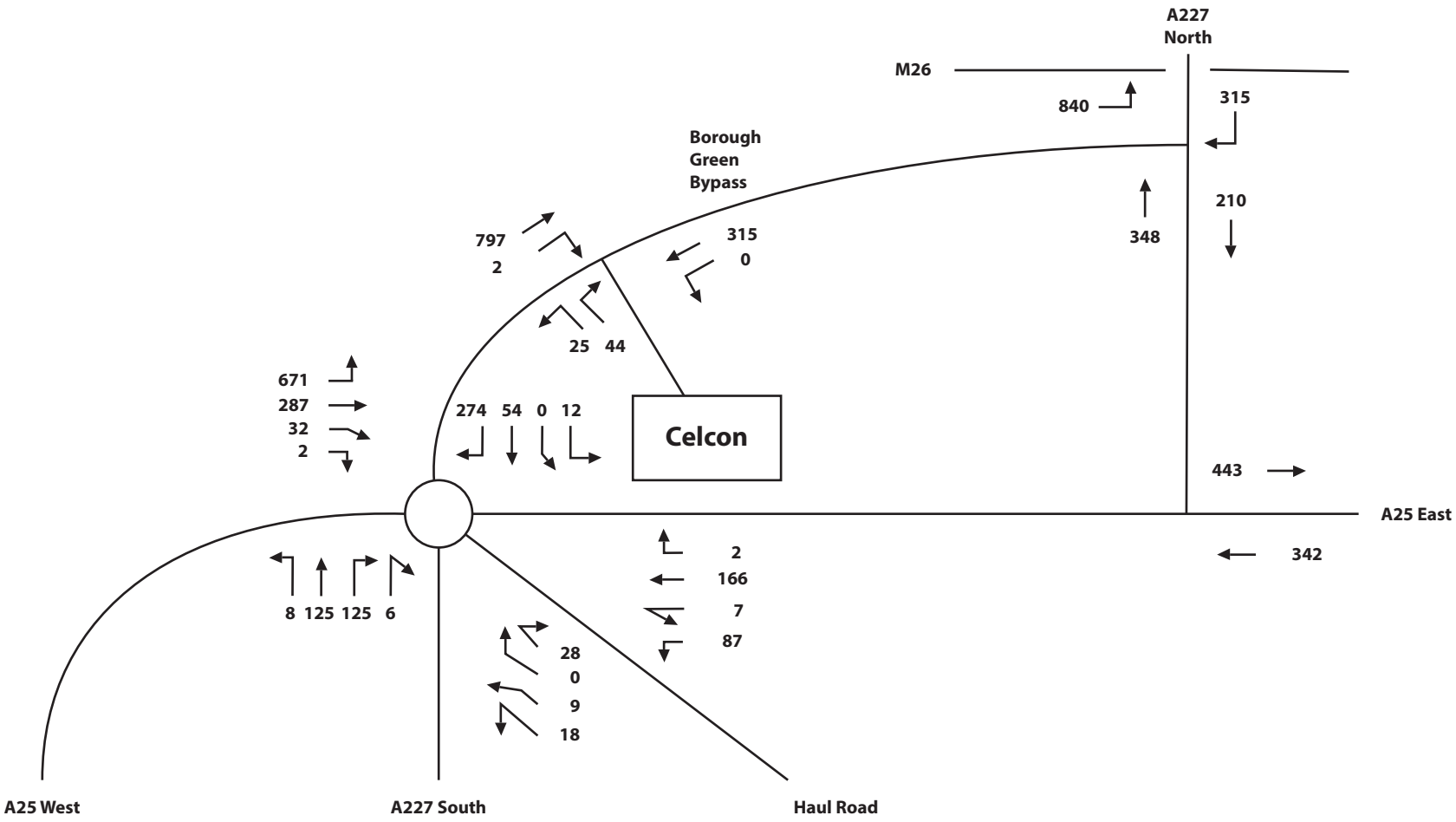
Project : Borough Green Gardens

2028 + Development + Committed Development

Predicted Flows Redistributed onto Bypass - AM Peak

Figure No.

15



LES HENRY ASSOCIATES LIMITED

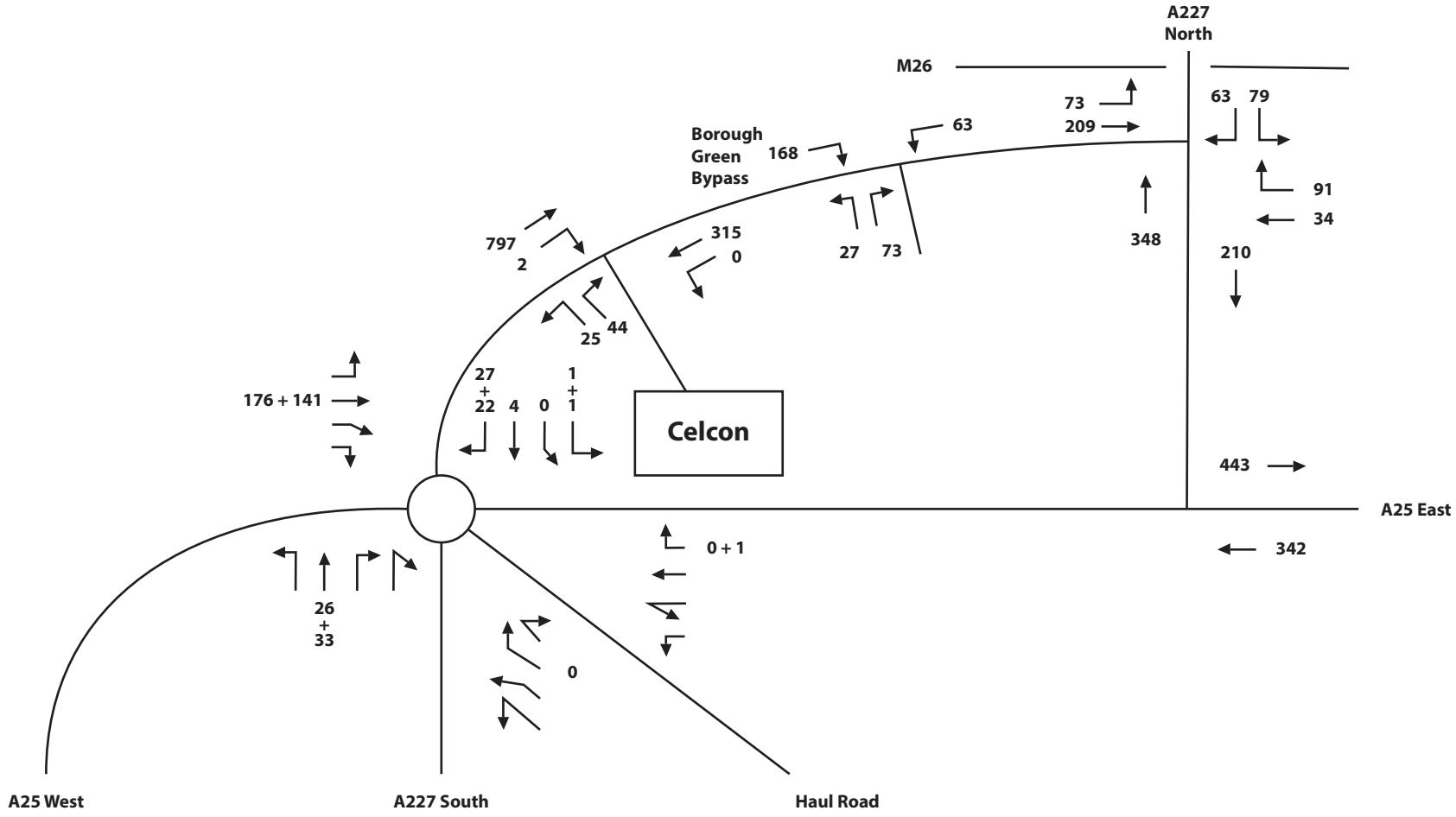
Project : Borough Green Gardens

2028 No Development

Predicted Flows Redistributed onto Bypass - PM Peak

Figure No.

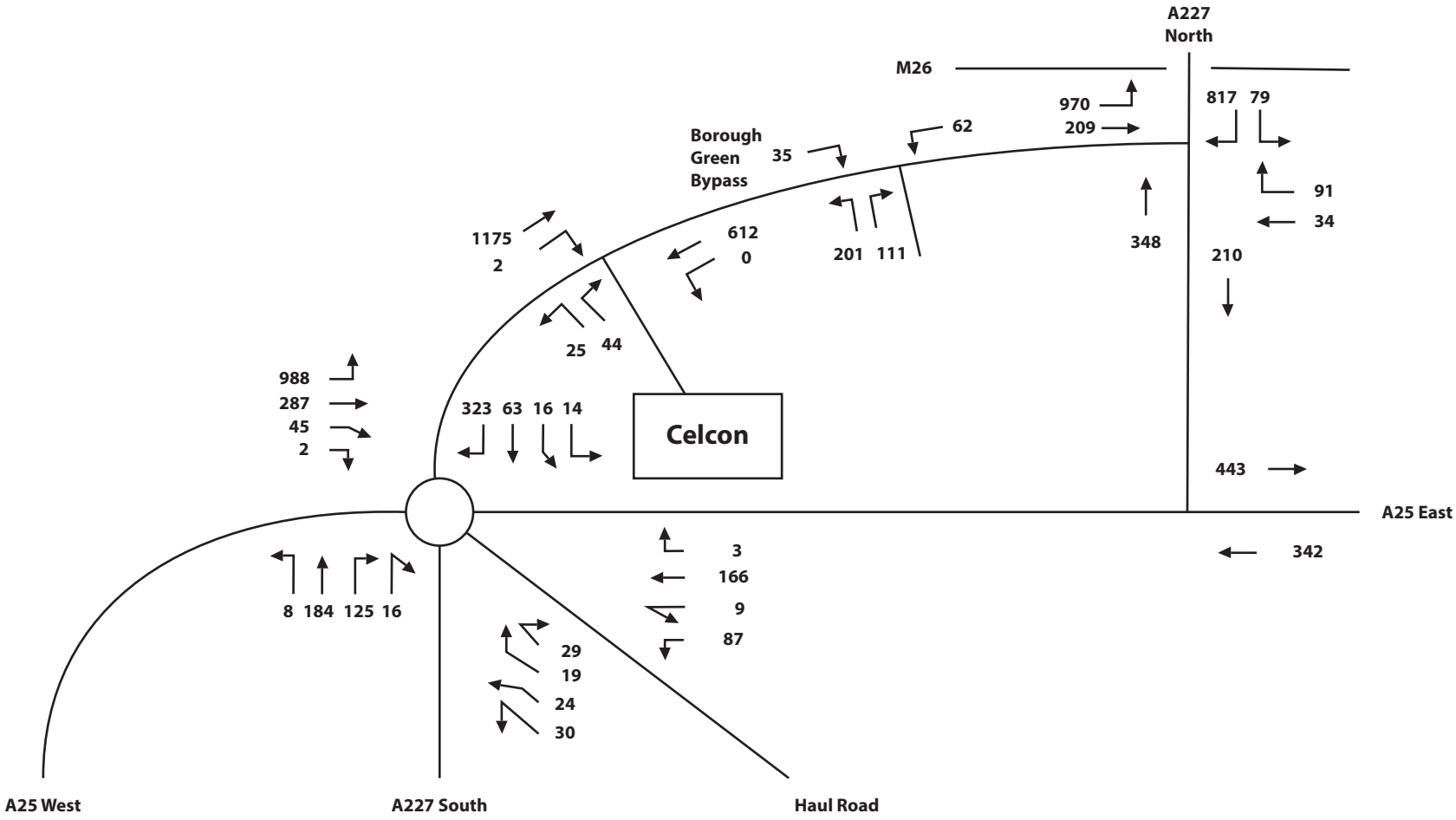
16



LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens
2028 + 2250 homes
Predicted Flows Redistributed onto Bypass - PM Peak

Figure No.
17



LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

2028 + Development + Committed Development

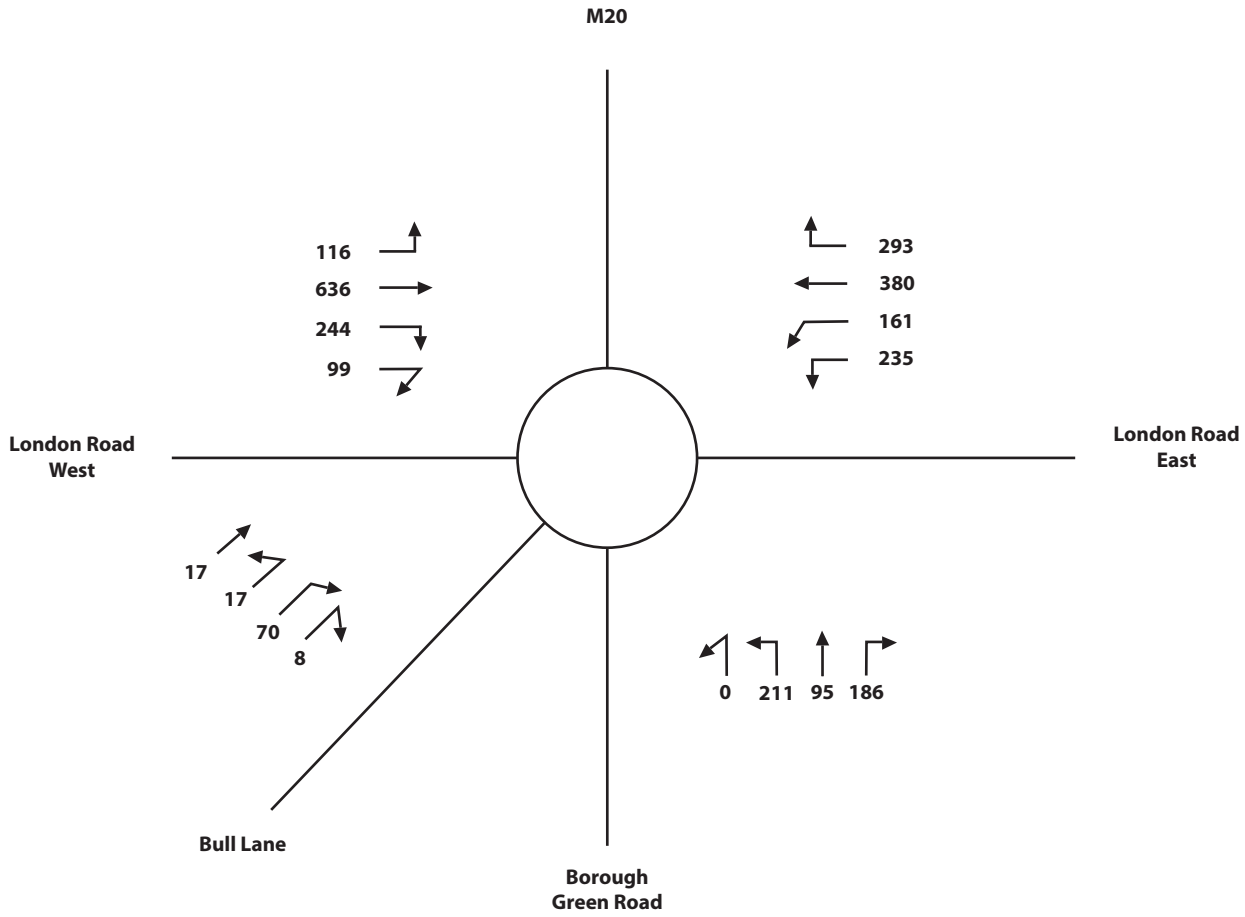
Predicted Flows Redistributed onto Bypass - PM Peak

Figure No.

18

APPENDIX D

TRAFFIC DISTRIBUTION FIGURES – WHITEHILL ROUNDABOUT



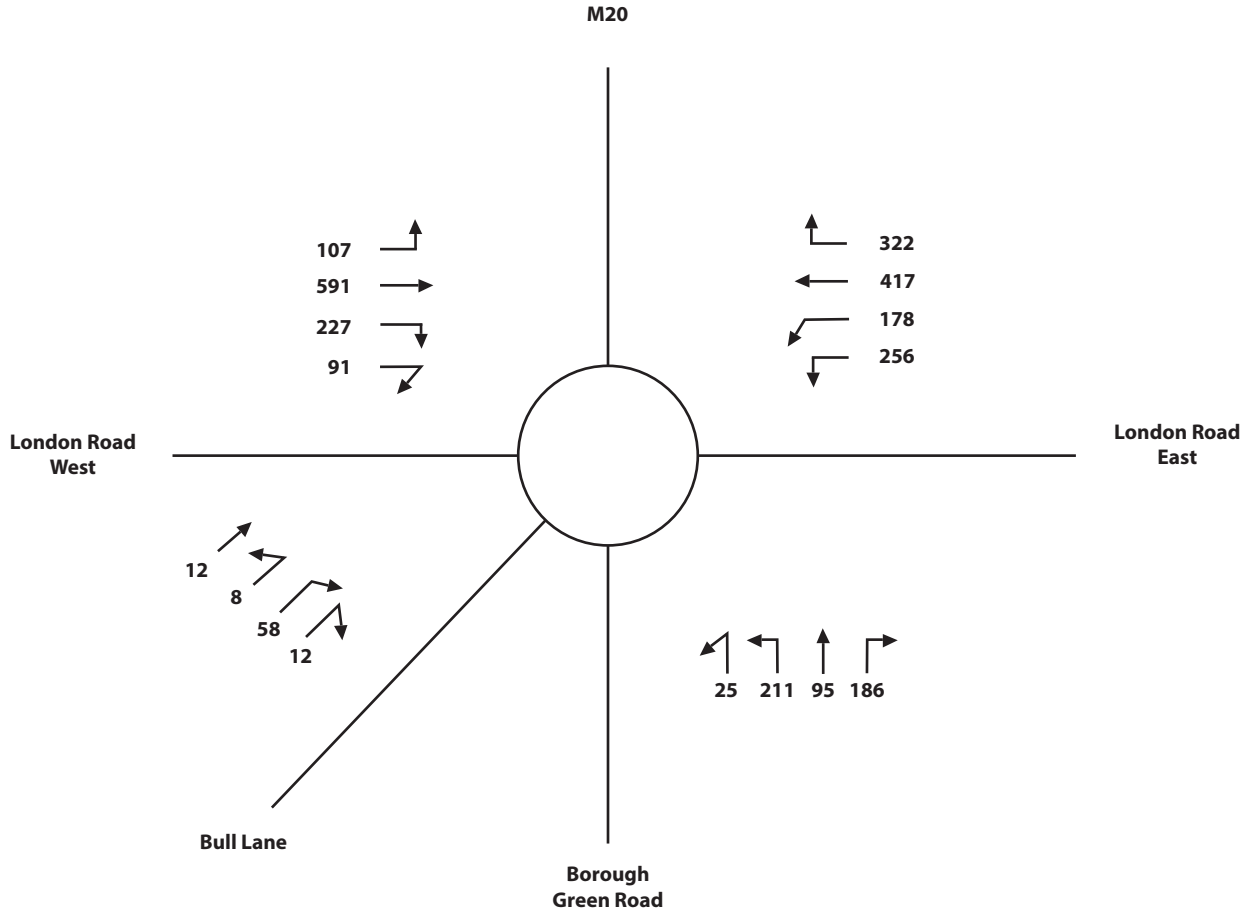
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Surveyed Traffic Flows - AM Peak (0800-0900) 2005
Based upon Borough Green By Pass 2002

Figure No.

19



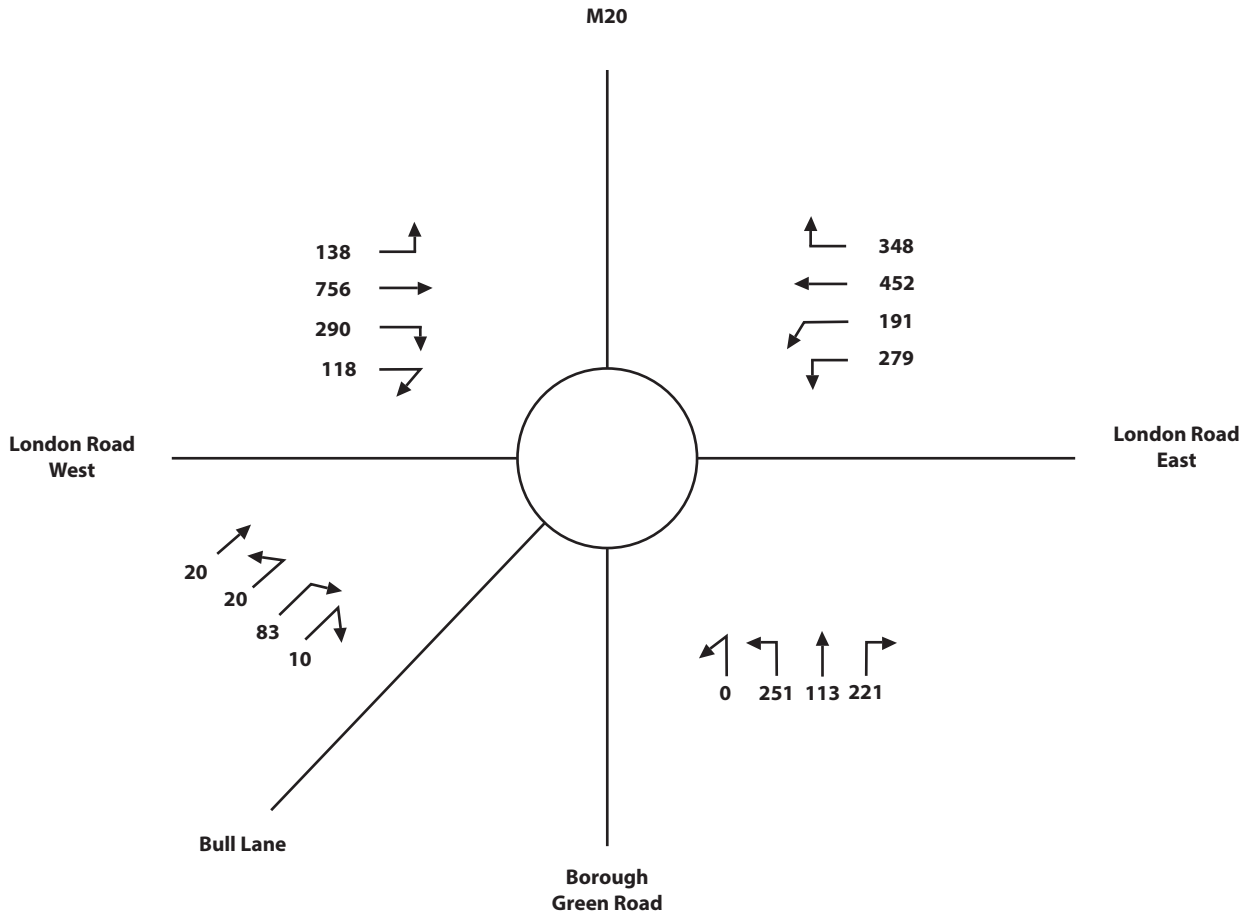
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Surveyed Traffic Flows - PM Peak (1700 - 1800) 2005
Based upon Borough Green By Pass 2002

Figure No.

20



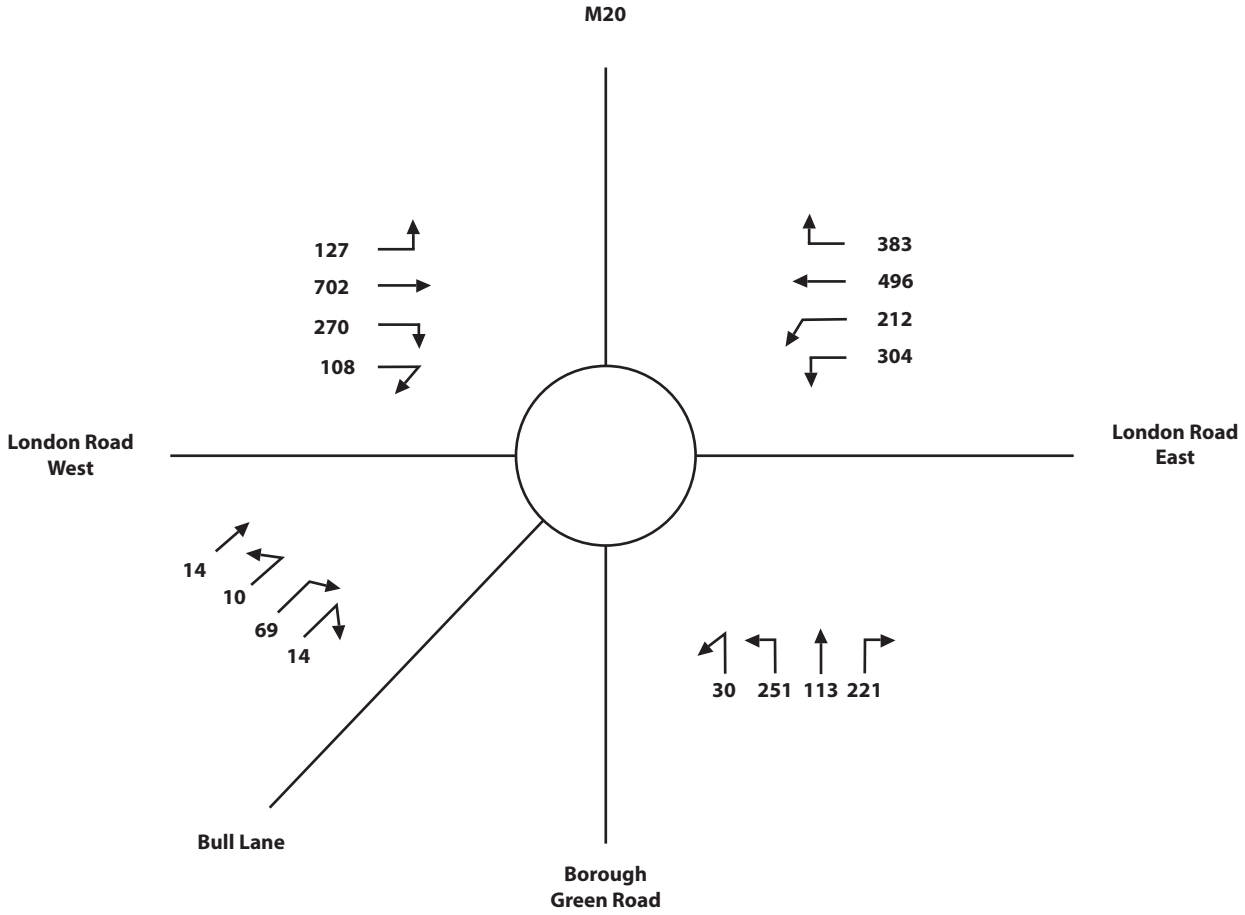
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2017 Traffic Flows - AM Peak (0800-0900)

Figure No.

21



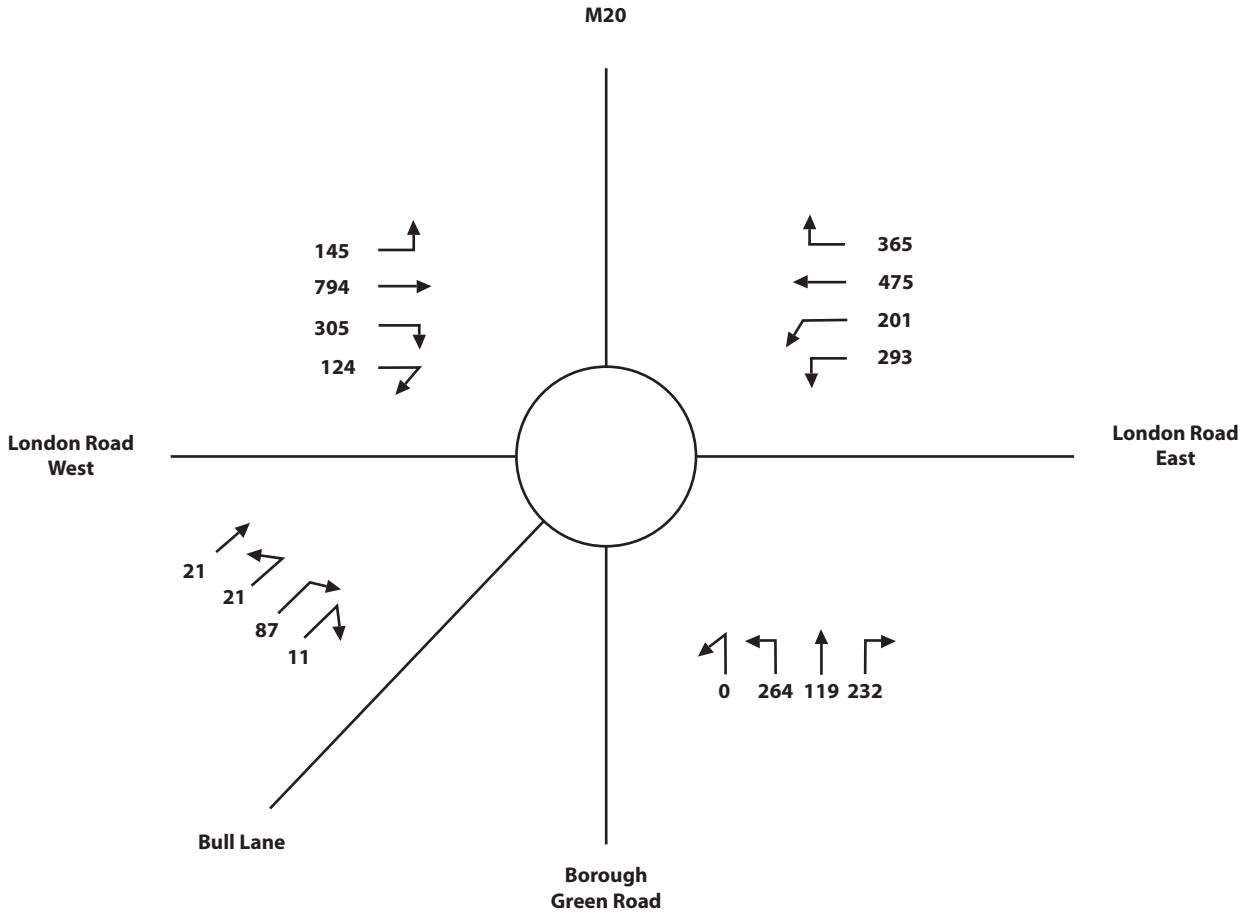
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2017 Traffic Flows - PM Peak (1700 - 1800)

Figure No.

22



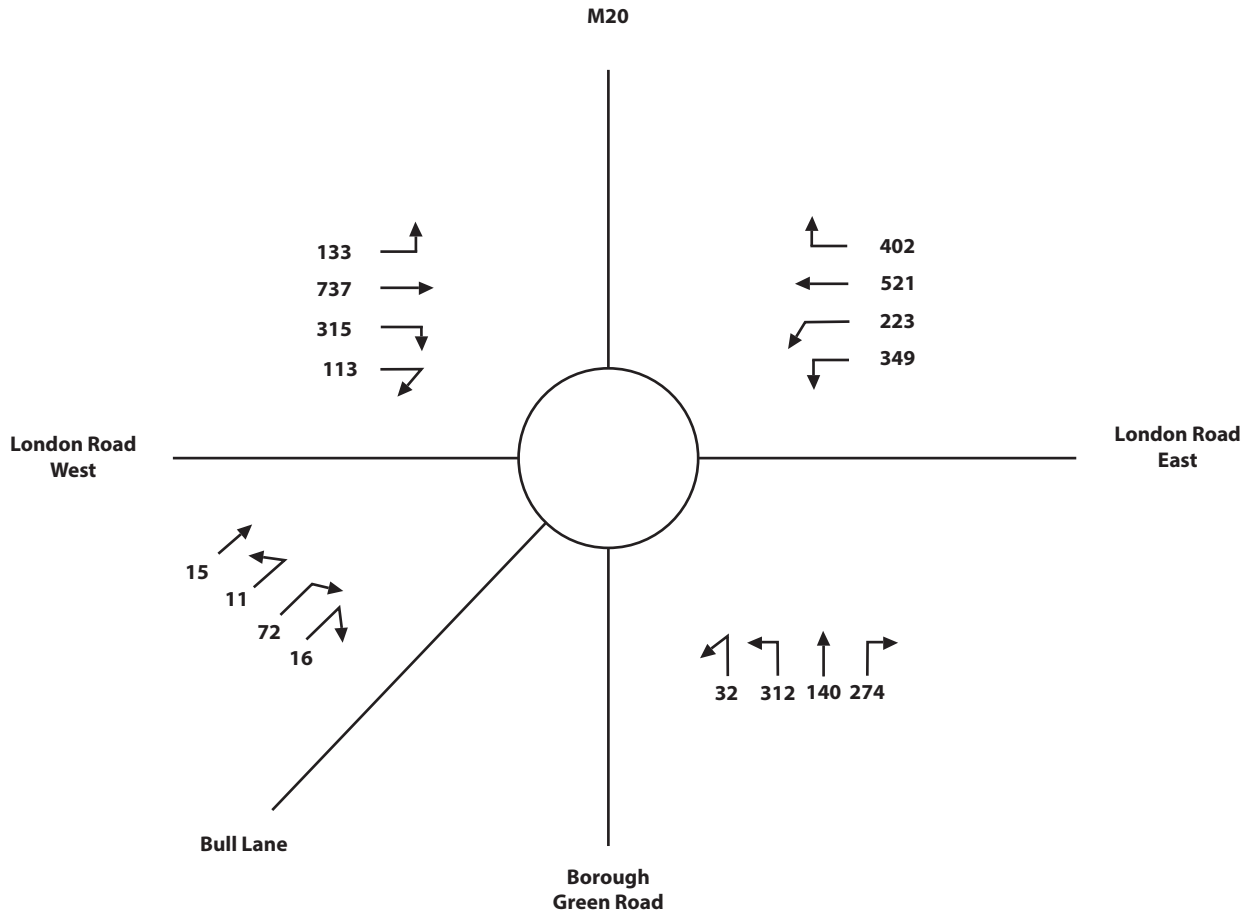
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2024 No Development Traffic Flows - AM Peak (0800-0900)

Figure No.

23



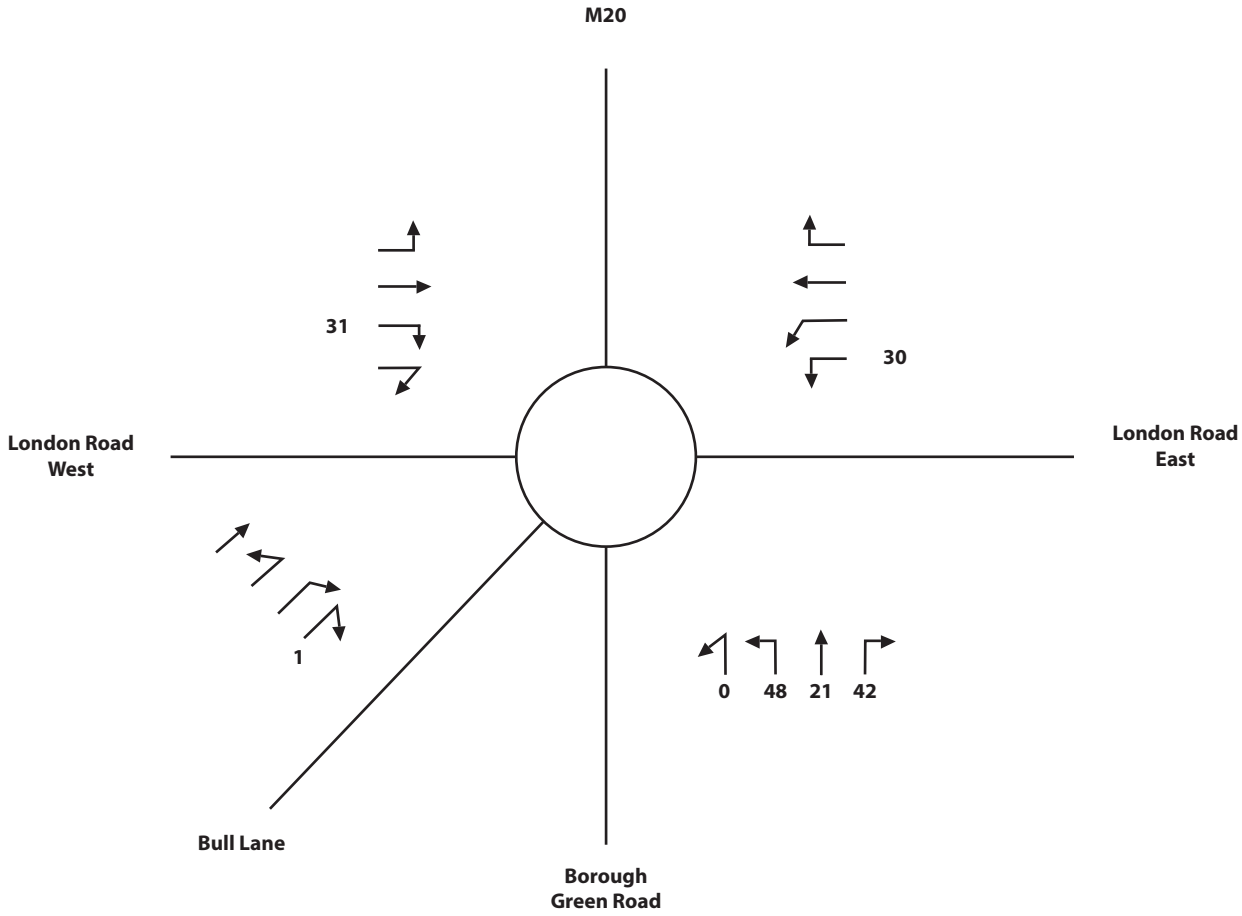
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2024 No Development Traffic Flows - PM Peak (1700 - 1800)

Figure No.

24



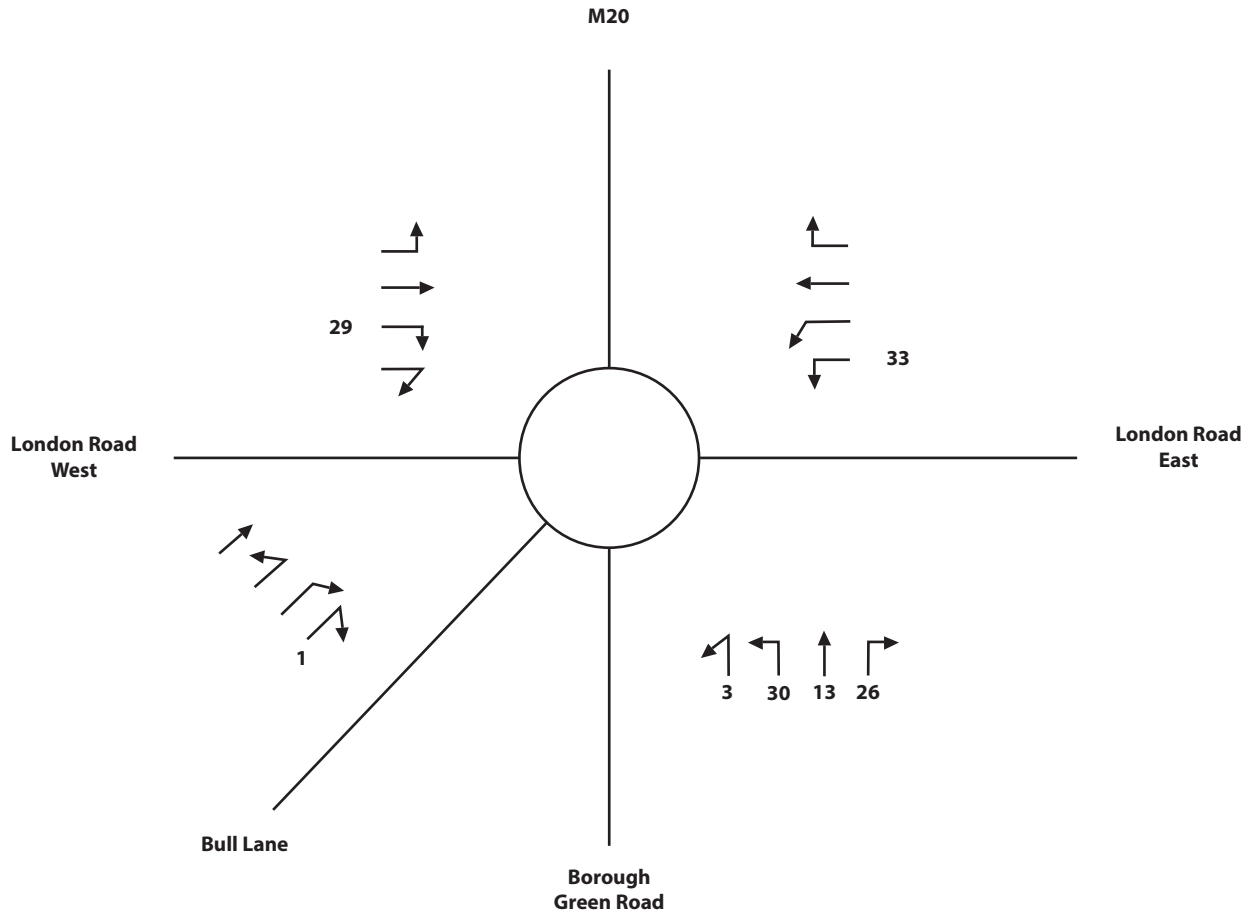
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2024 1000 Homes Traffic Flows - AM Peak (0800-0900)

Figure No.

25



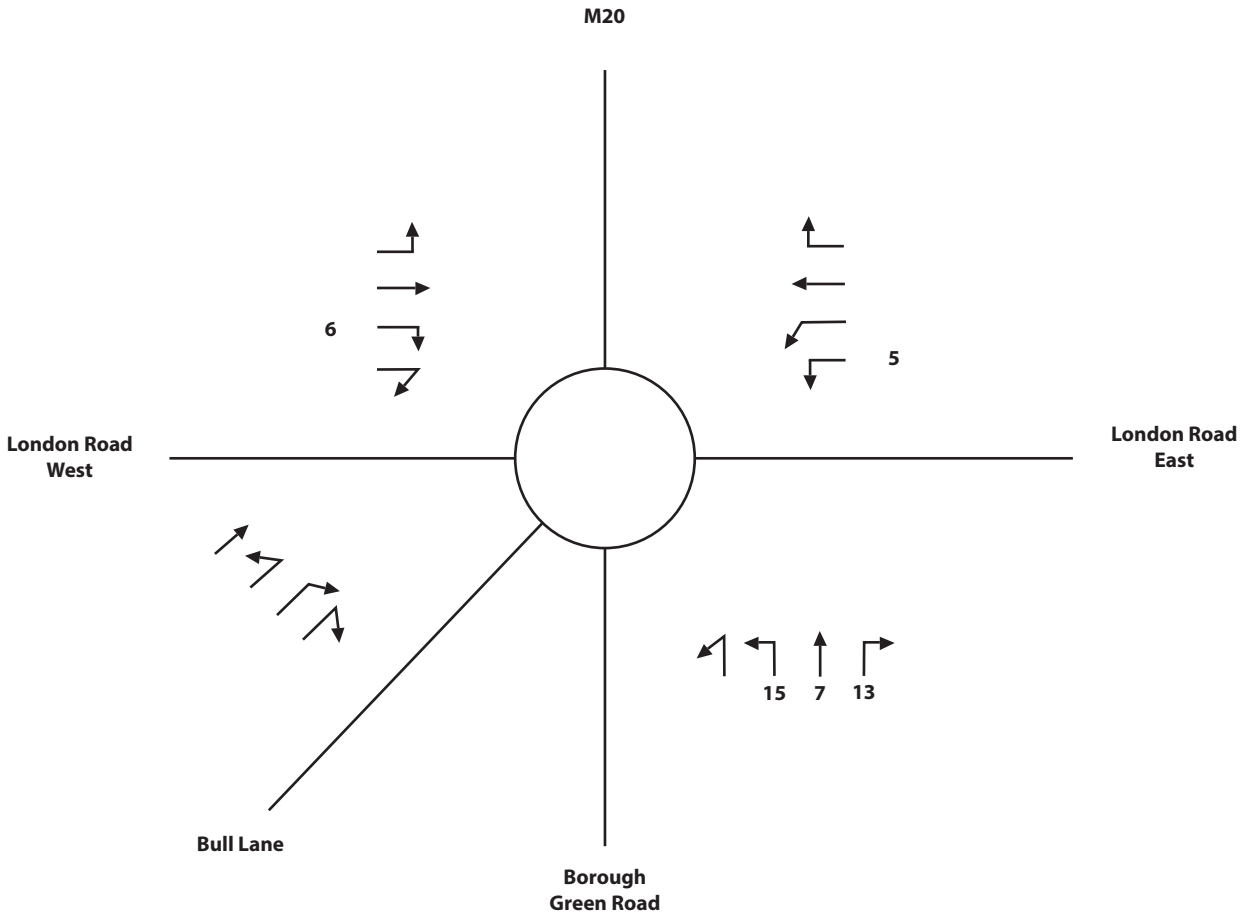
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2024 1000 Homes Traffic Flows - PM Peak (1700 - 1800)

Figure No.

26



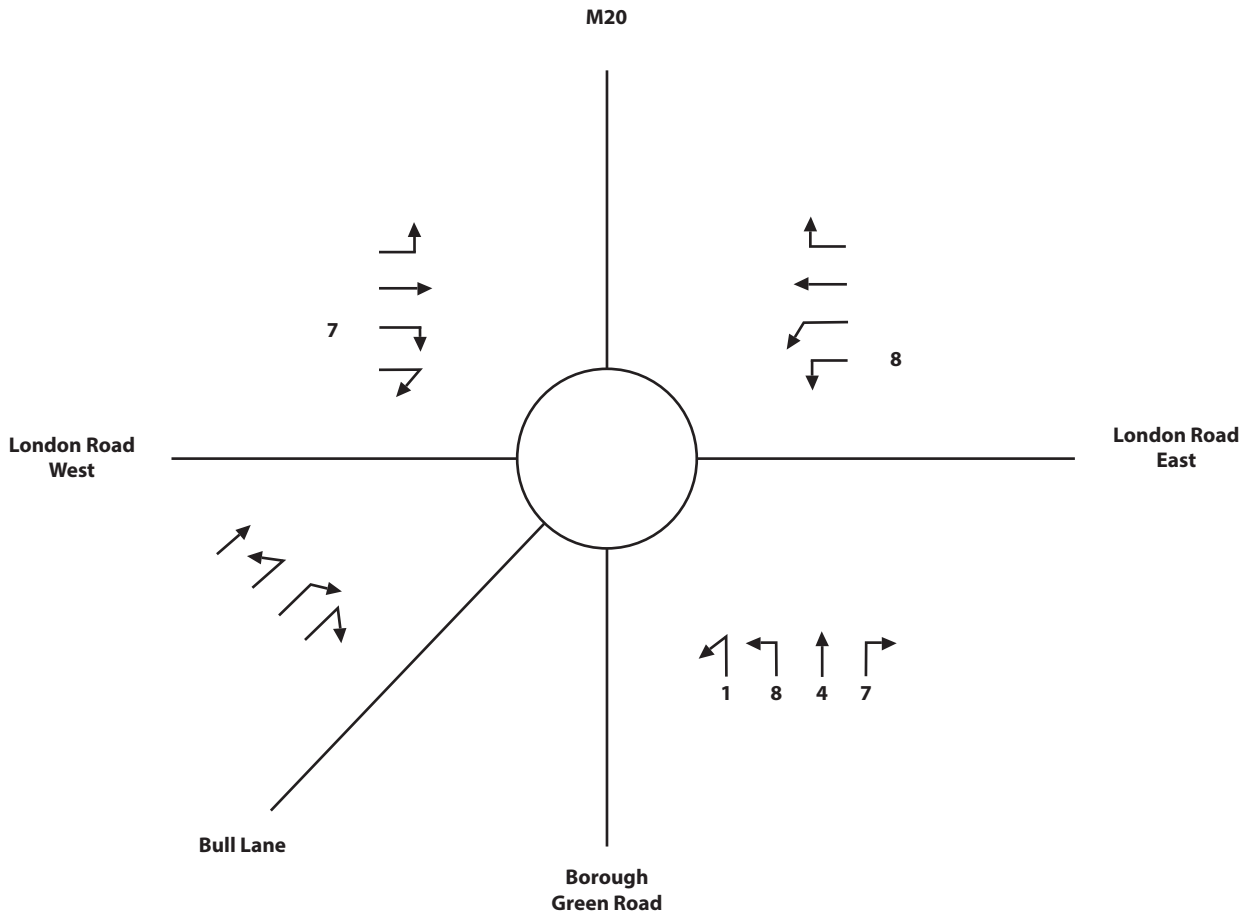
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Committed Development Traffic Flows - AM Peak (0800-0900)

Figure No.

27



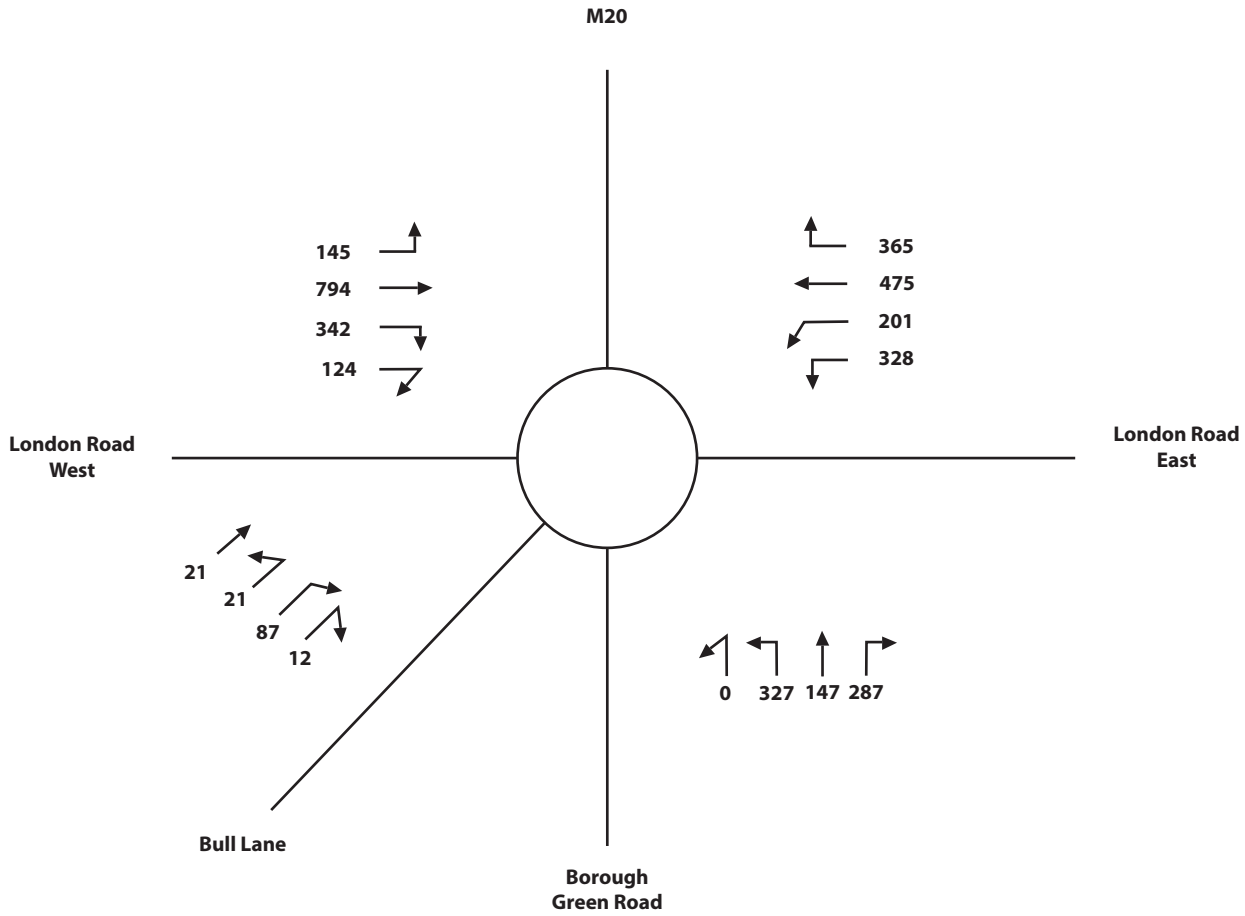
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Committed Development Traffic Flows - PM Peak (1700 - 1800)

Figure No.

28



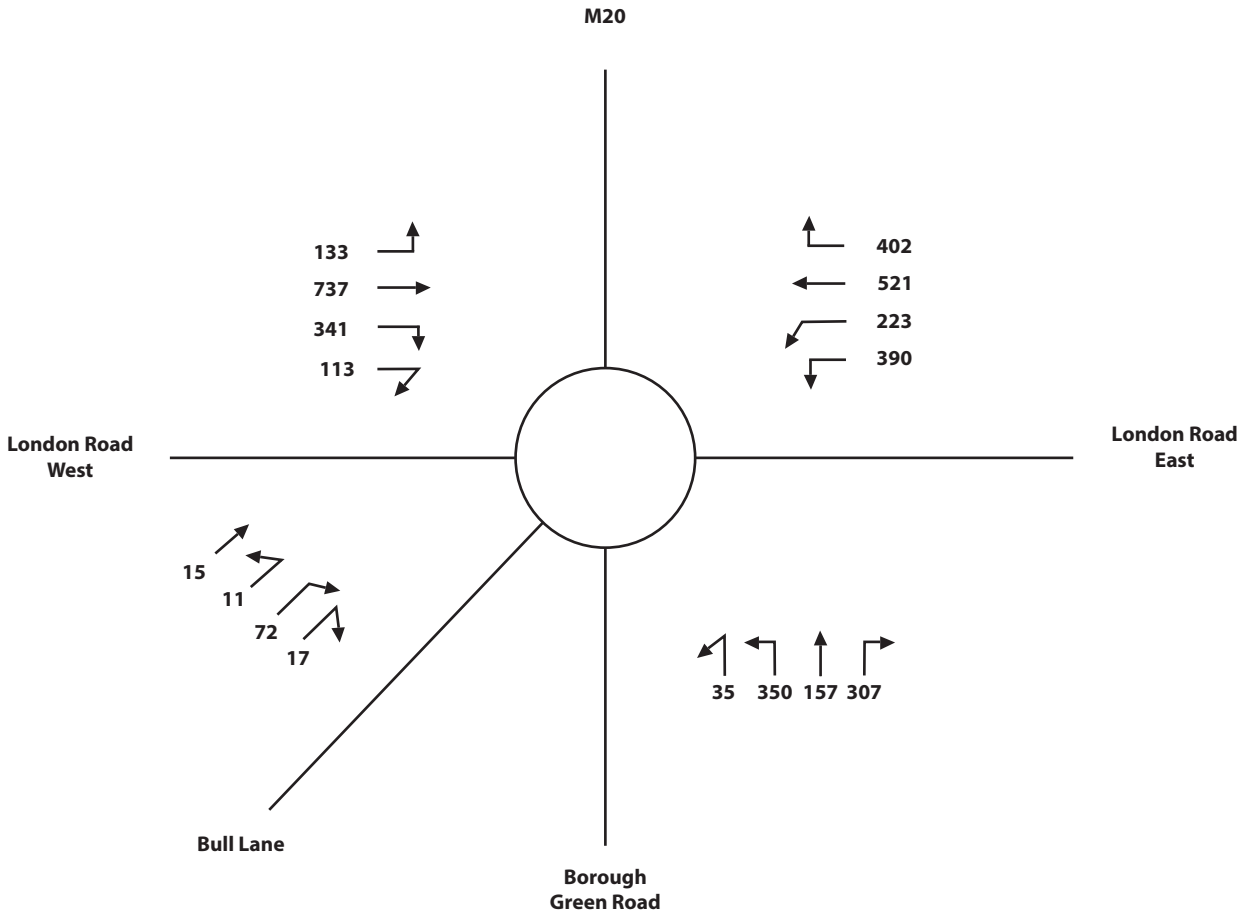
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2024 + Development + Committed Development Traffic Flows - AM Peak (0800-0900)

Figure No.

29



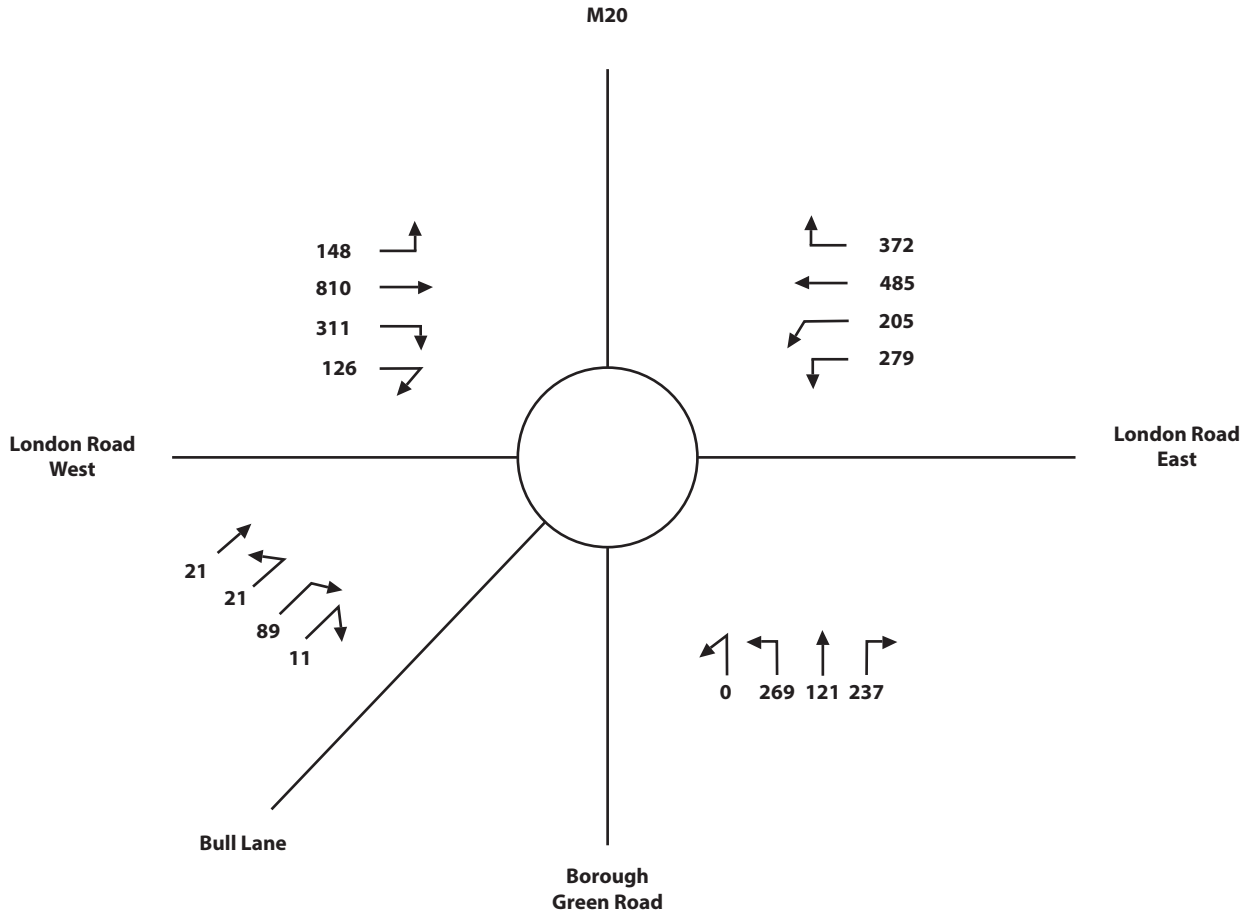
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2024 + Development + Committed Development Traffic Flows - PM Peak (1700 - 1800)

Figure No.

30



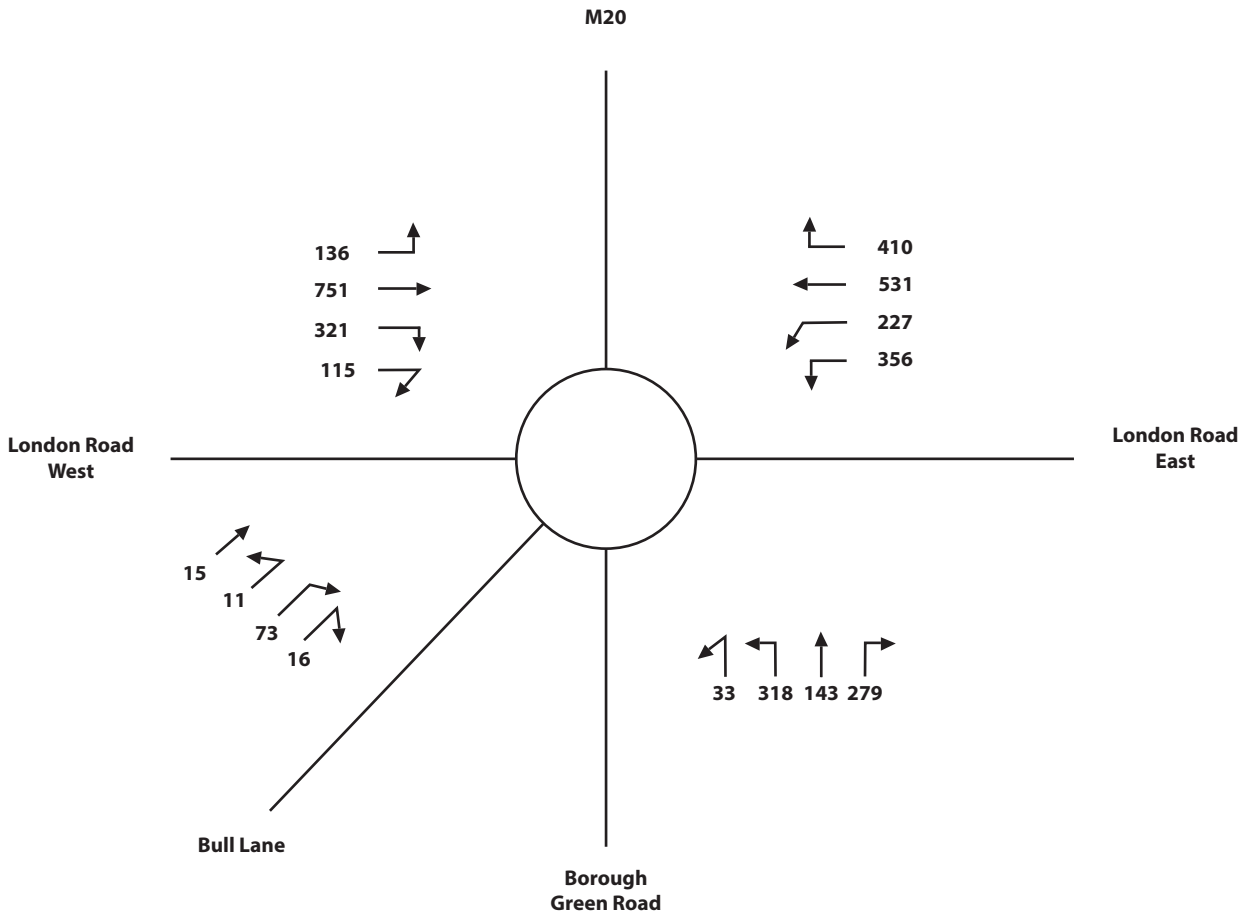
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2028 No Development Traffic Flows - AM Peak (0800-0900)

Figure No.

31



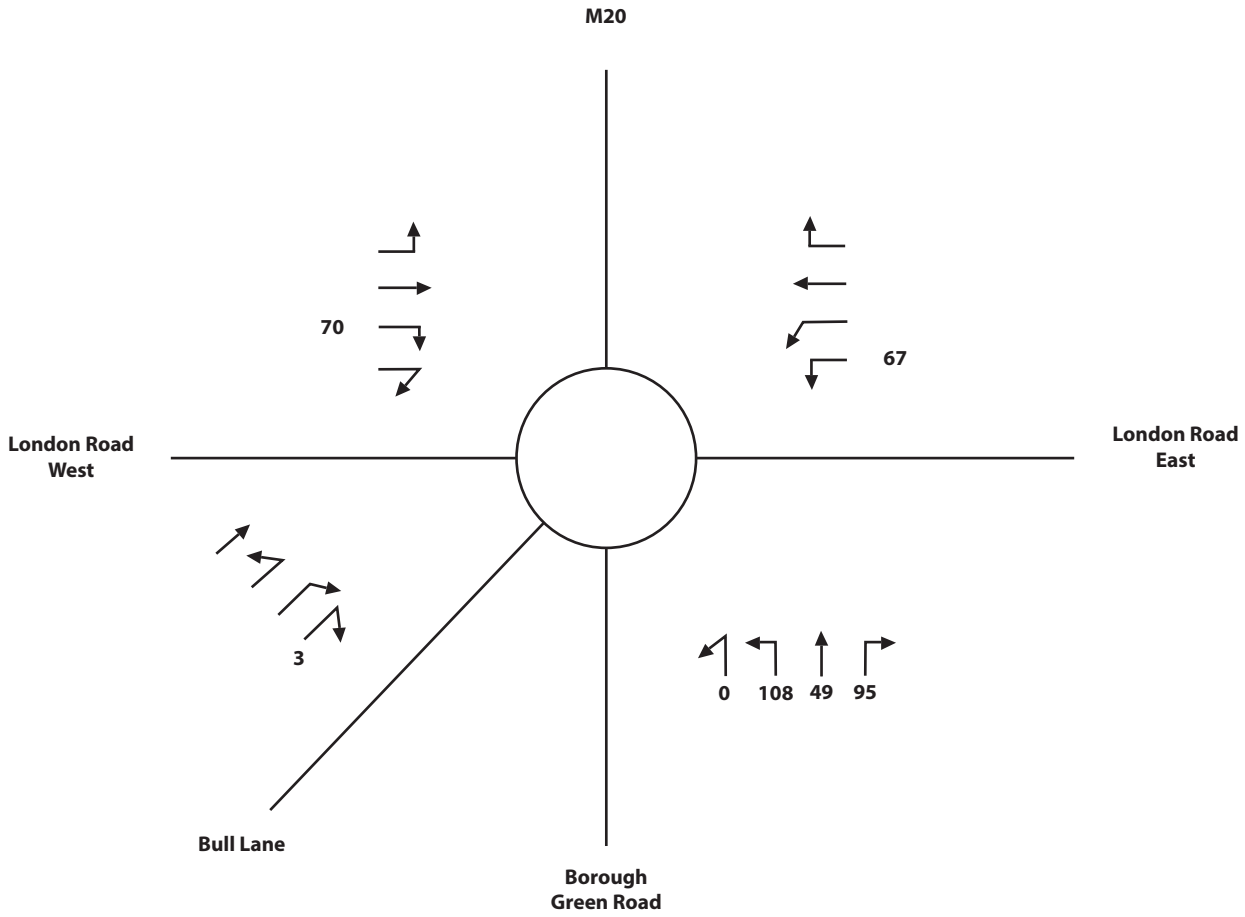
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2028 No Development Traffic Flows - PM Peak (1700 - 1800)

Figure No.

32



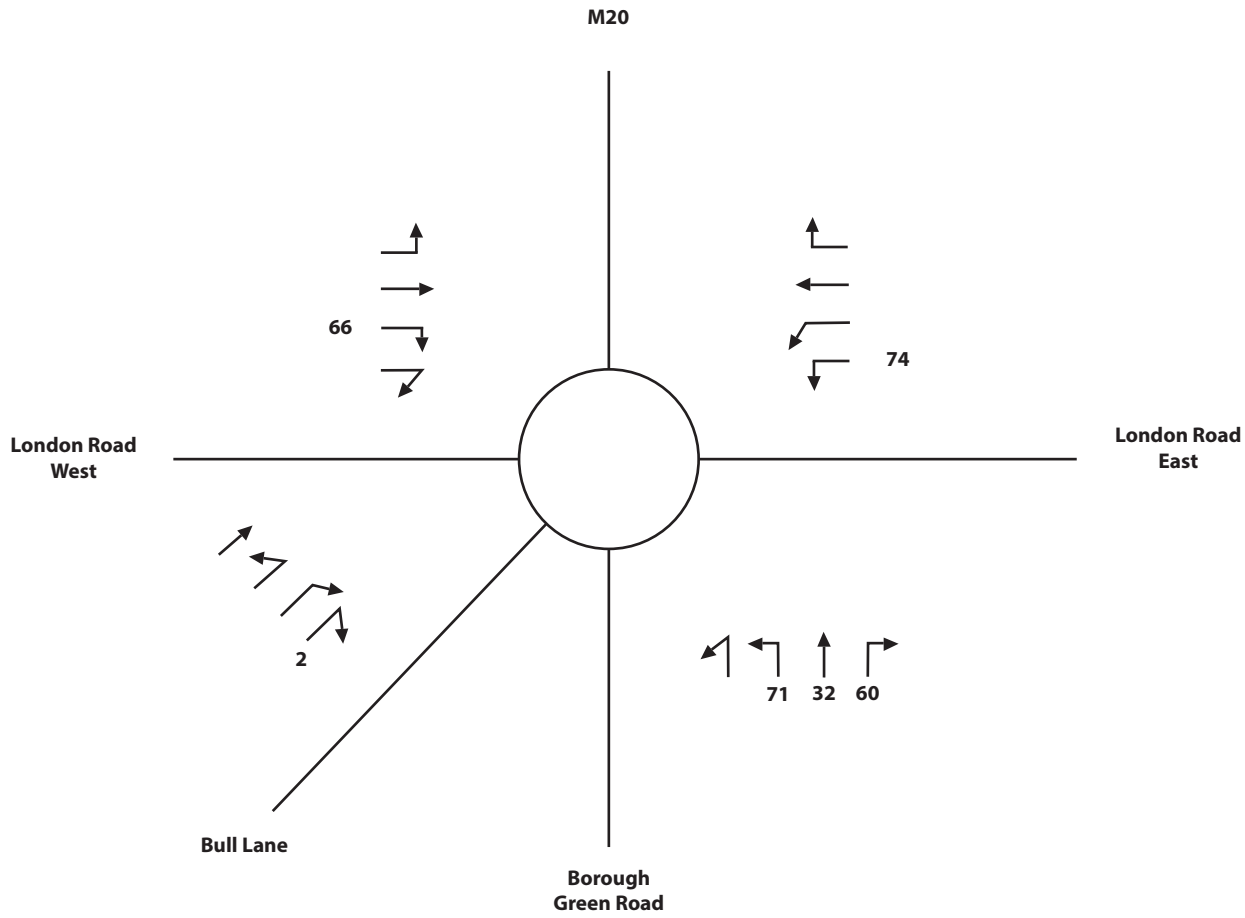
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2028 - 2250 Homes Traffic Flows - AM Peak (0800-0900)

Figure No.

33



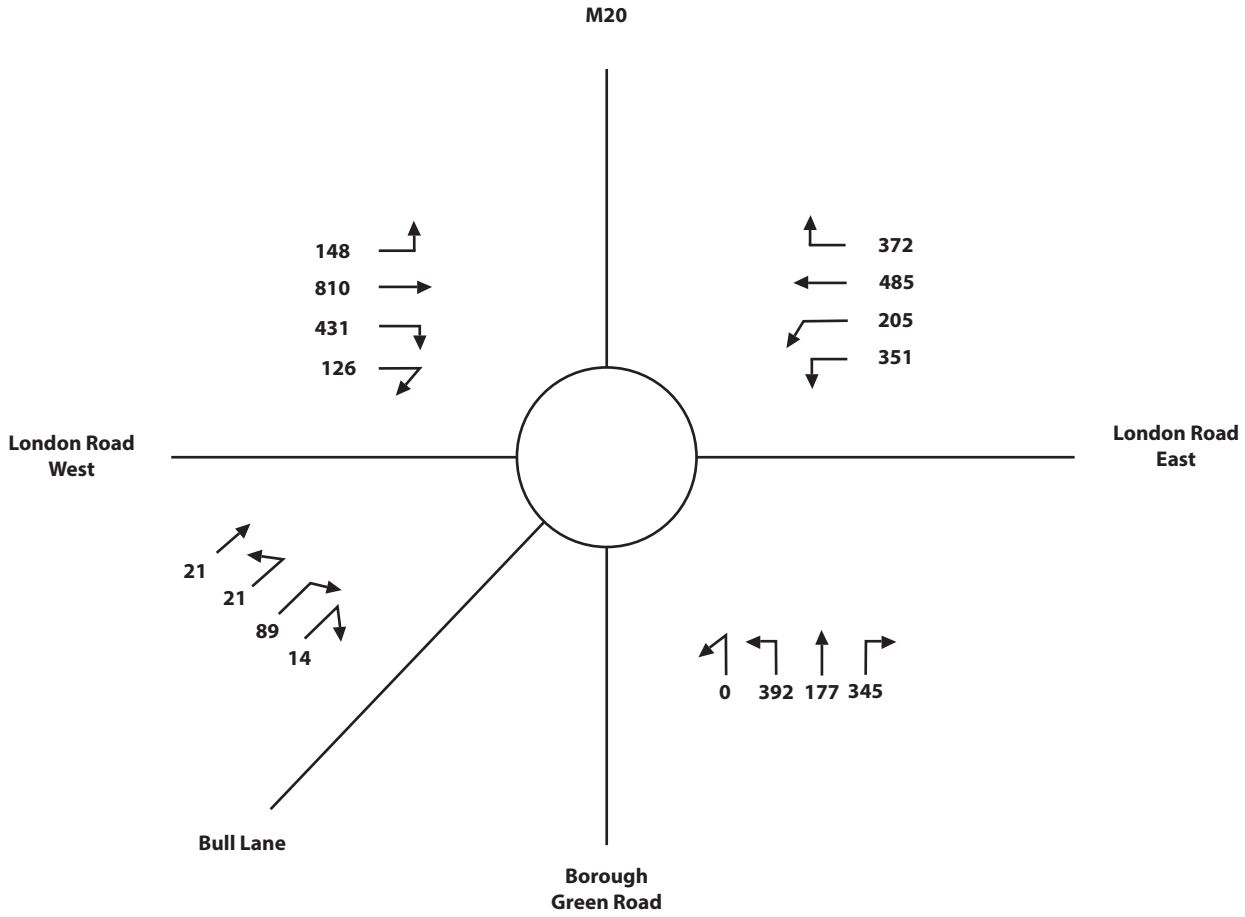
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2028 - 2250 Homes Traffic Flows - PM Peak (1700 - 1800)

Figure No.

34



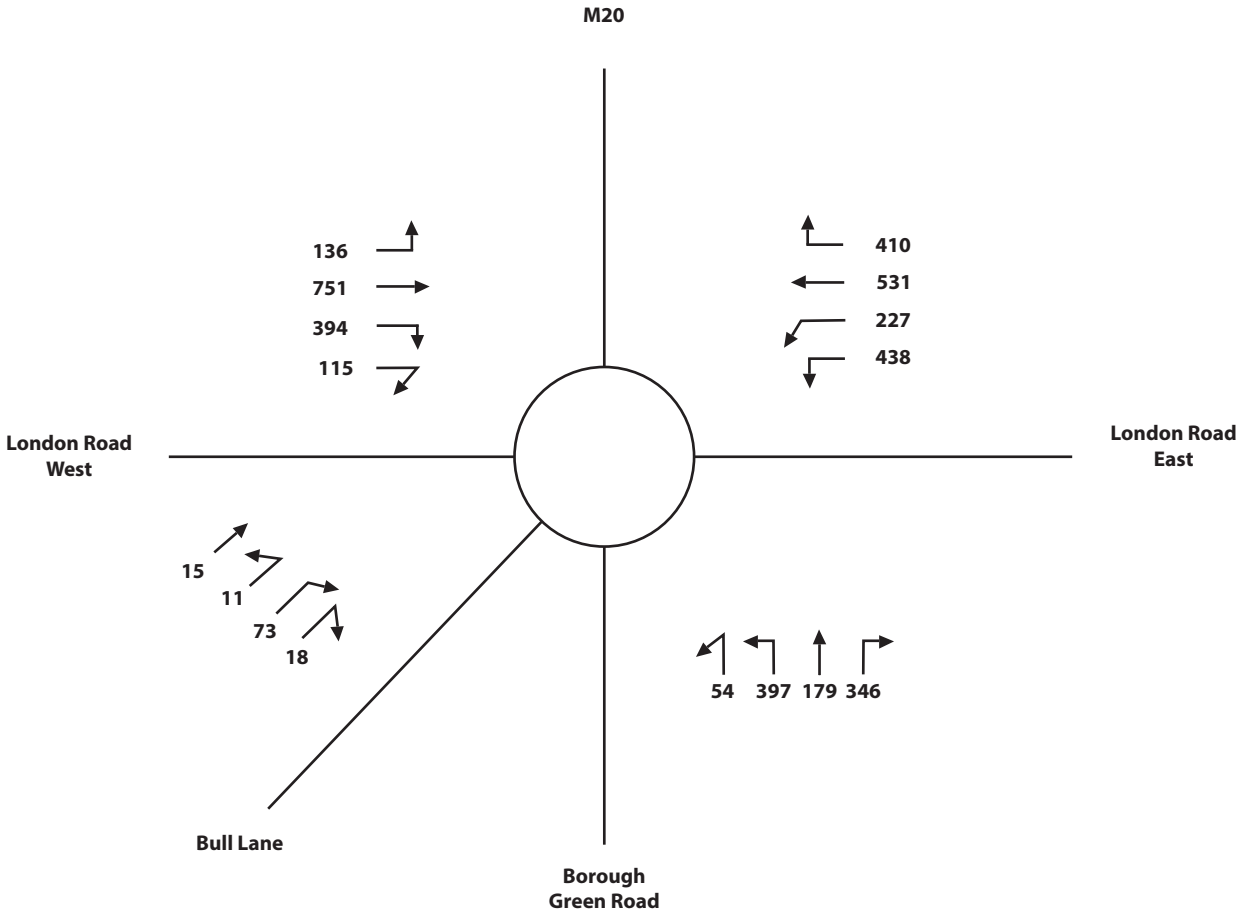
LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2028 + Development + Committed Development Traffic Flows - AM Peak (0800-0900)

Figure No.

35



LES HENRY ASSOCIATES LIMITED

Project : Borough Green Gardens

Predicted 2028 + Development + Committed Development Traffic Flows - PM Peak (1700 - 1800)

Figure No.

36

APPENDIX E

ARCADY ANALYSES – DARKHILL ROUNDABOUT

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

Filename: Dark Hill.arc8
Path: N:\DERS\SPR\5.SPT\Transport & Traffic (Policy Division)\Development\Les Henry\Various Guides
Report generation date: 29/12/2016 14:51:50

Summary of junction performance

	2017 AM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - Scenario 1				
Arm 1	3.13	5	4	8.18	8
Arm 2	4.19	5	5.15	3	7.16
Arm 3	3.14	3	5	4	7.18
Arm 4	3.16	8	5	4	7.16
Arm 5	3.18	4.14	3	6.18	3

	2017 AM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - Scenario 1				
Arm 1	3.13	5	4	8.18	8	3.13	4	D
Arm 2	4.19	5	5.15	3	7.16	3.19	3	D
Arm 3	3.14	3	5	4	7.18	3.13	7	D
Arm 4	3.16	8	5	4	7.16	4	3.15	7	D
Arm 5	3.18	4.14	3	6.18	3	3.16	7	D

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Scenario 1, 2017 AM " model duration: 08:00 - 09:30
"D2 - Scenario 2, 2024 AM" model duration: 08:00 - 09:30
"D3 - Scenario 3, 2024 AM + DEV" model duration: 08:00 - 09:30
"D4 - Scenario 4, 2028 AM + DEV" model duration: 08:00 - 09:30
"D5 - Scenario 5, 2017 PM" model duration: 17:00 - 18:30
"D6 - Scenario 6, 2024 PM" model duration: 17:00 - 18:30
"D7 - Scenario 7, 2024 PM + DEV" model duration: 17:00 - 18:30
"D8 - Scenario 8, 2028 PM + DEV" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 29/12/2016 14:51:48

File summary

Title	(untitled)
Location	
Site Number	
Date	07/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - Scenario 1, 2017 AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1, 2017 AM	Scenario 1	2017 AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			4.15	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Celcon	
2	2	A25 East	
3	3	Quasrry	
4	4	A27 South	
5	5	A27 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

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	2.00	8.20	10.00	19.00	36.00	43.00	
2	5.75	8.80	30.00	11.00	37.00	37.00	
3	3.65	7.60	28.00	21.00	37.00	48.00	
4	3.00	8.90	30.00	16.00	32.00	27.00	
5	3.75	8.60	30.00	14.00	36.00	44.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.530	1176.642
2		(calculated)	(calculated)	0.746	2282.686
3		(calculated)	(calculated)	0.653	1814.465
4		(calculated)	(calculated)	0.717	2002.556
5		(calculated)	(calculated)	0.681	1958.399

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	Y	9.00	100.000
2	ONE HOUR	Y	1218.00	100.000
3	ONE HOUR	Y	70.00	100.000
4	ONE HOUR	Y	266.00	100.000
5	ONE HOUR	Y	534.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	9.000	0.000	0.000	0.000
	2	63.000	0.000	10.000	258.000	887.000
	3	0.000	8.000	0.000	19.000	43.000
	4	9.000	218.000	22.000	0.000	17.000
	5	4.000	508.000	14.000	8.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	1.00	0.00	0.00	0.00
	2	0.05	0.00	0.01	0.21	0.73
	3	0.00	0.11	0.00	0.27	0.61
	4	0.03	0.82	0.08	0.00	0.06
	5	0.01	0.95	0.03	0.01	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.100	1.100	1.100	1.100	1.100
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	10.0	10.0	10.0	10.0	10.0
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	0.01	5.55	0.02	~1	A
2	0.60	4.37	1.62	2.20	A
3	0.08	4.59	0.10	~1	A
4	0.24	4.31	0.35	~1	A
5	0.34	3.50	0.57	1.10	A

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	6.78	6.74	583.81	0.00	867.49	0.008	0.01	4.600	A
2	916.97	913.98	33.02	0.00	2258.06	0.406	0.75	2.940	A
3	52.70	52.50	912.48	0.00	1218.73	0.043	0.05	3.395	A
4	200.26	199.56	751.13	0.00	1464.12	0.137	0.17	3.130	A
5	402.02	400.76	240.09	0.00	1794.93	0.224	0.32	2.837	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	8.09	8.08	698.81	0.00	806.60	0.010	0.01	4.958	A
2	1094.96	1093.82	39.52	0.00	2253.20	0.486	1.03	3.412	A
3	62.93	62.86	1092.03	0.00	1101.51	0.057	0.07	3.811	A
4	239.13	238.89	898.94	0.00	1358.16	0.176	0.23	3.537	A
5	480.06	479.68	287.38	0.00	1762.73	0.272	0.41	3.086	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	9.91	9.89	855.54	0.00	723.61	0.014	0.02	5.547	A
2	1341.04	1338.73	48.38	0.00	2246.59	0.597	1.61	4.350	A
3	77.07	76.95	1336.54	0.00	941.88	0.082	0.10	4.578	A
4	292.87	292.42	1100.23	0.00	1213.87	0.241	0.35	4.295	A
5	587.94	587.31	351.77	0.00	1718.89	0.342	0.57	3.497	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	9.91	9.91	856.58	0.00	723.06	0.014	0.02	5.552	A
2	1341.04	1341.01	48.44	0.00	2246.55	0.597	1.62	4.372	A
3	77.07	77.07	1338.80	0.00	940.40	0.082	0.10	4.586	A
4	292.87	292.87	1102.09	0.00	1212.53	0.242	0.35	4.305	A
5	587.94	587.94	352.32	0.00	1718.52	0.342	0.57	3.501	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	8.09	8.11	700.45	0.00	805.73	0.010	0.01	4.966	A
2	1094.96	1097.24	39.62	0.00	2253.13	0.486	1.05	3.434	A
3	62.93	63.05	1095.44	0.00	1099.29	0.057	0.07	3.823	A
4	239.13	239.58	901.75	0.00	1356.14	0.176	0.24	3.549	A
5	480.06	480.68	288.23	0.00	1762.15	0.272	0.41	3.091	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	6.78	6.79	586.32	0.00	866.17	0.008	0.01	4.609	A
2	916.97	918.14	33.16	0.00	2257.95	0.406	0.76	2.959	A
3	52.70	52.77	916.63	0.00	1216.02	0.043	0.05	3.403	A
4	200.26	200.50	754.56	0.00	1461.65	0.137	0.18	3.142	A
5	402.02	402.40	241.21	0.00	1794.17	0.224	0.32	2.847	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.01	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.75	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.05	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

4	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.01	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	1.03	0.00	0.00	1.10	2.20			N/A	N/A
3	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.41	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.02	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	1.61	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.57	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.02	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	1.62	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.57	0.00	0.00	0.00	1.10			N/A	N/A

Queue Variation results: (09:00-09:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.01	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

2	1.05	0.00	0.00	0.00	1.10			N/A	N/A
3	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.41	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.01	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.76	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.05	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

Filename: Dark Hill.arc8
Path: N:\DERS\SPR\5.SPT\Transport & Traffic (Policy Division)\Development\Les Henry\Various Guides
Report generation date: 29/12/2016 14:55:39

Summary of junction performance

	2017 PM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - Scenario 5				
Arm 1	3.14	4	19.9	31.48	D
Arm 2	31.73	4	51.73	31.5	D
Arm 3	31.37	4	51.3	31.37	D
Arm 4	31.55	4	51.;	31.4	D
Arm 5	41.85	41.43	81.6;	31.8;	D

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Scenario 1, 2017 AM" model duration: 08:00 - 09:30
"D2 - Scenario 2, 2024 AM" model duration: 08:00 - 09:30
"D3 - Scenario 3, 2024 AM + DEV" model duration: 08:00 - 09:30
"D4 - Scenario 4, 2028 AM + DEV" model duration: 08:00 - 09:30
"D5 - Scenario 5, 2017 PM " model duration: 17:00 - 18:30
"D6 - Scenario 6, 2024 PM" model duration: 17:00 - 18:30
"D7 - Scenario 7, 2024 PM + DEV" model duration: 17:00 - 18:30
"D8 - Scenario 8, 2028 PM + DEV" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 29/12/2016 14:55:37

File summary

Title	(untitled)
Location	
Site Number	
Date	07/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - Scenario 5, 2017 PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 5, 2017 PM	Scenario 5	2017 PM		ONE HOUR	17:00	18:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			4.24	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Celcon	
2	2	A25 East	
3	3	Quasrry	
4	4	A27 South	
5	5	A27 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

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	2.00	8.20	10.00	19.00	36.00	43.00	
2	5.75	8.80	30.00	11.00	37.00	37.00	
3	3.65	7.60	28.00	21.00	37.00	48.00	
4	3.00	8.90	30.00	16.00	32.00	27.00	
5	3.75	8.60	30.00	14.00	36.00	44.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.530	1176.642
2		(calculated)	(calculated)	0.746	2282.686
3		(calculated)	(calculated)	0.653	1814.465
4		(calculated)	(calculated)	0.717	2002.556
5		(calculated)	(calculated)	0.681	1958.399

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	Y	64.00	100.000
2	ONE HOUR	Y	541.00	100.000
3	ONE HOUR	Y	49.00	100.000
4	ONE HOUR	Y	248.00	100.000
5	ONE HOUR	Y	928.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	52.000	0.000	8.000	4.000
	2	2.000	0.000	7.000	125.000	407.000
	3	0.000	26.000	0.000	15.000	8.000
	4	0.000	234.000	6.000	0.000	8.000
	5	0.000	896.000	30.000	2.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.81	0.00	0.13	0.06
	2	0.00	0.00	0.01	0.23	0.75
	3	0.00	0.53	0.00	0.31	0.16
	4	0.00	0.94	0.02	0.00	0.03
	5	0.00	0.97	0.03	0.00	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.100	1.100	1.100	1.100	1.100
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	10.0	10.0	10.0	10.0	10.0
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	0.15	9.66	0.19	~1	A
2	0.27	2.40	0.40	~1	A
3	0.04	2.90	0.04	~1	A
4	0.17	2.88	0.22	~1	A
5	0.58	5.38	1.52	1.10	A

Main Results for each time segment

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	48.18	47.86	895.63	0.00	702.38	0.069	0.08	6.047	A
2	407.29	406.33	37.48	0.00	2254.73	0.181	0.24	2.141	A
3	36.89	36.78	411.54	0.00	1545.78	0.024	0.03	2.623	A
4	186.71	186.19	335.70	0.00	1761.91	0.106	0.13	2.513	A
5	698.65	695.93	201.20	0.00	1821.41	0.384	0.68	3.509	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	57.53	57.40	1072.17	0.00	608.90	0.094	0.11	7.178	A
2	486.35	486.11	44.88	0.00	2249.20	0.216	0.30	2.245	A
3	44.05	44.02	492.37	0.00	1493.01	0.030	0.03	2.732	A
4	222.95	222.81	401.63	0.00	1714.65	0.130	0.16	2.654	A
5	834.25	833.18	240.78	0.00	1794.46	0.465	0.95	4.115	A

Main results: (17:30-17:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	70.47	70.18	1312.16	0.00	481.82	0.146	0.19	9.613	A
2	595.65	595.28	54.91	0.00	2241.72	0.266	0.40	2.405	A
3	53.95	53.91	602.93	0.00	1420.83	0.038	0.04	2.896	A
4	273.05	272.84	491.83	0.00	1650.00	0.165	0.22	2.875	A
5	1021.75	1019.51	294.84	0.00	1757.65	0.581	1.51	5.349	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	70.47	70.46	1314.57	0.00	480.54	0.147	0.19	9.656	A
2	595.65	595.65	55.05	0.00	2241.62	0.266	0.40	2.405	A
3	53.95	53.95	603.36	0.00	1420.55	0.038	0.04	2.897	A
4	273.05	273.05	492.15	0.00	1649.76	0.166	0.22	2.875	A
5	1021.75	1021.71	295.07	0.00	1757.49	0.581	1.52	5.381	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	57.53	57.82	1075.82	0.00	606.96	0.095	0.12	7.214	A
2	486.35	486.72	45.08	0.00	2249.05	0.216	0.30	2.248	A
3	44.05	44.09	493.07	0.00	1492.56	0.030	0.03	2.735	A
4	222.95	223.16	402.17	0.00	1714.26	0.130	0.17	2.655	A
5	834.25	836.46	241.15	0.00	1794.21	0.465	0.96	4.145	A

Main results: (18:15-18:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	48.18	48.32	900.15	0.00	699.98	0.069	0.08	6.077	A
2	407.29	407.54	37.71	0.00	2254.55	0.181	0.24	2.143	A
3	36.89	36.92	412.83	0.00	1544.94	0.024	0.03	2.627	A
4	186.71	186.84	336.74	0.00	1761.17	0.106	0.13	2.517	A
5	698.65	699.75	201.91	0.00	1820.92	0.384	0.69	3.534	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.03	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

4	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.68	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.03	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.95	0.00	0.00	1.10	1.10			N/A	N/A

Queue Variation results: (17:30-17:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.40	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.04	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.51	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:45-18:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.40	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.04	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.52	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (18:00-18:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very		N/A	N/A

						small or very big.			
2	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.03	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.96	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (18:15-18:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.03	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

Filename: Dark Hill.arc8
Path: N:\DERS\SPR\5.SPT\Transport & Traffic (Policy Division)\Development\Les Henry\Various Guides
Report generation date: 29/12/2016 14:53:00

Summary of junction performance

	2024 AM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - Scenario 2				
Arm 1	3135	£4	81:7	3135	D
Arm 2	41;7	5153	71:6	3196	D
Arm 3	3144	£4	71;8	313<	D
Arm 4	316<	£4	718:	3159	D
Arm 5	3195	4143	6196	3169	D

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Scenario 1, 2017 AM" model duration: 08:00 - 09:30
"D2 - Scenario 2, 2024 AM " model duration: 08:00 - 09:30
"D3 - Scenario 3, 2024 AM + DEV" model duration: 08:00 - 09:30
"D4 - Scenario 4, 2028 AM + DEV" model duration: 08:00 - 09:30
"D5 - Scenario 5, 2017 PM" model duration: 17:00 - 18:30
"D6 - Scenario 6, 2024 PM" model duration: 17:00 - 18:30
"D7 - Scenario 7, 2024 PM + DEV" model duration: 17:00 - 18:30
"D8 - Scenario 8, 2028 PM + DEV" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 29/12/2016 14:52:59

File summary

Title	(untitled)
Location	
Site Number	
Date	07/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - Scenario 2, 2024 AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2, 2024 AM	Scenario 2	2024 AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			4.44	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Celcon	
2	2	A25 East	
3	3	Quasrry	
4	4	A27 South	
5	5	A27 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

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	2.00	8.20	10.00	19.00	36.00	43.00	
2	5.75	8.80	30.00	11.00	37.00	37.00	
3	3.65	7.60	28.00	21.00	37.00	48.00	
4	3.00	8.90	30.00	16.00	32.00	27.00	
5	3.75	8.60	30.00	14.00	36.00	44.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.530	1176.642
2		(calculated)	(calculated)	0.746	2282.686
3		(calculated)	(calculated)	0.653	1814.465
4		(calculated)	(calculated)	0.717	2002.556
5		(calculated)	(calculated)	0.681	1958.399

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	Y	10.00	100.000
2	ONE HOUR	Y	1279.00	100.000
3	ONE HOUR	Y	73.00	100.000
4	ONE HOUR	Y	279.00	100.000
5	ONE HOUR	Y	560.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	10.000	0.000	0.000	0.000
	2	66.000	0.000	11.000	271.000	931.000
	3	0.000	8.000	0.000	20.000	45.000
	4	9.000	229.000	23.000	0.000	18.000
	5	4.000	533.000	15.000	8.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	1.00	0.00	0.00	0.00
	2	0.05	0.00	0.01	0.21	0.73
	3	0.00	0.11	0.00	0.27	0.62
	4	0.03	0.82	0.08	0.00	0.06
	5	0.01	0.95	0.03	0.01	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.100	1.100	1.100	1.100	1.100
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	10.0	10.0	10.0	10.0	10.0
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	0.02	5.74	0.02	~1	A
2	0.63	4.73	1.84	2.20	A
3	0.09	4.85	0.11	~1	A
4	0.26	4.57	0.39	~1	A
5	0.36	3.63	0.62	1.10	A

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	7.53	7.49	612.28	0.00	852.42	0.009	0.01	4.686	A
2	962.90	959.64	34.51	0.00	2256.94	0.427	0.81	3.045	A
3	54.96	54.75	957.39	0.00	1189.41	0.046	0.05	3.489	A
4	210.05	209.30	787.80	0.00	1437.83	0.146	0.19	3.222	A
5	421.60	420.24	251.31	0.00	1787.29	0.236	0.34	2.894	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	8.99	8.98	732.91	0.00	788.55	0.011	0.01	5.079	A
2	1149.79	1148.50	41.31	0.00	2251.87	0.511	1.14	3.583	A
3	65.63	65.55	1145.80	0.00	1066.40	0.062	0.07	3.956	A
4	250.82	250.54	942.86	0.00	1326.68	0.189	0.26	3.679	A
5	503.43	503.02	300.83	0.00	1753.57	0.287	0.44	3.166	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	11.01	10.99	897.24	0.00	701.53	0.016	0.02	5.734	A
2	1408.21	1405.45	50.57	0.00	2244.96	0.627	1.83	4.702	A
3	80.37	80.23	1402.17	0.00	899.03	0.089	0.11	4.836	A
4	307.18	306.66	1153.82	0.00	1175.45	0.261	0.39	4.555	A
5	616.57	615.86	368.19	0.00	1707.71	0.361	0.62	3.625	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	11.01	11.01	898.42	0.00	700.90	0.016	0.02	5.739	A
2	1408.21	1408.16	50.65	0.00	2244.90	0.627	1.84	4.732	A
3	80.37	80.37	1404.85	0.00	897.28	0.090	0.11	4.847	A
4	307.18	307.18	1156.03	0.00	1173.87	0.262	0.39	4.568	A
5	616.57	616.56	368.83	0.00	1707.27	0.361	0.62	3.629	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	8.99	9.01	734.75	0.00	787.57	0.011	0.01	5.085	A
2	1149.79	1152.52	41.42	0.00	2251.78	0.511	1.16	3.613	A
3	65.63	65.77	1149.81	0.00	1063.79	0.062	0.07	3.968	A
4	250.82	251.34	946.16	0.00	1324.31	0.189	0.26	3.691	A
5	503.43	504.13	301.80	0.00	1752.91	0.287	0.45	3.174	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	7.53	7.54	615.00	0.00	850.98	0.009	0.01	4.694	A
2	962.90	964.23	34.67	0.00	2256.82	0.427	0.82	3.068	A
3	54.96	55.03	961.97	0.00	1186.42	0.046	0.05	3.499	A
4	210.05	210.32	791.59	0.00	1435.11	0.146	0.19	3.233	A
5	421.60	422.01	252.54	0.00	1786.45	0.236	0.34	2.904	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.01	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.81	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.05	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

4	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.01	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	1.14	0.00	0.00	1.10	2.20			N/A	N/A
3	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.02	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	1.83	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.62	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.02	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	1.84	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.62	0.00	0.00	0.00	1.10			N/A	N/A

Queue Variation results: (09:00-09:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.01	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

2	1.16	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.01	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.82	0.00	0.00	0.00	1.10			N/A	N/A
3	0.05	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

Filename: Dark Hill.arc8
Path: N:\DERS\SPR\5.SPT\Transport & Traffic (Policy Division)\Development\Les Henry\Various Guides
Report generation date: 29/12/2016 14:56:17

Summary of junction performance

	2024 PM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - Scenario 6				
Arm 1	3155	£4	43198	314:	E
Arm 2	3175	£4	5178	315;	D
Arm 3	3138	£4	51<7	3137	D
Arm 4	3156	£4	51<7	314;	D
Arm 5	41:7	5153	81;:	3194	D

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Scenario 1, 2017 AM" model duration: 08:00 - 09:30
"D2 - Scenario 2, 2024 AM" model duration: 08:00 - 09:30
"D3 - Scenario 3, 2024 AM + DEV" model duration: 08:00 - 09:30
"D4 - Scenario 4, 2028 AM + DEV" model duration: 08:00 - 09:30
"D5 - Scenario 5, 2017 PM" model duration: 17:00 - 18:30
"D6 - Scenario 6, 2024 PM " model duration: 17:00 - 18:30
"D7 - Scenario 7, 2024 PM + DEV" model duration: 17:00 - 18:30
"D8 - Scenario 8, 2028 PM + DEV" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 29/12/2016 14:56:16

File summary

Title	(untitled)
Location	
Site Number	
Date	07/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - Scenario 6, 2024 PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 6, 2024 PM	Scenario 6	2024 PM		ONE HOUR	17:00	18:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			4.55	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Celcon	
2	2	A25 East	
3	3	Quasrry	
4	4	A27 South	
5	5	A27 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

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	2.00	8.20	10.00	19.00	36.00	43.00	
2	5.75	8.80	30.00	11.00	37.00	37.00	
3	3.65	7.60	28.00	21.00	37.00	48.00	
4	3.00	8.90	30.00	16.00	32.00	27.00	
5	3.75	8.60	30.00	14.00	36.00	44.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.530	1176.642
2		(calculated)	(calculated)	0.746	2282.686
3		(calculated)	(calculated)	0.653	1814.465
4		(calculated)	(calculated)	0.717	2002.556
5		(calculated)	(calculated)	0.681	1958.399

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	Y	67.00	100.000
2	ONE HOUR	Y	567.00	100.000
3	ONE HOUR	Y	51.00	100.000
4	ONE HOUR	Y	260.00	100.000
5	ONE HOUR	Y	975.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	55.000	0.000	8.000	4.000
	2	2.000	0.000	7.000	131.000	427.000
	3	0.000	27.000	0.000	16.000	8.000
	4	0.000	246.000	6.000	0.000	8.000
	5	0.000	941.000	32.000	2.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.82	0.00	0.12	0.06
	2	0.00	0.00	0.01	0.23	0.75
	3	0.00	0.53	0.00	0.31	0.16
	4	0.00	0.95	0.02	0.00	0.03
	5	0.00	0.97	0.03	0.00	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.100	1.100	1.100	1.100	1.100
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	10.0	10.0	10.0	10.0	10.0
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	0.17	10.65	0.22	~1	B
2	0.28	2.45	0.42	~1	A
3	0.04	2.94	0.05	~1	A
4	0.18	2.94	0.23	~1	A
5	0.61	5.87	1.74	2.20	A

Main Results for each time segment

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	50.44	50.09	940.51	0.00	678.61	0.074	0.09	6.298	A
2	426.87	425.84	38.97	0.00	2253.61	0.189	0.26	2.165	A
3	38.40	38.28	431.06	0.00	1533.04	0.025	0.03	2.648	A
4	195.74	195.19	351.46	0.00	1750.61	0.112	0.14	2.546	A
5	734.03	731.06	210.95	0.00	1814.77	0.404	0.74	3.646	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	60.23	60.08	1125.93	0.00	580.43	0.104	0.13	7.608	A
2	509.72	509.46	46.67	0.00	2247.87	0.227	0.32	2.277	A
3	45.85	45.82	515.73	0.00	1477.76	0.031	0.04	2.764	A
4	233.73	233.59	420.50	0.00	1701.13	0.137	0.17	2.698	A
5	876.51	875.27	252.46	0.00	1786.51	0.491	1.05	4.341	A

Main results: (17:30-17:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	73.77	73.42	1377.74	0.00	447.09	0.165	0.21	10.588	B
2	624.28	623.87	57.09	0.00	2240.10	0.279	0.42	2.450	A
3	56.15	56.11	631.51	0.00	1402.17	0.040	0.05	2.941	A
4	286.27	286.03	514.92	0.00	1633.44	0.175	0.23	2.938	A
5	1073.50	1070.80	309.14	0.00	1747.92	0.614	1.72	5.825	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	73.77	73.76	1380.62	0.00	445.56	0.166	0.22	10.650	B
2	624.28	624.28	57.25	0.00	2239.98	0.279	0.42	2.450	A
3	56.15	56.15	631.98	0.00	1401.86	0.040	0.05	2.942	A
4	286.27	286.26	515.27	0.00	1633.19	0.175	0.23	2.939	A
5	1073.50	1073.44	309.38	0.00	1747.75	0.614	1.74	5.872	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	60.23	60.58	1130.23	0.00	578.15	0.104	0.13	7.658	A
2	509.72	510.12	46.91	0.00	2247.69	0.227	0.32	2.280	A
3	45.85	45.89	516.48	0.00	1477.27	0.031	0.04	2.768	A
4	233.73	233.96	421.08	0.00	1700.71	0.137	0.18	2.699	A
5	876.51	879.17	252.86	0.00	1786.23	0.491	1.07	4.378	A

Main results: (18:15-18:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	50.44	50.60	945.50	0.00	675.97	0.075	0.09	6.335	A
2	426.87	427.13	39.22	0.00	2253.42	0.189	0.26	2.168	A
3	38.40	38.42	432.43	0.00	1532.15	0.025	0.03	2.650	A
4	195.74	195.89	352.56	0.00	1749.82	0.112	0.14	2.550	A
5	734.03	735.30	211.71	0.00	1814.25	0.405	0.75	3.676	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.03	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

4	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.74	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.04	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.05	0.00	0.00	1.10	2.20			N/A	N/A

Queue Variation results: (17:30-17:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.42	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.05	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.72	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:45-18:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.42	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.05	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.74	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (18:00-18:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very		N/A	N/A

						small or very big.			
2	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.04	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.07	0.00	0.00	1.10	1.10			N/A	N/A

Queue Variation results: (18:15-18:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.03	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.75	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Filename: Dark Hill.arc8
Path: H:\My Pictures
Report generation date: 23/01/2017 14:19:52

Summary of junction performance

	2024 AM + DEV				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - Scenario 3				
Arm 1	7614;	<:1<3	47;1:4	413:	I
Arm 2	31:4	4143	7155	3173	D
Arm 3	315<	£4	9139	3154	D
Arm 4	317;	£4	8169	3163	D
Arm 5	319<	4143	61:<	316<	D

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Scenario 1, 2017 AM" model duration: 08:00 - 09:30
"D2 - Scenario 2, 2024 AM" model duration: 08:00 - 09:30
"D3 - Scenario 3, 2024 AM + DEV " model duration: 08:00 - 09:30
"D4 - Scenario 4, 2028 AM + DEV" model duration: 08:00 - 09:30
"D5 - Scenario 5, 2017 PM" model duration: 17:00 - 18:30
"D6 - Scenario 6, 2024 PM" model duration: 17:00 - 18:30
"D7 - Scenario 7, 2024 PM + DEV" model duration: 17:00 - 18:30
"D8 - Scenario 8, 2028 PM + DEV" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 23/01/2017 14:19:51

File summary

Title	(untitled)
Location	
Site Number	
Date	07/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - Scenario 3, 2024 AM + DEV

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 3, 2024 AM + DEV	Scenario 3	2024 AM + DEV		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			55.81	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Celcon	
2	2	A25 East	
3	3	Haul Road	
4	4	A27 South	
5	5	A27 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

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	2.00	8.20	10.00	19.00	36.00	43.00	
2	5.75	8.80	30.00	11.00	37.00	37.00	

3	3.65	7.60	28.00	21.00	37.00	48.00	
4	3.00	8.90	30.00	16.00	32.00	27.00	
5	3.75	8.60	30.00	14.00	36.00	44.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.530	1176.642
2		(calculated)	(calculated)	0.746	2282.686
3		(calculated)	(calculated)	0.653	1814.465
4		(calculated)	(calculated)	0.717	2002.556
5		(calculated)	(calculated)	0.681	1958.399

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	Y	889.00	100.000
2	ONE HOUR	Y	557.00	100.000
3	ONE HOUR	Y	160.00	100.000
4	ONE HOUR	Y	292.00	100.000
5	ONE HOUR	Y	599.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	0.000	11.000	95.000	783.000
	2	20.000	0.000	11.000	198.000	328.000
	3	35.000	10.000	0.000	42.000	73.000
	4	77.000	168.000	30.000	0.000	17.000
	5	364.000	203.000	24.000	8.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.00	0.01	0.11	0.88
	2	0.04	0.00	0.02	0.36	0.59
	3	0.22	0.06	0.00	0.26	0.46
	4	0.26	0.58	0.10	0.00	0.06
	5	0.61	0.34	0.04	0.01	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.100	1.100	1.100	1.100	1.100
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	10.0	10.0	10.0	10.0	10.0
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	1.07	148.71	43.18	97.90	F
2	0.40	4.22	0.71	1.10	A
3	0.21	6.06	0.29	~1	A
4	0.30	5.36	0.48	~1	A
5	0.39	3.79	0.69	1.10	A

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	669.29	660.73	332.31	0.00	1000.67	0.669	2.14	11.382	B
2	419.34	417.96	707.24	0.00	1755.09	0.239	0.34	2.959	A
3	120.46	119.93	1068.27	0.00	1117.02	0.108	0.13	3.970	A
4	219.83	218.97	931.53	0.00	1334.80	0.165	0.22	3.548	A
5	450.96	449.48	254.96	0.00	1784.81	0.253	0.37	2.963	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	799.19	789.11	397.81	0.00	965.99	0.827	4.66	21.236	C
2	500.73	500.20	844.78	0.00	1652.49	0.303	0.48	3.434	A
3	143.84	143.61	1276.85	0.00	980.84	0.147	0.19	4.728	A
4	262.50	262.15	1113.45	0.00	1204.39	0.218	0.30	4.202	A
5	538.49	538.03	305.24	0.00	1750.57	0.308	0.49	3.266	A

Main results: (08:30-08:45)

	Total Demand	Entry Flow	Circulating Flow	Pedestrian Demand	Capacity		End Queue	Delay	

Arm	(PCU/hr)	(PCU/hr)	(PCU/hr)	(Ped/hr)	(PCU/hr)	RFC	(PCU)	(s)	LOS
1	978.81	892.70	486.97	0.00	918.78	1.065	26.19	77.121	F
2	613.27	612.36	960.85	0.00	1565.90	0.392	0.70	4.150	A
3	176.16	175.76	1490.71	0.00	841.22	0.209	0.29	5.946	A
4	321.50	320.85	1298.47	0.00	1071.76	0.300	0.47	5.269	A
5	659.51	658.70	373.59	0.00	1704.03	0.387	0.69	3.782	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	978.81	910.83	487.72	0.00	918.38	1.066	43.18	148.708	F
2	613.27	613.22	979.09	0.00	1552.29	0.395	0.71	4.216	A
3	176.16	176.14	1509.49	0.00	828.97	0.213	0.29	6.065	A
4	321.50	321.46	1315.26	0.00	1059.72	0.303	0.48	5.363	A
5	659.51	659.50	374.31	0.00	1703.55	0.387	0.69	3.792	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	799.19	939.86	398.94	0.00	965.39	0.828	8.01	105.162	F
2	500.73	501.46	995.69	0.00	1539.91	0.325	0.53	3.818	A
3	143.84	144.15	1426.98	0.00	882.83	0.163	0.22	5.362	A
4	262.50	263.03	1247.40	0.00	1108.37	0.237	0.34	4.687	A
5	538.49	539.29	306.27	0.00	1749.87	0.308	0.49	3.272	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	669.29	692.07	334.05	0.00	999.75	0.669	2.32	13.744	B
2	419.34	420.06	738.82	0.00	1731.53	0.242	0.35	3.022	A
3	120.46	120.77	1101.30	0.00	1095.46	0.110	0.14	4.063	A
4	219.83	220.32	961.06	0.00	1313.63	0.167	0.22	3.625	A
5	450.96	451.43	256.54	0.00	1783.73	0.253	0.37	2.975	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	2.14	0.00	1.10	3.30	3.30			N/A	N/A
2	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	4.66	0.00	1.10	11.00	16.50			N/A	N/A
2	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue		N/A	N/A

						is very small or very big.			
5	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	26.19	3.30	20.90	50.60	61.60			N/A	N/A
2	0.70	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.47	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	43.18	7.70	36.30	81.40	97.90			N/A	N/A
2	0.71	0.00	0.00	0.00	1.10			N/A	N/A
3	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.69	0.00	0.00	0.00	1.10			N/A	N/A

Queue Variation results: (09:00-09:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	8.01	0.00	0.00	19.80	30.80			N/A	N/A
2	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	2.32	0.00	0.00	0.00	5.50			N/A	N/A
2	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

For sales and distribution information, program advice and maintenance, contact TRL:
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Filename: Dark Hill.arc8
Path: H:\My Pictures
Report generation date: 23/01/2017 14:19:06

Summary of junction performance

	2024 PM + DEV				
	Queue (PCU)	**95% Queue (PCU)**	**Delay (s)**	**RFC**	**LOS**
	A1 - Scenario 7				
Arm 1	31<9	4143	;16;	317:	D
Arm 2	314<	£4	5174	3148	D
Arm 3	3143	£4	6145	313;	D
Arm 4	315;	£4	6148	3154	D
Arm 5	51<4	7173	;18:	31:6	D

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Scenario 1, 2017 AM" model duration: 08:00 - 09:30
"D2 - Scenario 2, 2024 AM" model duration: 08:00 - 09:30
"D3 - Scenario 3, 2024 AM + DEV" model duration: 08:00 - 09:30
"D4 - Scenario 4, 2028 AM + DEV" model duration: 08:00 - 09:30
"D5 - Scenario 5, 2017 PM" model duration: 17:00 - 18:30
"D6 - Scenario 6, 2024 PM" model duration: 17:00 - 18:30
"D7 - Scenario 7, 2024 PM + DEV " model duration: 17:00 - 18:30
"D8 - Scenario 8, 2028 PM + DEV" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 23/01/2017 14:19:05

File summary

Title	(untitled)
Location	
Site Number	
Date	07/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - Scenario 7, 2024 PM + DEV

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 7, 2024 PM + DEV	Scenario 7	2024 PM + DEV		ONE HOUR	17:00	18:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			6.80	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Celcon	
2	2	A25 East	
3	3	Haul Road	
4	4	A27 South	
5	5	A27 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	2.00	8.20	10.00	19.00	36.00	43.00	
2	5.75	8.80	30.00	11.00	37.00	37.00	

3	3.65	7.60	28.00	21.00	37.00	48.00	
4	3.00	8.90	30.00	16.00	32.00	27.00	
5	3.75	8.60	30.00	14.00	36.00	44.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.530	1176.642
2		(calculated)	(calculated)	0.746	2282.686
3		(calculated)	(calculated)	0.653	1814.465
4		(calculated)	(calculated)	0.717	2002.556
5		(calculated)	(calculated)	0.681	1958.399

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	Y	377.00	100.000
2	ONE HOUR	Y	262.00	100.000
3	ONE HOUR	Y	101.00	100.000
4	ONE HOUR	Y	296.00	100.000
5	ONE HOUR	Y	1129.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	13.000	16.000	57.000	291.000
	2	3.000	0.000	9.000	86.000	164.000
	3	19.000	29.000	0.000	29.000	24.000
	4	149.000	123.000	16.000	0.000	8.000
	5	801.000	282.000	44.000	2.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.03	0.04	0.15	0.77
	2	0.01	0.00	0.03	0.33	0.63
	3	0.19	0.29	0.00	0.29	0.24
	4	0.50	0.42	0.05	0.00	0.03
	5	0.71	0.25	0.04	0.00	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.100	1.100	1.100	1.100	1.100
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	10.0	10.0	10.0	10.0	10.0
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	0.47	8.38	0.96	1.10	A
2	0.15	2.41	0.19	~1	A
3	0.08	3.12	0.10	~1	A
4	0.21	3.15	0.28	~1	A
5	0.73	8.57	2.91	4.40	A

Main Results for each time segment

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	283.83	282.05	371.89	0.00	979.71	0.290	0.44	5.663	A
2	197.25	196.78	318.80	0.00	2044.86	0.096	0.12	2.142	A
3	76.04	75.81	451.87	0.00	1519.45	0.050	0.06	2.742	A
4	222.84	222.19	397.18	0.00	1717.84	0.130	0.16	2.646	A
5	849.97	846.01	254.47	0.00	1785.14	0.476	0.99	4.199	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	338.92	338.24	445.20	0.00	940.89	0.360	0.61	6.564	A
2	235.53	235.41	382.22	0.00	1997.55	0.118	0.15	2.247	A
3	90.80	90.74	541.35	0.00	1461.04	0.062	0.07	2.889	A
4	266.10	265.92	475.82	0.00	1661.47	0.160	0.21	2.837	A
5	1014.95	1012.93	304.55	0.00	1751.04	0.580	1.50	5.349	A

Main results: (17:30-17:45)

	Total Demand	Entry Flow	Circulating Flow	Pedestrian Demand	Capacity		End Queue	Delay	

Arm	(PCU/hr)	(PCU/hr)	(PCU/hr)	(Ped/hr)	(PCU/hr)	RFC	(PCU)	(s)	LOS
1	415.08	413.74	544.35	0.00	888.39	0.467	0.95	8.318	A
2	288.47	288.28	467.50	0.00	1933.94	0.149	0.19	2.406	A
3	111.20	111.11	662.49	0.00	1381.95	0.080	0.10	3.115	A
4	325.90	325.60	582.32	0.00	1585.13	0.206	0.28	3.144	A
5	1243.05	1237.57	372.91	0.00	1704.50	0.729	2.87	8.381	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	415.08	415.05	546.05	0.00	887.49	0.468	0.96	8.380	A
2	288.47	288.47	468.99	0.00	1932.82	0.149	0.19	2.407	A
3	111.20	111.20	663.88	0.00	1381.04	0.081	0.10	3.117	A
4	325.90	325.90	583.51	0.00	1584.27	0.206	0.28	3.146	A
5	1243.05	1242.86	373.24	0.00	1704.27	0.729	2.91	8.572	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	338.92	340.24	447.66	0.00	939.59	0.361	0.63	6.620	A
2	235.53	235.71	384.48	0.00	1995.87	0.118	0.15	2.249	A
3	90.80	90.89	543.49	0.00	1459.64	0.062	0.07	2.892	A
4	266.10	266.39	477.66	0.00	1660.15	0.160	0.21	2.843	A
5	1014.95	1020.45	305.09	0.00	1750.68	0.580	1.54	5.464	A

Main results: (18:15-18:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	283.83	284.52	374.13	0.00	978.53	0.290	0.45	5.713	A
2	197.25	197.37	321.48	0.00	2042.86	0.097	0.12	2.147	A
3	76.04	76.10	454.73	0.00	1517.58	0.050	0.06	2.746	A
4	222.84	223.03	399.67	0.00	1716.06	0.130	0.16	2.652	A
5	849.97	852.09	255.43	0.00	1784.49	0.476	1.01	4.258	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.99	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.61	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue		N/A	N/A

						is very small or very big.			
4	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.50	0.00	0.00	2.20	4.40			N/A	N/A

Queue Variation results: (17:30-17:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.95	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	2.87	0.00	0.00	0.00	4.40			N/A	N/A

Queue Variation results: (17:45-18:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.96	0.00	0.00	0.00	1.10			N/A	N/A
2	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	2.91	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (18:00-18:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.63	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.54	0.00	0.00	2.20	3.30			N/A	N/A

Queue Variation results: (18:15-18:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue		N/A	N/A

						is very small or very big.			
5	1.01	0.00	0.00	1.10	2.20			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

Filename: Dark Hill.arc8
Path: H:\My Pictures
Report generation date: 23/01/2017 14:20:50

Summary of junction performance

	2028 AM + DEV				
	Queue (PCU)	**95% Queue (PCU)**	**Delay (s)**	**RFC**	**LOS**
	A1 - Scenario 4				
Arm 1	554174	553133	:;:157	416;	I
Arm 2	31:7	4143	715;	3173	D
Arm 3	3163	£4	9155	3155	D
Arm 4	3183	4143	8184	3164	D
Arm 5	31:;	4143	7133	3175	D

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Scenario 1, 2017 AM" model duration: 08:00 - 09:30
"D2 - Scenario 2, 2024 AM" model duration: 08:00 - 09:30
"D3 - Scenario 3, 2024 AM + DEV" model duration: 08:00 - 09:30
"D4 - Scenario 4, 2028 AM + DEV " model duration: 08:00 - 09:30
"D5 - Scenario 5, 2017 PM" model duration: 17:00 - 18:30
"D6 - Scenario 6, 2024 PM" model duration: 17:00 - 18:30
"D7 - Scenario 7, 2024 PM + DEV" model duration: 17:00 - 18:30
"D8 - Scenario 8, 2028 PM + DEV" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 23/01/2017 14:20:48

File summary

Title	(untitled)
Location	
Site Number	
Date	07/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - Scenario 4, 2028 AM + DEV

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 4, 2028 AM + DEV	Scenario 4	2028 AM + DEV		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			323.69	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Celcon	
2	2	A25 East	
3	3	Haul Road	
4	4	A27 South	
5	5	A27 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	2.00	8.20	10.00	19.00	36.00	43.00	
2	5.75	8.80	30.00	11.00	37.00	37.00	

3	3.65	7.60	28.00	21.00	37.00	48.00	
4	3.00	8.90	30.00	16.00	32.00	27.00	
5	3.75	8.60	30.00	14.00	36.00	44.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.530	1176.642
2		(calculated)	(calculated)	0.746	2282.686
3		(calculated)	(calculated)	0.653	1814.465
4		(calculated)	(calculated)	0.717	2002.556
5		(calculated)	(calculated)	0.681	1958.399

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	Y	1151.00	100.000
2	ONE HOUR	Y	570.00	100.000
3	ONE HOUR	Y	161.00	100.000
4	ONE HOUR	Y	298.00	100.000
5	ONE HOUR	Y	643.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	0.000	11.000	123.000	1017.000
	2	22.000	0.000	12.000	202.000	334.000
	3	35.000	10.000	0.000	42.000	74.000
	4	85.000	171.000	24.000	0.000	18.000
	5	404.000	207.000	24.000	8.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.00	0.01	0.11	0.88
	2	0.04	0.00	0.02	0.35	0.59
	3	0.22	0.06	0.00	0.26	0.46
	4	0.29	0.57	0.08	0.00	0.06
	5	0.63	0.32	0.04	0.01	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.100	1.100	1.100	1.100	1.100
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	10.0	10.0	10.0	10.0	10.0
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	1.38	787.24	221.41	220.00	F
2	0.40	4.28	0.74	1.10	A
3	0.22	6.22	0.30	~1	A
4	0.31	5.51	0.50	1.10	A
5	0.42	4.00	0.78	1.10	A

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	866.53	842.96	332.97	0.00	1000.32	0.866	5.89	22.599	C
2	429.13	427.55	884.96	0.00	1622.51	0.264	0.39	3.309	A
3	121.21	120.60	1259.46	0.00	992.20	0.122	0.15	4.540	A
4	224.35	223.36	1101.00	0.00	1213.32	0.185	0.25	3.996	A
5	484.08	482.45	260.08	0.00	1781.32	0.272	0.41	3.044	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1034.73	942.59	398.66	0.00	965.54	1.072	28.93	81.449	F
2	512.42	511.82	992.87	0.00	1542.01	0.332	0.54	3.841	A
3	144.74	144.48	1441.81	0.00	873.15	0.166	0.22	5.433	A
4	267.90	267.48	1259.30	0.00	1099.84	0.244	0.35	4.755	A
5	578.04	577.51	311.46	0.00	1746.34	0.331	0.54	3.386	A

Main results: (08:30-08:45)

	Total Demand	Entry Flow	Circulating Flow	Pedestrian Demand	Capacity		End Queue	Delay	

Arm	(PCU/hr)	(PCU/hr)	(PCU/hr)	(Ped/hr)	(PCU/hr)	RFC	(PCU)	(s)	LOS
1	1267.27	917.16	488.10	0.00	918.18	1.380	116.46	295.427	F
2	627.58	626.80	978.72	0.00	1552.57	0.404	0.74	4.274	A
3	177.26	176.92	1530.79	0.00	815.06	0.217	0.30	6.203	A
4	328.10	327.52	1332.62	0.00	1047.28	0.313	0.50	5.497	A
5	707.96	707.00	381.38	0.00	1698.73	0.417	0.78	3.990	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1267.27	917.62	488.84	0.00	917.79	1.381	203.87	622.759	F
2	627.58	627.57	979.28	0.00	1552.15	0.404	0.74	4.282	A
3	177.26	177.26	1532.02	0.00	814.25	0.218	0.30	6.216	A
4	328.10	328.09	1333.77	0.00	1046.46	0.314	0.50	5.512	A
5	707.96	707.94	382.04	0.00	1698.28	0.417	0.78	3.998	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1034.73	964.56	399.88	0.00	964.90	1.072	221.41	787.242	F
2	512.42	513.15	1015.00	0.00	1525.51	0.336	0.56	3.915	A
3	144.74	145.06	1464.90	0.00	858.08	0.169	0.22	5.555	A
4	267.90	268.44	1279.98	0.00	1085.02	0.247	0.36	4.852	A
5	578.04	578.99	312.58	0.00	1745.57	0.331	0.55	3.396	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	866.53	994.47	334.70	0.00	999.41	0.867	189.42	744.072	F
2	429.13	429.61	1036.68	0.00	1509.33	0.284	0.44	3.668	A
3	121.21	121.41	1411.56	0.00	892.90	0.136	0.17	5.135	A
4	224.35	224.69	1236.75	0.00	1116.01	0.201	0.28	4.444	A
5	484.08	484.62	261.63	0.00	1780.26	0.272	0.41	3.059	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	5.89	0.00	0.00	4.40	17.60			N/A	N/A
2	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.41	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	28.93	0.00	15.40	71.50	96.80			N/A	N/A
2	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue		N/A	N/A

						is very small or very big.			
5	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	116.46	56.10	110.00	170.50	190.30			N/A	N/A
2	0.74	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.78	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	203.87	130.90	>199	>199	>199			N/A	N/A
2	0.74	0.00	0.00	0.00	1.10			N/A	N/A
3	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.50	0.00	0.00	0.00	1.10			N/A	N/A
5	0.78	0.00	0.00	0.00	1.10			N/A	N/A

Queue Variation results: (09:00-09:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	221.41	140.80	>199	>199	>199			N/A	N/A
2	0.56	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.36	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.55	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	189.42	104.50	182.60	>199	>199			N/A	N/A
2	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.41	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Filename: Dark Hill.arc8
Path: H:\My Pictures
Report generation date: 23/01/2017 14:17:41

Summary of junction performance

	2028 PM + DEV				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - Scenario 8				
Arm 1	414:	B	<164	3185	D
Arm 2	3153	£4	5179	3148	D
Arm 3	3143	£4	614<	313;	D
Arm 4	3167	£4	6165	3157	D
Arm 5	91::	57153	4:183	31;:	F

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Scenario 1, 2017 AM" model duration: 08:00 - 09:30
"D2 - Scenario 2, 2024 AM" model duration: 08:00 - 09:30
"D3 - Scenario 3, 2024 AM + DEV" model duration: 08:00 - 09:30
"D4 - Scenario 4, 2028 AM + DEV" model duration: 08:00 - 09:30
"D5 - Scenario 5, 2017 PM" model duration: 17:00 - 18:30
"D6 - Scenario 6, 2024 PM" model duration: 17:00 - 18:30
"D7 - Scenario 7, 2024 PM + DEV" model duration: 17:00 - 18:30
"D8 - Scenario 8, 2028 PM + DEV " model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 23/01/2017 14:17:40

File summary

Title	(untitled)
Location	
Site Number	
Date	07/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - Scenario 8, 2028 PM + DEV

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 8, 2028 PM + DEV	Scenario 8	2028 PM + DEV		ONE HOUR	17:00	18:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			11.94	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Celcon	
2	2	A25 East	
3	3	Haul Road	
4	4	A27 South	
5	5	A27 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	2.00	8.20	10.00	19.00	36.00	43.00	
2	5.75	8.80	30.00	11.00	37.00	37.00	

3	3.65	7.60	28.00	21.00	37.00	48.00	
4	3.00	8.90	30.00	16.00	32.00	27.00	
5	3.75	8.60	30.00	14.00	36.00	44.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.530	1176.642
2		(calculated)	(calculated)	0.746	2282.686
3		(calculated)	(calculated)	0.653	1814.465
4		(calculated)	(calculated)	0.717	2002.556
5		(calculated)	(calculated)	0.681	1958.399

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	Y	416.00	100.000
2	ONE HOUR	Y	265.00	100.000
3	ONE HOUR	Y	102.00	100.000
4	ONE HOUR	Y	333.00	100.000
5	ONE HOUR	Y	1322.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	14.000	16.000	63.000	323.000
	2	3.000	0.000	9.000	87.000	166.000
	3	19.000	29.000	0.000	30.000	24.000
	4	184.000	125.000	16.000	0.000	8.000
	5	988.000	287.000	45.000	2.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.03	0.04	0.15	0.78
	2	0.01	0.00	0.03	0.33	0.63
	3	0.19	0.28	0.00	0.29	0.24
	4	0.55	0.38	0.05	0.00	0.02
	5	0.75	0.22	0.03	0.00	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.100	1.100	1.100	1.100	1.100
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	10.0	10.0	10.0	10.0	10.0
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	0.52	9.31	1.17	?	A
2	0.15	2.46	0.20	~1	A
3	0.08	3.19	0.10	~1	A
4	0.24	3.32	0.34	~1	A
5	0.87	17.50	6.77	24.20	C

Main Results for each time segment

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	313.19	311.13	377.63	0.00	976.67	0.321	0.51	5.932	A
2	199.51	199.03	347.85	0.00	2023.19	0.099	0.12	2.171	A
3	76.79	76.55	482.46	0.00	1499.48	0.051	0.06	2.782	A
4	250.70	249.94	422.54	0.00	1699.66	0.148	0.19	2.730	A
5	995.27	989.66	282.22	0.00	1766.25	0.563	1.40	5.063	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	373.98	373.15	452.00	0.00	937.29	0.399	0.72	7.009	A
2	238.23	238.11	417.08	0.00	1971.55	0.121	0.15	2.284	A
3	91.70	91.63	578.05	0.00	1437.07	0.064	0.07	2.942	A
4	299.36	299.14	506.26	0.00	1639.65	0.183	0.24	2.953	A
5	1188.45	1184.61	337.77	0.00	1728.42	0.688	2.36	7.229	A

Main results: (17:30-17:45)

	Total Demand	Entry Flow	Circulating Flow	Pedestrian Demand	Capacity		End Queue	Delay	

Arm	(PCU/hr)	(PCU/hr)	(PCU/hr)	(Ped/hr)	(PCU/hr)	RFC	(PCU)	(s)	LOS
1	458.02	456.29	550.65	0.00	885.05	0.518	1.16	9.198	A
2	291.77	291.58	509.70	0.00	1902.45	0.153	0.20	2.458	A
3	112.30	112.21	707.23	0.00	1352.73	0.083	0.10	3.191	A
4	366.64	366.27	619.43	0.00	1558.52	0.235	0.34	3.321	A
5	1455.55	1439.42	413.58	0.00	1676.81	0.868	6.40	15.708	C

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	458.02	457.96	554.54	0.00	883.00	0.519	1.17	9.314	A
2	291.77	291.77	511.86	0.00	1900.84	0.154	0.20	2.460	A
3	112.30	112.30	708.99	0.00	1351.58	0.083	0.10	3.194	A
4	366.64	366.64	620.92	0.00	1557.45	0.235	0.34	3.324	A
5	1455.55	1454.06	413.98	0.00	1676.53	0.868	6.77	17.504	C

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	373.98	375.69	457.60	0.00	934.33	0.400	0.74	7.112	A
2	238.23	238.42	420.31	0.00	1969.14	0.121	0.15	2.289	A
3	91.70	91.79	580.74	0.00	1435.32	0.064	0.08	2.949	A
4	299.36	299.72	508.54	0.00	1638.01	0.183	0.25	2.961	A
5	1188.45	1205.58	338.42	0.00	1727.98	0.688	2.49	7.818	A

Main results: (18:15-18:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	313.19	314.06	380.61	0.00	975.10	0.321	0.53	6.000	A
2	199.51	199.63	351.08	0.00	2020.78	0.099	0.12	2.174	A
3	76.79	76.85	485.77	0.00	1497.32	0.051	0.06	2.789	A
4	250.70	250.92	425.41	0.00	1697.61	0.148	0.19	2.737	A
5	995.27	999.45	283.32	0.00	1765.49	0.564	1.44	5.196	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.51	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.40	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.72	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue		N/A	N/A

						is very small or very big.			
4	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	2.36	0.00	0.00	4.40	7.70			N/A	N/A

Queue Variation results: (17:30-17:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	1.16	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	6.40	0.00	0.00	9.90	24.20			N/A	N/A

Queue Variation results: (17:45-18:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	1.17	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	6.77	0.00	0.00	3.30	18.70			N/A	N/A

Queue Variation results: (18:00-18:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.74	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	2.49	0.00	0.00	5.50	8.80			N/A	N/A

Queue Variation results: (18:15-18:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue		N/A	N/A

						is very small or very big.			
5	1.44	0.00	0.00	1.10	4.40			N/A	N/A

APPENDIX F

ARCADY ANALYSES – WHITEHILL ROUNDABOUT

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

Filename: WHITEHILL RABT.arc8
Path: C:\Users\lhenry\Documents
Report generation date: 04/01/2017 08:56:52

Summary of junction performance

	AM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	PREDICTED FLOWS - 2017				
Arm 2	6188	9193	<167	31::	D
Arm 3	4165	B	:178	3188	D
Arm 4	3157	£4	81;6	314;	D
Arm 5	44183	79153	631;6	31<6	G

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2017, AM " model duration: 08:00 - 09:30
"D2 - 2024 NO DEV, AM" model duration: 08:00 - 09:30
"D3 - 2024 PLUS DEV, AM" model duration: 08:00 - 09:30
"D4 - 2028 PLUS DEV, AM" model duration: 08:00 - 09:30
"D5 - 2017, PM" model duration: 17:00 - 18:30
"D6 - 2024 NO DEV, PM" model duration: 17:00 - 18:30
"D7 - 2024 PLUS DEV, PM" model duration: 17:00 - 18:30
"D8 - 2028 PLUS DEV, PM" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 04/01/2017 08:56:51

File summary

Title	WHITEHILL ROUNDABOUT
Location	WROTHAM, KENT
Site Number	
Date	04/01/2017
Version	AMENDED TRAFFIC FLOWS
Status	
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

PREDICTED FLOWS - 2017, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
PREDICTED FLOWS	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2017, AM	2017	AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			17.37	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	M20 ON SLIP	
2	2	A20 EAST	
3	3	A227 SOUTH	
4	4	BULL LANE	
5	5	A20 WEST	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-	E - Entry	I' - Effective flare	R - Entry	D - Inscribed circle	PHI - Conflict (entry)	Exit

	width (m)	width (m)	length (m)	radius (m)	diameter (m)	angle (deg)	Only
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Y
2	5.00	8.80	25.00	25.00	55.00	55.00	
3	4.25	8.50	20.00	20.00	55.00	50.00	
4	2.50	8.50	25.00	20.00	55.00	45.00	
5	5.25	9.00	20.00	30.00	55.00	60.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	Exit-only	Exit-only
2		(calculated)	(calculated)	0.638	2113.391
3		(calculated)	(calculated)	0.604	1911.702
4		(calculated)	(calculated)	0.569	1692.831
5		(calculated)	(calculated)	0.633	2098.887

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	Exit-only	Y	Exit-only	Exit-only
2	ONE HOUR	Y	1270.00	100.000
3	ONE HOUR	Y	585.00	100.000
4	ONE HOUR	Y	133.00	100.000
5	ONE HOUR	Y	1302.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	348.000	0.000	279.000	191.000	452.000
	3	113.000	221.000	0.000	0.000	251.000
	4	20.000	83.000	10.000	0.000	20.000
	5	138.000	756.000	290.000	118.000	0.000

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.20	0.20	0.20	0.20	0.20
	2	0.27	0.00	0.22	0.15	0.36
	3	0.19	0.38	0.00	0.00	0.43
	4	0.15	0.62	0.08	0.00	0.15
	5	0.11	0.58	0.22	0.09	0.00

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	0.77	9.34	3.55	6.60	A
3	0.55	7.45	1.32	?	A
4	0.18	5.83	0.24	~1	A
5	0.93	30.83	11.50	46.20	D

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only

2	956.12	951.77	312.86	0.00	1913.70	0.500	1.09	4.099	A
3	440.42	438.43	831.00	0.00	1410.02	0.312	0.50	4.067	A
4	100.13	99.69	1037.97	0.00	1102.53	0.091	0.11	3.947	A
5	980.21	974.48	595.82	0.00	1721.94	0.569	1.43	5.259	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1141.70	1139.30	374.28	0.00	1874.50	0.609	1.69	5.369	A
3	525.90	524.97	994.67	0.00	1311.21	0.401	0.73	5.030	A
4	119.56	119.40	1242.64	0.00	986.13	0.121	0.15	4.569	A
5	1170.47	1165.73	713.36	0.00	1647.57	0.710	2.62	8.137	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1398.30	1391.23	450.90	0.00	1825.59	0.766	3.46	8.972	A
3	644.10	641.82	1212.83	0.00	1179.51	0.546	1.30	7.334	A
4	146.44	146.10	1518.18	0.00	829.43	0.177	0.23	5.792	A
5	1433.53	1403.84	871.79	0.00	1547.34	0.926	10.04	23.847	C

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1398.30	1397.90	458.40	0.00	1820.81	0.768	3.55	9.342	A
3	644.10	644.02	1220.20	0.00	1175.06	0.548	1.32	7.454	A
4	146.44	146.43	1524.59	0.00	825.78	0.177	0.24	5.828	A
5	1433.53	1427.69	875.15	0.00	1545.21	0.928	11.50	30.832	D

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1141.70	1148.88	386.70	0.00	1866.57	0.612	1.76	5.573	A
3	525.90	528.18	1005.72	0.00	1304.54	0.403	0.75	5.115	A
4	119.56	119.89	1251.89	0.00	980.87	0.122	0.15	4.600	A
5	1170.47	1205.25	718.24	0.00	1644.49	0.712	2.81	9.692	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	956.12	958.72	316.37	0.00	1911.46	0.500	1.11	4.169	A
3	440.42	441.40	837.42	0.00	1406.14	0.313	0.50	4.108	A
4	100.13	100.30	1045.31	0.00	1098.35	0.091	0.11	3.968	A
5	980.21	985.52	599.93	0.00	1719.33	0.570	1.48	5.434	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

								Probability Of	**Probability Of**

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Reaching Or Exceeding Marker	Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.09	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.43	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.69	0.00	0.00	3.30	5.50			N/A	N/A
3	0.73	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	2.62	0.00	0.00	5.50	8.80			N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	3.46	0.00	0.00	0.00	6.60			N/A	N/A
3	1.30	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	10.04	0.00	0.00	24.20	39.60			N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	3.55	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	1.32	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	11.50	0.00	0.00	23.10	46.20			N/A	N/A

Queue Variation results: (09:00-09:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
	Exit-	Exit-	Exit-	Exit-	Exit-				

1	only	only	only	only	only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.76	0.00	0.00	3.30	4.40			N/A	N/A
3	0.75	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	2.81	0.00	0.00	5.50	9.90			N/A	N/A

Queue Variation results: (09:15-09:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.11	0.00	0.00	1.10	3.30			N/A	N/A
3	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.48	0.00	0.00	1.10	4.40			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Filename: WHITEHILL RABT.arc8
Path: C:\Users\lhenry\Documents
Report generation date: 04/01/2017 09:05:38

Summary of junction performance

	PM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	PREDICTED FLOWS - 2017				
Arm 2	8169	49183	451<;	31;7	E
Arm 3	31:9	4143	9134	3174	D
Arm 4	3149	£4	8138	3146	D
Arm 5	7147	44133	44183	31;3	E

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2017, AM" model duration: 08:00 - 09:30
"D2 - 2024 NO DEV, AM" model duration: 08:00 - 09:30
"D3 - 2024 PLUS DEV, AM" model duration: 08:00 - 09:30
"D4 - 2028 PLUS DEV, AM" model duration: 08:00 - 09:30
"D5 - 2017, PM " model duration: 17:00 - 18:30
"D6 - 2024 NO DEV, PM" model duration: 17:00 - 18:30
"D7 - 2024 PLUS DEV, PM" model duration: 17:00 - 18:30
"D8 - 2028 PLUS DEV, PM" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 04/01/2017 09:05:37

File summary

Title	WHITEHILL ROUNDABOUT
Location	WROTHAM, KENT
Site Number	
Date	04/01/2017
Version	AMENDED TRAFFIC FLOWS
Status	
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

PREDICTED FLOWS - 2017, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
PREDICTED FLOWS	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2017, PM	2017	PM		ONE HOUR	17:00	18:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			11.21	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	M20 ON SLIP	
2	2	A20 EAST	
3	3	A227 SOUTH	
4	4	BULL LANE	
5	5	A20 WEST	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-	E - Entry	I' - Effective flare	R - Entry	D - Inscribed circle	PHI - Conflict (entry)	Exit

	width (m)	width (m)	length (m)	radius (m)	diameter (m)	angle (deg)	Only
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Y
2	5.00	8.80	25.00	25.00	55.00	55.00	
3	4.25	8.50	20.00	20.00	55.00	50.00	
4	2.50	8.50	25.00	20.00	55.00	45.00	
5	5.25	9.00	20.00	30.00	55.00	60.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	Exit-only	Exit-only
2		(calculated)	(calculated)	0.638	2113.391
3		(calculated)	(calculated)	0.604	1911.702
4		(calculated)	(calculated)	0.569	1692.831
5		(calculated)	(calculated)	0.633	2098.887

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	Exit-only	Y	Exit-only	Exit-only
2	ONE HOUR	Y	1395.00	100.000
3	ONE HOUR	Y	415.00	100.000
4	ONE HOUR	Y	107.00	100.000
5	ONE HOUR	Y	1207.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	383.000	0.000	304.000	212.000	496.000
	3	113.000	21.000	0.000	30.000	251.000
	4	14.000	69.000	14.000	0.000	10.000
	5	127.000	702.000	270.000	108.000	0.000

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.20	0.20	0.20	0.20	0.20
	2	0.27	0.00	0.22	0.15	0.36
	3	0.27	0.05	0.00	0.07	0.60
	4	0.13	0.64	0.13	0.00	0.09
	5	0.11	0.58	0.22	0.09	0.00

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	0.84	12.98	5.36	16.50	B
3	0.41	6.01	0.76	1.10	A
4	0.13	5.05	0.16	~1	A
5	0.80	11.50	4.14	11.00	B

Main Results for each time segment

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only

2	1050.23	1045.01	293.70	0.00	1925.93	0.545	1.30	4.470	A
3	312.43	311.14	898.19	0.00	1369.45	0.228	0.32	3.736	A
4	80.56	80.23	947.12	0.00	1154.20	0.070	0.08	3.687	A
5	908.69	904.29	460.10	0.00	1807.80	0.503	1.10	4.362	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1254.08	1250.77	351.55	0.00	1889.00	0.664	2.13	6.172	A
3	373.08	372.54	1075.06	0.00	1262.68	0.295	0.46	4.445	A
4	96.19	96.08	1133.73	0.00	1048.07	0.092	0.11	4.159	A
5	1085.07	1082.42	550.79	0.00	1750.42	0.620	1.76	5.904	A

Main results: (17:30-17:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1535.92	1523.85	428.76	0.00	1839.72	0.835	5.15	12.094	B
3	456.92	455.76	1309.88	0.00	1120.92	0.408	0.75	5.944	A
4	117.81	117.60	1383.00	0.00	906.30	0.130	0.16	5.019	A
5	1328.93	1319.95	672.15	0.00	1673.65	0.794	4.01	10.926	B

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1535.92	1535.08	431.44	0.00	1838.01	0.836	5.36	12.979	B
3	456.92	456.89	1319.42	0.00	1115.15	0.410	0.76	6.015	A
4	117.81	117.80	1391.13	0.00	901.68	0.131	0.16	5.051	A
5	1328.93	1328.42	675.78	0.00	1671.35	0.795	4.14	11.503	B

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1254.08	1266.61	355.31	0.00	1886.60	0.665	2.23	6.510	A
3	373.08	374.23	1088.50	0.00	1254.56	0.297	0.47	4.503	A
4	96.19	96.40	1145.28	0.00	1041.50	0.092	0.11	4.190	A
5	1085.07	1094.28	555.98	0.00	1747.14	0.621	1.83	6.150	A

Main results: (18:15-18:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1050.23	1053.79	296.02	0.00	1924.45	0.546	1.34	4.568	A
3	312.43	313.00	905.71	0.00	1364.92	0.229	0.33	3.768	A
4	80.56	80.67	954.37	0.00	1150.07	0.070	0.08	3.705	A
5	908.69	911.53	463.52	0.00	1805.64	0.503	1.13	4.442	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

								Probability Of	Probability Of

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Reaching Or Exceeding Marker	Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.30	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.10	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.13	0.00	0.00	4.40	6.60			N/A	N/A
3	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.76	0.00	0.00	3.30	5.50			N/A	N/A

Queue Variation results: (17:30-17:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	5.15	0.00	0.00	4.40	16.50			N/A	N/A
3	0.75	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	4.01	0.00	0.00	2.20	11.00			N/A	N/A

Queue Variation results: (17:45-18:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	5.36	0.00	0.00	0.00	9.90			N/A	N/A
3	0.76	0.00	0.00	0.00	1.10			N/A	N/A
4	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	4.14	0.00	0.00	0.00	4.40			N/A	N/A

Queue Variation results: (18:00-18:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.23	0.00	0.00	4.40	6.60			N/A	N/A
						Percentiles could not be calculated. This			

3	0.47	~1	~1	~1	~1	may be because the mean queue is very small or very big.		N/A	N/A
4	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.83	0.00	0.00	3.30	5.50			N/A	N/A

Queue Variation results: (18:15-18:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.34	0.00	0.00	2.20	4.40			N/A	N/A
3	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.13	0.00	0.00	1.10	3.30			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

Filename: WHITEHILL RABT.arc8
Path: C:\Users\lhenry\Documents
Report generation date: 04/01/2017 08:57:32

Summary of junction performance

	AM				
	Queue (PCU)	**95% Queue (PCU)**	**Delay (s)**	**RFC**	**LOS**
	PREDICTED FLOWS - 2024 NO DEV				
Arm 2	816;	49183	4619:	31;7	E
Arm 3	4183	B	;15:	318;	D
Arm 4	3184	4143	:169	3165	D
Arm 5	7617<	447173	<:16;	4136	I

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2017, AM" model duration: 08:00 - 09:30
"D2 - 2024 NO DEV, AM " model duration: 08:00 - 09:30
"D3 - 2024 PLUS DEV, AM" model duration: 08:00 - 09:30
"D4 - 2028 PLUS DEV, AM" model duration: 08:00 - 09:30
"D5 - 2017, PM" model duration: 17:00 - 18:30
"D6 - 2024 NO DEV, PM" model duration: 17:00 - 18:30
"D7 - 2024 PLUS DEV, PM" model duration: 17:00 - 18:30
"D8 - 2028 PLUS DEV, PM" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 04/01/2017 08:57:31

File summary

Title	WHITEHILL ROUNDABOUT
Location	WROTHAM, KENT
Site Number	
Date	04/01/2017
Version	AMENDED TRAFFIC FLOWS
Status	
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

PREDICTED FLOWS - 2024 NO DEV, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
PREDICTED FLOWS	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2024 NO DEV, AM	2024 NO DEV	AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			44.76	E

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	M20 ON SLIP	
2	2	A20 EAST	
3	3	A227 SOUTH	
4	4	BULL LANE	
5	5	A20 WEST	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-	E - Entry	I' - Effective flare	R - Entry	D - Inscribed circle	PHI - Conflict (entry)	Exit

	width (m)	width (m)	length (m)	radius (m)	diameter (m)	angle (deg)	Only
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Y
2	5.00	8.80	25.00	25.00	55.00	55.00	
3	4.25	8.50	20.00	20.00	55.00	50.00	
4	2.50	8.50	25.00	20.00	55.00	45.00	
5	5.25	9.00	20.00	30.00	55.00	60.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	Exit-only	Exit-only
2		(calculated)	(calculated)	0.638	2113.391
3		(calculated)	(calculated)	0.604	1911.702
4		(calculated)	(calculated)	0.569	1692.831
5		(calculated)	(calculated)	0.633	2098.887

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	Exit-only	Y	Exit-only	Exit-only
2	ONE HOUR	Y	1334.00	100.000
3	ONE HOUR	Y	602.00	100.000
4	ONE HOUR	Y	229.00	100.000
5	ONE HOUR	Y	1368.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	365.000	0.000	293.000	201.000	475.000
	3	119.000	232.000	0.000	0.000	251.000
	4	21.000	87.000	100.000	0.000	21.000
	5	145.000	794.000	305.000	124.000	0.000

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.20	0.20	0.20	0.20	0.20
	2	0.27	0.00	0.22	0.15	0.36
	3	0.20	0.39	0.00	0.00	0.42
	4	0.09	0.38	0.44	0.00	0.09
	5	0.11	0.58	0.22	0.09	0.00

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	0.84	13.67	5.38	16.50	B
3	0.58	8.27	1.50	?	A
4	0.32	7.36	0.51	1.10	A
5	1.03	97.38	43.49	114.40	F

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only

2	1004.31	999.20	395.68	0.00	1860.83	0.540	1.28	4.570	A
3	453.22	451.09	872.45	0.00	1384.99	0.327	0.53	4.231	A
4	172.40	171.57	1080.27	0.00	1078.47	0.160	0.21	4.363	A
5	1029.90	1022.85	692.24	0.00	1660.93	0.620	1.76	6.139	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1199.24	1195.90	472.94	0.00	1811.52	0.662	2.11	6.398	A
3	541.19	540.13	1043.99	0.00	1281.43	0.422	0.80	5.334	A
4	205.87	205.50	1293.16	0.00	957.40	0.215	0.30	5.264	A
5	1229.80	1221.97	828.79	0.00	1574.54	0.781	3.72	10.992	B

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1468.76	1456.76	552.76	0.00	1760.58	0.834	5.11	12.562	B
3	662.81	660.11	1264.84	0.00	1148.10	0.577	1.47	8.070	A
4	252.13	251.31	1577.41	0.00	795.74	0.317	0.50	7.263	A
5	1506.20	1412.69	1011.74	0.00	1458.80	1.032	27.10	50.646	F

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1468.76	1467.68	561.87	0.00	1754.76	0.837	5.38	13.674	B
3	662.81	662.69	1275.91	0.00	1141.42	0.581	1.50	8.267	A
4	252.13	252.11	1586.87	0.00	790.36	0.319	0.51	7.356	A
5	1506.20	1440.64	1016.95	0.00	1455.50	1.035	43.49	97.381	F

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1199.24	1211.45	525.00	0.00	1778.29	0.674	2.33	7.129	A
3	541.19	543.87	1071.03	0.00	1265.11	0.428	0.83	5.512	A
4	205.87	206.68	1306.70	0.00	949.69	0.217	0.31	5.334	A
5	1229.80	1386.32	836.31	0.00	1569.79	0.783	4.36	36.171	E

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1004.31	1008.39	401.58	0.00	1857.07	0.541	1.31	4.687	A
3	453.22	454.37	881.17	0.00	1379.73	0.328	0.54	4.286	A
4	172.40	172.78	1089.34	0.00	1073.31	0.161	0.21	4.398	A
5	1029.90	1039.97	697.77	0.00	1657.43	0.621	1.84	6.513	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

								Probability Of	Probability Of

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Reaching Or Exceeding Marker	Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.28	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.76	0.00	0.00	2.20	3.30			N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.11	0.00	0.00	4.40	6.60			N/A	N/A
3	0.80	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	3.72	0.00	0.00	8.80	13.20			N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	5.11	0.00	0.00	5.50	16.50			N/A	N/A
3	1.47	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	27.10	1.10	19.80	57.20	72.60			N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	5.38	0.00	0.00	0.00	9.90			N/A	N/A
3	1.50	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.51	0.00	0.00	0.00	1.10			N/A	N/A
5	43.49	3.30	33.00	91.30	114.40			N/A	N/A

Queue Variation results: (09:00-09:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.33	0.00	0.00	4.40	7.70			N/A	N/A
3	0.83	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

4	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	4.36	0.00	0.00	7.70	16.50			N/A	N/A

Queue Variation results: (09:15-09:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.31	0.00	0.00	2.20	3.30			N/A	N/A
3	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.84	0.00	0.00	0.00	3.30			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

Filename: WHITEHILL RABT.arc8
Path: C:\Users\lhenry\Documents
Report generation date: 04/01/2017 09:06:16

Summary of junction performance

	PM				
	Queue (PCU)	**95% Queue (PCU)**	**Delay (s)**	**RFC**	**LOS**
	PREDICTED FLOWS - 2024 NO DEV				
Arm 2	71;;	47163	44153	31;5	E
Arm 3	5145	5153	431;<	3199	E
Arm 4	3155	£4	9187	314:	D
Arm 5	61;4	<1<3	441<;	31:;	E

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2017, AM" model duration: 08:00 - 09:30
"D2 - 2024 NO DEV, AM" model duration: 08:00 - 09:30
"D3 - 2024 PLUS DEV, AM" model duration: 08:00 - 09:30
"D4 - 2028 PLUS DEV, AM" model duration: 08:00 - 09:30
"D5 - 2017, PM" model duration: 17:00 - 18:30
"D6 - 2024 NO DEV, PM " model duration: 17:00 - 18:30
"D7 - 2024 PLUS DEV, PM" model duration: 17:00 - 18:30
"D8 - 2028 PLUS DEV, PM" model duration: 17:00 - 18:30

Run using Junctions 8.0.6.541 at 04/01/2017 09:06:15

File summary

Title	WHITEHILL ROUNDABOUT
Location	WROTHAM, KENT
Site Number	
Date	04/01/2017
Version	AMENDED TRAFFIC FLOWS
Status	
Identifier	
Client	
Jobnumber	
Enumerator	lhenry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

PREDICTED FLOWS - 2024 NO DEV, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
PREDICTED FLOWS	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2024 NO DEV, PM	2024 NO DEV	PM		ONE HOUR	17:00	18:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5			11.23	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	M20 ON SLIP	
2	2	A20 EAST	
3	3	A227 SOUTH	
4	4	BULL LANE	
5	5	A20 WEST	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-	E - Entry	I' - Effective flare	R - Entry	D - Inscribed circle	PHI - Conflict (entry)	Exit

	width (m)	width (m)	length (m)	radius (m)	diameter (m)	angle (deg)	Only
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Y
2	5.00	8.80	25.00	25.00	55.00	55.00	
3	4.25	8.50	20.00	20.00	55.00	50.00	
4	2.50	8.50	25.00	20.00	55.00	45.00	
5	5.25	9.00	20.00	30.00	55.00	60.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	Exit-only	Exit-only
2		(calculated)	(calculated)	0.638	2113.391
3		(calculated)	(calculated)	0.604	1911.702
4		(calculated)	(calculated)	0.569	1692.831
5		(calculated)	(calculated)	0.633	2098.887

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	Exit-only	Y	Exit-only	Exit-only
2	ONE HOUR	Y	1465.00	100.000
3	ONE HOUR	Y	647.00	100.000
4	ONE HOUR	Y	113.00	100.000
5	ONE HOUR	Y	1067.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	402.000	0.000	319.000	223.000	521.000
	3	119.000	232.000	0.000	32.000	264.000
	4	15.000	72.000	15.000	0.000	11.000
	5	133.000	737.000	84.000	113.000	0.000

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Turning Proportions (PCU) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.20	0.20	0.20	0.20	0.20
	2	0.27	0.00	0.22	0.15	0.36
	3	0.18	0.36	0.00	0.05	0.41
	4	0.13	0.64	0.13	0.00	0.10
	5	0.12	0.69	0.08	0.11	0.00

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	1.100	1.100	1.100	1.100	1.100
	3	1.100	1.100	1.100	1.100	1.100
	4	1.100	1.100	1.100	1.100	1.100
	5	1.100	1.100	1.100	1.100	1.100

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	2	10.0	10.0	10.0	10.0	10.0
	3	10.0	10.0	10.0	10.0	10.0
	4	10.0	10.0	10.0	10.0	10.0
	5	10.0	10.0	10.0	10.0	10.0

Arm 1 is exit only and so the above grid should be ignored for this Arm.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	0.82	11.20	4.88	14.30	B
3	0.66	10.89	2.12	2.20	B
4	0.17	6.54	0.22	~1	A
5	0.78	11.98	3.81	9.90	B

Main Results for each time segment

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only

2	1102.93	1097.65	158.83	0.00	2012.02	0.548	1.32	4.306	A
3	487.10	484.61	943.29	0.00	1342.23	0.363	0.62	4.605	A
4	85.07	84.68	1152.20	0.00	1037.57	0.082	0.10	4.153	A
5	803.29	799.36	640.54	0.00	1693.64	0.474	0.98	4.409	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1317.00	1313.86	190.12	0.00	1992.04	0.661	2.11	5.812	A
3	581.64	580.23	1129.10	0.00	1230.05	0.473	0.97	6.080	A
4	101.58	101.43	1379.31	0.00	908.41	0.112	0.14	4.905	A
5	959.21	956.80	766.85	0.00	1613.73	0.594	1.59	6.007	A

Main results: (17:30-17:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1613.00	1602.50	231.82	0.00	1965.42	0.821	4.73	10.609	B
3	712.36	708.02	1377.09	0.00	1080.34	0.659	2.06	10.515	B
4	124.42	124.08	1682.63	0.00	735.90	0.169	0.22	6.470	A
5	1174.79	1166.40	935.83	0.00	1506.82	0.780	3.68	11.359	B

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1613.00	1612.39	233.32	0.00	1964.47	0.821	4.88	11.195	B
3	712.36	712.14	1385.66	0.00	1075.17	0.663	2.12	10.893	B
4	124.42	124.40	1692.77	0.00	730.13	0.170	0.22	6.536	A
5	1174.79	1174.29	941.07	0.00	1503.51	0.781	3.81	11.982	B

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1317.00	1327.76	192.22	0.00	1990.70	0.662	2.19	6.066	A
3	581.64	586.06	1141.15	0.00	1222.78	0.476	1.01	6.260	A
4	101.58	101.92	1393.61	0.00	900.27	0.113	0.14	4.963	A
5	959.21	967.85	774.28	0.00	1609.03	0.596	1.65	6.258	A

Main results: (18:15-18:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1102.93	1106.29	160.10	0.00	2011.20	0.548	1.35	4.391	A
3	487.10	488.60	950.75	0.00	1337.73	0.364	0.63	4.671	A
4	85.07	85.24	1161.44	0.00	1032.31	0.082	0.10	4.181	A
5	803.29	805.87	645.58	0.00	1690.46	0.475	1.01	4.491	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

								Probability Of	**Probability Of**

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Reaching Or Exceeding Marker	Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.32	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.62	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	0.98	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.11	0.00	0.00	4.40	6.60			N/A	N/A
3	0.97	0.00	0.00	1.10	1.10			N/A	N/A
4	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.59	0.00	0.00	3.30	4.40			N/A	N/A

Queue Variation results: (17:30-17:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	4.73	0.00	0.00	3.30	14.30			N/A	N/A
3	2.06	0.00	0.00	0.00	2.20			N/A	N/A
4	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	3.68	0.00	0.00	1.10	9.90			N/A	N/A

Queue Variation results: (17:45-18:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	4.88	0.00	0.00	0.00	5.50			N/A	N/A
3	2.12	0.00	0.00	0.00	2.20			N/A	N/A
4	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	3.81	0.00	0.00	0.00	4.40			N/A	N/A

Queue Variation results: (18:00-18:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.19	0.00	0.00	4.40	6.60			N/A	N/A
3	1.01	0.00	0.00	1.10	1.10			N/A	N/A
4	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

5	1.65	0.00	0.00	3.30	4.40			N/A	N/A

Queue Variation results: (18:15-18:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.35	0.00	0.00	2.20	4.40			N/A	N/A
3	0.63	0.00	0.00	0.00	1.10			N/A	N/A
4	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.01	0.00	0.00	1.10	2.20			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

For sales and distribution information, program advice and maintenance, contact TRL:
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Filename: Whitehill Roundabout.arc8
Path: H:\My Pictures
Report generation date: 27/01/2017 07:36:32

Summary of junction performance

	AM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2024 Plus Dev				
Arm 2	8177	4:193	4617:	31;7	E
Arm 3	51<6	9193	451<5	31:6	E
Arm 4	3165	£4	:16<	3155	D
Arm 5	8:1;7	45;1:3	45515:	4139	I

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2017, AM" model duration: 07:45 - 09:15
"D2 - 2024 No Dev, AM" model duration: 07:45 - 09:15
"D3 - 2024 Plus Dev, AM " model duration: 07:45 - 09:15
"D4 - 2028 Plus Dev, AM" model duration: 07:45 - 09:15
"D5 - 2017, PM" model duration: 16:45 - 18:15
"D6 - 2024 No Dev, PM" model duration: 16:45 - 18:15
"D7 - 2024 Plus Dev, PM" model duration: 16:45 - 18:15
"D8 - 2028 Plus Dev, PM" model duration: 16:45 - 18:15

Run using Junctions 8.0.6.541 at 27/01/2017 07:36:30

File summary

Title	WhiteHill Roundabout
Location	Wrotham
Site Number	
Date	23/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Les Henry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - 2024 Plus Dev, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		Y				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2024 Plus Dev, AM	2024 Plus Dev	AM	2031 Plus Dev	ONE HOUR	07:45	09:15	90	15				Y		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5				54.71	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	M20 On Slip	
2	2	A20 East	
3	3	A227 South	
4	4	Bull Lane	
5	5	A20 West	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00
5	0.00	99999.00		0.00

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	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Y
2	5.00	8.80	25.00	25.00	55.00	55.00	
3	4.25	8.50	20.00	20.00	55.00	50.00	
4	2.50	8.50	25.00	20.00	55.00	45.00	
5	5.25	9.00	20.00	30.00	55.00	60.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	Exit-only	Exit-only
2		(calculated)	(calculated)	0.638	2113.391
3		(calculated)	(calculated)	0.604	1911.702
4		(calculated)	(calculated)	0.569	1692.831
5		(calculated)	(calculated)	0.633	2098.887

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	Exit-only	Y	Exit-only	Exit-only
2	ONE HOUR	Y	1369.00	100.000
3	ONE HOUR	Y	761.00	100.000
4	ONE HOUR	Y	141.00	100.000
5	ONE HOUR	Y	1405.00	100.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	0.84	13.47	5.44	17.60	B	1256.22	1884.33	260.08	8.28	2.89	260.11	8.28
3	0.73	12.92	2.93	6.60	B	698.31	1047.46	144.39	8.27	1.60	144.40	8.27
4	0.22	7.39	0.32	~1	A	129.38	194.08	18.77	5.80	0.21	18.77	5.80
5	1.06	122.27	57.84	128.70	F	1289.25	1933.88	1491.09	46.26	16.57	1491.16	46.26

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	507.59	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1030.65	257.66	1025.41	873.60	357.32	0.00	1885.32	1830.16	0.547	0.00	1.31	4.578	A
3	572.92	143.23	569.84	510.31	872.42	0.00	1385.01	1002.26	0.414	0.00	0.77	4.839	A
4	106.15	26.54	105.64	243.24	1199.02	0.00	1010.94	479.76	0.105	0.00	0.13	4.372	A
5	1057.76	264.44	1050.22	616.38	688.28	0.00	1663.44	1167.77	0.636	0.00	1.88	6.381	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	607.26	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1230.70	307.68	1227.26	1044.04	426.69	0.00	1841.04	1830.16	0.668	1.31	2.17	6.416	A
3	684.12	171.03	682.24	610.06	1043.89	0.00	1281.49	1002.26	0.534	0.77	1.24	6.586	A
4	126.76	31.69	126.53	290.86	1435.27	0.00	876.58	479.77	0.145	0.13	0.18	5.278	A
5	1263.07	315.77	1254.01	737.82	823.98	0.00	1577.59	1167.77	0.801	1.88	4.15	11.913	B

Main results: (08:15-08:30)

	Total	Junction				Pedestrian		Saturation		Start	End		

Arm	Demand (PCU/hr)	Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Demand (Ped/hr)	Capacity (PCU/hr)	Capacity (PCU/hr)	RFC	Queue (PCU)	Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	729.74	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1507.30	376.82	1495.25	1216.25	486.89	0.00	1802.62	1830.16	0.836	2.17	5.18	12.418	B
3	837.88	209.47	831.55	719.09	1263.06	0.00	1149.18	1002.26	0.729	1.24	2.82	12.230	B
4	155.24	38.81	154.74	345.59	1749.02	0.00	698.15	479.76	0.222	0.18	0.31	7.281	A
5	1546.93	386.73	1428.29	899.17	1004.59	0.00	1463.32	1167.77	1.057	4.15	33.81	59.208	F

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	736.21	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1507.30	376.82	1506.26	1231.48	494.40	0.00	1797.83	1830.16	0.838	5.18	5.44	13.467	B
3	837.88	209.47	837.44	727.25	1273.42	0.00	1142.93	1002.26	0.733	2.82	2.93	12.919	B
4	155.24	38.81	155.22	349.20	1761.66	0.00	690.96	479.76	0.225	0.31	0.32	7.391	A
5	1546.93	386.73	1450.80	905.59	1011.29	0.00	1459.08	1167.77	1.060	33.81	57.84	122.270	F

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	635.71	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1230.70	307.68	1242.64	1171.57	499.49	0.00	1794.58	1830.16	0.686	5.44	2.46	7.325	A
3	684.12	171.03	690.56	667.19	1074.95	0.00	1262.75	1002.26	0.542	2.93	1.32	6.995	A
4	126.76	31.69	127.26	312.48	1453.03	0.00	866.48	479.77	0.146	0.32	0.19	5.362	A
5	1263.07	315.77	1473.32	746.84	833.45	0.00	1571.60	1167.77	0.804	57.84	5.28	64.309	F

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	513.43	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1030.65	257.66	1035.10	887.76	364.27	0.00	1880.88	1830.16	0.548	2.46	1.35	4.705	A
3	572.92	143.23	575.05	517.75	881.62	0.00	1379.46	1002.26	0.415	1.32	0.79	4.937	A
4	106.15	26.54	106.39	246.50	1210.17	0.00	1004.59	479.76	0.106	0.19	0.13	4.409	A
5	1057.76	264.44	1070.99	622.09	694.47	0.00	1659.52	1167.77	0.637	5.28	1.97	6.875	A

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	18.94	1.26	4.578	A	A
3	11.16	0.74	4.839	A	A
4	1.88	0.13	4.372	A	A
5	26.73	1.78	6.381	A	A

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	31.15	2.08	6.416	A	A
3	17.94	1.20	6.586	A	A
4	2.72	0.18	5.278	A	A
5	56.44	3.76	11.913	B	B

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	69.46	4.63	12.418	B	B
3	38.87	2.59	12.230	B	B
4	4.54	0.30	7.281	A	A
5	308.82	20.59	59.208	F	E

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	80.15	5.34	13.467	B	B
3	43.36	2.89	12.919	B	B
4	4.72	0.31	7.391	A	A
5	689.49	45.97	122.270	F	F

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	39.44	2.63	7.325	A	A
3	20.88	1.39	6.995	A	A
4	2.92	0.19	5.362	A	A
5	377.79	25.19	64.309	F	E

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	20.95	1.40	4.705	A	A
3	12.18	0.81	4.937	A	A
4	2.00	0.13	4.409	A	A
5	31.82	2.12	6.875	A	A

Queue Variation Results for each time segment

Queue Variation results: (07:45-08:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.31	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.77	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.88	0.00	0.00	3.30	3.30			N/A	N/A

Queue Variation results: (08:00-08:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.17	0.00	0.00	4.40	6.60			N/A	N/A
3	1.24	0.00	0.00	2.20	3.30			N/A	N/A
4	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	4.15	0.00	0.00	9.90	15.40			N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	5.18	0.00	0.00	5.50	17.60			N/A	N/A
3	2.82	0.00	0.00	0.00	6.60			N/A	N/A
4	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	33.81	4.40	27.50	64.90	79.20			N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	5.44	0.00	0.00	0.00	9.90			N/A	N/A

3	2.93	0.00	0.00	0.00	4.40			N/A	N/A
4	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	57.84	12.10	48.40	106.70	128.70			N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.46	0.00	0.00	5.50	7.70			N/A	N/A
3	1.32	0.00	0.00	2.20	3.30			N/A	N/A
4	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	5.28	0.00	0.00	11.00	19.80			N/A	N/A

Queue Variation results: (09:00-09:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.35	0.00	0.00	2.20	4.40			N/A	N/A
3	0.79	0.00	0.00	1.10	1.10			N/A	N/A
4	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.97	0.00	0.00	0.00	3.30			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

Filename: Whitehill Roundabout.arc8
Path: H:\My Pictures
Report generation date: 25/01/2017 12:28:22

Summary of junction performance

	PM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2024 Plus Dev				
Arm 2	461<3	89143	64188	31<7	G
Arm 3	9159	55133	58189	31;9	G
Arm 4	315<	£4	;153	3154	D
Arm 5	69147	4391:3	;8158	4135	I

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2017, AM" model duration: 07:45 - 09:15
"D2 - 2024 No Dev, AM" model duration: 07:45 - 09:15
"D3 - 2024 Plus Dev, AM" model duration: 07:45 - 09:15
"D4 - 2028 Plus Dev, AM" model duration: 07:45 - 09:15
"D5 - 2017, PM" model duration: 16:45 - 18:15
"D6 - 2024 No Dev, PM" model duration: 16:45 - 18:15
"D7 - 2024 Plus Dev, PM " model duration: 16:45 - 18:15
"D8 - 2028 Plus Dev, PM" model duration: 16:45 - 18:15

Run using Junctions 8.0.6.541 at 25/01/2017 12:28:20

File summary

Title	WhiteHill Roundabout
Location	Wrotham
Site Number	
Date	23/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Les Henry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - 2024 Plus Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		Y				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2024 Plus Dev, PM	2024 Plus Dev	PM	2031 Plus Dev	ONE HOUR	16:45	18:15	90	15				Y		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5				48.11	E

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	M20 On Slip	
2	2	A20 East	
3	3	A227 South	
4	4	Bull Lane	
5	5	A20 West	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00
5	0.00	99999.00		0.00

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	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Y
2	5.00	8.80	25.00	25.00	55.00	55.00	
3	4.25	8.50	20.00	20.00	55.00	50.00	
4	2.50	8.50	25.00	20.00	55.00	45.00	
5	5.25	9.00	20.00	30.00	55.00	60.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	Exit-only	Exit-only
2		(calculated)	(calculated)	0.638	2113.391
3		(calculated)	(calculated)	0.604	1911.702
4		(calculated)	(calculated)	0.569	1692.831
5		(calculated)	(calculated)	0.633	2098.887

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	Exit-only	Y	Exit-only	Exit-only
2	ONE HOUR	Y	1536.00	100.000
3	ONE HOUR	Y	849.00	100.000
4	ONE HOUR	Y	115.00	100.000
5	ONE HOUR	Y	1324.00	100.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	0.94	31.55	13.90	56.10	D	1409.46	2114.19	497.99	14.13	5.53	498.04	14.13
3	0.86	25.56	6.26	22.00	D	779.06	1168.59	248.29	12.75	2.76	248.31	12.75
4	0.21	8.20	0.29	~1	A	105.53	158.29	16.53	6.27	0.18	16.53	6.27
5	1.02	85.25	36.14	106.70	F	1214.93	1822.39	940.75	30.97	10.45	940.80	30.97

Main Results for each time segment

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	529.01	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1156.38	289.10	1149.54	834.75	352.23	0.00	1888.57	1812.30	0.612	0.00	1.71	5.310	A
3	639.17	159.79	635.22	559.60	942.16	0.00	1342.91	1035.10	0.476	0.00	0.99	5.564	A
4	86.58	21.64	86.14	277.58	1299.81	0.00	953.62	508.42	0.091	0.00	0.11	4.563	A
5	996.78	249.19	990.07	660.02	725.92	0.00	1639.62	1149.65	0.608	0.00	1.68	6.036	A

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	632.75	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1380.83	345.21	1375.03	998.03	420.92	0.00	1844.72	1812.30	0.749	1.71	3.16	8.327	A
3	763.23	190.81	760.18	669.08	1126.87	0.00	1231.40	1035.10	0.620	0.99	1.75	8.349	A
4	103.38	25.85	103.18	331.94	1555.11	0.00	808.42	508.42	0.128	0.11	0.16	5.613	A
5	1190.25	297.56	1183.06	789.65	868.64	0.00	1549.33	1149.65	0.768	1.68	3.47	10.605	B

Main results: (17:15-17:30)

	Total	Junction				Pedestrian		Saturation		Start	End		

Arm	Demand (PCU/hr)	Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Demand (Ped/hr)	Capacity (PCU/hr)	Capacity (PCU/hr)	RFC	Queue (PCU)	Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	758.69	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1691.17	422.79	1656.74	1179.44	491.70	0.00	1799.55	1812.30	0.940	3.16	11.77	23.522	C
3	934.77	233.69	919.60	794.61	1353.83	0.00	1094.38	1035.10	0.854	1.75	5.54	21.060	C
4	126.62	31.65	126.15	396.18	1877.24	0.00	625.22	508.42	0.203	0.16	0.28	7.927	A
5	1457.75	364.44	1379.56	953.13	1050.27	0.00	1434.42	1149.65	1.016	3.47	23.02	45.889	E

Main results: (17:30-17:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	770.38	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1691.17	422.79	1682.63	1198.45	500.58	0.00	1793.88	1812.30	0.943	11.77	13.90	31.545	D
3	934.77	233.69	931.88	807.87	1375.33	0.00	1081.40	1035.10	0.864	5.54	6.26	25.562	D
4	126.62	31.65	126.58	402.64	1904.57	0.00	609.68	508.42	0.208	0.28	0.29	8.197	A
5	1457.75	364.44	1405.26	967.01	1064.14	0.00	1425.65	1149.65	1.023	23.02	36.14	85.254	F

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	662.43	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1380.83	345.21	1421.84	1081.11	467.43	0.00	1815.04	1812.30	0.761	13.90	3.65	11.040	B
3	763.23	190.81	780.46	715.92	1173.35	0.00	1203.34	1035.10	0.634	6.26	1.96	9.724	A
4	103.38	25.85	103.85	351.12	1602.68	0.00	781.37	508.42	0.132	0.29	0.17	5.848	A
5	1190.25	297.56	1318.39	813.95	892.58	0.00	1534.19	1149.65	0.776	36.14	4.11	28.000	D

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	535.90	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1156.38	289.10	1163.89	846.94	357.86	0.00	1884.97	1812.30	0.613	3.65	1.77	5.546	A
3	639.17	159.79	642.92	567.50	954.25	0.00	1335.61	1035.10	0.479	1.96	1.02	5.748	A
4	86.58	21.64	86.81	281.36	1315.81	0.00	944.52	508.42	0.092	0.17	0.11	4.619	A
5	996.78	249.19	1006.22	668.13	734.49	0.00	1634.20	1149.65	0.610	4.11	1.75	6.399	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	24.49	1.63	5.310	A	A
3	14.23	0.95	5.564	A	A
4	1.60	0.11	4.563	A	A
5	23.90	1.59	6.036	A	A

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	44.41	2.96	8.327	A	A
3	24.97	1.66	8.349	A	A
4	2.35	0.16	5.613	A	A
5	47.97	3.20	10.605	B	B

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	138.20	9.21	23.522	C	C
3	70.44	4.70	21.060	C	C
4	4.02	0.27	7.927	A	A
5	226.20	15.08	45.889	E	D

Queueing Delay results: (17:30-17:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	194.88	12.99	31.545	D	C
3	89.78	5.99	25.562	D	C
4	4.25	0.28	8.197	A	A
5	447.19	29.81	85.254	F	F

Queueing Delay results: (17:45-18:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	68.18	4.55	11.040	B	B
3	32.96	2.20	9.724	A	A
4	2.60	0.17	5.848	A	A
5	167.69	11.18	28.000	D	C

Queueing Delay results: (18:00-18:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	27.83	1.86	5.546	A	A
3	15.91	1.06	5.748	A	A
4	1.71	0.11	4.619	A	A
5	27.80	1.85	6.399	A	A

Queue Variation Results for each time segment

Queue Variation results: (16:45-17:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.71	0.00	0.00	2.20	2.20			N/A	N/A
3	0.99	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.68	0.00	0.00	2.20	2.20			N/A	N/A

Queue Variation results: (17:00-17:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	3.16	0.00	0.00	6.60	11.00			N/A	N/A
3	1.75	0.00	0.00	3.30	5.50			N/A	N/A
4	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	3.47	0.00	0.00	7.70	12.10			N/A	N/A

Queue Variation results: (17:15-17:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	11.77	0.00	0.00	29.70	47.30			N/A	N/A
3	5.54	0.00	0.00	9.90	20.90			N/A	N/A
4	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	23.02	0.00	15.40	51.70	67.10			N/A	N/A

Queue Variation results: (17:30-17:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	13.90	0.00	0.00	30.80	56.10			N/A	N/A
3	6.26	0.00	0.00	6.60	22.00			N/A	N/A

4	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	36.14	1.10	24.20	81.40	106.70			N/A	N/A

Queue Variation results: (17:45-18:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	3.65	0.00	0.00	7.70	13.20			N/A	N/A
3	1.96	0.00	0.00	3.30	6.60			N/A	N/A
4	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	4.11	0.00	0.00	7.70	15.40			N/A	N/A

Queue Variation results: (18:00-18:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.77	0.00	0.00	1.10	5.50			N/A	N/A
3	1.02	0.00	0.00	1.10	2.20			N/A	N/A
4	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	1.75	0.00	0.00	0.00	3.30			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Filename: Whitehill Roundabout.arc8
Path: H:\My Pictures
Report generation date: 25/01/2017 12:27:34

Summary of junction performance

	AM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2028 Plus Dev				
Arm 2	:153	58163	4:176	31;;	F
Arm 3	:176	5:183	5;15;	31;<	G
Arm 4	3174	£4	<15;	315:	D
Arm 5	479176	5491:3	63<136	4153	I

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2017, AM" model duration: 07:45 - 09:15
"D2 - 2024 No Dev, AM" model duration: 07:45 - 09:15
"D3 - 2024 Plus Dev, AM" model duration: 07:45 - 09:15
"D4 - 2028 Plus Dev, AM " model duration: 07:45 - 09:15
"D5 - 2017, PM" model duration: 16:45 - 18:15
"D6 - 2024 No Dev, PM" model duration: 16:45 - 18:15
"D7 - 2024 Plus Dev, PM" model duration: 16:45 - 18:15
"D8 - 2028 Plus Dev, PM" model duration: 16:45 - 18:15

Run using Junctions 8.0.6.541 at 25/01/2017 12:27:32

File summary

Title	WhiteHill Roundabout
Location	Wrotham
Site Number	
Date	23/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Les Henry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - 2028 Plus Dev, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		Y				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2028 Plus Dev, AM	2028 Plus Dev	AM		ONE HOUR	07:45	09:15	90	15				Y		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5				130.42	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	M20 On Slip	
2	2	A20 East	
3	3	A227 South	
4	4	Bull Lane	
5	5	A20 West	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00
5	0.00	99999.00		0.00

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	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Y
2	5.00	8.80	25.00	25.00	55.00	55.00	
3	4.25	8.50	20.00	20.00	55.00	50.00	
4	2.50	8.50	25.00	20.00	55.00	45.00	
5	5.25	9.00	20.00	30.00	55.00	60.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	Exit-only	Exit-only
2		(calculated)	(calculated)	0.638	2113.391
3		(calculated)	(calculated)	0.604	1911.702
4		(calculated)	(calculated)	0.569	1692.831
5		(calculated)	(calculated)	0.633	2098.887

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	Exit-only	Y	Exit-only	Exit-only
2	ONE HOUR	Y	1413.00	100.000
3	ONE HOUR	Y	914.00	100.000
4	ONE HOUR	Y	145.00	100.000
5	ONE HOUR	Y	1515.00	100.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	0.88	17.43	7.20	25.30	C	1296.59	1944.89	328.49	10.13	3.65	328.54	10.14
3	0.89	28.28	7.43	27.50	D	838.70	1258.05	287.54	13.71	3.19	287.57	13.72
4	0.27	9.28	0.41	~1	A	133.05	199.58	22.75	6.84	0.25	22.75	6.84
5	1.20	309.03	146.43	216.70	F	1390.19	2085.29	5229.59	150.47	58.11	5229.82	150.48

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	537.06	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1063.78	265.95	1057.84	929.09	426.06	0.00	1841.44	1804.70	0.578	0.00	1.48	5.016	A
3	688.11	172.03	683.75	594.83	889.07	0.00	1374.96	1030.23	0.500	0.00	1.09	5.695	A
4	109.16	27.29	108.59	247.48	1325.35	0.00	939.09	481.82	0.116	0.00	0.14	4.765	A
5	1140.57	285.14	1130.35	672.07	761.86	0.00	1616.89	1163.92	0.705	0.00	2.56	7.980	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	641.54	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1270.26	317.56	1265.75	1105.80	505.70	0.00	1790.61	1804.70	0.709	1.48	2.61	7.481	A
3	821.67	205.42	818.17	708.57	1062.88	0.00	1270.03	1030.23	0.647	1.09	1.96	8.695	A
4	130.35	32.59	130.07	295.19	1585.86	0.00	790.94	481.82	0.165	0.14	0.22	5.989	A
5	1361.95	340.49	1341.32	804.19	911.73	0.00	1522.07	1163.92	0.895	2.56	7.71	19.961	C

Main results: (08:15-08:30)

	Total	Junction				Pedestrian		Saturation		Start	End		

Arm	Demand (PCU/hr)	Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Demand (Ped/hr)	Capacity (PCU/hr)	Capacity (PCU/hr)	RFC	Queue (PCU)	Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	755.34	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1555.74	388.94	1539.03	1213.95	526.67	0.00	1777.23	1804.70	0.875	2.61	6.79	15.622	C
3	1006.33	251.58	987.71	793.31	1272.39	0.00	1143.55	1030.23	0.880	1.96	6.62	23.101	C
4	159.65	39.91	158.94	338.95	1921.15	0.00	600.26	481.82	0.266	0.22	0.39	8.959	A
5	1668.05	417.01	1390.76	974.89	1105.19	0.00	1399.67	1163.92	1.192	7.71	77.03	119.716	F

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	762.35	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1555.74	388.94	1554.12	1219.99	526.62	0.00	1777.26	1804.70	0.875	6.79	7.20	17.427	C
3	1006.33	251.58	1003.08	797.03	1283.71	0.00	1136.71	1030.23	0.885	6.62	7.43	28.277	D
4	159.65	39.91	159.59	341.12	1945.68	0.00	586.31	481.82	0.272	0.39	0.41	9.279	A
5	1668.05	417.01	1390.46	986.76	1118.51	0.00	1391.25	1163.92	1.199	77.03	146.43	290.658	F

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	667.37	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1270.26	317.56	1287.11	1199.38	563.34	0.00	1753.82	1804.70	0.724	7.20	2.98	8.774	A
3	821.67	205.42	842.75	758.50	1091.96	0.00	1252.48	1030.23	0.656	7.43	2.16	10.133	B
4	130.35	32.59	131.08	311.31	1623.40	0.00	769.59	481.82	0.169	0.41	0.23	6.210	A
5	1361.95	340.49	1497.83	822.22	932.26	0.00	1509.08	1163.92	0.903	146.43	112.46	309.029	F

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	585.24	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1063.78	265.95	1068.64	1171.36	590.21	0.00	1736.67	1804.70	0.613	2.98	1.77	5.972	A
3	688.11	172.03	692.10	724.55	934.30	0.00	1347.65	1030.23	0.511	2.16	1.16	6.078	A
4	109.16	27.29	109.48	286.16	1340.24	0.00	930.62	481.82	0.117	0.23	0.15	4.825	A
5	1140.57	285.14	1576.58	679.49	770.23	0.00	1611.59	1163.92	0.708	112.46	3.46	130.622	F

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	21.35	1.42	5.016	A	A
3	15.66	1.04	5.695	A	A
4	2.10	0.14	4.765	A	A
5	35.59	2.37	7.980	A	A

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	37.08	2.47	7.481	A	A
3	27.88	1.86	8.695	A	A
4	3.16	0.21	5.989	A	A
5	96.41	6.43	19.961	C	B

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	87.94	5.86	15.622	C	B
3	82.17	5.48	23.101	C	C
4	5.69	0.38	8.959	A	A
5	644.77	42.98	119.716	F	F

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	105.47	7.03	17.427	C	B
3	106.56	7.10	28.277	D	C
4	6.05	0.40	9.279	A	A
5	1676.30	111.75	290.658	F	F

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	48.97	3.26	8.774	A	A
3	37.13	2.48	10.133	B	B
4	3.49	0.23	6.210	A	A
5	1941.72	129.45	309.029	F	F

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	27.68	1.85	5.972	A	A
3	18.15	1.21	6.078	A	A
4	2.25	0.15	4.825	A	A
5	834.80	55.65	130.622	F	F

Queue Variation Results for each time segment

Queue Variation results: (07:45-08:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.48	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	1.09	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	2.56	0.00	0.00	5.50	7.70			N/A	N/A

Queue Variation results: (08:00-08:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.61	0.00	0.00	5.50	8.80			N/A	N/A
3	1.96	0.00	0.00	4.40	6.60			N/A	N/A
4	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	7.71	0.00	2.20	19.80	28.60			N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	6.79	0.00	0.00	11.00	25.30			N/A	N/A
3	6.62	0.00	0.00	14.30	25.30			N/A	N/A
4	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	77.03	37.40	72.60	112.20	125.40			N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	7.20	0.00	0.00	4.40	20.90			N/A	N/A

3	7.43	0.00	0.00	11.00	27.50			N/A	N/A
4	0.41	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	146.43	85.80	141.90	198.00	>199			N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.98	0.00	0.00	6.60	9.90			N/A	N/A
3	2.16	0.00	0.00	4.40	6.60			N/A	N/A
4	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	112.46	74.80	110.00	144.10	155.10			N/A	N/A

Queue Variation results: (09:00-09:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1.77	0.00	0.00	2.20	5.50			N/A	N/A
3	1.16	0.00	0.00	1.10	3.30			N/A	N/A
4	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	3.46	0.00	0.00	0.00	7.70			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

Filename: Whitehill Roundabout.arc8
Path: H:\My Pictures
Report generation date: 25/01/2017 12:29:10

Summary of junction performance

	PM				
	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2028 Plus Dev				
Arm 2	5;173	437183	8;174	31<<	I
Arm 3	54178	:;143	:5154	31<<	I
Arm 4	3166	£4	<169	3156	D
Arm 5	;5199	4841;3	4:51;5	4144	I

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2017, AM" model duration: 07:45 - 09:15
"D2 - 2024 No Dev, AM" model duration: 07:45 - 09:15
"D3 - 2024 Plus Dev, AM" model duration: 07:45 - 09:15
"D4 - 2028 Plus Dev, AM" model duration: 07:45 - 09:15
"D5 - 2017, PM" model duration: 16:45 - 18:15
"D6 - 2024 No Dev, PM" model duration: 16:45 - 18:15
"D7 - 2024 Plus Dev, PM" model duration: 16:45 - 18:15
"D8 - 2028 Plus Dev, PM " model duration: 16:45 - 18:15

Run using Junctions 8.0.6.541 at 25/01/2017 12:29:08

File summary

Title	WhiteHill Roundabout
Location	Wrotham
Site Number	
Date	23/12/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Les Henry
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	Y		N/A	0.85	36.00	20.00

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

(Default Analysis Set) - 2028 Plus Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY		Y				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2028 Plus Dev, PM	2028 Plus Dev	PM	2031 Plus Dev	ONE HOUR	16:45	18:15	90	15				Y		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4,5				99.30	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	M20 On Slip	
2	2	A20 East	
3	3	A227 South	
4	4	Bull Lane	
5	5	A20 West	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00
5	0.00	99999.00		0.00

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	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Y
2	5.00	8.80	25.00	25.00	55.00	55.00	
3	4.25	8.50	20.00	20.00	55.00	50.00	
4	2.50	8.50	25.00	20.00	55.00	45.00	
5	5.25	9.00	20.00	30.00	55.00	60.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	Exit-only	Exit-only
2		(calculated)	(calculated)	0.638	2113.391
3		(calculated)	(calculated)	0.604	1911.702
4		(calculated)	(calculated)	0.569	1692.831
5		(calculated)	(calculated)	0.633	2098.887

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		Y	Y	HV Percentages	2.00				Y	Y

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	Exit-only	Y	Exit-only	Exit-only
2	ONE HOUR	Y	1606.00	100.000
3	ONE HOUR	Y	976.00	100.000
4	ONE HOUR	Y	117.00	100.000
5	ONE HOUR	Y	1396.00	100.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	0.99	58.41	28.40	104.50	F	1473.69	2210.54	850.98	23.10	9.46	851.06	23.10
3	0.99	72.21	21.45	78.10	F	895.59	1343.39	604.09	26.98	6.71	604.14	26.98
4	0.23	9.36	0.33	~1	A	107.36	161.04	18.89	7.04	0.21	18.89	7.04
5	1.11	172.82	82.66	151.80	F	1280.99	1921.49	2415.34	75.42	26.84	2415.43	75.42

Main Results for each time segment

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	553.24	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1209.08	302.27	1201.09	874.27	393.71	0.00	1862.09	1795.23	0.649	0.00	2.00	5.921	A
3	734.78	183.70	729.46	635.37	959.42	0.00	1332.49	1066.44	0.551	0.00	1.33	6.510	A
4	88.08	22.02	87.61	296.03	1392.85	0.00	900.70	521.68	0.098	0.00	0.12	4.868	A
5	1050.98	262.75	1042.84	702.08	778.39	0.00	1606.43	1146.99	0.654	0.00	2.04	6.930	A

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	660.95	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1443.76	360.94	1435.47	1043.43	469.47	0.00	1813.74	1795.23	0.796	2.00	4.07	10.247	B
3	877.40	219.35	871.91	758.54	1146.40	0.00	1219.61	1066.44	0.719	1.33	2.70	11.214	B
4	105.18	26.30	104.94	353.56	1664.75	0.00	746.07	521.68	0.141	0.12	0.18	6.175	A
5	1254.98	313.74	1243.30	839.14	930.55	0.00	1510.17	1146.99	0.831	2.04	4.95	14.249	B

Main results: (17:15-17:30)

	Total	Junction				Pedestrian		Saturation		Start	End		

Arm	Demand (PCU/hr)	Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Demand (Ped/hr)	Capacity (PCU/hr)	Capacity (PCU/hr)	RFC	Queue (PCU)	Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	773.73	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1768.24	442.06	1702.35	1185.71	522.28	0.00	1780.03	1795.23	0.993	4.07	20.54	35.601	E
3	1074.60	268.65	1027.32	873.02	1351.62	0.00	1095.72	1066.44	0.981	2.70	14.52	42.284	E
4	128.82	32.20	128.28	411.00	1967.94	0.00	573.64	521.68	0.225	0.18	0.31	8.881	A
5	1537.02	384.26	1378.30	992.79	1103.42	0.00	1400.80	1146.99	1.097	4.95	44.63	76.115	F

Main results: (17:30-17:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	786.82	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1768.24	442.06	1736.80	1196.50	524.77	0.00	1778.44	1795.23	0.994	20.54	28.40	58.406	F
3	1074.60	268.65	1046.87	884.36	1377.22	0.00	1080.26	1066.44	0.995	14.52	21.45	72.208	F
4	128.82	32.20	128.75	417.50	2006.59	0.00	551.67	521.68	0.234	0.31	0.33	9.363	A
5	1537.02	384.26	1384.94	1012.18	1123.16	0.00	1388.31	1146.99	1.107	44.63	82.66	172.817	F

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	720.74	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1443.76	360.94	1535.90	1181.32	544.24	0.00	1766.01	1795.23	0.818	28.40	5.37	22.624	C
3	877.40	219.35	948.83	843.84	1236.31	0.00	1165.33	1066.44	0.753	21.45	3.60	23.515	C
4	105.18	26.30	105.68	388.88	1796.27	0.00	671.28	521.68	0.157	0.33	0.21	7.006	A
5	1254.98	313.74	1448.07	903.71	998.24	0.00	1467.34	1146.99	0.855	82.66	34.38	148.124	F

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	Exit-only	Exit-only	Exit-only	574.55	Exit-only	0.00	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	1209.08	302.27	1221.81	953.45	443.78	0.00	1830.14	1795.23	0.661	5.37	2.19	6.639	A
3	734.78	183.70	743.52	679.81	985.78	0.00	1316.58	1066.44	0.558	3.60	1.41	7.011	A
4	88.08	22.02	88.42	311.02	1418.27	0.00	886.25	521.68	0.099	0.21	0.12	4.965	A
5	1050.98	262.75	1179.81	714.72	791.97	0.00	1597.84	1146.99	0.658	34.38	2.18	12.832	B

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	28.40	1.89	5.921	A	A
3	19.00	1.27	6.510	A	A
4	1.73	0.12	4.868	A	A
5	28.73	1.92	6.930	A	A

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	56.03	3.74	10.247	B	B
3	37.57	2.50	11.214	B	B
4	2.63	0.18	6.175	A	A
5	65.89	4.39	14.249	B	B

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	213.90	14.26	35.601	E	D
3	153.13	10.21	42.284	E	D
4	4.56	0.30	8.881	A	A
5	390.51	26.03	76.115	F	E

Queueing Delay results: (17:30-17:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	370.88	24.73	58.406	F	E
3	273.53	18.24	72.208	F	E
4	4.91	0.33	9.363	A	A
5	955.78	63.72	172.817	F	F

Queueing Delay results: (17:45-18:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	146.70	9.78	22.624	C	C
3	98.34	6.56	23.515	C	C
4	3.18	0.21	7.006	A	A
5	877.79	58.52	148.124	F	F

Queueing Delay results: (18:00-18:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	35.07	2.34	6.639	A	A
3	22.52	1.50	7.011	A	A
4	1.87	0.12	4.965	A	A
5	96.63	6.44	12.832	B	B

Queue Variation Results for each time segment

Queue Variation results: (16:45-17:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.00	0.00	1.10	2.20	3.30			N/A	N/A
3	1.33	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	2.04	0.00	0.00	3.30	4.40			N/A	N/A

Queue Variation results: (17:00-17:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	4.07	0.00	0.00	8.80	14.30			N/A	N/A
3	2.70	0.00	0.00	5.50	8.80			N/A	N/A
4	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	4.95	0.00	0.00	12.10	17.60			N/A	N/A

Queue Variation results: (17:15-17:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	20.54	0.00	9.90	50.60	69.30			N/A	N/A
3	14.52	0.00	6.60	36.30	50.60			N/A	N/A
4	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	44.63	12.10	39.60	77.00	90.20			N/A	N/A

Queue Variation results: (17:30-17:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	28.40	0.00	12.10	74.80	104.50			N/A	N/A
3	21.45	0.00	8.80	55.00	78.10			N/A	N/A

4	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	82.66	30.80	75.90	132.00	151.80			N/A	N/A

Queue Variation results: (17:45-18:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	5.37	0.00	0.00	12.10	19.80			N/A	N/A
3	3.60	0.00	0.00	7.70	13.20			N/A	N/A
4	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	34.38	11.00	30.80	56.10	64.90			N/A	N/A

Queue Variation results: (18:00-18:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
2	2.19	0.00	0.00	1.10	5.50			N/A	N/A
3	1.41	0.00	0.00	0.00	3.30			N/A	N/A
4	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
5	2.18	0.00	0.00	0.00	3.30			N/A	N/A