Highways Technical Note

Sawyers Hall Farm, Brentwood

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This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2008, BS EN ISO 14001: 2004 and BS OHSAS 18001:2007)

Issue	Date	Prepared by	Checked by	Approved by
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Comments

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1. Introduction

1.1. Waterman Infrastructure and Environment Ltd. have been instructed by SpenHill to provide highways and transportation advice in connection with the proposals for the construction of a residential development on land currently occupied by Sawyers Hall Farm, Brentwood CM15 9BZ for a total of 450 dwellings.

1.2. Brentwood Borough Council has recently released details in connection with the Local Development Plan traffic modelling for its various options, as follows.

- Option 1: Dunton Hills Garden Village – 2500 dwellings
- Option 2: West Horndon Extension – 2500 dwellings
- Option 3: North of Brentwood – 1169 dwellings
- Option 4: Land east of Running Waters – 1000 dwellings

1.3. A number of employment sites have also been considered within the options. Some are included within all options and others individually, as shown below:

- Land adjacent to Ingatestone By-pass – All options
- Land at Codham Hall – All options
- Childerditch Industrial Estate – All options
- Land east of A128, south of A127 – Option 1
- Land west of Thorndon Avenue, West Horndon – Option 2

1.4. This Highways Technical Note takes the extensive traffic modelling work and methodologies undertaken as part of the Local Development Plan to demonstrate the traffic impact of the proposed 450 dwellings.

1.5. This note concludes that an additional 450 dwellings on the land north of Sawyers Hall Lane is likely to present an insignificant effect on the junction of A1023/A128 (Wilson's Corner) double mini-roundabout.

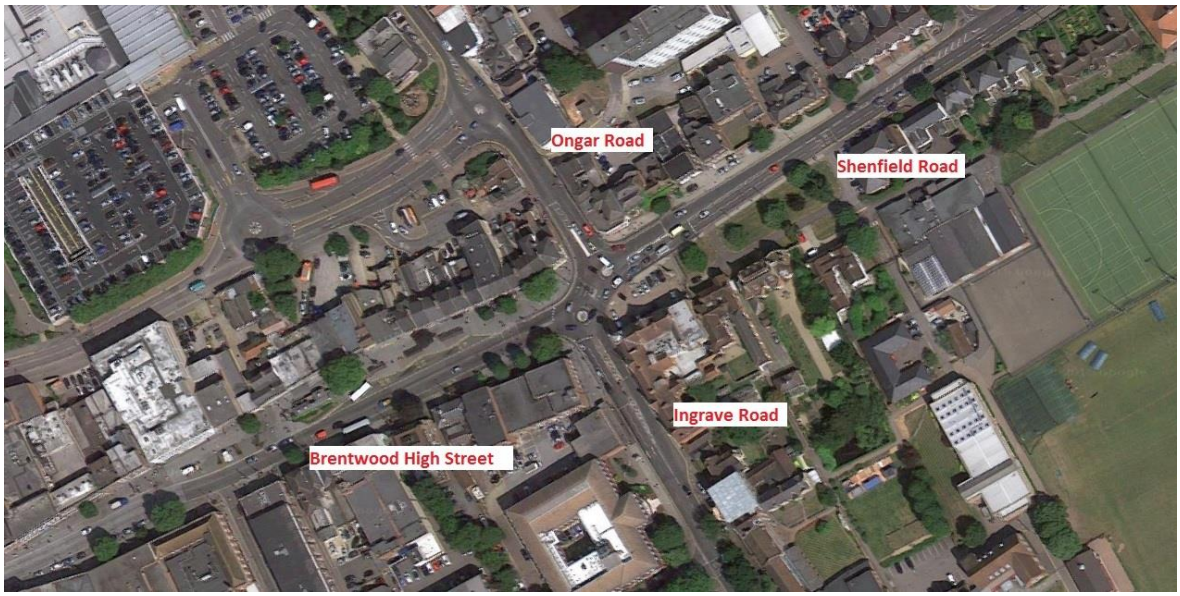
2. Assessment Methodology

2.1. It has been decided that the estimated traffic created by the Hopefield Site proposed development will be additional to that considered within the modelling of each Local Plan option.

2.2. A particular focus has been placed on the A1023/A128 (Wilson's Corner) double mini-roundabout in the town centre, shown in Figure 1, as this is known as a pinch-point for traffic passing through the town, with delays experienced by vehicles on a number of approaches during the peak hours.

2.3. Detailed information with regards to assignment contained in the work undertaken on behalf of Brentwood Council is not fully available at this stage and has been requested by WIE. In the absence of this data WIE have made assumptions regarding the proposed Hopefield traffic based on Journey to Work Census data and likely traffic routing from the work ward to the ward of residency using GIS, MapInfo software. The 'shortest route' has been used to determine likely routes given the congested nature of the central Brentwood area that better reflects likely driver travel patterns. This data has been used to assign the proposed Hopefield development traffic through the junction and then in addition to the traffic estimated as part of the 2030 Local Plan modelling assessments.

Figure 1: Aerial view of the Wilson's Corner Junction



2.4. The distribution method as indicated that 25% of the total proposed vehicle trips will travel through the double mini roundabout junction.

2.5. The outputs from the 'Junction 8' traffic modelling has been used as the basis of the assessment undertaken in this report.

Existing Residential Modal Split

2.6. In order to provide an indication on the likely modal split of residents the Census 2011 data for the Brentwood North Ward (in which the site resides) has been obtained. The Census output is provided below.

Table 1: Journey to Work Census 2011 – Brentwood North Ward

Mode of Travel	Percentage
Work Mainly at or From Home	5%
Underground, Metro, Light Rail, Tram	2%
Train	19%
Bus, Minibus or Coach	2%
Taxi	1%
Motorcycle, Scooter or Moped	1%
Driving a Car or Van	51%
Passenger in a Car or Van	3%
Bicycle	1%
On Foot	14%
Other Method of Travel to Work	1%

Source: Census 2011, Brentwood North Ward

2.7. The above table indicates that around 51% of people use their car to travel to work.

Proposed Trip Generation

2.8. When the site was operational is would have generated a number of vehicle trips. In order to establish the likely level of traffic the TRICS data has been interrogated. Details of the vehicle trip rates and trips is presented tin the table below.

Table 2: Proposed Residential Trips (All Modes)

	Arrive		Depart		
Period	Trip Rate	Trips	Trip Rate	Trips	Two Way Trips
08:00 - 09:00	0.263	118	0.366	165	283
17:00 - 18:00	0.601	270	0.351	158	428

Note: Based on 450 dwellings

2.9. The above table indicates that the site could have generated 283 two way trips during the AM peak and 428 two way trips during the PM peak. Details of the TRICS data is provided at ***Appendix A***.

2.10. In order to provide an indication on the likely number of vehicle movements to be generated by the proposed site the 'all mode' trips in the above table have been combined with the car driver percentage in Table 1, as follows.

Table 3: Proposed Residential Vehicle Trip Generation

Period	Arrive	Depart	Two Way Trips
08:00 - 09:00	60	84	144
17:00 - 18:00	138	80	218

2.11. The above table indicates that the site could generate 144 two way vehicle trips during the AM peak and 218 two way vehicle trips during the PM peak.

2.12. The vehicle trips in Table 3 have been distributed on the local highway network and then applied to the junction modelling undertaken on behalf of Brentwood Council.

2.13. Detail of the traffic flow diagrams are provided at ***Appendix B***.

3. Wilson's Corner Junction Modelling

Modelling of Junction with Hopefield Sanctuary Development

3.1. In the absence of the full model details used within the working undertaken by Brentwood Council of the Local Plan options, the modelling outputs placed online at http://www.brentwood.gov.uk/pdf/11022016094002u.pdf were referred to in order to replicate the published models and then add the proposed AM and PM peak hour development traffic to the 2030 traffic for each option.

3.2. The Ratio of Flow to Capacity (RFC) and average queue length, in Passenger Car Units (PCUs) results are as follows for each Local Plan option in the AM and PM peak hours and compared against the results obtained through the work undertaken on behalf of Brentwood Council.

3.3. A RFC of 0.85 is considered to be the theoretical capacity of the junction approach as this is the point where spare capacity becomes negligible, and any RFC values at this point or above have been highlighted in red.

Table 4: Junction Operation Results for Local Plan + Hopefield Traffic Flow Scenarios in AM Peak

	AM Peak			
	Brentwood Local Plan Option Results		Local Plan Options + Hopefield	
Approach Link	RFC	Queue length	RFC	Queue length
2030 Base AM				
A128 Ongar Road	0.21	0	0.21	0
A1023 Shenfield Road	0.82	4	0.82	4
Link Road (E)	0.19	0	0.19	0
Link Road (W)	0.10	0	0.10	0
A128 Ingrave Road	0.76	3	0.76	3
A1023 High Street	0.70	2	0.70	2
2030 Option 1 AM				
A128 Ongar Road	0.21	0	0.21	0
A1023 Shenfield Road	0.84	5	0.85	5
Link Road (E)	0.19	0	0.19	0
Link Road (W)	0.10	0	0.10	0
A128 Ingrave Road	0.85	3	0.86	6
A1023 High Street	0.81	2	0.81	4

2030 Option 2 AM				
A128 Ongar Road	0.21	0	0.21	0
A1023 Shenfield Road	0.85	5	0.85	5
Link Road (E)	0.19	0	0.19	0
Link Road (W)	0.10	0	0.10	0
A128 Ingrave Road	0.85	5	0.86	6
A1023 High Street	0.81	4	0.81	4
2030 Option 3 AM				
A128 Ongar Road	0.21	0	0.21	0
A1023 Shenfield Road	0.89	8	0.90	8
Link Road (E)	0.19	0	0.19	0
Link Road (W)	0.10	0	0.10	0
A128 Ingrave Road	0.82	5	0.83	5
A1023 High Street	0.80	4	0.81	4
2030 Option 4 AM				
A128 Ongar Road	0.21	0	0.21	0
A1023 Shenfield Road	0.89	8	0.89	8
Link Road (E)	0.19	0	0.19	0
Link Road (W)	0.10	0	0.10	0
A128 Ingrave Road	0.85	6	0.86	6
A1023 High Street	0.84	5	0.84	5

3.4. Based on the modelling work undertaken on behalf of Brentwood Council for the AM peak hour, the Shenfield Road approach is at theoretical capacity in Options 3 and 4, while Ingrave Road is at this threshold in Options 1, 2 and 4.

3.5. The results indicate that adding the traffic from the proposed Hopefield Sanctuary development to the Local Plan option traffic has a negligible impact on the operation of the junction, with minimal or no difference in RFC values or queue lengths calculated.

Table 5: Junction Operation Results for Local Plan + Hopefield Traffic Flow Scenarios in PM Peak

	PM Peak			
	Brentwood Local Plan Option Results		Local Plan Options + Hopefield	
Approach Link	RFC	Queue length	RFC	Queue length
2030 Base PM				
A128 Ongar Road	0.21	0	0.21	0
A1023 Shenfield Road	0.70	2	0.70	2
Link Road (E)	0.20	0	0.20	0
Link Road (W)	0.10	0	0.10	0
A128 Ingrave Road	0.84	5	0.84	5
A1023 High Street	0.66	2	0.66	2
2030 Option 1 PM				
A128 Ongar Road	0.21	0	0.21	0
A1023 Shenfield Road	0.75	3	0.76	3
Link Road (E)	0.20	0	0.20	0
Link Road (W)	0.10	0	0.10	0
A128 Ingrave Road	0.93	12	0.95	15
A1023 High Street	0.77	3	0.79	4
2030 Option 2 PM				
A128 Ongar Road	0.21	0	0.21	0
A1023 Shenfield Road	0.75	3	0.76	3
Link Road (E)	0.20	0	0.20	0
Link Road (W)	0.10	0	0.10	0
A128 Ingrave Road	0.93	12	0.95	15
A1023 High Street	0.78	3	0.79	4
2030 Option 3 PM				
A128 Ongar Road	0.21	0	0.21	0
A1023 Shenfield Road	0.76	3	0.77	3
Link Road (E)	0.20	0	0.20	0

Link Road (W)	0.10	0	0.10	0
A128 Ingrave Road	1.00	31	1.02	41
A1023 High Street	0.86	5	0.87	6
2030 Option 4 PM				
A128 Ongar Road	0.21	0	0.21	0
A1023 Shenfield Road	0.76	3	0.77	3
Link Road (E)	0.20	0	0.20	0
Link Road (W)	0.10	0	0.10	0
A128 Ingrave Road	0.96	17	0.98	23
A1023 High Street	0.84	5	0.86	5

3.6. Based on the assessments undertaken on behalf of Brentwood Council for the PM peak hour, the Ingrave Road approach is at theoretical capacity in Options 1, 2, 3 and 4 while High Street is at this threshold in Option 3.

3.7. The results indicate that adding the traffic from the proposed Hopefield site development to the Local Plan option traffic has a negligible impact on the operation of the junction, with minimal or no difference in RFC values or queue lengths calculated.

3.8. Details of the Junctions 8 output is provided at ***Appendix C***.

4. Conclusions

4.1. Proposals are to provide up to 450 dwellings on the Hopefield site in Brentwood, Essex.

4.2. The assessments undertaken on behalf of Brentwood Borough Council indicates that the Wilson's Corner double mini-roundabout is not at theoretical capacity in the 2030 baseline scenario, however does reach this threshold on certain approaches when the Local Plan traffic is added to the baseline flows.

4.3. The work undertaken on behalf of Brentwood Council which assesses the local highway network with the various Local Plan options. This work has been used as the basis to test the A1023/A128 (Wilson's Corner) double mini-roundabout in the town centre, as this is known as a pinch-point for traffic passing through the town, with delays experienced by vehicles on a number of approaches during the peak hours.

4.4. The results of the traffic modelling, which includes the Local Plan options as well as the proposed traffic associated with the proposed Hopefield site, indicates that the Hopefield proposals have a minimal effect on the junction.

4.5. The report has demonstrated that the proposed Hopefield residential scheme is unlikely to have an adverse effect on traffic capacity or safety.

APPENDICES

A. TRICS Data – Residential

Calculation Reference: AUDIT-701701-160208-0256

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	ES	EAST SUSSEX	1 days
	EX	ESSEX	1 days
	HC	HAMPSHIRE	1 days
	SC	SURREY	1 days
	WS	WEST SUSSEX	1 days
03	SOUTH WEST		
	CW	CORNWALL	1 days
	DC	DORSET	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	NF	NORFOLK	2 days
	SF	SUFFOLK	3 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 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: 7 to 237 (units:)
Range Selected by User: 7 to 400 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/07 to 12/11/15

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	2 days
Tuesday	5 days
Wednesday	1 days
Thursday	4 days
Friday	1 days

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

Selected survey types:

Manual count	13 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)	7
Edge of Town	6

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	13

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

Filtering Stage 3 selection:

Use Class:

C1	1 days
C3	11 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	2 days
5,001 to 10,000	4 days
10,001 to 15,000	1 days
15,001 to 20,000	3 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:

25,001 to 50,000	2 days
50,001 to 75,000	1 days
75,001 to 100,000	3 days
100,001 to 125,000	1 days
125,001 to 250,000	5 days
250,001 to 500,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	4 days
1.1 to 1.5	9 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	2 days
No	11 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.

LIST OF SITES relevant to selection parameters

1 CA-03-A-04 DETACHED CAMBRIDGESHIRE

THORPE PARK ROAD
PETERBOROUGH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 9
Survey date: TUESDAY 18/10/11 Survey Type: MANUAL

2 CW-03-A-02 SEMI D./DETATCHED CORNWALL
BOSVEAN GARDENS

TRURO
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 73
Survey date: TUESDAY 18/09/07 Survey Type: MANUAL

3 DC-03-A-08 BUNGALOWS DORSET
HURSTDENE ROAD
CASTLE LANE WEST
BOURNEMOUTH
Edge of Town
Residential Zone
Total Number of dwellings: 28
Survey date: MONDAY 24/03/14 Survey Type: MANUAL

4 ES-03-A-02 PRIVATE HOUSING EAST SUSSEX
SOUTH COAST ROAD

PEACEHAVEN
Edge of Town
Residential Zone
Total Number of dwellings: 37
Survey date: FRIDAY 18/11/11 Survey Type: MANUAL

5 EX-03-A-01 SEMI-DET. ESSEX
MILTON ROAD
CORRINGHAM
STANFORD-LE-HOPE
Edge of Town
Residential Zone
Total Number of dwellings: 237
Survey date: TUESDAY 13/05/08 Survey Type: MANUAL

6 HC-03-A-17 HOUSES & FLATS HAMPSHIRE
CANADA WAY

LIPHOOK
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 36
Survey date: THURSDAY 12/11/15 Survey Type: MANUAL

7 NF-03-A-01 SEMI DET. & BUNGALOWS NORFOLK
YARMOUTH ROAD

CAISTER-ON-SEA
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 27
Survey date: TUESDAY 16/10/12 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8 NF-03-A-02 HOUSES & FLATS NORFOLK
DEREHAM ROAD

NORWICH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 98
Survey date: MONDAY 22/10/12 Survey Type: MANUAL

9 SC-03-A-04 DETACHED & TERRACED SURREY
HIGH ROAD

BYFLEET
Edge of Town
Residential Zone
Total Number of dwellings: 71
Survey date: THURSDAY 23/01/14 Survey Type: MANUAL

10 SF-03-A-01 SEMI DETACHED SUFFOLK
A1156 FELIXSTOWE ROAD
RACECOURSE
IPSWICH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 77
Survey date: WEDNESDAY 23/05/07 Survey Type: MANUAL

11 SF-03-A-02 SEMI DET./TERRACED SUFFOLK
STOKE PARK DRIVE
MAIDENHALL
IPSWICH
Edge of Town
Residential Zone
Total Number of dwellings: 230
Survey date: THURSDAY 24/05/07 Survey Type: MANUAL

12 SF-03-A-04 DETACHED & BUNGALOWS SUFFOLK
NORMANSTON DRIVE

LOWESTOFT
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 7
Survey date: TUESDAY 23/10/12 Survey Type: MANUAL

13 WS-03-A-04 MIXED HOUSES WEST SUSSEX
HILLS FARM LANE
BROADBRIDGE HEATH
HORSHAM
Edge of Town
Residential Zone
Total Number of dwellings: 151
Survey date: THURSDAY 11/12/14 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/A - HOUSES PRIVATELY OWNED
MULTI-MODAL 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	13	83	0.090	13	83	0.310	13	83	0.400
08:00 - 09:00	13	83	0.158	13	83	0.406	13	83	0.564
09:00 - 10:00	13	83	0.158	13	83	0.206	13	83	0.364
10:00 - 11:00	13	83	0.142	13	83	0.186	13	83	0.328
11:00 - 12:00	13	83	0.184	13	83	0.170	13	83	0.354
12:00 - 13:00	13	83	0.183	13	83	0.177	13	83	0.360
13:00 - 14:00	13	83	0.179	13	83	0.171	13	83	0.350
14:00 - 15:00	13	83	0.178	13	83	0.181	13	83	0.359
15:00 - 16:00	13	83	0.325	13	83	0.216	13	83	0.541
16:00 - 17:00	13	83	0.303	13	83	0.192	13	83	0.495
17:00 - 18:00	13	83	0.367	13	83	0.194	13	83	0.561
18:00 - 19:00	13	83	0.251	13	83	0.189	13	83	0.440
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.518			2.598			5.116

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:	7 - 237 (units:)
Survey date date range:	01/01/07 - 12/11/15
Number of weekdays (Monday-Friday):	13
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
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	13	83	0.148	13	83	0.468	13	83	0.616
08:00 - 09:00	13	83	0.278	13	83	0.851	13	83	1.129
09:00 - 10:00	13	83	0.263	13	83	0.366	13	83	0.629
10:00 - 11:00	13	83	0.241	13	83	0.304	13	83	0.545
11:00 - 12:00	13	83	0.273	13	83	0.272	13	83	0.545
12:00 - 13:00	13	83	0.295	13	83	0.264	13	83	0.559
13:00 - 14:00	13	83	0.287	13	83	0.253	13	83	0.540
14:00 - 15:00	13	83	0.292	13	83	0.289	13	83	0.581
15:00 - 16:00	13	83	0.767	13	83	0.420	13	83	1.187
16:00 - 17:00	13	83	0.551	13	83	0.369	13	83	0.920
17:00 - 18:00	13	83	0.601	13	83	0.351	13	83	0.952
18:00 - 19:00	13	83	0.437	13	83	0.360	13	83	0.797
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.433			4.567			9.000

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

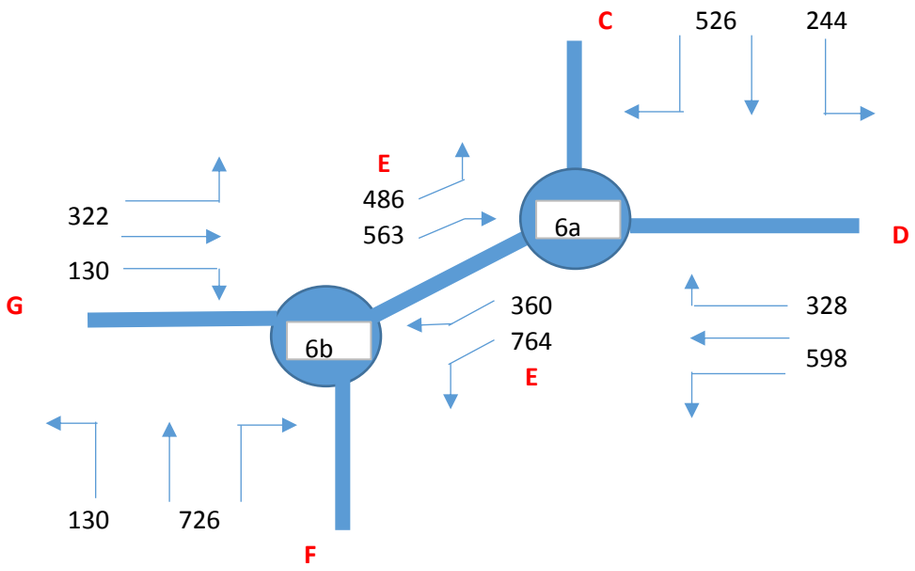
Trip rate parameter range selected:	7 - 237 (units:)
Survey date date range:	01/01/07 - 12/11/15
Number of weekdays (Monday-Friday):	13
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

B. Traffic Flow Diagrams

2030 LP Option 1 AM

Wilson's Corner Double Mini-Roundabout



Junction 6b

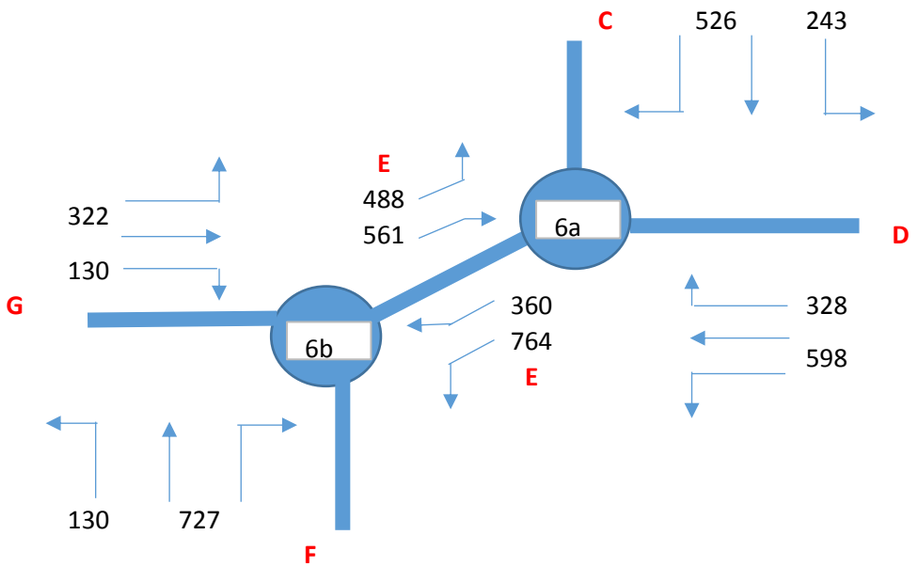
	E	F	G
E		764	360
F	726		130
G	322	130	

Junction 6a

	C	D	E
C		244	526
D	328		598
E	486	563	

2030 LP Option 2 AM

Wilson's Corner Double Mini-Roundabout



Junction 6b

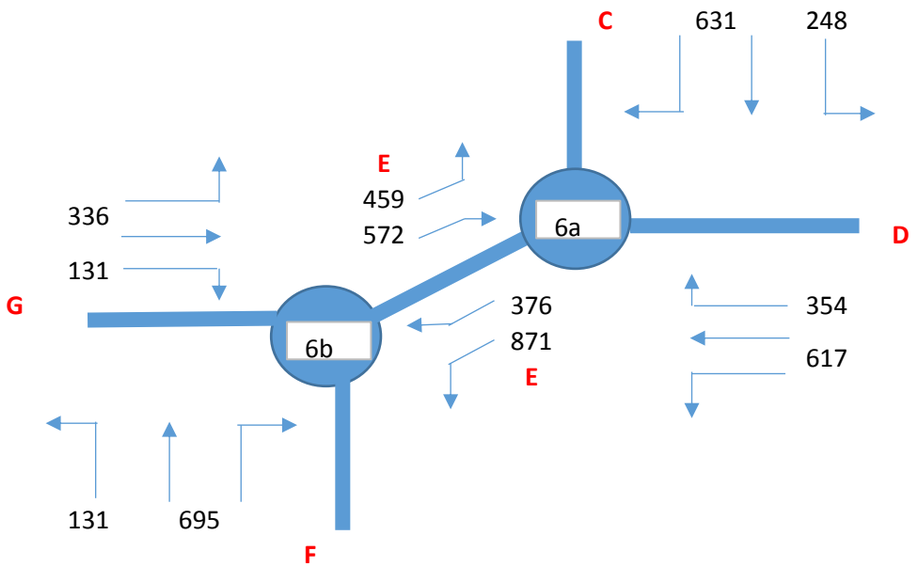
	E	F	G
E		764	360
F	727		130
G	322	130	

Junction 6a

	C	D	E
C		243	526
D	328		598
E	488	561	

2030 LP Option 3 AM

Wilson's Corner Double Mini-Roundabout



Junction 6b

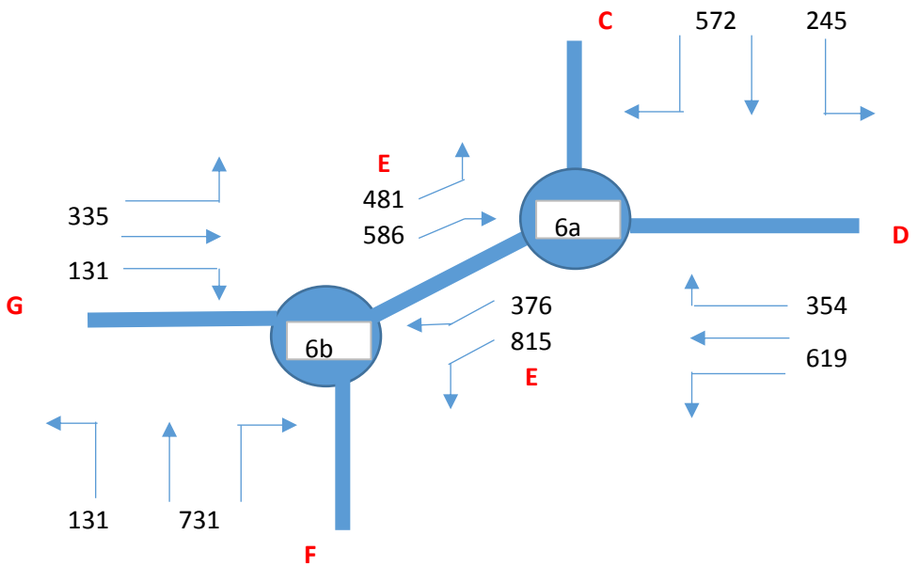
	E	F	G
E		871	376
F	695		131
G	336	131	

Junction 6a

	C	D	E
C		248	631
D	354		617
E	459	572	

2030 LP Option 4 AM

Wilson's Corner Double Mini-Roundabout



Junction 6b

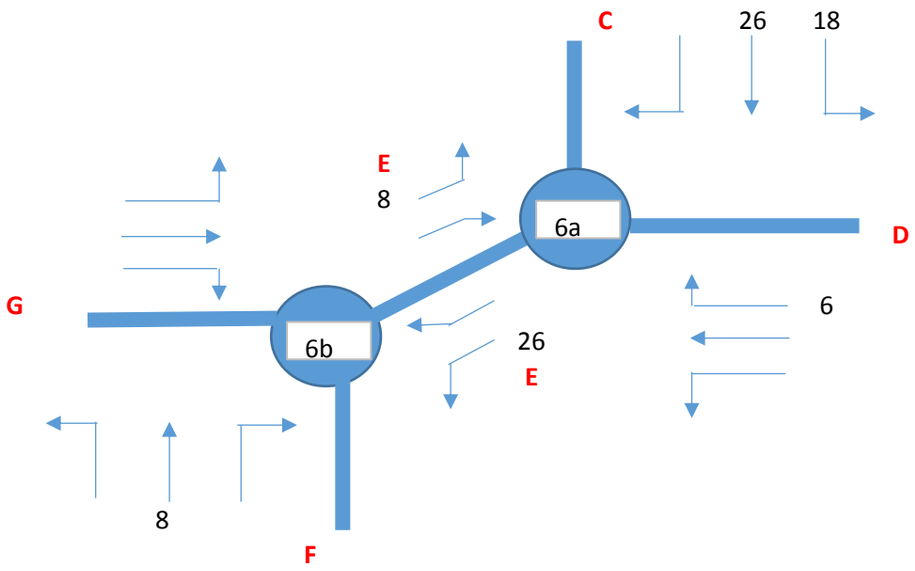
	E	F	G
E		815	376
F	731		131
G	335	131	

Junction 6a

	C	D	E
C		245	572
D	354		619
E	481	586	

Hopefield Development Traffic AM

Wilson's Corner Double Mini-Roundabout



Junction 6b

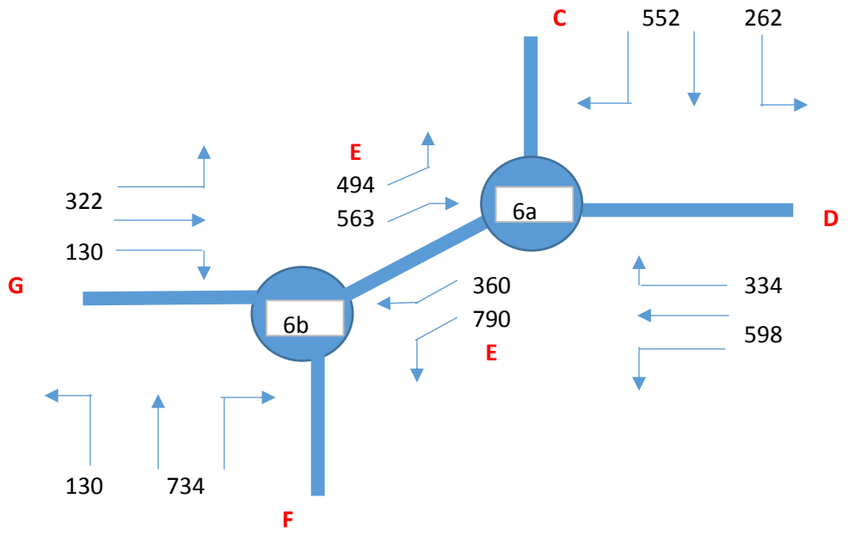
	E	F	G
E		26	
F	8		
G			

Junction 6a

	C	D	E
C		18	26
D	6		
E	8		

2030 LP Option 1 + Hopefield Development AM

Wilson's Corner Double Mini-Roundabout



Junction 6b

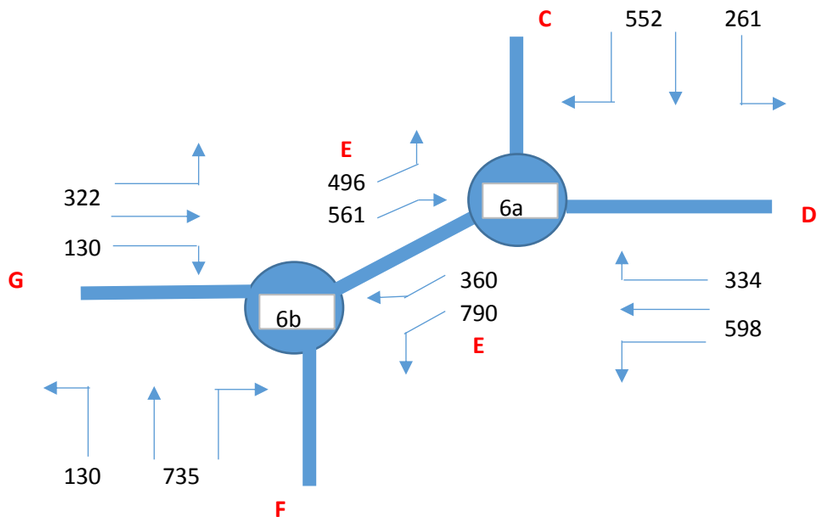
From \ To	Arm E	Arm F	Arm G	**Total**
Arm E	0	790	360	**1150**
Arm F	734	0	130	**864**
Arm G	322	130	0	**452**
Total	**1056**	**920**	**490**	-
				2466

Junction 6a

From \ To	Arm C	Arm D	Arm E	**Total**
Arm C	0	262	552	**814**
Arm D	334	0	598	**932**
Arm E	494	563	0	**1057**
Total	**828**	**825**	**1150**	-
				2803

2030 LP Option 2 + Hopefield Development AM

Wilson's Corner Double Mini-Roundabout



Junction 6b

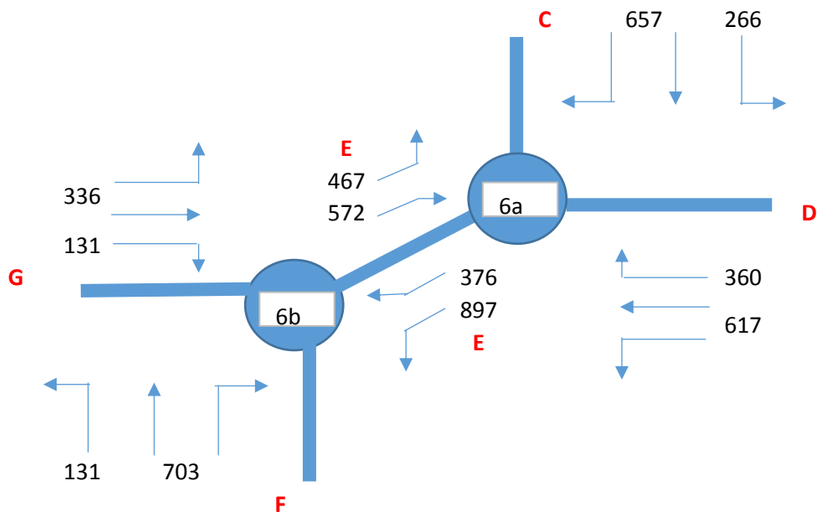
From \ To	Arm E	Arm F	Arm G	**Total**
Arm E	0	790	360	**1150**
Arm F	735	0	130	**865**
Arm G	322	130	0	**452**
Total	**1057**	**920**	**490**	-
				2467

Junction 6a

From \ To	Arm C	Arm D	Arm E	**Total**
Arm C	0	261	552	**813**
Arm D	334	0	598	**932**
Arm E	496	561	0	**1057**
Total	**830**	**822**	**1150**	-
				2802

2030 LP Option 3 + Hopefield Development AM

Wilson's Corner Double Mini-Roundabout



Junction 6b

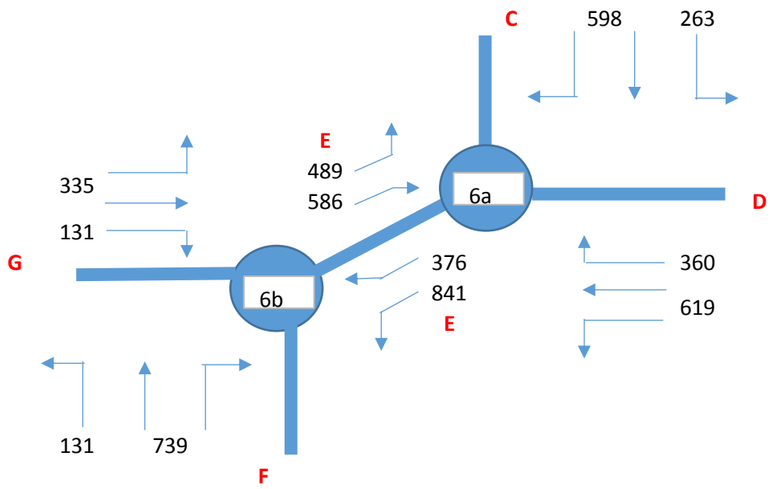
From \ To	Arm E	Arm F	Arm G	**Total**
Arm E	0	897	376	**1273**
Arm F	703	0	131	**834**
Arm G	336	131	0	**467**
Total	**1039**	**1028**	**507**	-
				2574

Junction 6a

From \ To	Arm C	Arm D	Arm E	**Total**
Arm C	0	266	657	**923**
Arm D	360	0	617	**977**
Arm E	467	572	0	**1039**
Total	**827**	**838**	**1274**	-
				2939

2030 LP Option 4 + Hopefield Development AM

Wilson's Corner Double Mini-Roundabout



Junction 6b

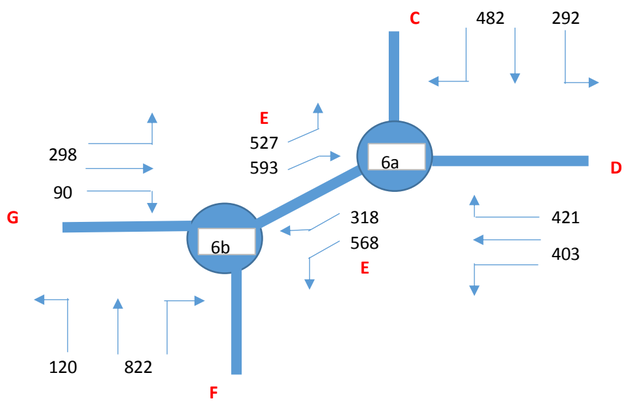
From \ To	Arm E	Arm F	Arm G	**Total**
Arm E	0	841	376	**1217**
Arm F	739	0	131	**870**
Arm G	335	131	0	**466**
Total	**1074**	**972**	**507**	-
				2553

Junction 6a

From \ To	Arm C	Arm D	Arm E	**Total**
Arm C	0	263	598	**861**
Arm D	360	0	619	**979**
Arm E	489	586	0	**1075**
Total	**849**	**849**	**1217**	-
				2915

2030 LP Option 1 PM

Wilson's Corner Double Mini-Roundabout



Junction 6b

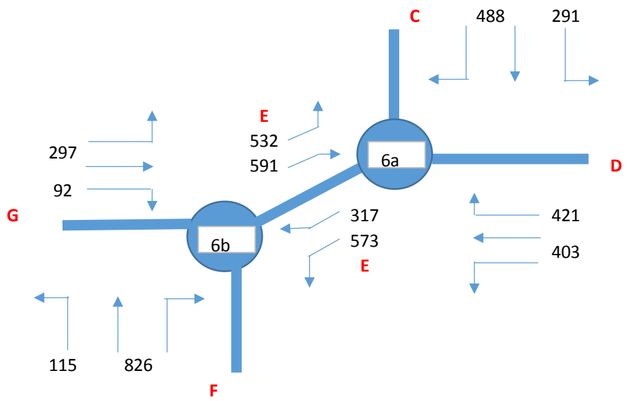
	E	F	G
E		568	318
F	822		120
G	298	90	

Junction 6a

	C	D	E
C		292	482
D	421		403
E	527	593	

2030 LP Option 2 PM

Wilson's Corner Double Mini-Roundabout



Junction 6b

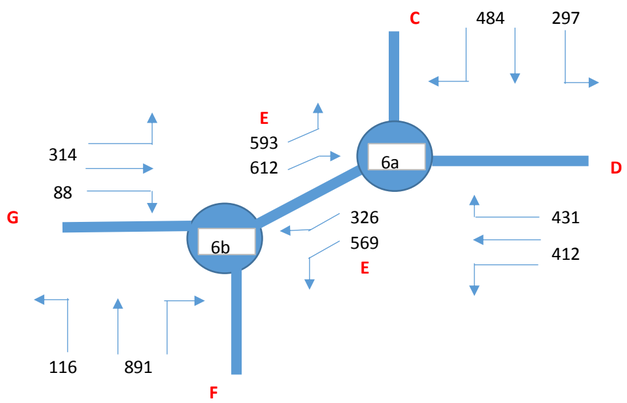
	E	F	G
E		573	317
F	826		115
G	297	92	

Junction 6a

	C	D	E
C		291	488
D	421		403
E	532	591	

2030 LP Option 3 PM

Wilson's Corner Double Mini-Roundabout



Junction 6b

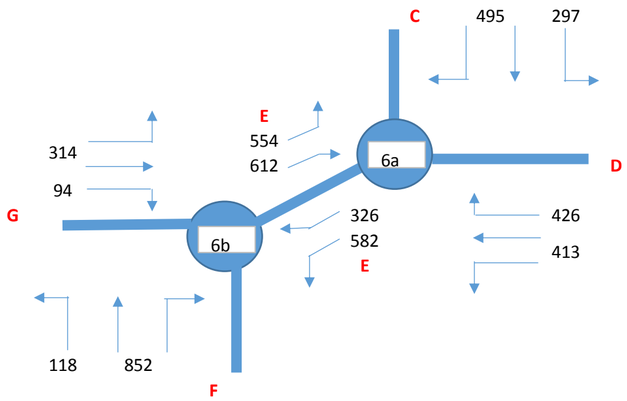
	E	F	G
E		569	326
F	891		116
G	314	88	

Junction 6a

	C	D	E
C		297	484
D	431		412
E	593	612	

2030 LP Option 4 PM

Wilson's Corner Double Mini-Roundabout



Junction 6b

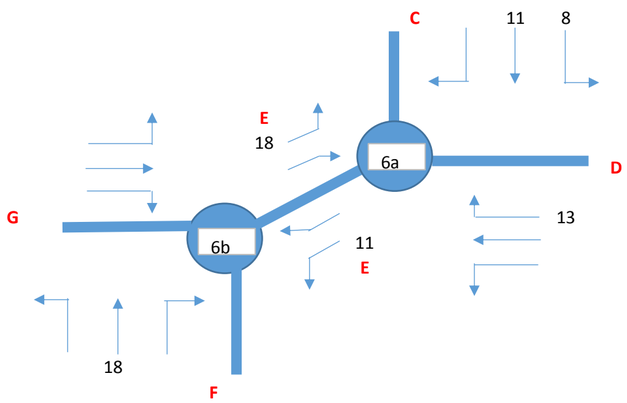
	E	F	G
E		582	326
F	852		118
G	314	94	

Junction 6a

	C	D	E
C		297	495
D	426		413
E	554	612	

Hopefield Development Traffic PM

Wilson's Corner Double Mini-Roundabout



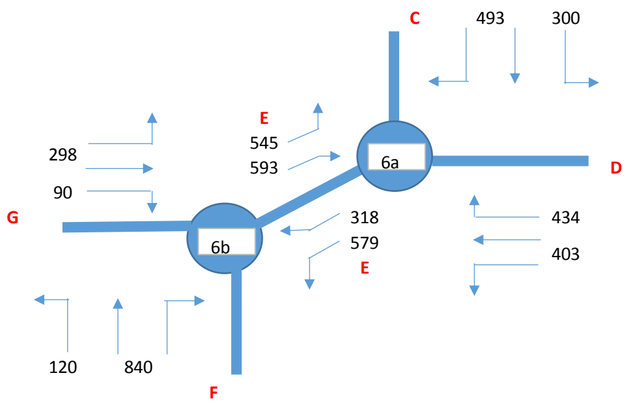
Junction 6b

	E	F	G
E		11	
F	18		
G			

Junction 6a

	C	D	E
C		8	11
D	13		
E	18		

2030 LP Option 1 + Hopefield Development PM



Wilson's Corner Double Mini-Roundabout

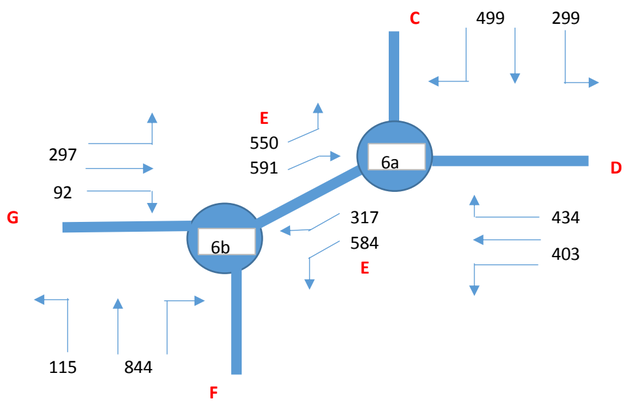
Junction 6b

From \ To	Arm E	Arm F	Arm G	**Total**
Arm E	0	579	318	**897**
Arm F	840	0	120	**960**
Arm G	298	90	0	**388**
Total	**1138**	**669**	**438**	-
				2245

Junction 6a

From \ To	Arm C	Arm D	Arm E	**Total**
Arm C	0	300	493	**793**
Arm D	434	0	403	**837**
Arm E	545	593	0	**1138**
Total	**979**	**893**	**896**	-
				2768

2030 LP Option 2 + Hopefield Development PM



Wilson's Corner Double Mini-Roundabout

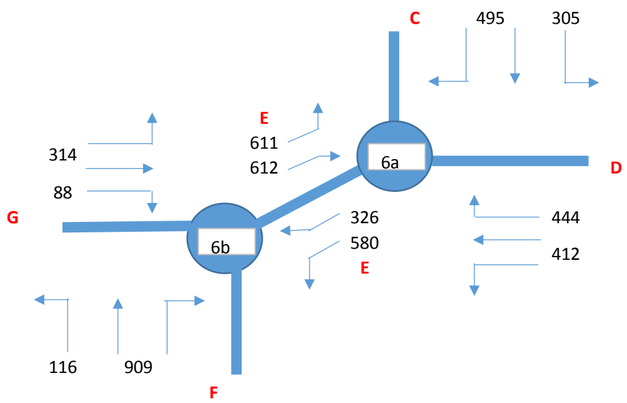
Junction 6b

From \ To	Arm E	Arm F	Arm G	**Total**
Arm E	0	584	317	**901**
Arm F	844	0	115	**959**
Arm G	297	92	0	**389**
Total	**1141**	**676**	**432**	-
				2249

Junction 6a

From \ To	Arm C	Arm D	Arm E	**Total**
Arm C	0	299	499	**798**
Arm D	434	0	403	**837**
Arm E	550	591	0	**1141**
Total	**984**	**890**	**902**	-
				2776

2030 LP Option 3 + Hopefield Development PM



Wilson's Corner Double Mini-Roundabout

Junction 6b

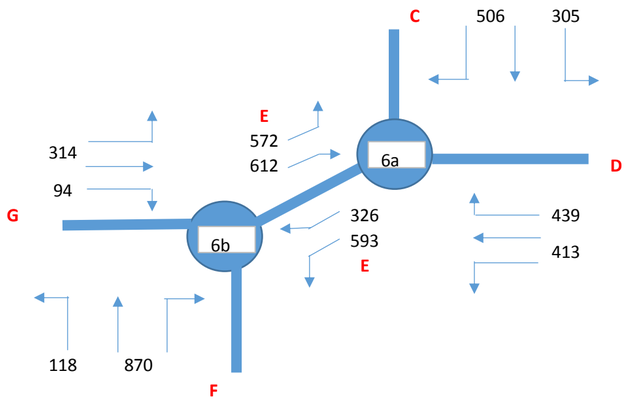
From \ To	Arm E	Arm F	Arm G	**Total**
Arm E	0	580	326	**906**
Arm F	909	0	116	**1025**
Arm G	314	88	0	**402**
Total	**1223**	**668**	**442**	-
				2333

Junction 6a

From \ To	Arm C	Arm D	Arm E	**Total**
Arm C	0	305	495	**800**
Arm D	444	0	412	**856**
Arm E	611	612	0	**1223**
Total	**1055**	**917**	**907**	-
				2879

2030 LP Option 4 + Hopefield Development PM

Wilson's Corner Double Mini-Roundabout



Junction 6b

From \ To	Arm E	Arm F	Arm G	**Total**
Arm E	0	593	326	**919**
Arm F	870	0	118	**988**
Arm G	314	94	0	**408**
Total	**1184**	**687**	**444**	-
				2315

Junction 6a

From \ To	Arm C	Arm D	Arm E	**Total**
Arm C	0	305	506	**811**
Arm D	439	0	413	**852**
Arm E	572	612	0	**1184**
Total	**1011**	**917**	**919**	-
				2847

C. Junction Modelling Output Results

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.4.487 [15039,24/03/2014]

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: Wilson's Corner Rbts - Uncoupled.arc8
Path: H:\
Report generation date: 10/03/2016 12:24:45

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2030 Base							
Junction 6a - Arm C	0.26	4.74	0.21	A	0.26	4.73	0.21	A
Junction 6a - Arm D	4.40	18.06	0.82	C	2.36	11.00	0.70	B
Junction 6a - Arm E	0.23	4.14	0.19	A	0.24	4.39	0.20	A
Junction 6b - Arm E	0.11	4.12	0.10	A	0.11	4.02	0.10	A
Junction 6b - Arm F	3.18	15.10	0.76	C	5.12	22.37	0.84	C
Junction 6b - Arm G	2.28	19.59	0.70	C	1.94	19.44	0.66	C
	A1 - 2030 Op1+Hopefield							
Junction 6a - Arm C	0.26	4.72	0.21	A	0.26	4.71	0.21	A
Junction 6a - Arm D	5.45	21.65	0.85	C	3.07	13.40	0.76	B
Junction 6a - Arm E	0.23	4.20	0.19	A	0.25	4.51	0.20	A
Junction 6b - Arm E	0.12	4.15	0.10	A	0.11	4.05	0.10	A

Junction 6b - Arm F	5.66	24.34	0.86	C	15.05	59.68	0.95	F
Junction 6b - Arm G	4.12	34.03	0.81	D	3.52	34.05	0.79	D
	A1 - 2030 Op2+Hopefield							
Junction 6a - Arm C	0.26	4.72	0.21	A	0.26	4.71	0.21	A
Junction 6a - Arm D	5.45	21.66	0.85	C	3.08	13.43	0.76	B
Junction 6a - Arm E	0.23	4.20	0.19	A	0.25	4.51	0.20	A
Junction 6b - Arm E	0.12	4.15	0.10	A	0.11	4.06	0.10	A
Junction 6b - Arm F	5.70	24.51	0.86	C	14.82	58.84	0.95	F
Junction 6b - Arm G	4.14	34.22	0.81	D	3.65	35.18	0.79	E
	A1 - 2030 Op3+Hopefield							
Junction 6a - Arm C	0.26	4.73	0.21	A	0.26	4.69	0.21	A
Junction 6a - Arm D	7.91	30.41	0.90	D	3.37	14.39	0.77	B
Junction 6a - Arm E	0.24	4.27	0.19	A	0.25	4.54	0.20	A
Junction 6b - Arm E	0.12	4.15	0.10	A	0.11	4.05	0.10	A
Junction 6b - Arm F	4.57	20.22	0.83	C	41.33	145.57	1.02	F
Junction 6b - Arm G	4.10	32.76	0.81	D	5.79	55.22	0.87	F
	A1 - 2030 Op4+Hopefield							
Junction 6a - Arm C	0.26	4.73	0.21	A	0.26	4.69	0.21	A
Junction 6a - Arm D	7.89	30.26	0.89	D	3.37	14.39	0.77	B
Junction 6a - Arm E	0.24	4.27	0.19	A	0.25	4.54	0.20	A
Junction 6b - Arm E	0.12	4.15	0.10	A	0.11	4.05	0.10	A
Junction 6b - Arm F	5.92	25.30	0.86	D	41.33	145.57	1.02	F
Junction 6b - Arm G	4.97	40.20	0.84	E	5.79	55.22	0.87	F

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

"D1 - 2030 Base, AM " model duration: 08:00 - 09:00
"D2 - 2030 Base, PM" model duration: 17:00 - 18:00
"D3 - 2030 Op1+Hopefield, AM" model duration: 08:00 - 09:00
"D4 - 2030 Op2+Hopefield, AM" model duration: 08:00 - 09:00
"D5 - 2030 Op3+Hopefield, AM" model duration: 08:00 - 09:00
"D6 - 2030 Op4+Hopefield, AM" model duration: 08:00 - 09:00
"D7 - 2030 Op1+Hopefield, PM" model duration: 17:00 - 18:00
"D8 - 2030 Op2+Hopefield, PM" model duration: 17:00 - 18:00
"D9 - 2030 Op3+Hopefield, PM" model duration: 17:00 - 18:00
"D10 - 2030 Op4+Hopefield, PM" model duration: 17:00 - 18:00

Run using Junctions 8.0.4.487 at 10/03/2016 12:24:42

File summary

Title	(untitled)
Location	
Site Number	
Date	09/03/2016
Version	
Status	(new file)
Identifier	
Client	

Jobnumber	
Enumerator	CSMS4
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			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) - 2030 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	Junction 6b - Arm F - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6b - Arm G - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm C - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm D - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?

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
2030 Base, AM	2030 Base	AM		Varies by Arm	08:00	09:00	60	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
6a	6a	(untitled)	Mini-roundabout	C,D,E	13.86	B
6b	6b	(untitled)	Mini-roundabout	E,F,G	15.72	C

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Junction	Arm	Arm	Name	Description
6a	**C**	C	A128 Ongar Road	
6a	**D**	D	A1023 Shenfield Road	
6a	**E**	E	Link Road (E)	
6b	**E**	E	Link Road (W)	
6b	**F**	F	A128 Ingrave Road	
6b	**G**	G	A1023 High Street	

Capacity Options

Junction	Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
6a	**C**	0.00	99999.00
6a	**D**	0.00	99999.00
6a	**E**	0.00	99999.00
6b	**E**	0.00	99999.00

6b	**F**	0.00	99999.00
6b	**G**	0.00	99999.00

Mini Roundabout Geometry

Junction	Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
6a	**C**	5.20	5.20	6.90	3.33	13.82	7.00	0.00	
6a	**D**	6.00	6.00	6.20	3.69	16.94	16.30	0.00	
6a	**E**	7.40	7.40	7.40	0.00	13.91	7.40	0.00	✓
6b	**E**	5.80	5.80	5.80	0.00	11.06	10.60	0.00	✓
6b	**F**	6.00	6.00	6.00	0.00	14.38	10.00	0.00	✓
6b	**G**	5.00	5.00	5.00	0.00	15.97	13.00	0.00	

Pedestrian Crossings

Junction	Arm	Crossing Type
6a	**C**	Puffin
6a	**D**	Puffin
6a	**E**	None
6b	**E**	None
6b	**F**	Puffin
6b	**G**	Puffin

Pelican/ Puffin Crossings

Junction	Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
6a	**C**	3.00	2.90	1.00	6.00	6.00	7.00	4.00
6a	**D**	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	**F**	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	**G**	3.00	2.90	1.00	6.00	6.00	7.00	2.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Junction	Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
6a	**C**		(calculated)	(calculated)	0.647	1031.982

6a	D		(calculated)	(calculated)	0.753	1198.780
6a	E		(calculated)	(calculated)	0.593	1255.923
6b	E		(calculated)	(calculated)	0.517	1035.020
6b	F		(calculated)	(calculated)	0.526	1026.383
6b	G		(calculated)	(calculated)	0.621	1011.993

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
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
6a	C	FLAT		200.00	100.000
6a	D	FLAT	✓	897.00	100.000
6a	E	FLAT		200.00	100.000
6b	E	FLAT		100.00	100.000
6b	F	FLAT	✓	771.00	100.000
6b	G	FLAT	✓	426.00	100.000

Pedestrian Flows

General Flows Data

Junction	Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
6a	C	FLAT	0.00
6a	D	FLAT	0.00
6a	E	-	-

6b	**E**	-	-
6b	**F**	FLAT	0.00
6b	**G**	FLAT	0.00

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.000	716.000	355.000
	F	648.000	0.000	123.000
	G	308.000	118.000	0.000

Turning Proportions (PCU) - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.00	0.67	0.33
	F	0.84	0.00	0.16
	G	0.72	0.28	0.00

Turning Counts / Proportions (PCU/hr) - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.000	223.000	489.000
	D	314.000	0.000	583.000
	E	423.000	532.000	0.000

Turning Proportions (PCU) - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.00	0.31	0.69
	D	0.35	0.00	0.65
	E	0.44	0.56	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 6b (for whole period)

		To		
		E	F	G
From	E	1.000	1.000	1.000
	F	1.000	1.000	1.000
	G	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.0	0.0	0.0
	F	0.0	0.0	0.0
	G	0.0	0.0	0.0

Average PCU Per Vehicle - Junction 6a (for whole period)

		To		
		C	D	E
From	C	1.000	1.000	1.000
	D	1.000	1.000	1.000
	E	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.0	0.0	0.0
	D	0.0	0.0	0.0
	E	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
6a	C	0.21	4.74	0.26	A

6a	**D**	0.82	18.06	4.40	C
6a	**E**	0.19	4.14	0.23	A
6b	**E**	0.10	4.12	0.11	A
6b	**F**	0.76	15.10	3.18	C
6b	**G**	0.70	19.59	2.28	C

(Default Analysis Set) - 2030 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	Junction 6b - Arm F - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6b - Arm G - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm C - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm D - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?

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	Model Time Period	Time Segment	Single Time	Locked

						Time (HH:mm)	Length (min)	Length (min)	Segment Only	
2030 Base, PM	2030 Base	PM		Varies by Arm	17:00	18:00	60	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
6a	6a	(untitled)	Mini-roundabout	C,D,E	8.81	A
6b	6b	(untitled)	Mini-roundabout	E,F,G	20.16	C

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Junction	Arm	Arm	Name	Description
6a	**C**	C	A128 Ongar Road	
6a	**D**	D	A1023 Shenfield Road	
6a	**E**	E	Link Road (E)	
6b	**E**	E	Link Road (W)	
6b	**F**	F	A128 Ingrave Road	
6b	**G**	G	A1023 High Street	

Capacity Options

Junction	Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
6a	**C**	0.00	99999.00
6a	**D**	0.00	99999.00
6a	**E**	0.00	99999.00
6b	**E**	0.00	99999.00
6b	**F**	0.00	99999.00
6b	**G**	0.00	99999.00

Mini Roundabout Geometry

Junction	Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
6a	C	5.20	5.20	6.90	3.33	13.82	7.00	0.00	
6a	D	6.00	6.00	6.20	3.69	16.94	16.30	0.00	
6a	E	7.40	7.40	7.40	0.00	13.91	7.40	0.00	✓
6b	E	5.80	5.80	5.80	0.00	11.06	10.60	0.00	✓
6b	F	6.00	6.00	6.00	0.00	14.38	10.00	0.00	✓
6b	G	5.00	5.00	5.00	0.00	15.97	13.00	0.00	

Pedestrian Crossings

Junction	Arm	Crossing Type
6a	C	Puffin
6a	D	Puffin
6a	E	None
6b	E	None
6b	F	Puffin
6b	G	Puffin

Pelican/ Puffin Crossings

Junction	Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
6a	C	3.00	2.90	1.00	6.00	6.00	7.00	4.00
6a	D	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	F	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	G	3.00	2.90	1.00	6.00	6.00	7.00	2.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Junction	Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
6a	C		(calculated)	(calculated)	0.647	1031.982
6a	D		(calculated)	(calculated)	0.753	1198.780
6a	E		(calculated)	(calculated)	0.593	1255.923
6b	E		(calculated)	(calculated)	0.517	1035.020

6b	**F**		(calculated)	(calculated)	0.526	1026.383
6b	**G**		(calculated)	(calculated)	0.621	1011.993

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
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
6a	**C**	FLAT		200.00	100.000
6a	**D**	FLAT	✓	779.00	100.000
6a	**E**	FLAT		200.00	100.000
6b	**E**	FLAT		100.00	100.000
6b	**F**	FLAT	✓	847.00	100.000
6b	**G**	FLAT	✓	365.00	100.000

Pedestrian Flows

General Flows Data

Junction	Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
6a	**C**	FLAT	0.00
6a	**D**	FLAT	0.00
6a	**E**	-	-
6b	**E**	-	-
6b	**F**	FLAT	0.00
6b	**G**	FLAT	0.00

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.000	507.000	312.000
	F	744.000	0.000	103.000
	G	288.000	77.000	0.000

Turning Proportions (PCU) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.00	0.62	0.38
	F	0.88	0.00	0.12
	G	0.79	0.21	0.00

Turning Counts / Proportions (PCU/hr) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.000	274.000	437.000
	D	397.000	0.000	382.000
	E	469.000	563.000	0.000

Turning Proportions (PCU) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.00	0.39	0.61
	D	0.51	0.00	0.49
	E	0.45	0.55	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 6b (for whole period)

	To			
From		E	F	G

	E	1.000	1.000	1.000
	F	1.000	1.000	1.000
	G	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.0	0.0	0.0
	F	0.0	0.0	0.0
	G	0.0	0.0	0.0

Average PCU Per Vehicle - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	1.000	1.000	1.000
	D	1.000	1.000	1.000
	E	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.0	0.0	0.0
	D	0.0	0.0	0.0
	E	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
6a	**C**	0.21	4.73	0.26	A
6a	**D**	0.70	11.00	2.36	B
6a	**E**	0.20	4.39	0.24	A
6b	**E**	0.10	4.02	0.11	A
6b	**F**	0.84	22.37	5.12	C

6b	**G**	0.66	19.44	1.94	C

(Default Analysis Set) - 2030 Op1+Hopefield, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	Junction 6b - Arm F - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6b - Arm G - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm C - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm D - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?

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

2030 Op1+Hopefield, AM	2030 Op1+Hopefield	AM		Varies by Arm	08:00	09:00	60	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
6a	6a	(untitled)	Mini-roundabout	C,D,E	16.48	C
6b	6b	(untitled)	Mini-roundabout	E,F,G	26.01	D

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Junction	Arm	Arm	Name	Description
6a	**C**	C	A128 Ongar Road	
6a	**D**	D	A1023 Shenfield Road	
6a	**E**	E	Link Road (E)	
6b	**E**	E	Link Road (W)	
6b	**F**	F	A128 Ingrave Road	
6b	**G**	G	A1023 High Street	

Capacity Options

Junction	Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
6a	**C**	0.00	99999.00
6a	**D**	0.00	99999.00
6a	**E**	0.00	99999.00
6b	**E**	0.00	99999.00
6b	**F**	0.00	99999.00
6b	**G**	0.00	99999.00

Mini Roundabout Geometry

Junction	Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
6a	C	5.20	5.20	6.90	3.33	13.82	7.00	0.00	
6a	D	6.00	6.00	6.20	3.69	16.94	16.30	0.00	
6a	E	7.40	7.40	7.40	0.00	13.91	7.40	0.00	✓
6b	E	5.80	5.80	5.80	0.00	11.06	10.60	0.00	✓
6b	F	6.00	6.00	6.00	0.00	14.38	10.00	0.00	✓
6b	G	5.00	5.00	5.00	0.00	15.97	13.00	0.00	

Pedestrian Crossings

Junction	Arm	Crossing Type
6a	C	Puffin
6a	D	Puffin
6a	E	None
6b	E	None
6b	F	Puffin
6b	G	Puffin

Pelican/ Puffin Crossings

Junction	Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
6a	C	3.00	2.90	1.00	6.00	6.00	7.00	4.00
6a	D	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	F	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	G	3.00	2.90	1.00	6.00	6.00	7.00	2.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Junction	Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
6a	C		(calculated)	(calculated)	0.647	1031.982
6a	D		(calculated)	(calculated)	0.753	1198.780
6a	E		(calculated)	(calculated)	0.593	1255.923
6b	E		(calculated)	(calculated)	0.517	1035.020

6b	**F**		(calculated)	(calculated)	0.526	1026.383
6b	**G**		(calculated)	(calculated)	0.621	1011.993

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
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
6a	**C**	FLAT		200.00	100.000
6a	**D**	FLAT	✓	932.00	100.000
6a	**E**	FLAT		200.00	100.000
6b	**E**	FLAT		100.00	100.000
6b	**F**	FLAT	✓	864.00	100.000
6b	**G**	FLAT	✓	452.00	100.000

Pedestrian Flows

General Flows Data

Junction	Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
6a	**C**	FLAT	0.00
6a	**D**	FLAT	0.00
6a	**E**	-	-
6b	**E**	-	-
6b	**F**	FLAT	0.00
6b	**G**	FLAT	0.00

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.000	790.000	360.000
	F	734.000	0.000	130.000
	G	322.000	130.000	0.000

Turning Proportions (PCU) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.00	0.69	0.31
	F	0.85	0.00	0.15
	G	0.71	0.29	0.00

Turning Counts / Proportions (PCU/hr) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.000	262.000	552.000
	D	334.000	0.000	598.000
	E	494.000	563.000	0.000

Turning Proportions (PCU) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.00	0.32	0.68
	D	0.36	0.00	0.64
	E	0.47	0.53	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 6b (for whole period)

	To			
From		E	F	G

	E	1.000	1.000	1.000
	F	1.000	1.000	1.000
	G	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.0	0.0	0.0
	F	0.0	0.0	0.0
	G	0.0	0.0	0.0

Average PCU Per Vehicle - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	1.000	1.000	1.000
	D	1.000	1.000	1.000
	E	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.0	0.0	0.0
	D	0.0	0.0	0.0
	E	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
6a	**C**	0.21	4.72	0.26	A
6a	**D**	0.85	21.65	5.45	C
6a	**E**	0.19	4.20	0.23	A
6b	**E**	0.10	4.15	0.12	A
6b	**F**	0.86	24.34	5.66	C

6b	**G**	0.81	34.03	4.12	D

(Default Analysis Set) - 2030 Op2+Hopefield, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	Junction 6b - Arm F - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6b - Arm G - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm C - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm D - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?

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

2030 Op2+Hopefield, AM	2030 Op2+Hopefield	AM		Varies by Arm	08:00	09:00	60	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
6a	6a	(untitled)	Mini-roundabout	C,D,E	16.49	C
6b	6b	(untitled)	Mini-roundabout	E,F,G	26.17	D

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Junction	Arm	Arm	Name	Description
6a	**C**	C	A128 Ongar Road	
6a	**D**	D	A1023 Shenfield Road	
6a	**E**	E	Link Road (E)	
6b	**E**	E	Link Road (W)	
6b	**F**	F	A128 Ingrave Road	
6b	**G**	G	A1023 High Street	

Capacity Options

Junction	Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
6a	**C**	0.00	99999.00
6a	**D**	0.00	99999.00
6a	**E**	0.00	99999.00
6b	**E**	0.00	99999.00
6b	**F**	0.00	99999.00
6b	**G**	0.00	99999.00

Mini Roundabout Geometry

Junction	Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
6a	C	5.20	5.20	6.90	3.33	13.82	7.00	0.00	
6a	D	6.00	6.00	6.20	3.69	16.94	16.30	0.00	
6a	E	7.40	7.40	7.40	0.00	13.91	7.40	0.00	✓
6b	E	5.80	5.80	5.80	0.00	11.06	10.60	0.00	✓
6b	F	6.00	6.00	6.00	0.00	14.38	10.00	0.00	✓
6b	G	5.00	5.00	5.00	0.00	15.97	13.00	0.00	

Pedestrian Crossings

Junction	Arm	Crossing Type
6a	C	Puffin
6a	D	Puffin
6a	E	None
6b	E	None
6b	F	Puffin
6b	G	Puffin

Pelican/ Puffin Crossings

Junction	Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
6a	C	3.00	2.90	1.00	6.00	6.00	7.00	4.00
6a	D	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	F	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	G	3.00	2.90	1.00	6.00	6.00	7.00	2.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Junction	Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
6a	C		(calculated)	(calculated)	0.647	1031.982
6a	D		(calculated)	(calculated)	0.753	1198.780
6a	E		(calculated)	(calculated)	0.593	1255.923
6b	E		(calculated)	(calculated)	0.517	1035.020

6b	F		(calculated)	(calculated)	0.526	1026.383
6b	G		(calculated)	(calculated)	0.621	1011.993

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
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
6a	C	FLAT		200.00	100.000
6a	D	FLAT	✓	932.00	100.000
6a	E	FLAT		200.00	100.000
6b	E	FLAT		100.00	100.000
6b	F	FLAT	✓	865.00	100.000
6b	G	FLAT	✓	452.00	100.000

Pedestrian Flows

General Flows Data

Junction	Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
6a	C	FLAT	0.00
6a	D	FLAT	0.00
6a	E	-	-
6b	E	-	-
6b	F	FLAT	0.00
6b	G	FLAT	0.00

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.000	790.000	360.000
	F	735.000	0.000	130.000
	G	322.000	130.000	0.000

Turning Proportions (PCU) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.00	0.69	0.31
	F	0.85	0.00	0.15
	G	0.71	0.29	0.00

Turning Counts / Proportions (PCU/hr) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.000	261.000	552.000
	D	334.000	0.000	598.000
	E	496.000	561.000	0.000

Turning Proportions (PCU) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.00	0.32	0.68
	D	0.36	0.00	0.64
	E	0.47	0.53	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 6b (for whole period)

	To			
From		E	F	G

	E	1.000	1.000	1.000
	F	1.000	1.000	1.000
	G	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.0	0.0	0.0
	F	0.0	0.0	0.0
	G	0.0	0.0	0.0

Average PCU Per Vehicle - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	1.000	1.000	1.000
	D	1.000	1.000	1.000
	E	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.0	0.0	0.0
	D	0.0	0.0	0.0
	E	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
6a	**C**	0.21	4.72	0.26	A
6a	**D**	0.85	21.66	5.45	C
6a	**E**	0.19	4.20	0.23	A
6b	**E**	0.10	4.15	0.12	A
6b	**F**	0.86	24.51	5.70	C

6b	**G**	0.81	34.22	4.14	D

(Default Analysis Set) - 2030 Op3+Hopefield, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	Junction 6b - Arm F - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6b - Arm G - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm C - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm D - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?

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

2030 Op3+Hopefield, AM	2030 Op3+Hopefield	AM		Varies by Arm	08:00	09:00	60	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
6a	6a	(untitled)	Mini-roundabout	C,D,E	22.88	C
6b	6b	(untitled)	Mini-roundabout	E,F,G	23.25	C

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Junction	Arm	Arm	Name	Description
6a	**C**	C	A128 Ongar Road	
6a	**D**	D	A1023 Shenfield Road	
6a	**E**	E	Link Road (E)	
6b	**E**	E	Link Road (W)	
6b	**F**	F	A128 Ingrave Road	
6b	**G**	G	A1023 High Street	

Capacity Options

Junction	Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
6a	**C**	0.00	99999.00
6a	**D**	0.00	99999.00
6a	**E**	0.00	99999.00
6b	**E**	0.00	99999.00
6b	**F**	0.00	99999.00
6b	**G**	0.00	99999.00

Mini Roundabout Geometry

Junction	Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
6a	C	5.20	5.20	6.90	3.33	13.82	7.00	0.00	
6a	D	6.00	6.00	6.20	3.69	16.94	16.30	0.00	
6a	E	7.40	7.40	7.40	0.00	13.91	7.40	0.00	✓
6b	E	5.80	5.80	5.80	0.00	11.06	10.60	0.00	✓
6b	F	6.00	6.00	6.00	0.00	14.38	10.00	0.00	✓
6b	G	5.00	5.00	5.00	0.00	15.97	13.00	0.00	

Pedestrian Crossings

Junction	Arm	Crossing Type
6a	C	Puffin
6a	D	Puffin
6a	E	None
6b	E	None
6b	F	Puffin
6b	G	Puffin

Pelican/ Puffin Crossings

Junction	Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
6a	C	3.00	2.90	1.00	6.00	6.00	7.00	4.00
6a	D	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	F	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	G	3.00	2.90	1.00	6.00	6.00	7.00	2.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Junction	Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
6a	C		(calculated)	(calculated)	0.647	1031.982
6a	D		(calculated)	(calculated)	0.753	1198.780
6a	E		(calculated)	(calculated)	0.593	1255.923
6b	E		(calculated)	(calculated)	0.517	1035.020

6b	**F**		(calculated)	(calculated)	0.526	1026.383
6b	**G**		(calculated)	(calculated)	0.621	1011.993

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
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
6a	**C**	FLAT		200.00	100.000
6a	**D**	FLAT	✓	977.00	100.000
6a	**E**	FLAT		200.00	100.000
6b	**E**	FLAT		100.00	100.000
6b	**F**	FLAT	✓	834.00	100.000
6b	**G**	FLAT	✓	467.00	100.000

Pedestrian Flows

General Flows Data

Junction	Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
6a	**C**	FLAT	0.00
6a	**D**	FLAT	0.00
6a	**E**	-	-
6b	**E**	-	-
6b	**F**	FLAT	0.00
6b	**G**	FLAT	0.00

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.000	897.000	376.000
	F	703.000	0.000	131.000
	G	336.000	131.000	0.000

Turning Proportions (PCU) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.00	0.70	0.30
	F	0.84	0.00	0.16
	G	0.72	0.28	0.00

Turning Counts / Proportions (PCU/hr) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.000	266.000	657.000
	D	360.000	0.000	617.000
	E	467.000	572.000	0.000

Turning Proportions (PCU) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.00	0.29	0.71
	D	0.37	0.00	0.63
	E	0.45	0.55	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 6b (for whole period)

	To			
From		E	F	G

	E	1.000	1.000	1.000
	F	1.000	1.000	1.000
	G	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.0	0.0	0.0
	F	0.0	0.0	0.0
	G	0.0	0.0	0.0

Average PCU Per Vehicle - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	1.000	1.000	1.000
	D	1.000	1.000	1.000
	E	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.0	0.0	0.0
	D	0.0	0.0	0.0
	E	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
6a	**C**	0.21	4.73	0.26	A
6a	**D**	0.90	30.41	7.91	D
6a	**E**	0.19	4.27	0.24	A
6b	**E**	0.10	4.15	0.12	A
6b	**F**	0.83	20.22	4.57	C

6b	**G**	0.81	32.76	4.10	D

(Default Analysis Set) - 2030 Op4+Hopefield, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	Junction 6b - Arm F - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6b - Arm G - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm C - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm D - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?

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

2030 Op4+Hopefield, AM	2030 Op4+Hopefield	AM		Varies by Arm	08:00	09:00	60	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
6a	6a	(untitled)	Mini-roundabout	C,D,E	22.79	C
6b	6b	(untitled)	Mini-roundabout	E,F,G	28.66	D

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Junction	Arm	Arm	Name	Description
6a	**C**	C	A128 Ongar Road	
6a	**D**	D	A1023 Shenfield Road	
6a	**E**	E	Link Road (E)	
6b	**E**	E	Link Road (W)	
6b	**F**	F	A128 Ingrave Road	
6b	**G**	G	A1023 High Street	

Capacity Options

Junction	Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
6a	**C**	0.00	99999.00
6a	**D**	0.00	99999.00
6a	**E**	0.00	99999.00
6b	**E**	0.00	99999.00
6b	**F**	0.00	99999.00
6b	**G**	0.00	99999.00

Mini Roundabout Geometry

Junction	Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
6a	C	5.20	5.20	6.90	3.33	13.82	7.00	0.00	
6a	D	6.00	6.00	6.20	3.69	16.94	16.30	0.00	
6a	E	7.40	7.40	7.40	0.00	13.91	7.40	0.00	✓
6b	E	5.80	5.80	5.80	0.00	11.06	10.60	0.00	✓
6b	F	6.00	6.00	6.00	0.00	14.38	10.00	0.00	✓
6b	G	5.00	5.00	5.00	0.00	15.97	13.00	0.00	

Pedestrian Crossings

Junction	Arm	Crossing Type
6a	C	Puffin
6a	D	Puffin
6a	E	None
6b	E	None
6b	F	Puffin
6b	G	Puffin

Pelican/ Puffin Crossings

Junction	Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
6a	C	3.00	2.90	1.00	6.00	6.00	7.00	4.00
6a	D	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	F	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	G	3.00	2.90	1.00	6.00	6.00	7.00	2.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Junction	Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
6a	C		(calculated)	(calculated)	0.647	1031.982
6a	D		(calculated)	(calculated)	0.753	1198.780
6a	E		(calculated)	(calculated)	0.593	1255.923
6b	E		(calculated)	(calculated)	0.517	1035.020

6b	**F**		(calculated)	(calculated)	0.526	1026.383
6b	**G**		(calculated)	(calculated)	0.621	1011.993

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
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
6a	**C**	FLAT		200.00	100.000
6a	**D**	FLAT	✓	979.00	100.000
6a	**E**	FLAT		200.00	100.000
6b	**E**	FLAT		100.00	100.000
6b	**F**	FLAT	✓	870.00	100.000
6b	**G**	FLAT	✓	466.00	100.000

Pedestrian Flows

General Flows Data

Junction	Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
6a	**C**	FLAT	0.00
6a	**D**	FLAT	0.00
6a	**E**	-	-
6b	**E**	-	-
6b	**F**	FLAT	0.00
6b	**G**	FLAT	0.00

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.000	841.000	376.000
	F	739.000	0.000	131.000
	G	335.000	131.000	0.000

Turning Proportions (PCU) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.00	0.69	0.31
	F	0.85	0.00	0.15
	G	0.72	0.28	0.00

Turning Counts / Proportions (PCU/hr) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.000	263.000	598.000
	D	360.000	0.000	619.000
	E	489.000	586.000	0.000

Turning Proportions (PCU) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.00	0.31	0.69
	D	0.37	0.00	0.63
	E	0.45	0.55	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 6b (for whole period)

	To			
From		E	F	G

	E	1.000	1.000	1.000
	F	1.000	1.000	1.000
	G	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.0	0.0	0.0
	F	0.0	0.0	0.0
	G	0.0	0.0	0.0

Average PCU Per Vehicle - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	1.000	1.000	1.000
	D	1.000	1.000	1.000
	E	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.0	0.0	0.0
	D	0.0	0.0	0.0
	E	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
6a	**C**	0.21	4.73	0.26	A
6a	**D**	0.89	30.26	7.89	D
6a	**E**	0.19	4.27	0.24	A
6b	**E**	0.10	4.15	0.12	A
6b	**F**	0.86	25.30	5.92	D

6b	**G**	0.84	40.20	4.97	E

(Default Analysis Set) - 2030 Op1+Hopefield, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	Junction 6b - Arm F - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6b - Arm G - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm C - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm D - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?

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

2030 Op1+Hopefield, PM	2030 Op1+Hopefield	PM		Varies by Arm	17:00	18:00	60	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
6a	6a	(untitled)	Mini-roundabout	C,D,E	10.56	B
6b	6b	(untitled)	Mini-roundabout	E,F,G	48.97	E

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Junction	Arm	Arm	Name	Description
6a	**C**	C	A128 Ongar Road	
6a	**D**	D	A1023 Shenfield Road	
6a	**E**	E	Link Road (E)	
6b	**E**	E	Link Road (W)	
6b	**F**	F	A128 Ingrave Road	
6b	**G**	G	A1023 High Street	

Capacity Options

Junction	Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
6a	**C**	0.00	99999.00
6a	**D**	0.00	99999.00
6a	**E**	0.00	99999.00
6b	**E**	0.00	99999.00
6b	**F**	0.00	99999.00
6b	**G**	0.00	99999.00

Mini Roundabout Geometry

Junction	Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
6a	C	5.20	5.20	6.90	3.33	13.82	7.00	0.00	
6a	D	6.00	6.00	6.20	3.69	16.94	16.30	0.00	
6a	E	7.40	7.40	7.40	0.00	13.91	7.40	0.00	✓
6b	E	5.80	5.80	5.80	0.00	11.06	10.60	0.00	✓
6b	F	6.00	6.00	6.00	0.00	14.38	10.00	0.00	✓
6b	G	5.00	5.00	5.00	0.00	15.97	13.00	0.00	

Pedestrian Crossings

Junction	Arm	Crossing Type
6a	C	Puffin
6a	D	Puffin
6a	E	None
6b	E	None
6b	F	Puffin
6b	G	Puffin

Pelican/ Puffin Crossings

Junction	Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
6a	C	3.00	2.90	1.00	6.00	6.00	7.00	4.00
6a	D	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	F	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	G	3.00	2.90	1.00	6.00	6.00	7.00	2.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Junction	Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
6a	C		(calculated)	(calculated)	0.647	1031.982
6a	D		(calculated)	(calculated)	0.753	1198.780
6a	E		(calculated)	(calculated)	0.593	1255.923
6b	E		(calculated)	(calculated)	0.517	1035.020

6b	F		(calculated)	(calculated)	0.526	1026.383
6b	G		(calculated)	(calculated)	0.621	1011.993

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
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
6a	C	FLAT		200.00	100.000
6a	D	FLAT	✓	837.00	100.000
6a	E	FLAT		200.00	100.000
6b	E	FLAT		100.00	100.000
6b	F	FLAT	✓	960.00	100.000
6b	G	FLAT	✓	388.00	100.000

Pedestrian Flows

General Flows Data

Junction	Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
6a	C	FLAT	0.00
6a	D	FLAT	0.00
6a	E	-	-
6b	E	-	-
6b	F	FLAT	0.00
6b	G	FLAT	0.00

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.000	579.000	318.000
	F	840.000	0.000	120.000
	G	298.000	90.000	0.000

Turning Proportions (PCU) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.00	0.65	0.35
	F	0.88	0.00	0.13
	G	0.77	0.23	0.00

Turning Counts / Proportions (PCU/hr) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.000	300.000	493.000
	D	434.000	0.000	403.000
	E	545.000	593.000	0.000

Turning Proportions (PCU) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.00	0.38	0.62
	D	0.52	0.00	0.48
	E	0.48	0.52	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 6b (for whole period)

	To			
From		E	F	G

	E	1.000	1.000	1.000
	F	1.000	1.000	1.000
	G	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.0	0.0	0.0
	F	0.0	0.0	0.0
	G	0.0	0.0	0.0

Average PCU Per Vehicle - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	1.000	1.000	1.000
	D	1.000	1.000	1.000
	E	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.0	0.0	0.0
	D	0.0	0.0	0.0
	E	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
6a	**C**	0.21	4.71	0.26	A
6a	**D**	0.76	13.40	3.07	B
6a	**E**	0.20	4.51	0.25	A
6b	**E**	0.10	4.05	0.11	A
6b	**F**	0.95	59.68	15.05	F

6b	**G**	0.79	34.05	3.52	D

(Default Analysis Set) - 2030 Op2+Hopefield, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	Junction 6b - Arm F - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6b - Arm G - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm C - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm D - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?

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

2030 Op2+Hopefield, PM	2030 Op2+Hopefield	PM		Varies by Arm	17:00	18:00	60	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
6a	6a	(untitled)	Mini-roundabout	C,D,E	10.58	B
6b	6b	(untitled)	Mini-roundabout	E,F,G	48.70	E

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Junction	Arm	Arm	Name	Description
6a	**C**	C	A128 Ongar Road	
6a	**D**	D	A1023 Shenfield Road	
6a	**E**	E	Link Road (E)	
6b	**E**	E	Link Road (W)	
6b	**F**	F	A128 Ingrave Road	
6b	**G**	G	A1023 High Street	

Capacity Options

Junction	Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
6a	**C**	0.00	99999.00
6a	**D**	0.00	99999.00
6a	**E**	0.00	99999.00
6b	**E**	0.00	99999.00
6b	**F**	0.00	99999.00
6b	**G**	0.00	99999.00

Mini Roundabout Geometry

Junction	Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
6a	C	5.20	5.20	6.90	3.33	13.82	7.00	0.00	
6a	D	6.00	6.00	6.20	3.69	16.94	16.30	0.00	
6a	E	7.40	7.40	7.40	0.00	13.91	7.40	0.00	✓
6b	E	5.80	5.80	5.80	0.00	11.06	10.60	0.00	✓
6b	F	6.00	6.00	6.00	0.00	14.38	10.00	0.00	✓
6b	G	5.00	5.00	5.00	0.00	15.97	13.00	0.00	

Pedestrian Crossings

Junction	Arm	Crossing Type
6a	C	Puffin
6a	D	Puffin
6a	E	None
6b	E	None
6b	F	Puffin
6b	G	Puffin

Pelican/ Puffin Crossings

Junction	Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
6a	C	3.00	2.90	1.00	6.00	6.00	7.00	4.00
6a	D	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	F	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	G	3.00	2.90	1.00	6.00	6.00	7.00	2.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Junction	Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
6a	C		(calculated)	(calculated)	0.647	1031.982
6a	D		(calculated)	(calculated)	0.753	1198.780
6a	E		(calculated)	(calculated)	0.593	1255.923
6b	E		(calculated)	(calculated)	0.517	1035.020

6b	**F**		(calculated)	(calculated)	0.526	1026.383
6b	**G**		(calculated)	(calculated)	0.621	1011.993

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
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
6a	**C**	FLAT		200.00	100.000
6a	**D**	FLAT	✓	837.00	100.000
6a	**E**	FLAT		200.00	100.000
6b	**E**	FLAT		100.00	100.000
6b	**F**	FLAT	✓	959.00	100.000
6b	**G**	FLAT	✓	389.00	100.000

Pedestrian Flows

General Flows Data

Junction	Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
6a	**C**	FLAT	0.00
6a	**D**	FLAT	0.00
6a	**E**	-	-
6b	**E**	-	-
6b	**F**	FLAT	0.00
6b	**G**	FLAT	0.00

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.000	584.000	317.000
	F	844.000	0.000	115.000
	G	297.000	92.000	0.000

Turning Proportions (PCU) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.00	0.65	0.35
	F	0.88	0.00	0.12
	G	0.76	0.24	0.00

Turning Counts / Proportions (PCU/hr) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.000	299.000	499.000
	D	434.000	0.000	403.000
	E	550.000	591.000	0.000

Turning Proportions (PCU) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.00	0.37	0.63
	D	0.52	0.00	0.48
	E	0.48	0.52	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 6b (for whole period)

	To			
From		E	F	G

	E	1.000	1.000	1.000
	F	1.000	1.000	1.000
	G	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.0	0.0	0.0
	F	0.0	0.0	0.0
	G	0.0	0.0	0.0

Average PCU Per Vehicle - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	1.000	1.000	1.000
	D	1.000	1.000	1.000
	E	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.0	0.0	0.0
	D	0.0	0.0	0.0
	E	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
6a	**C**	0.21	4.71	0.26	A
6a	**D**	0.76	13.43	3.08	B
6a	**E**	0.20	4.51	0.25	A
6b	**E**	0.10	4.06	0.11	A
6b	**F**	0.95	58.84	14.82	F

6b	**G**	0.79	35.18	3.65	E

(Default Analysis Set) - 2030 Op3+Hopefield, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	Junction 6b - Arm F - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6b - Arm G - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm C - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm D - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?

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

2030 Op3+Hopefield, PM	2030 Op3+Hopefield	PM		Varies by Arm	17:00	18:00	60	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
6a	6a	(untitled)	Mini-roundabout	C,D,E	11.28	B
6b	6b	(untitled)	Mini-roundabout	E,F,G	112.52	F

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Junction	Arm	Arm	Name	Description
6a	**C**	C	A128 Ongar Road	
6a	**D**	D	A1023 Shenfield Road	
6a	**E**	E	Link Road (E)	
6b	**E**	E	Link Road (W)	
6b	**F**	F	A128 Ingrave Road	
6b	**G**	G	A1023 High Street	

Capacity Options

Junction	Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
6a	**C**	0.00	99999.00
6a	**D**	0.00	99999.00
6a	**E**	0.00	99999.00
6b	**E**	0.00	99999.00
6b	**F**	0.00	99999.00
6b	**G**	0.00	99999.00

Mini Roundabout Geometry

Junction	Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
6a	C	5.20	5.20	6.90	3.33	13.82	7.00	0.00	
6a	D	6.00	6.00	6.20	3.69	16.94	16.30	0.00	
6a	E	7.40	7.40	7.40	0.00	13.91	7.40	0.00	✓
6b	E	5.80	5.80	5.80	0.00	11.06	10.60	0.00	✓
6b	F	6.00	6.00	6.00	0.00	14.38	10.00	0.00	✓
6b	G	5.00	5.00	5.00	0.00	15.97	13.00	0.00	

Pedestrian Crossings

Junction	Arm	Crossing Type
6a	C	Puffin
6a	D	Puffin
6a	E	None
6b	E	None
6b	F	Puffin
6b	G	Puffin

Pelican/ Puffin Crossings

Junction	Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
6a	C	3.00	2.90	1.00	6.00	6.00	7.00	4.00
6a	D	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	F	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	G	3.00	2.90	1.00	6.00	6.00	7.00	2.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Junction	Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
6a	C		(calculated)	(calculated)	0.647	1031.982
6a	D		(calculated)	(calculated)	0.753	1198.780
6a	E		(calculated)	(calculated)	0.593	1255.923
6b	E		(calculated)	(calculated)	0.517	1035.020

6b	**F**		(calculated)	(calculated)	0.526	1026.383
6b	**G**		(calculated)	(calculated)	0.621	1011.993

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
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
6a	**C**	FLAT		200.00	100.000
6a	**D**	FLAT	✓	856.00	100.000
6a	**E**	FLAT		200.00	100.000
6b	**E**	FLAT		100.00	100.000
6b	**F**	FLAT	✓	1025.00	100.000
6b	**G**	FLAT	✓	402.00	100.000

Pedestrian Flows

General Flows Data

Junction	Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
6a	**C**	FLAT	0.00
6a	**D**	FLAT	0.00
6a	**E**	-	-
6b	**E**	-	-
6b	**F**	FLAT	0.00
6b	**G**	FLAT	0.00

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.000	580.000	326.000
	F	909.000	0.000	116.000
	G	314.000	88.000	0.000

Turning Proportions (PCU) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.00	0.64	0.36
	F	0.89	0.00	0.11
	G	0.78	0.22	0.00

Turning Counts / Proportions (PCU/hr) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.000	305.000	495.000
	D	444.000	0.000	412.000
	E	611.000	612.000	0.000

Turning Proportions (PCU) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.00	0.38	0.62
	D	0.52	0.00	0.48
	E	0.50	0.50	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 6b (for whole period)

	To			
From		E	F	G

	E	1.000	1.000	1.000
	F	1.000	1.000	1.000
	G	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.0	0.0	0.0
	F	0.0	0.0	0.0
	G	0.0	0.0	0.0

Average PCU Per Vehicle - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	1.000	1.000	1.000
	D	1.000	1.000	1.000
	E	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.0	0.0	0.0
	D	0.0	0.0	0.0
	E	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
6a	**C**	0.21	4.69	0.26	A
6a	**D**	0.77	14.39	3.37	B
6a	**E**	0.20	4.54	0.25	A
6b	**E**	0.10	4.05	0.11	A
6b	**F**	1.02	145.57	41.33	F

6b	**G**	0.87	55.22	5.79	F

(Default Analysis Set) - 2030 Op4+Hopefield, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	Junction 6b - Arm F - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6b - Arm G - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm C - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	Junction 6a - Arm D - Pelican/Puffin Details	Pedestrian crossing uses default flow of 0. Is this correct?

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

2030 Op4+Hopefield, PM	2030 Op4+Hopefield	PM		Varies by Arm	17:00	18:00	60	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
6a	6a	(untitled)	Mini-roundabout	C,D,E	11.28	B
6b	6b	(untitled)	Mini-roundabout	E,F,G	112.52	F

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Junction	Arm	Arm	Name	Description
6a	**C**	C	A128 Ongar Road	
6a	**D**	D	A1023 Shenfield Road	
6a	**E**	E	Link Road (E)	
6b	**E**	E	Link Road (W)	
6b	**F**	F	A128 Ingrave Road	
6b	**G**	G	A1023 High Street	

Capacity Options

Junction	Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
6a	**C**	0.00	99999.00
6a	**D**	0.00	99999.00
6a	**E**	0.00	99999.00
6b	**E**	0.00	99999.00
6b	**F**	0.00	99999.00
6b	**G**	0.00	99999.00

Mini Roundabout Geometry

Junction	Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
6a	C	5.20	5.20	6.90	3.33	13.82	7.00	0.00	
6a	D	6.00	6.00	6.20	3.69	16.94	16.30	0.00	
6a	E	7.40	7.40	7.40	0.00	13.91	7.40	0.00	✓
6b	E	5.80	5.80	5.80	0.00	11.06	10.60	0.00	✓
6b	F	6.00	6.00	6.00	0.00	14.38	10.00	0.00	✓
6b	G	5.00	5.00	5.00	0.00	15.97	13.00	0.00	

Pedestrian Crossings

Junction	Arm	Crossing Type
6a	C	Puffin
6a	D	Puffin
6a	E	None
6b	E	None
6b	F	Puffin
6b	G	Puffin

Pelican/ Puffin Crossings

Junction	Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
6a	C	3.00	2.90	1.00	6.00	6.00	7.00	4.00
6a	D	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	F	3.00	2.90	1.00	6.00	6.00	7.00	3.00
6b	G	3.00	2.90	1.00	6.00	6.00	7.00	2.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Junction	Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
6a	C		(calculated)	(calculated)	0.647	1031.982
6a	D		(calculated)	(calculated)	0.753	1198.780
6a	E		(calculated)	(calculated)	0.593	1255.923
6b	E		(calculated)	(calculated)	0.517	1035.020

6b	**F**		(calculated)	(calculated)	0.526	1026.383
6b	**G**		(calculated)	(calculated)	0.621	1011.993

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
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
6a	**C**	FLAT		200.00	100.000
6a	**D**	FLAT	✓	856.00	100.000
6a	**E**	FLAT		200.00	100.000
6b	**E**	FLAT		100.00	100.000
6b	**F**	FLAT	✓	1025.00	100.000
6b	**G**	FLAT	✓	402.00	100.000

Pedestrian Flows

General Flows Data

Junction	Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
6a	**C**	FLAT	0.00
6a	**D**	FLAT	0.00
6a	**E**	-	-
6b	**E**	-	-
6b	**F**	FLAT	0.00
6b	**G**	FLAT	0.00

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.000	580.000	326.000
	F	909.000	0.000	116.000
	G	314.000	88.000	0.000

Turning Proportions (PCU) - Junction 6b (for whole period)

		To		
		E	F	G
From	E	0.00	0.64	0.36
	F	0.89	0.00	0.11
	G	0.78	0.22	0.00

Turning Counts / Proportions (PCU/hr) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.000	305.000	495.000
	D	444.000	0.000	412.000
	E	611.000	612.000	0.000

Turning Proportions (PCU) - Junction 6a (for whole period)

		To		
		C	D	E
From	C	0.00	0.38	0.62
	D	0.52	0.00	0.48
	E	0.50	0.50	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 6b (for whole period)

	To			
From		E	F	G

	E	1.000	1.000	1.000
	F	1.000	1.000	1.000
	G	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6b (for whole period)

		To		
		E	**F**	**G**
From	**E**	0.0	0.0	0.0
	F	0.0	0.0	0.0
	G	0.0	0.0	0.0

Average PCU Per Vehicle - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	1.000	1.000	1.000
	D	1.000	1.000	1.000
	E	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 6a (for whole period)

		To		
		C	**D**	**E**
From	**C**	0.0	0.0	0.0
	D	0.0	0.0	0.0
	E	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
6a	**C**	0.21	4.69	0.26	A
6a	**D**	0.77	14.39	3.37	B
6a	**E**	0.20	4.54	0.25	A
6b	**E**	0.10	4.05	0.11	A
6b	**F**	1.02	145.57	41.33	F

6b	**G**	0.87	55.22	5.79	F

UK and Ireland Office Locations