

B8 Warehouse (Commercial) - Person Trip Rates

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Peter Brett Associates Caversham Bridge House Reading

Licence No: 706701

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

MULTI-MODAL OGVS**Calculation factor: 100 sqm****BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	2950	0.000	1	2950	0.000	1	2950	0.000
06:00 - 07:00	1	2950	0.068	1	2950	0.000	1	2950	0.068
07:00 - 08:00	4	14419	0.028	4	14419	0.023	4	14419	0.051
08:00 - 09:00	4	14419	0.033	4	14419	0.016	4	14419	0.049
09:00 - 10:00	4	14419	0.031	4	14419	0.028	4	14419	0.059
10:00 - 11:00	4	14419	0.043	4	14419	0.035	4	14419	0.078
11:00 - 12:00	4	14419	0.038	4	14419	0.026	4	14419	0.064
12:00 - 13:00	4	14419	0.021	4	14419	0.023	4	14419	0.044
13:00 - 14:00	4	14419	0.042	4	14419	0.028	4	14419	0.070
14:00 - 15:00	4	14419	0.021	4	14419	0.021	4	14419	0.042
15:00 - 16:00	4	14419	0.033	4	14419	0.019	4	14419	0.052
16:00 - 17:00	4	14419	0.029	4	14419	0.023	4	14419	0.052
17:00 - 18:00	4	14419	0.023	4	14419	0.021	4	14419	0.044
18:00 - 19:00	4	14419	0.010	4	14419	0.016	4	14419	0.026
19:00 - 20:00	1	2950	0.000	1	2950	0.203	1	2950	0.203
20:00 - 21:00	1	2950	0.000	1	2950	0.102	1	2950	0.102
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.420			0.584			1.004

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.

B8 Warehouse (Commercial) - Person Trip Rates

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Peter Brett Associates Caversham Bridge House Reading

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TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

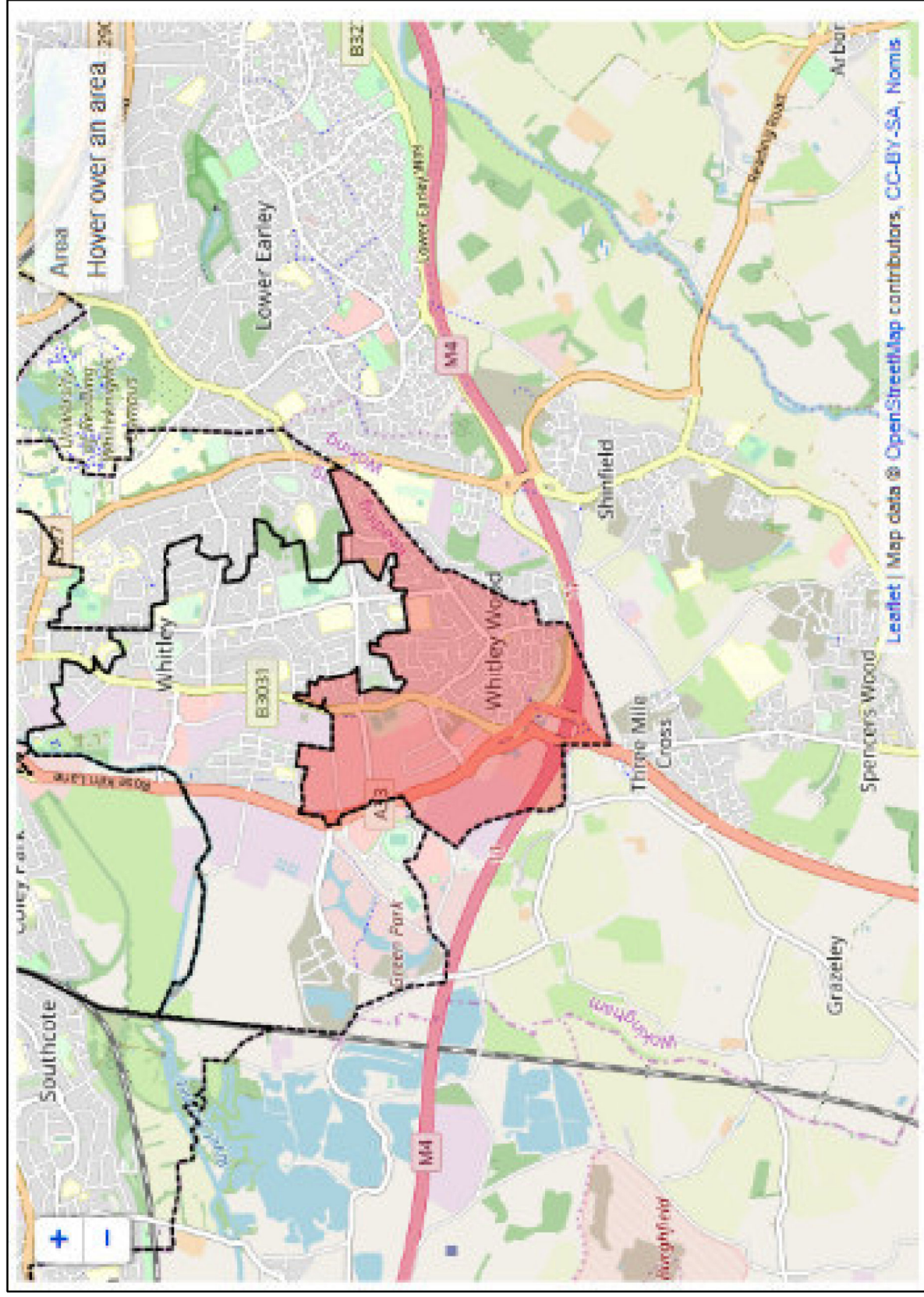
MULTI-MODAL TOTAL PEOPLE**Calculation factor: 100 sqm****BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	2950	0.203	1	2950	0.000	1	2950	0.203
06:00 - 07:00	1	2950	0.305	1	2950	0.034	1	2950	0.339
07:00 - 08:00	4	14419	0.147	4	14419	0.057	4	14419	0.204
08:00 - 09:00	4	14419	0.189	4	14419	0.047	4	14419	0.236
09:00 - 10:00	4	14419	0.163	4	14419	0.073	4	14419	0.236
10:00 - 11:00	4	14419	0.088	4	14419	0.073	4	14419	0.161
11:00 - 12:00	4	14419	0.073	4	14419	0.069	4	14419	0.142
12:00 - 13:00	4	14419	0.116	4	14419	0.095	4	14419	0.211
13:00 - 14:00	4	14419	0.244	4	14419	0.134	4	14419	0.378
14:00 - 15:00	4	14419	0.106	4	14419	0.163	4	14419	0.269
15:00 - 16:00	4	14419	0.055	4	14419	0.116	4	14419	0.171
16:00 - 17:00	4	14419	0.055	4	14419	0.142	4	14419	0.197
17:00 - 18:00	4	14419	0.054	4	14419	0.186	4	14419	0.240
18:00 - 19:00	4	14419	0.055	4	14419	0.097	4	14419	0.152
19:00 - 20:00	1	2950	0.237	1	2950	0.203	1	2950	0.440
20:00 - 21:00	1	2950	0.102	1	2950	0.136	1	2950	0.238
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.192			1.625			3.817

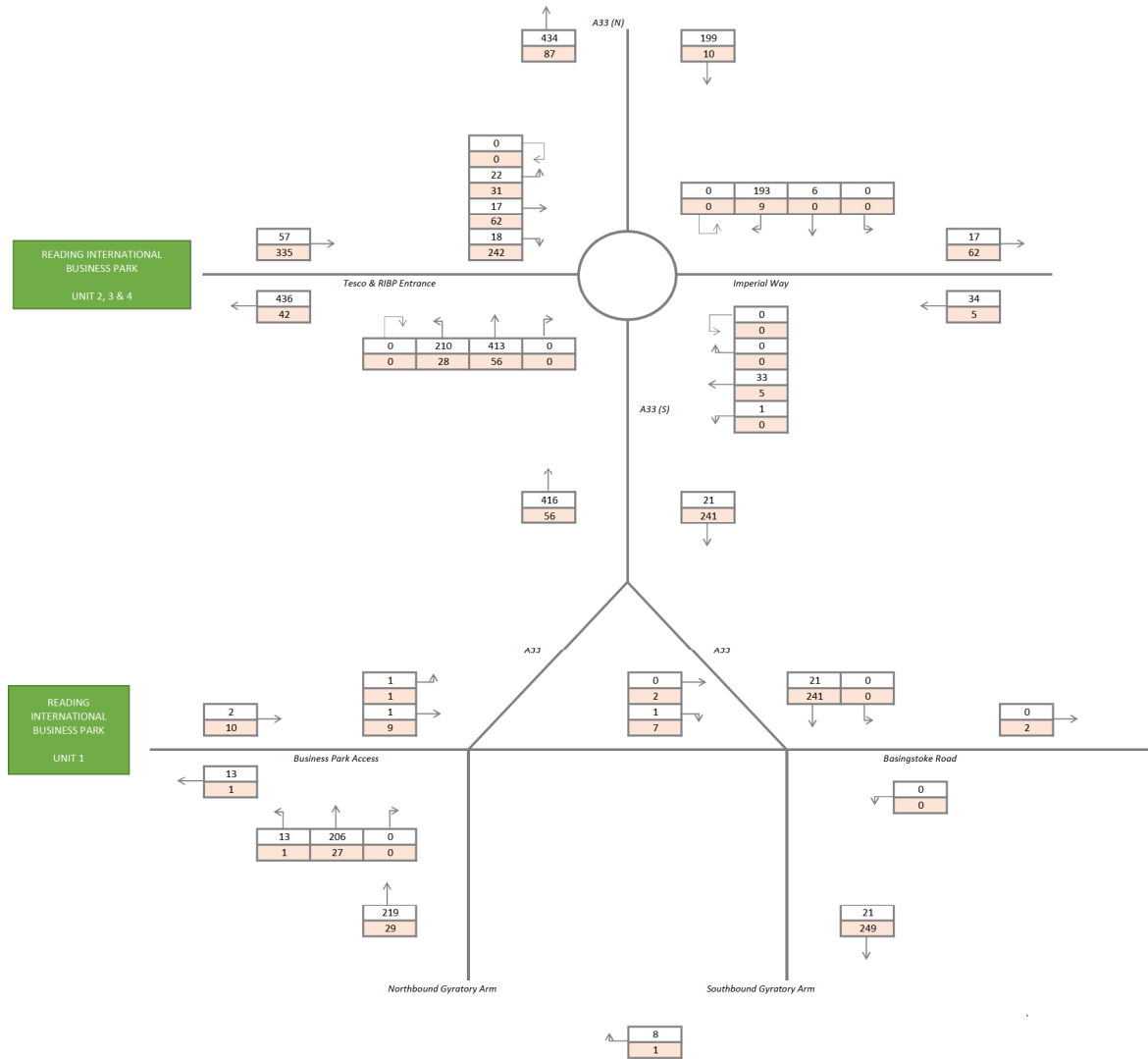
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are 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.

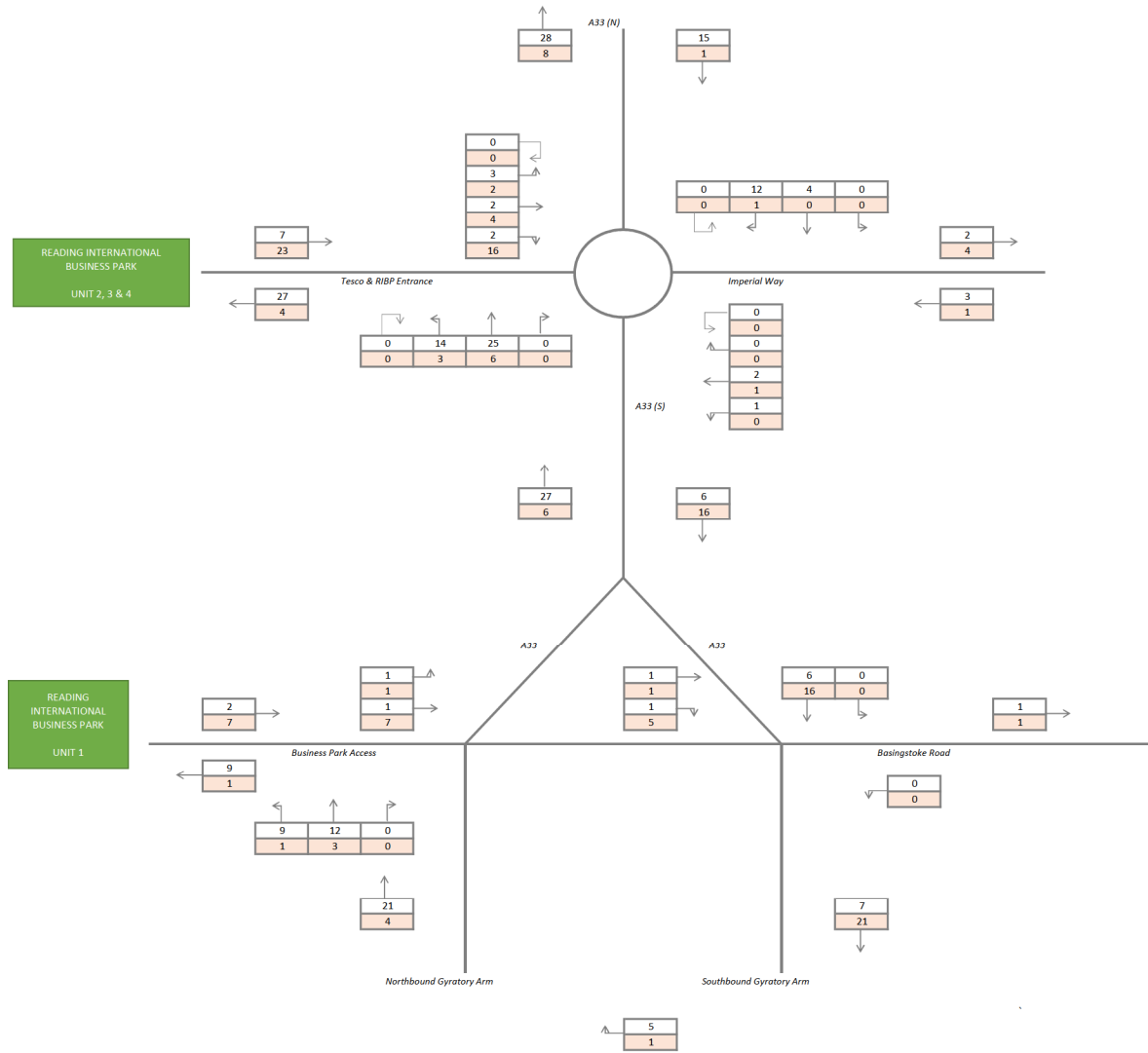
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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.

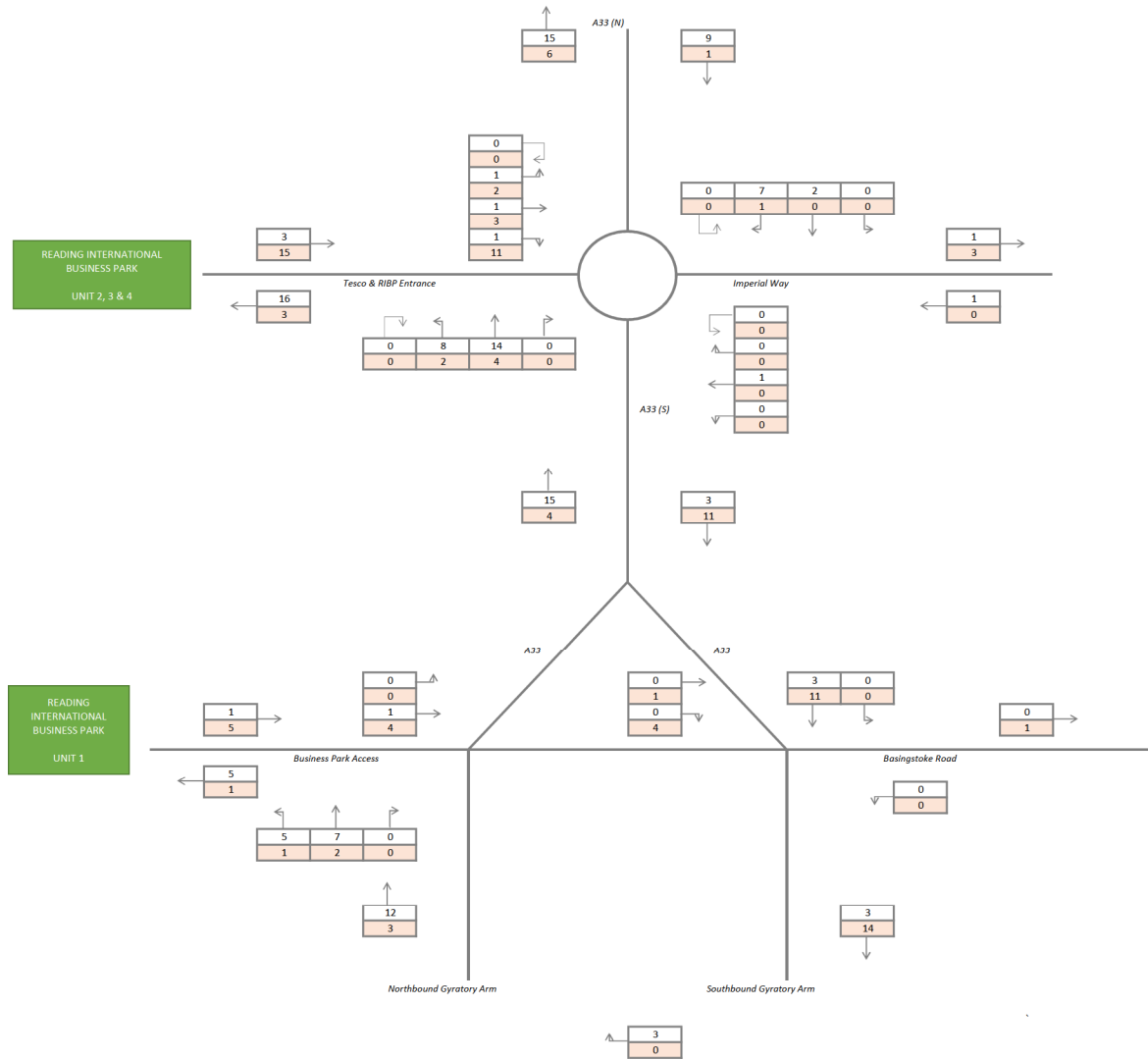
Appendix F MSOA Data



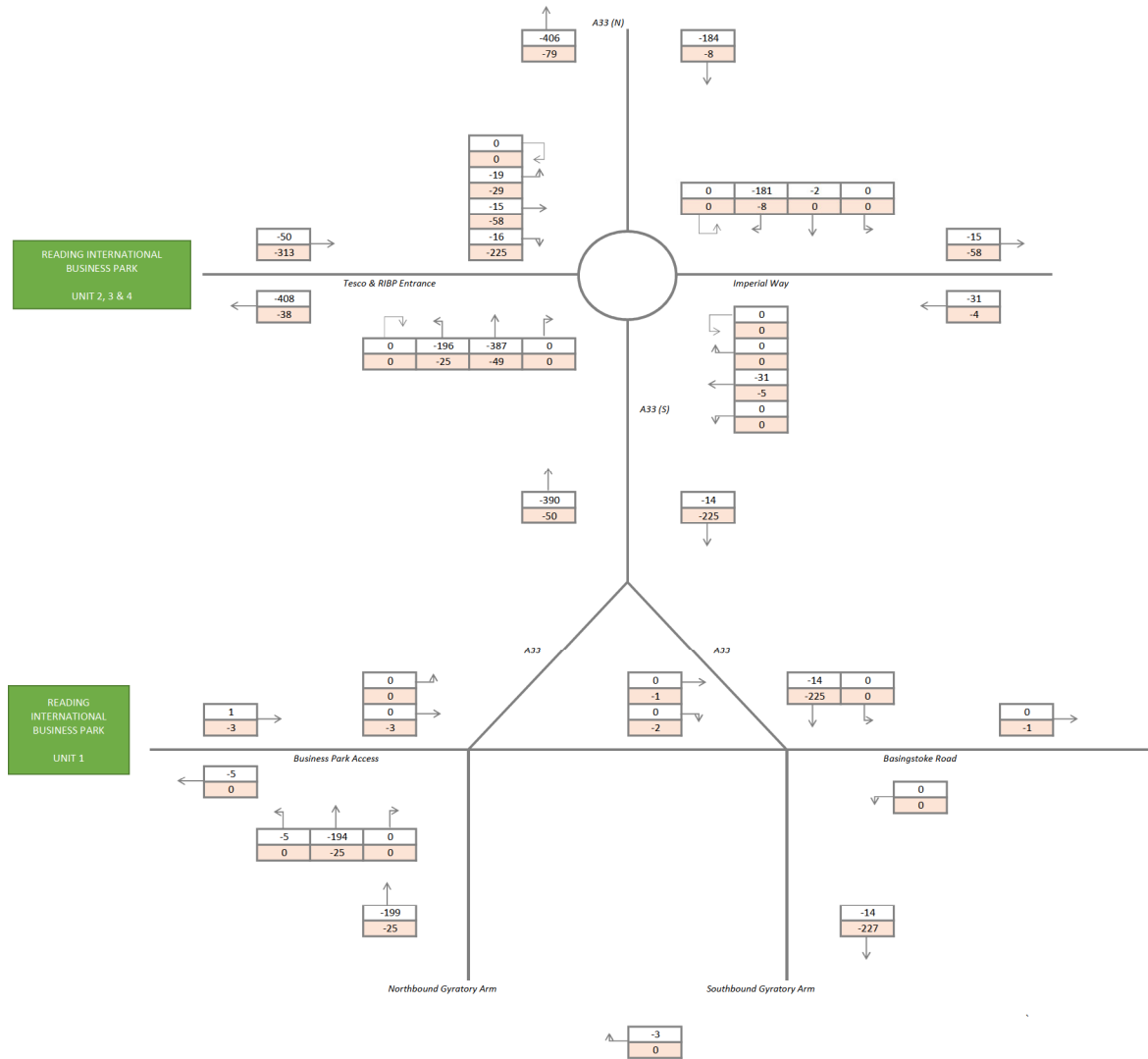
Appendix G Trip Distribution Diagrams

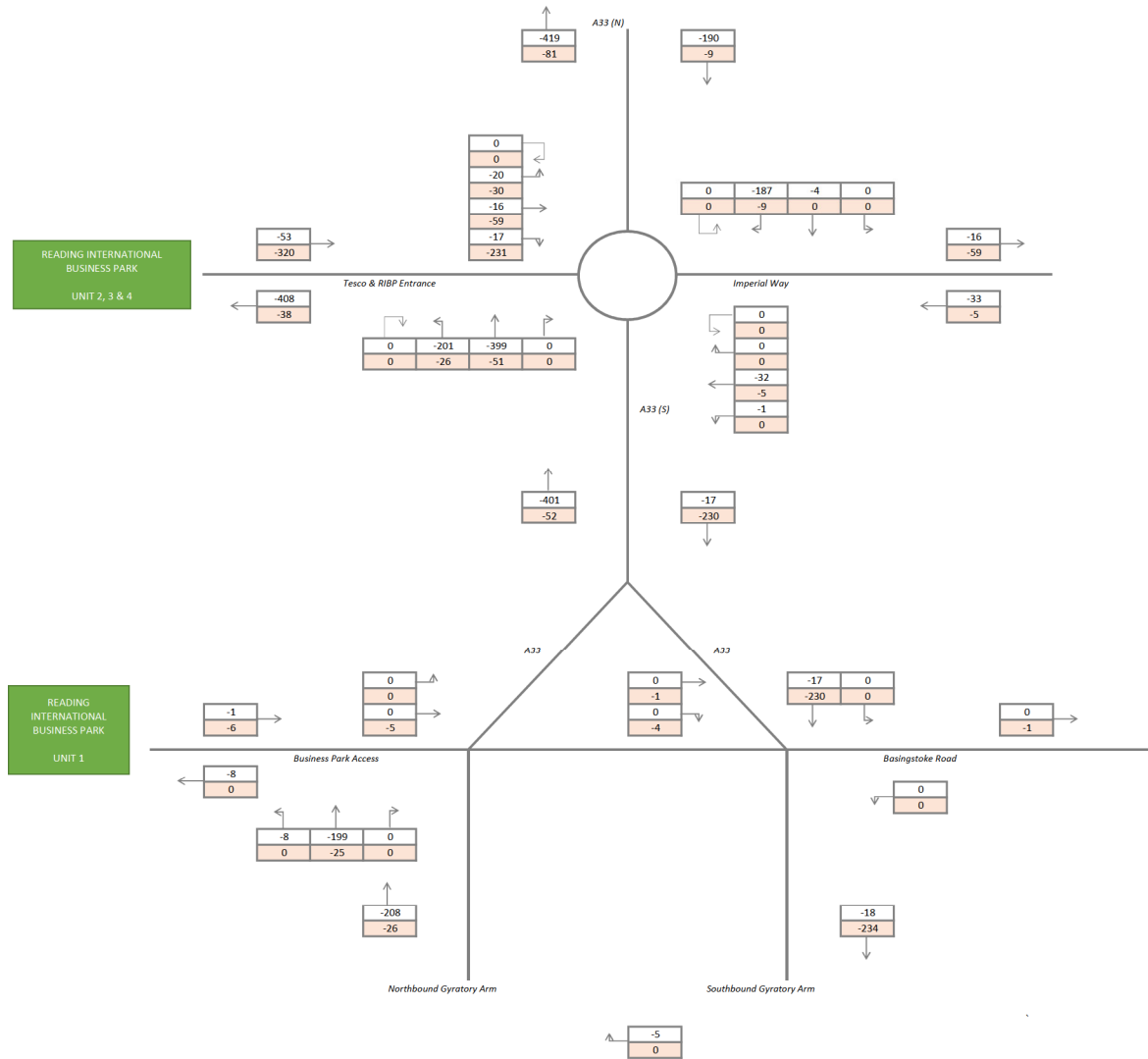






Appendix H Trip Distribution Comparison Diagrams





Appendix I ARCADY Results

Junctions 9					
ARCADY 9 - Roundabout Module					
Version: 9.5.1.7462					
© Copyright TRL Limited, 2019					
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The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution					

Filename: A33 - Imperial Way - Tesco Rbt (AM).j9

Path: X:\43337 - Reading International Business Park\5500 - Transport\Junction Models

Report generation date: 24/09/2019 12:50:51

»2019 Traffic Survey, AM

»2019 + B1 (Extant), AM

»2019 + B2, AM

»2019 + B8, AM

Summary of junction performance

	AM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2019 Traffic Survey				
Arm A	D1	4.9	13.92	0.83	B
Arm B		0.6	4.86	0.38	A
Arm C		10.6	14.52	0.92	B
Arm D		7.1	226.12	0.92	F
	2019 + B1 (Extant)				
Arm A	D2	12.2	30.57	0.94	D
Arm B		0.9	6.68	0.47	A
Arm C		352.7	427.07	1.24	F
Arm D		6.0	133.57	0.86	F
	2019 + B2				
Arm A	D3	5.3	14.87	0.84	B
Arm B		0.6	4.94	0.38	A
Arm C		13.1	17.90	0.94	C
Arm D		8.8	253.16	0.98	F
	2019 + B8				
Arm A	D4	5.1	14.45	0.84	B
Arm B		0.6	4.91	0.38	A
Arm C		11.9	16.34	0.93	C
Arm D		7.8	237.46	0.94	F

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

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

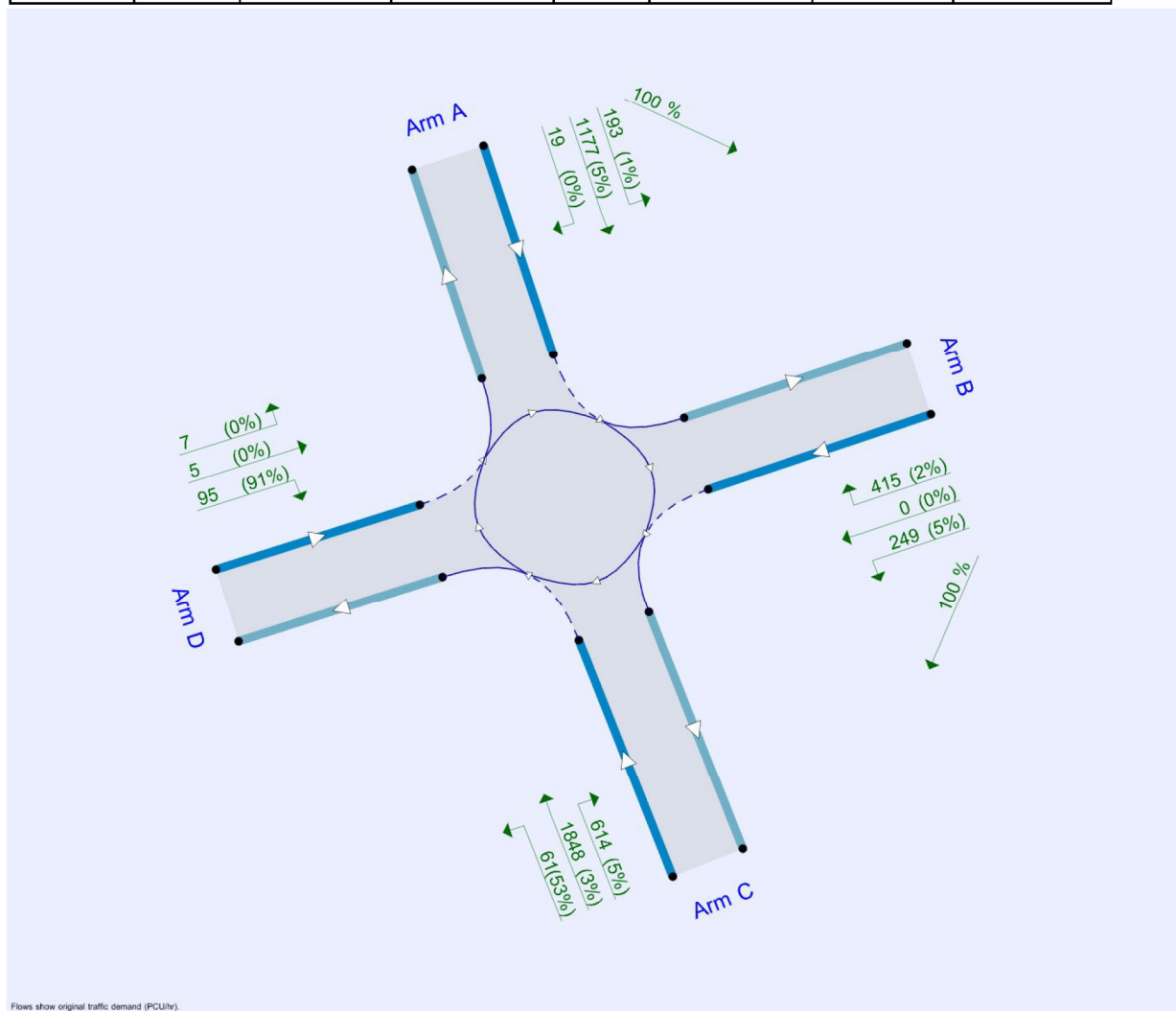
File summary

File Description

Title	A33 / Imperial Way / Tesco Rbt (AM Only)
Location	Reading
Site number	1
Date	12/07/2019
Version	V1
Status	Working
Identifier	
Client	Arlington
Jobnumber	43337
Enumerator	CORP\bhouse
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Traffic Survey	AM	ONE HOUR	07:45	09:15	15	✓
D2	2019 + B1 (Extant)	AM	ONE HOUR	07:45	09:15	15	✓
D3	2019 + B2	AM	ONE HOUR	07:45	09:15	15	✓
D4	2019 + B8	AM	ONE HOUR	07:45	09:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2019 Traffic Survey, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm B - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	17.69	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	A33 North	
B	Imperial Way	
C	A33 South	
D	Tesco & RIBP	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A	6.70	9.15	8.4	36.0	52.0	16.0	
B	4.18	7.91	31.8	51.0	52.0	21.0	
C	10.51	11.24	2.0	22.0	52.0	17.0	
D	5.81	9.73	5.0	46.0	52.0	15.0	

Bypass

Arm	Arm has bypass	Bypass utilisation (%)
A	✓	100
B	✓	100
C		
D		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.784	2584
B	0.713	2215
C	0.939	3449
D	0.727	2264

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

Arm Capacity Adjustments

Arm	Type	Reason	Direct capacity adjustment (PCU/hr)	Percentage capacity adjustment (%)
A	Percentage			80.00
D	Direct		125	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Traffic Survey	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1385	100.000
B		ONE HOUR	✓	664	100.000
C		ONE HOUR	✓	2501	100.000
D		ONE HOUR	✓	104	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		A	B	C	D
From	A	5	193	1175	12
	B	415	0	249	0
	C	1834	614	0	53
	D	6	4	94	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		A	B	C	D
From	A	25	1	5	0
	B	2	0	5	0
	C	3	5	0	53
	D	0	0	91	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.83	13.92	4.9	B	1271	1641
B	0.38	4.86	0.6	A	609	571
C	0.92	14.52	10.6	B	2295	3442
D	0.92	226.12	7.1	F	95	143

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1043	897	224	145	0	534	1732	0.518	893	1696	0.0	1.1	4.482	A
B	500	312	78	187	145	963	1529	0.204	311	464	0.0	0.3	3.013	A
C	1883	1883	471	0	187	324	3144	0.599	1877	950	0.0	1.5	2.945	A
D	78	78	20	0	0	2152	824	0.095	78	49	0.0	0.2	8.463	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1245	1072	268	174	0	638	1667	0.643	1069	2028	1.1	1.9	6.288	A
B	597	373	93	224	174	1152	1394	0.268	373	554	0.3	0.4	3.593	A
C	2248	2248	562	0	224	388	3084	0.729	2244	1137	1.5	2.8	4.435	A
D	93	93	23	0	0	2573	518	0.180	93	58	0.2	0.4	14.839	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1525	1312	328	212	0	759	1591	0.825	1302	2465	1.9	4.6	12.595	B
B	731	457	114	274	212	1387	1227	0.373	456	673	0.4	0.6	4.759	A
C	2754	2754	688	0	274	475	3003	0.917	2725	1369	2.8	9.8	12.425	B
D	115	115	29	0	0	3129	125	0.916	95	71	0.4	5.3	163.200	F

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1525	1312	328	212	0	776	1580	0.831	1311	2486	4.6	4.9	13.916	B
B	731	457	114	274	212	1408	1212	0.377	457	679	0.6	0.6	4.863	A
C	2754	2754	688	0	274	476	3002	0.917	2751	1389	9.8	10.6	14.522	B
D	115	115	29	0	0	3155	125	0.916	107	71	5.3	7.1	226.120	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1245	1072	268	174	0	673	1645	0.651	1083	2057	4.9	2.0	6.863	A
B	597	373	93	224	174	1192	1366	0.273	374	564	0.6	0.4	3.707	A
C	2248	2248	562	0	224	389	3083	0.729	2279	1176	10.6	2.9	4.840	A
D	93	93	23	0	0	2609	492	0.190	120	59	7.1	0.4	18.227	C

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1043	897	224	145	0	538	1729	0.519	901	1706	2.0	1.1	4.582	A
B	500	312	78	187	145	972	1522	0.205	313	467	0.4	0.3	3.037	A
C	1883	1883	471	0	187	326	3143	0.599	1888	960	2.9	1.6	3.003	A
D	78	78	20	0	0	2165	815	0.096	79	49	0.4	0.2	8.604	A

2019 + B1 (Extant), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm B - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	253.00	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2019 + B1 (Extant)	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1584	100.000
B		ONE HOUR	✓	698	100.000
C		ONE HOUR	✓	3123	100.000
D		ONE HOUR	✓	162	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	5	193	1181	205
	B	415	0	250	33
	C	2247	614	0	262
	D	28	21	113	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		A	B	C	D
	A	25	1	5	0
	B	2	0	5	0
	C	3	5	0	53
	D	0	0	91	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.94	30.57	12.2	D	1454	1915
B	0.47	6.68	0.9	A	640	617
C	1.24	427.07	352.7	F	2866	4299
D	0.86	133.57	6.0	F	149	223

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1193	1047	262	145	0	559	1717	0.610	1041	2016	0.0	1.6	5.506	A
B	525	337	84	188	145	1125	1414	0.239	336	475	0.0	0.3	3.400	A
C	2351	2351	588	0	188	493	2986	0.788	2336	968	0.0	3.8	5.763	A
D	122	122	30	0	0	2455	604	0.202	120	374	0.0	0.4	11.118	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1424	1250	313	174	0	657	1655	0.756	1244	2380	1.6	3.1	9.020	A
B	627	403	101	225	174	1343	1258	0.320	402	559	0.3	0.5	4.281	A
C	2808	2808	702	0	225	590	2895	0.970	2749	1155	3.8	18.4	20.946	C
D	146	146	36	0	0	2896	284	0.514	141	444	0.4	1.5	36.888	E

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1744	1532	383	212	0	681	1640	0.934	1502	2483	3.1	10.5	23.374	C
B	769	493	123	275	212	1617	1063	0.464	492	566	0.5	0.9	6.399	A
C	3438	3438	860	0	275	718	2774	1.240	2770	1390	18.4	185.4	137.572	F
D	178	178	45	0	0	2999	209	0.855	164	490	1.5	4.9	100.993	F

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1744	1532	383	212	0	688	1635	0.937	1525	2485	10.5	12.2	30.568	D
B	769	493	123	275	212	1646	1042	0.473	493	567	0.9	0.9	6.676	A
C	3438	3438	860	0	275	723	2769	1.242	2769	1416	185.4	352.7	349.000	F
D	178	178	45	0	0	2999	208	0.856	174	493	4.9	6.0	133.570	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1424	1250	313	174	0	689	1635	0.765	1285	2476	12.2	3.5	11.695	B
B	627	403	101	225	174	1389	1225	0.329	404	585	0.9	0.5	4.473	A
C	2808	2808	702	0	225	598	2887	0.973	2878	1195	352.7	335.1	427.070	F
D	146	146	36	0	0	3016	196	0.742	149	461	6.0	5.2	122.514	F

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1193	1047	262	145	0	690	1634	0.641	1054	2478	3.5	1.9	6.536	A
B	525	337	84	188	145	1143	1401	0.241	338	601	0.5	0.3	3.450	A
C	2351	2351	588	0	188	497	2982	0.788	2972	983	335.1	179.8	312.517	F
D	122	122	30	0	0	3040	179	0.683	127	430	5.2	3.9	112.657	F

2019 + B2, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm B - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	20.72	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2019 + B2	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1401	100.000
B		ONE HOUR	✓	664	100.000
C		ONE HOUR	✓	2539	100.000
D		ONE HOUR	✓	111	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	5	193	1179	24
	B	415	0	249	0
	C	1859	614	0	66
	D	9	6	96	0

Vehicle Mix

Heavy Vehicle Percentages

From	To				
	A	B	C	D	
	A	25	1	5	0
	B	2	0	5	0
	C	3	5	0	53
	D	0	0	91	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.84	14.87	5.3	B	1286	1663
B	0.38	4.94	0.6	A	609	571
C	0.94	17.90	13.1	C	2330	3495
D	0.98	253.16	8.8	F	102	153

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1055	909	227	145	0	537	1730	0.526	905	1717	0.0	1.2	4.552	A
B	500	312	78	187	145	976	1519	0.206	311	465	0.0	0.3	3.037	A
C	1911	1911	478	0	187	333	3136	0.610	1905	955	0.0	1.6	3.036	A
D	84	84	21	0	0	2171	811	0.103	83	67	0.0	0.2	8.405	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1259	1086	271	174	0	642	1665	0.652	1083	2052	1.2	1.9	6.460	A
B	597	373	93	224	174	1168	1383	0.270	373	556	0.3	0.4	3.633	A
C	2283	2283	571	0	224	399	3074	0.742	2277	1142	1.6	2.9	4.681	A
D	100	100	25	0	0	2595	502	0.199	99	81	0.2	0.4	15.154	C

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1543	1330	333	212	0	759	1591	0.836	1318	2490	1.9	4.9	13.288	B
B	731	457	114	274	212	1404	1215	0.376	456	673	0.4	0.6	4.833	A
C	2795	2795	699	0	274	488	2991	0.935	2760	1372	2.9	11.9	14.478	B
D	122	122	31	0	0	3150	125	0.978	99	98	0.4	6.2	176.058	F

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1543	1330	333	212	0	777	1579	0.842	1329	2515	4.9	5.3	14.873	B
B	731	457	114	274	212	1425	1200	0.381	457	681	0.6	0.6	4.943	A
C	2795	2795	699	0	274	489	2990	0.935	2791	1393	11.9	13.1	17.904	C
D	122	122	31	0	0	3180	125	0.978	112	99	6.2	8.8	253.161	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1259	1086	271	174	0	684	1638	0.663	1099	2090	5.3	2.1	7.165	A
B	597	373	93	224	174	1214	1350	0.276	374	569	0.6	0.4	3.764	A
C	2283	2283	571	0	224	400	3073	0.743	2323	1187	13.1	3.1	5.269	A
D	100	100	25	0	0	2641	469	0.213	133	82	8.8	0.5	20.020	C

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1055	909	227	145	0	541	1727	0.526	913	1727	2.1	1.2	4.661	A
B	500	312	78	187	145	986	1512	0.207	313	468	0.4	0.3	3.064	A
C	1911	1911	478	0	187	335	3134	0.610	1917	964	3.1	1.6	3.100	A
D	84	84	21	0	0	2184	801	0.104	85	68	0.5	0.2	8.561	A

2019 + B8, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm B - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	19.20	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2019 + B8	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1394	100.000
B		ONE HOUR	✓	664	100.000
C		ONE HOUR	✓	2523	100.000
D		ONE HOUR	✓	107	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	5	193	1177	19
	B	415	0	249	0
	C	1848	614	0	61
	D	7	5	95	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		A	B	C	D
	A	25	1	5	0
	B	2	0	5	0
	C	3	5	0	53
	D	0	0	91	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.84	14.45	5.1	B	1279	1653
B	0.38	4.91	0.6	A	609	571
C	0.93	16.34	11.9	C	2315	3473
D	0.94	237.46	7.8	F	98	147

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1049	904	226	145	0	535	1731	0.522	900	1707	0.0	1.1	4.520	A
B	500	312	78	187	145	970	1524	0.205	311	464	0.0	0.3	3.026	A
C	1899	1899	475	0	187	329	3139	0.605	1893	953	0.0	1.6	2.999	A
D	81	81	20	0	0	2162	817	0.099	80	60	0.0	0.2	8.460	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1253	1080	270	174	0	640	1666	0.648	1077	2041	1.1	1.9	6.382	A
B	597	373	93	224	174	1161	1388	0.269	373	555	0.3	0.4	3.615	A
C	2268	2268	567	0	224	394	3079	0.737	2263	1140	1.6	2.9	4.575	A
D	96	96	24	0	0	2585	509	0.189	95	72	0.2	0.4	15.050	C

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1535	1322	331	212	0	759	1591	0.831	1311	2479	1.9	4.8	12.979	B
B	731	457	114	274	212	1397	1220	0.375	456	673	0.4	0.6	4.801	A
C	2778	2778	694	0	274	482	2996	0.927	2746	1371	2.9	10.9	13.556	B
D	118	118	29	0	0	3141	125	0.942	97	87	0.4	5.6	168.626	F

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1535	1322	331	212	0	777	1580	0.837	1321	2501	4.8	5.1	14.449	B
B	731	457	114	274	212	1418	1205	0.379	457	680	0.6	0.6	4.909	A
C	2778	2778	694	0	274	483	2995	0.928	2774	1391	10.9	11.9	16.336	C
D	118	118	29	0	0	3169	125	0.942	109	88	5.6	7.8	237.459	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1253	1080	270	174	0	678	1642	0.658	1092	2074	5.1	2.1	7.021	A
B	597	373	93	224	174	1203	1358	0.275	374	567	0.6	0.4	3.738	A
C	2268	2268	567	0	224	396	3077	0.737	2304	1182	11.9	3.0	5.077	A
D	96	96	24	0	0	2627	479	0.201	126	73	7.8	0.4	19.093	C

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1049	904	226	145	0	540	1728	0.523	908	1717	2.1	1.2	4.626	A
B	500	312	78	187	145	980	1517	0.206	313	467	0.4	0.3	3.051	A
C	1899	1899	475	0	187	331	3138	0.605	1905	962	3.0	1.6	3.058	A
D	81	81	20	0	0	2176	807	0.100	82	60	0.4	0.2	8.611	A

Junctions 9					
ARCADY 9 - Roundabout Module					
Version: 9.5.1.7462					
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Filename: A33 - Imperial Way - Tesco Rbt (PM).j9

Path: X:\43337 - Reading International Business Park\5500 - Transport\Junction Models

Report generation date: 24/09/2019 12:54:13

»2019 Traffic Survey, PM

»2019 + B1 (Extant), PM

»2019 + B2, PM

»2019 + B8, PM

Summary of junction performance

	PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2019 Traffic Survey				
Arm A	D1	8.3	13.45	0.90	B
Arm B		5.9	53.99	0.88	F
Arm C		6.3	11.11	0.86	B
Arm D		0.5	13.49	0.25	B
	2019 + B1 (Extant)				
Arm A	D2	51.1	72.46	1.03	F
Arm B		40.8	311.96	1.25	F
Arm C		7.5	12.79	0.89	B
Arm D		11.2	85.04	0.93	F
	2019 + B2				
Arm A	D3	9.0	14.70	0.91	B
Arm B		7.1	64.40	0.91	F
Arm C		6.5	11.43	0.87	B
Arm D		0.6	14.31	0.30	B
	2019 + B8				
Arm A	D4	8.8	14.30	0.90	B
Arm B		6.6	60.69	0.90	F
Arm C		6.4	11.32	0.86	B
Arm D		0.6	14.05	0.29	B

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

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

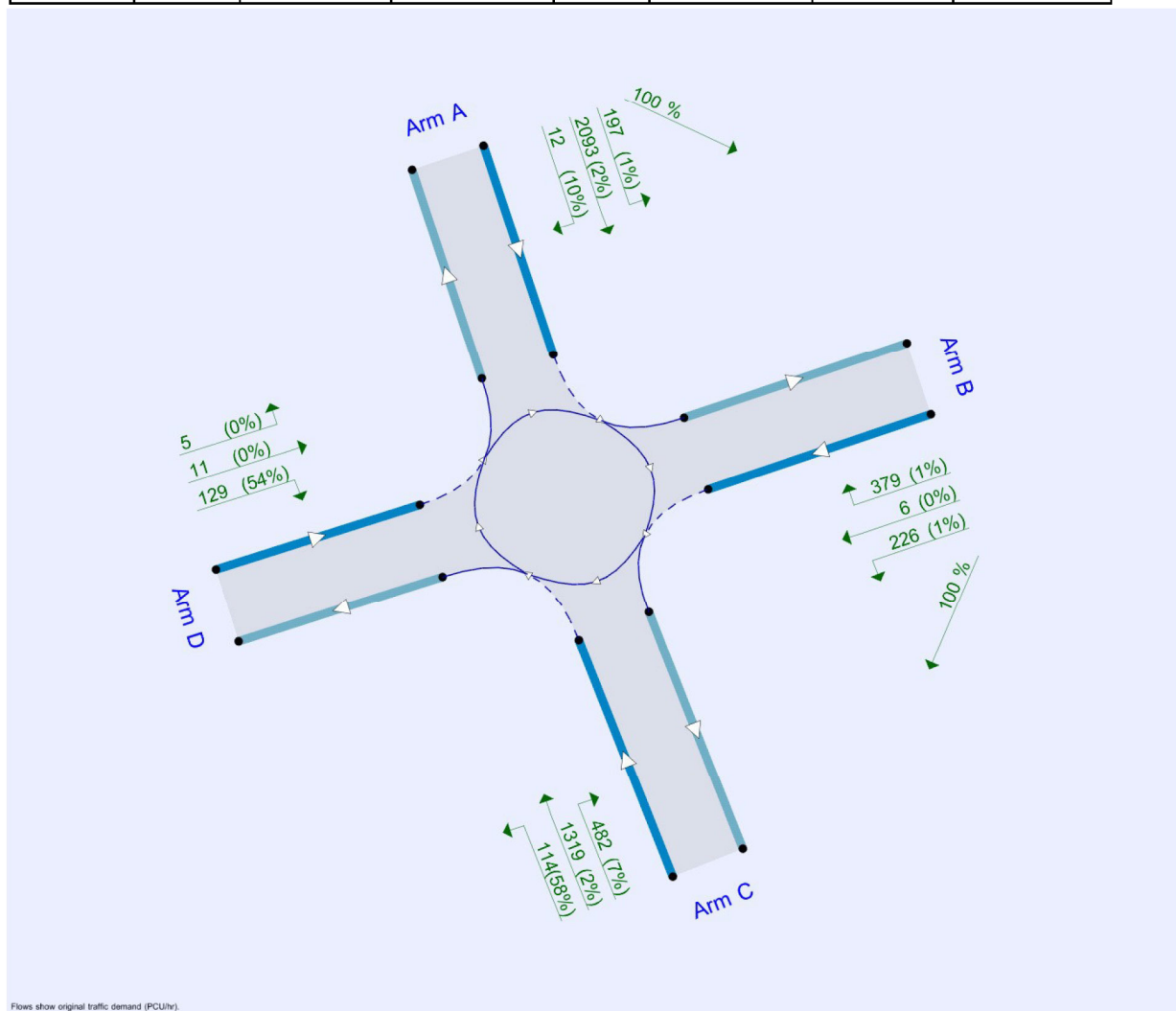
File summary

File Description

Title	A33 / Imperial Way / Tesco Rbt (PM Only)
Location	Reading
Site number	1
Date	12/07/2019
Version	V1
Status	Working
Identifier	
Client	Arlington
Jobnumber	43337
Enumerator	CORP\bhouse
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Traffic Survey	PM	ONE HOUR	16:45	18:15	15	✓
D2	2019 + B1 (Extant)	PM	ONE HOUR	16:45	18:15	15	✓
D3	2019 + B2	PM	ONE HOUR	16:45	18:15	15	✓
D4	2019 + B8	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2019 Traffic Survey, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm B - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D	17.55	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	A33 North	
B	Imperial Way	
C	A33 South	
D	Tesco & RIBP	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A	6.70	9.15	8.4	36.0	52.0	16.0	
B	4.18	7.91	31.8	51.0	52.0	21.0	
C	10.51	11.24	2.0	22.0	52.0	17.0	
D	5.81	9.73	5.0	46.0	52.0	15.0	

Bypass

Arm	Arm has bypass	Bypass utilisation (%)
A	✓	100
B	✓	100
C		
D		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.784	2584
B	0.713	2215
C	0.939	3449
D	0.727	2264

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