



ODYSSEY MARKIDES

TECHNICAL NOTE

PROJECT	:	Stevenage Garden Centre
JOB NO.	:	14-066
NOTE TITLE	:	Site Access and Parking for a Foodstore Development
AUTHOR	:	J Baker
APPROVED	:	A Markides
DATE	:	21/03/14

1.0 Introduction

- 1.1 Odyssey Markides have been instructed by Amentum to produce a technical note examining the level of parking and the access arrangements required for a 6500sqm foodstore on the site currently occupied by Stevenage Garden Centre. The garden centre is located to the north of Stevenage and is accessed from Graveley Road (see Figure 1 for location plan).
- 1.2 The site is currently occupied by Stevenage Garden Centre. The existing garden centre currently has a retail sales area of 7658sqm, comprised of approximately 2810sqm of covered floorspace (either within buildings or under canopies) and the remainder as open air sales space. An area approaching 6000sqm is available for car parking on the site. A small part of this is formally laid out parking space, but the majority is unmarked hard standing.
- 1.3 In 2007, consent was granted to expand the garden centre to provide a total sales area of 13535sqm, with 6099sqm of this being within buildings and areas covered by canopies. In addition, it was proposed to formalise the parking provision on site to provide a total of 403 spaces. In 2011 this consent was extended for a further 3 years.

2.0 EXISTING TRAFFIC GENERATION

- 2.1 Vehicular access to the site is currently via a simple priority junction with Graveley Road. In order to identify the level of traffic that the site currently generates and to obtain data to allow the capacity of the access to be assessed, manual classified turning counts at the site access were undertaken between 16:30 and 18:30 on Friday 21st February 2011 and between 11:00 and 14:00 on Saturday 22nd February 2011 (see Appendix A).

- 2.2 The peak periods for through traffic at the site access junction from this survey have been identified as 16:45 to 17:45 on the Friday and 12:45 to 13:45 on the Saturday. The turning flows at the access can be seen in Figure 2 and the observed traffic generation for the existing garden centre during these time periods is as shown in Table 2.1.

Table 2.1: Existing Traffic Generation

	In	Out	Total
Friday 16:45-17:45	6	7	13
Saturday 12:45-13:45	3	7	10

- 2.3 An increase in traffic would be expected as a result of implementing the previous consent for expansion of the garden centre use on the site. The Transport Assessment (Appendix B) for this proposal concluded that the peak increase in trips as a result on a Friday and Saturday as the result of the expansion would be as shown in Table 2.2.

Table 2.2: Additional Traffic Generation Resulting from Garden Centre Expansion

	In	Out	Total
Friday 16:00-17:00	9	12	21
Saturday 14:15-15:15	37	39	76

- 2.4 Whilst the peak hours for do not coincide, if we were to add the two sets of flows together it would give a robust estimate of the level of traffic generation for the site that has previously been found acceptable in planning terms. This is shown in Table 2.3.

Table 2.3: Potential Peak Hour Garden Centre Traffic Generation

	In	Out	Total
Friday Peak	15	19	34
Saturday Peak	40	46	86

3.0 Foodstore Traffic Generation

- 3.1 In order to estimate the level of traffic that a 6500sqm foodstore on the site could generate, reference has been made to the TRICS trip rate database. Sites in the South East of England, with a size range of plus or minus 2000sqm of that proposed, have been selected to obtain representative trip rates. Details of the sites and the trip rates can be found in Appendix C. Table 3.1 shows the trip generation in the nearest hour to the peaks identified above.

Table 3.1: Potential Foodstore Traffic Generation

	In	Out	Total
Friday Peak	398	410	807
Saturday Peak	445	445	890

- 3.2 'TRICS Research Report 95/2 - Pass by and Diverted Traffic' provides detailed information on the characteristics of trips made to and from foodstores. Of particular relevance from this report are the following:

- All research confirms the view that very little new traffic is generated by new store developments. In most circumstances 10% or less of the total trips are completely new and in practice the value is so small it can be discounted.
- Non-primary trips (those that already pass-by on the road outside a site or take a short diversion) are accepted to form 30% of all trips.

- 3.3 What this means is that a whilst a new foodstore on the site would result in an increase in traffic at the site access, there is the potential that traffic will decrease on other parts of the road network as a result of the proposals. At the site access, there will be an increase in the flows turning in and out of the site, but as part of that traffic would already have been passing on Graveley Road there would be a reduction in through movements at the site access. In order to provide a robust assessment it has been assumed that 'pass-by' trips will form 15% of the trip generation for the site (although in reality it could be higher than this).
- 3.4 Applying this pass-by traffic proportion results in the 'with foodstore' turning flows shown in Figure 3.

4.0 Site Access Capacity

- 4.1 Industry standard software, PICADY, has been used to assess the capacity of the current site access under observed traffic flows. The output can be seen in Appendix D and the results are summarised in Table 4.1.

Table 4.1 : Site Access – Current Performance

	Friday Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Site Access – right turn	0.021	0.02	0.023	0.02
Site Access – left turn	0.020	0.02	0.022	0.02
Graveley Rd – right turn into site	0.002	0.0	0.020	0.02

- 4.2 Two of the most useful output from PICADY are the Ratio of Flow to Capacity (RFC) and the queue length. RFC's below 0.85 show that a junction operates well within capacity, with little or no queuing expected. An RFC of between 0.85 and 1.0 indicates that the junction is performing above its practical capacity and queues and delays will begin to be experienced. RFC's over 1.0 show that the junction is over-capacity and queues would be expected to increase rapidly with any increase in traffic. It can be seen from Table 4.1 that site access currently operates well within capacity with no queues.
- 4.3 The capacity tests of the existing site access layout have been repeated with the anticipated foodstore traffic flows in place. The results of these tests are also available in Appendix D and summarised in Table 4.2.

Table 4.2 : Site Access – With Foodstore Traffic

	Friday Peak		Saturday Peak	
	RFC	Queue	RFC	Queue
Site Access – right turn	0.522	1.07	0.669	1.91
Site Access – left turn	0.577	1.33	0.598	1.44
Graveley Rd – right turn into site	0.157	0.27	0.432	0.91

- 4.4 It can be seen that with the foodstore in place the existing site access layout would continue to operate within capacity. It should also be noted that the site has an extensive frontage onto Graveley Road and if it were felt necessary to increase the capacity of the existing simple priority junction further this could easily be achieved by providing a ghost island for right turning traffic into the site and increasing the site exit to two lanes.
- 4.5 On the basis of the above analysis, we are of the view that there would be no issues with site access capacity if a foodstore of 6500sqm were provided on this site.

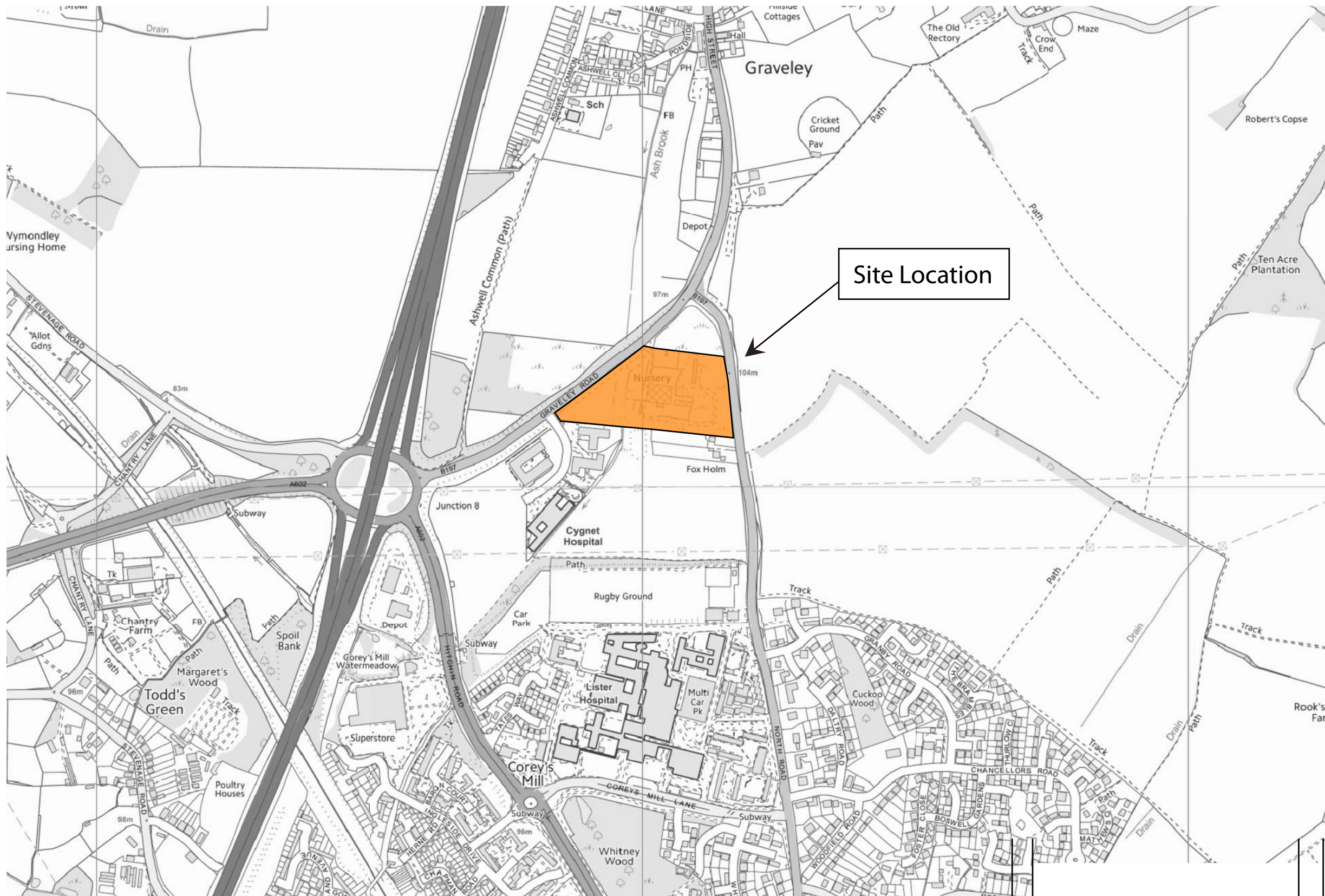
5.0 Parking

- 5.1 Parking standards for new development in Stevenage are set out in 'Parking Provision Supplementary Planning Document Adopted January 2012'. This identifies that for foodstores of more than 1000sqm GFA a maximum parking provision of 1 space per 14sqm GFA should be applied. For a store of 6500sqm GFA this would equate to 464 parking spaces.
- 5.2 The likely demand for parking for a foodstore of this size can be estimates from the trip generation of the store throughout the day, by calculating the parking accumulation. Table 5.1 uses the trip rates in Appendix C to calculate the parking demand for a 6500sqm store.

Table 5.1 : Parking Accumulation

Time	Weekday Parking Demand	Saturday Parking Demand
06:00-07:00	50	38
07:00-08:00	102	76
08:00-09:00	171	144
09:00-10:00	277	208
10:00-11:00	296	262
11:00-12:00	285	268
12:00-13:00	278	275
13:00-14:00	251	274
14:00-15:00	271	286
15:00-16:00	261	289
16:00-17:00	249	243
17:00-18:00	237	184
18:00-19:00	217	122
19:00-20:00	162	75
20:00-21:00	101	46
21:00-22:00	69	27
22:00-23:00	38	20

- 5.3 It can be seen that the peak parking demand is just under 300 spaces. However, we would anticipate a higher provision than this to ensure that there is no queuing for spaces on the public highway and to allow for peak period demand (i.e. pre-Christmas peak).
- 5.4 The parking provision for the site would therefore need to be a minimum of 300 spaces to cater for demand and a maximum of 464 parking spaces to comply with the current parking standards.
- 5.5 The previous application for expansion of the garden centre use demonstrated that there was sufficient space on site to provide 403 parking spaces, a loading area and an overall effective sales area of 13535sqm (internal and external). On this basis it is clear that there is sufficient space on the site to accommodate the level of parking required for a store of the size envisaged.



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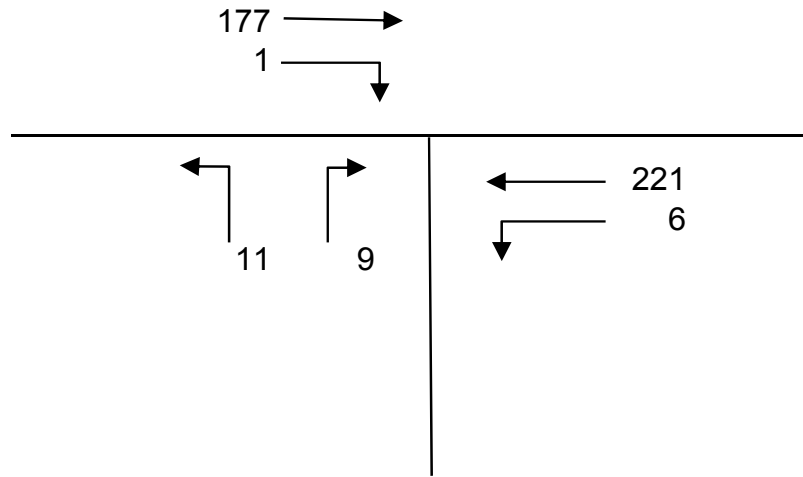
Job Title
**STEVENAGE GARDEN CENTRE,
STEVENAGE**

Drawing Title
SITE LOCATION

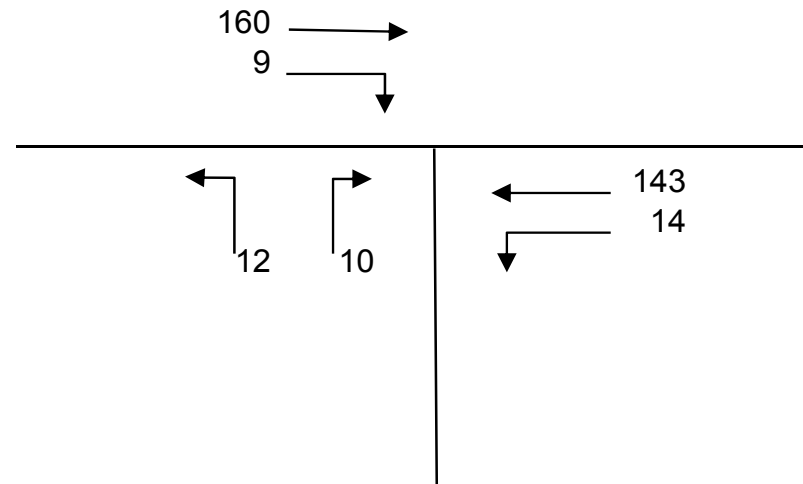
Client
AMENTUM

Rev	Amendments	Drn	Chk	App	Date
Scale	1:7500	Date	MAR '14	Designed	KM
Drawn	KM	Checked	JB	Approved	JB
Job No	14-066	Figure No	FIGURE No.1	Rev	

Friday
16:45-17:45



Saturday
12:45-13:45



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Rev	Amendments	Drn	Chk	App	Date
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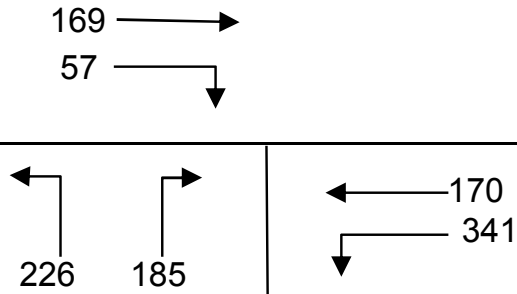
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Drawing Title	TURNING MOVEMENTS- EXISTING

Client

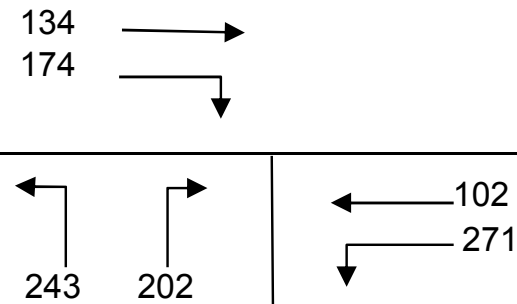
AMENTUM

Scale N.T.S.	Date MAR '14	Designed KM
Drawn KM	Checked JB	Approved JB
Job No 14-066	Figure No FIGURE No.2	Rev

Friday
16:45-17:45



Saturday
12:45-13:45



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Rev	Amendments	Drn	Chk	App	Date
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Job Title	STEVENAGE GARDEN CENTRE, STEVENAGE
Drawing Title	TURNING MOVEMENTS- WITH DEVELOPMENT

Client

AMENTUM

Scale N.T.S.	Date MAR '14	Designed KM
Drawn KM	Checked JB	Approved JB
Job No 14-066	Figure No FIGURE No.3	Rev

APPENDIX A

K&M TRAFFIC SURVEYS

DATE : 21st FEBRUARY 2014

DAY : FRIDAY

LOCATION : STEVENAGE GARDEN CENTRE , GRAVELEY RD, STEVENAGE, HERTS

GATES CLOSED AT 17:15 OF GARDEN CENTRE

	STEVENAGE GARDEN CENTRE TO GRAVELEY RD - SOUTH								STEVENAGE GARDEN CENTRE TO GRAVELEY RD - NORTH								GRAVELEY RD - NORTH TO STEVENAGE GARDEN CENTRE								GRAVELEY RD - NORTH TO GRAVELEY RD - SOUTH							
	MOVEMENT						TOTAL		MOVEMENT						TOTAL		MOVEMENT						TOTAL		MOVEMENT						TOTAL	
	LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	1			LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	2			LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	3			LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	4		
1630-1645	3	0	0	0	0		3		4	0	0	0	0		4		2	0	0	0	0	0		2		58	0	0	1	0		59
1645-1700	4	0	0	0	0		4		3	0	0	0	0		3		5	0	0	0	0	0		5		57	0	0	0	0		57
1700-1715	5	0	0	0	0		5		6	0	0	0	0		6		1	0	0	0	0	0		1		50	0	0	0	0		50
1715-1730	2	0	0	0	0		2		0	0	0	0	0		0		0	0	0	0	0	0		0		58	2	0	1	0		61
1730-1745	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		53	0	0	0	0		53
1745-1800	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		41	0	0	0	0		41
1800-1815	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		35	0	0	0	0		35
1815-1830	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		40	0	0	0	0		40
1830-1845	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		39	0	0	1	0		40
1845-1900	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		31	1	0	0	0		32
1900-1915	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		27	1	0	0	0		28
1915-1930	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		24	0	0	0	0		24
1630-1930	14	0	0	0	0		14		13	0	0	0	0		13		8	0	0	0	0	0		8		513	2	0	2	0		396
1630-1730	14	0	0	0	0		14		13	0	0	0	0		13		8	0	0	0	0	0		8		223	2	0	2	0		227
1645-1745	11	0	0	0	0		11		9	0	0	0	0		9		6	0	0	0	0	0		6		218	2	0	1	0		221
1700-1800	7	0	0	0	0		7		6	0	0	0	0		6		1	0	0	0	0	0		1		202	2	0	1	0		205
1715-1815	2	0	0	0	0		2		0	0	0	0	0		0		0	0	0	0	0	0		0		187	2	0	1	0		190
1730-1830	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		169	0	0	0	0		169
1745-1845	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		155	0	0	1	0		156
1800-1900	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		145	1	0	1	0		147
1815-1915	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		137	2	0	1	0		140
1830-1930	0	0	0	0	0		0		0	0	0	0	0		0		0	0	0	0	0	0		0		121	2	0	1	0		124

K&M TRAFFIC SURVEYS

DATE : 22nd FEBRUARY 2014

DAY : SATURDAY

LOCATION : STEVENAGE GARDEN CENTRE , GRAVELEY RD, STEVENAGE, HERTS

	STEVENAGE GARDEN CENTRE TO GRAVELEY RD - SOUTH						STEVENAGE GARDEN CENTRE TO GRAVELEY RD - NORTH						GRAVELEY RD - NORTH TO STEVENAGE GARDEN CENTRE						GRAVELEY RD - NORTH TO GRAVELEY RD - SOUTH					
	MOVEMENT 1						MOVEMENT 2						MOVEMENT 3						MOVEMENT 4					
	LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	TOTAL	LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	TOTAL	LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	TOTAL	LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	TOTAL
1100-1115	1	0	0	0	0	1	3	0	0	0	0	3	8	0	0	0	0	8	26	0	1	2	0	29
1115-1130	2	0	0	0	0	2	2	0	0	0	0	2	4	0	0	0	0	4	29	1	0	0	0	30
1130-1145	4	0	0	0	0	4	4	0	0	0	0	4	5	0	0	0	0	5	35	1	0	0	2	38
1145-1200	4	0	0	0	0	4	8	0	0	0	0	8	8	0	0	1	0	9	27	0	0	0	0	27
1200-1215	8	0	0	0	0	8	2	0	0	1	0	3	5	0	0	0	0	5	38	1	1	0	0	40
1215-1230	1	0	0	0	0	1	8	0	0	0	0	8	6	0	0	0	0	6	34	0	0	0	2	36
1230-1245	5	0	0	0	0	5	5	0	0	0	0	5	8	0	0	0	0	8	37	1	0	0	0	38
1245-1300	4	0	0	0	0	4	3	0	0	0	0	3	1	0	0	0	0	1	37	0	1	0	0	38
1300-1315	1	0	0	0	0	1	1	0	0	0	0	1	3	0	0	0	0	3	29	1	0	3	1	34
1315-1330	4	0	0	0	0	4	4	0	0	0	0	4	2	0	0	0	0	2	30	1	0	0	0	31
1330-1345	3	0	0	0	0	3	2	0	0	0	0	2	7	0	0	1	0	8	40	0	0	0	0	40
1345-1400	4	0	0	0	0	4	2	0	0	0	0	2	3	0	0	0	0	3	34	0	0	2	0	36
1100-1400	41	0	0	0	0	29	44	0	0	1	0	36	60	0	0	1	0	46	396	4	3	2	4	276
1100-1200	11	0	0	0	0	11	17	0	0	0	0	17	25	0	0	1	0	26	117	2	1	2	2	124
1115-1215	18	0	0	0	0	18	16	0	0	1	0	17	22	0	0	1	0	23	129	3	1	0	2	135
1130-1230	17	0	0	0	0	17	22	0	0	1	0	23	24	0	0	1	0	25	134	2	1	0	4	141
1145-1245	18	0	0	0	0	18	23	0	0	1	0	24	27	0	0	1	0	28	136	2	1	0	2	141
1200-1300	18	0	0	0	0	18	18	0	0	1	0	19	20	0	0	0	0	20	146	2	2	0	2	152
1215-1315	11	0	0	0	0	11	17	0	0	0	0	17	18	0	0	0	0	18	137	2	1	3	3	146
1230-1330	14	0	0	0	0	14	13	0	0	0	0	13	14	0	0	0	0	14	133	3	1	3	1	141
1245-1345	12	0	0	0	0	12	10	0	0	0	0	10	13	0	0	1	0	14	136	2	1	3	1	143
1300-1400	12	0	0	0	0	12	9	0	0	0	0	9	15	0	0	1	0	16	133	2	0	5	1	141

K&M TRAFFIC SURVEYS

DATE : 21st FEBRUARY 2014

DAY : FRIDAY

LOCATION : STEVENAGE GARDEN CENTRE , GRAVELEY RD, STEVENAGE, HERTS

GATES CLOSED AT 17:15 OF GARDEN CENTRE

	GRAVELEY RD - SOUTH TO GRAVELEY RD - NORTH							GRAVELEY RD - SOUTH TO STEVENAGE GARDEN CENTRE					
	MOVEMENT							MOVEMENT					
	5							6					
	LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	TOTAL		LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	TOTAL
1630-1645	30	0	0	0	0	30		2	0	0	0	0	2
1645-1700	34	4	0	0	0	38		1	0	0	0	0	1
1700-1715	44	2	0	0	0	46		0	0	0	0	0	0
1715-1730	41	1	1	0	0	43		0	0	0	0	0	0
1730-1745	50	0	0	0	0	50		0	0	0	0	0	0
1745-1800	32	0	0	0	1	33		0	0	0	0	0	0
1800-1815	32	0	0	0	0	32		0	0	0	0	0	0
1815-1830	30	0	0	0	0	30		0	0	0	0	0	0
1830-1845	31	0	1	1	1	34		0	0	0	0	0	0
1845-1900	27	1	0	0	0	28		0	0	0	0	0	0
1900-1915	25	1	0	0	0	26		0	0	0	0	0	0
1915-1930	19	0	0	0	0	19		0	0	0	0	0	0
1630-1930	395	7	1	0	1	302		3	0	0	0	0	3
1630-1730	149	7	1	0	0	157		3	0	0	0	0	3
1645-1745	169	7	1	0	0	177		1	0	0	0	0	1
1700-1800	167	3	1	0	1	172		0	0	0	0	0	0
1715-1815	155	1	1	0	1	158		0	0	0	0	0	0
1730-1830	144	0	0	0	1	145		0	0	0	0	0	0
1745-1845	125	0	1	1	2	129		0	0	0	0	0	0
1800-1900	120	1	1	1	1	124		0	0	0	0	0	0
1815-1915	113	2	1	1	1	118		0	0	0	0	0	0
1830-1930	102	2	1	1	1	107		0	0	0	0	0	0

K&M TRAFFIC SURVEYS

DATE : 22nd FEBRUARY 2014

DAY : SATURDAY

LOCATION : STEVENAGE GARDEN CENTRE , GRAVELEY RD, STEVENAGE, HERTS

GRAVELEY RD - SOUTH TO GRAVELEY RD - NORTH							GRAVELEY RD - SOUTH TO STEVENAGE GARDEN CENTRE						
MOVEMENT 5							MOVEMENT 6						
	LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	TOTAL		LIGHT	HEAVY	BUS	MCYCLE	PCYCLE	TOTAL
1100-1115	23	0	0	0	0	23	1	0	0	0	0	0	1
1115-1130	23	0	0	0	0	23	1	0	0	0	0	0	1
1130-1145	32	1	0	0	1	34	3	0	0	0	0	0	3
1145-1200	35	1	0	0	0	36	7	0	0	0	0	0	7
1200-1215	34	0	0	1	0	35	1	0	0	0	0	0	1
1215-1230	34	1	1	1	0	37	1	0	0	0	0	0	1
1230-1245	32	1	0	1	0	34	3	0	0	0	0	0	3
1245-1300	33	2	0	6	0	41	2	0	0	0	0	0	2
1300-1315	42	0	0	1	0	43	2	0	0	0	0	0	2
1315-1330	38	0	1	0	0	39	2	0	0	0	0	0	2
1330-1345	37	0	0	0	0	37	3	0	0	0	0	0	3
1345-1400	36	1	0	0	0	37	4	0	0	0	0	0	4
1100-1400	399	6	1	9	1	263	30	0	0	0	0	0	19
1100-1200	113	2	0	0	1	116	12	0	0	0	0	0	12
1115-1215	124	2	0	1	1	128	12	0	0	0	0	0	12
1130-1230	135	3	1	2	1	142	12	0	0	0	0	0	12
1145-1245	135	3	1	3	0	142	12	0	0	0	0	0	12
1200-1300	133	4	1	9	0	147	7	0	0	0	0	0	7
1215-1315	141	4	1	9	0	155	8	0	0	0	0	0	8
1230-1330	145	3	1	8	0	157	9	0	0	0	0	0	9
1245-1345	150	2	1	7	0	160	9	0	0	0	0	0	9
1300-1400	153	1	1	1	0	156	11	0	0	0	0	0	11

APPENDIX B

**Stevenage Garden Centre
Graveley Road, Stevenage
Transport Assessment**

Ref: 4186/DA/SAM/001/02

November 2006

Checked and Approved by.....

Date.....

1. INTRODUCTION

- 1.1 Sanderson Associates have been appointed by Blooms of Bressingham Holdings Ltd. to prepare a Transport Assessment in support of a planning application for the further development of the Stevenage Garden Centre at Graveley Road, Stevenage.
- 1.2 This report considers the proposed traffic generation in relation to the proposed increase in size of the current Garden Centre and assigned it to the highway network in similar proportion to existing movements. Assessment has then been made of its impact on the capacity and safety of the local highway network up to the year 2013.

peaks when the Garden Centre will be at its busiest. The weekday AM peak was not counted since the Garden Centre will generate negligible traffic at this time of day over and above existing levels (staff vehicles only).

- 2.6 The results of the traffic surveys are provided in Appendix A. It was found that the existing two-way flows on Graveley Road, adjacent to the site, are very low, e.g.:

Friday PM peak - 298

Sunday PM peak - 316

- 2.7 In confirmation of these figures, ATC data collected between 30 November and 7 December 2004 offer the following figures:

Weekday average	5pm-6pm	Northbound	227
		Southbound	98
		Total	325
Saturday average	2pm-3pm	Northbound	146
		Southbound	135
		Total	281
Sunday average	2pm-3pm	Northbound	128
		Southbound	151
		Total	279

- 2.8 Accident data for the 5 year period 1st May 2001 to 30th April 2006 has been provided by Herfordshire County Council (see Appendix B). No

3. PROPOSED DEVELOPMENT

- 3.1 The existing Garden Centre offers 7,658 sqm of retail sales area. It is proposed to increase this to 13,535 sqm – a 77% increase (see layout plan in Appendix C).
- 3.2 The existing Garden Centre access is to be retained but the internal car parking layout will be formalised and laid out to provide 403 visitor spaces including 16 disabled spaces, and 20 staff spaces.
- 3.3 In addition a new goods yard/servicing area will be provided capable of turning an articulated lorry within it.
- 3.4 Deliveries to the site will increase from 6 per day to 10 per day. These will take place between 9am and 5pm. In approximate proportions these deliveries will be made up of:
- 15% vans
 - 45% box lorries
 - 40% articulated lorries
- The design of the service yard and car park entrance has taken into account the movement of these vehicles.

Table 2. Additional Flows Resulting from the Development

Period	Arrivals	Departures	Total
Friday 1600-1700	9	12	21
Saturday 1415-1515	37	39	76
Sunday 1430-1530	44	44	88

4.6 Traffic Generation is very low during the weekday peaks. Even in the busiest period (Sunday) only 3 car trips every 2 minutes will be added to the local road network. Bearing in mind that these flows will not occur during normal peak traffic conditions, it is submitted that the development will have insignificant effect on the network.

4.7 Comparison of the above figures with those derived from the TRICS database has been attempted. However, the results from TRICS are not appropriate for use for the following reasons:

- The number of sites and count days are very small e.g. 1 for the Friday peak and 3 for the Sat/Sun peaks. Thus average trip rates are subject to the local circumstances of just a few sites and may not be typical.
- The sites were counted at extreme seasonal trading peaks e.g. May, and pre-Christmas (21 November and 13 December). These do not offer typical trip rates.
- Sites were incomparable in size to the proposal (13535 sqm.). Three sites are available on the database with retail floor areas of 400 sqm; 1750 sqm, and; 7500sqm.

6. ASSESSMENT YEARS

6.1 Assessments have been carried out for the existing and proposed traffic conditions. At the request of Herfordshire County Council's Area Highways Development Control Manager conditions in the year of opening plus 5 years i.e. 2013, have been assessed using Temprow rates.

6.2 Temprow rates for the Stevenage area have been used. The rates have taken account of the fact that the traffic counts were recorded in 2006 and the year of opening 2008. So the growth rates cover the period 2006-2008 and 2008 - 2013 i.e.

2006-2008	Friday (weekday) PM peak	1.018
	Saturday	1.02
	Sunday	1.02
2008 -2013	Friday (weekday) PM peak	1.038
	Saturday	1.046
	Sunday	1.047

Table 3. PICADY results summary - Graveley Road/Garden Centre Access

Assessment Scenario	Worst Case RFC	Worst Case Queue Length (vehicles)	Related Traffic Movement
Friday PM Existing	0.024	0	NA
Friday PM Existing and Proposed 2008	0.043	0	NA
Friday PM Existing and Proposed 2013	0.046	0	NA
Saturday PM Existing	0.059	0.1	Right turn from access
Saturday PM Existing and Proposed 2008	0.109	0.1	Right turn from access
Saturday PM Existing and Proposed 2013	0.114	0.1	Right turn from access
Sunday PM Existing	0.071	0.1	Right turn from access
Sunday PM Existing and Proposed 2008	0.130	0.1	Right turn from access
Sunday PM Existing and Proposed 2013	0.138	0.2	Right turn from access

- 7.4 The results show that there will be no capacity or queuing problems at the Garden Centre access, even in the year 2013.
- 7.5 The results indicate, however that there is an existing capacity/queuing problem at the Graveley Road/North Road junction during the weekday evening peak. It should be noted, however, that very few vehicles are generated by the Garden Centre during this period. For example, it is estimated that the proposed development will add only 13 vehicle movements to this junction in the weekday evening peak (about 1 vehicle every 5 minutes). Proportionally this accounts for an increase of just 1% on movements through the junction. This would be an unperceivable difference in practice and no different to daily variations in flows experienced at present.
- 7.6 The increased flows generated by the proposal will increase the RFC value by just 0.008 and, the worst queue by less than one vehicle. It is submitted that the proposed development will not have a material impact on either the existing Garden Centre access or the Graveley Road/North Road Junction.
- 7.7 Analysis of the Graveley Road/A1 junction 8 has not been undertaken. It has not been deemed necessary due to:
- The low flows on Graveley Road between the site and junction 8. 292 vehicles per hour in the busiest period (two way), less than 5

8. SAFETY IMPLICATIONS

- 8.1 As noted in Section 2, an accident problem appears to exist at the Graveley Road/North Road junction in relation to the right turning movement from North Road.
- 8.2 It should be noted that the proposal will not add any newly generated traffic to the right turning movement.
- 8.3 Most accidents (7 of 10) have occurred in the weekday AM or PM peak when traffic generated by the proposal is extremely low.
- 8.4 It is submitted that the proposal will not have a material effect on accident frequency or road safety.

northwards to Graveley and Letchworth and southwards, adjacent to the A602 Hitchin Road, into Stevenage town centre and beyond. This is part of the Great North Way – National Cycle Route 12 – linking London to Grimsby.

9.2.3 Appendix F offers a plan (due to be updated) of the extensive cycle route network in the Stevenage area.

9.2.4 Appendix G offers a plan showing the 3 mile 'cycle to work' area which includes parts of Letchworth, Hitchin, Weston and most of Stevenage. It is concluded that staff within this area would find it relatively easy to cycle to work.

9.2.5. Due to the nature of the goods sold at a Garden Centre it is not expected that a significant proportions of customers will choose to cycle to the site, despite the excellent route and parking facilities.

9.3 Public Transport

9.3.1 Bus stops lie on each side of Graveley Road within a short walk of the site. The eastbound stop is immediately adjacent to the Garden Centre and has a layby facility and timetable. The westbound stop lies 150m to the south west and has similar facilities.

10. CONCLUSIONS

- 10.1 Traffic generated by the proposal is extremely low during weekday peak periods. The peak trading periods for a Garden Centre occur at the weekends when it has been identified that the Saturday PM peak is 1415-1515 hours and Sunday PM peak is 1430-1530 hours.
- 10.2 Consequently the development will have insignificant effect on the road network during weekdays. Even at the busiest weekend period, flows are such that junction capacity and queuing are hardly changed from current levels.
- 10.3 PICADY calculations have assessed the Graveley Road/Site Access, and the Graveley Road/North Road junctions for the Friday, Saturday and Sunday peak periods. Assessment for the existing, proposed 2008 and 2013 traffic conditions have been carried out.
- 10.4 It has been found that there is no capacity or queuing problem in all scenarios relating to the Graveley Road/Site Access junction. The worst case RFC value is 0.138 in 2013 with proposed flows.
- 10.5 It has been found that there is an existing queuing and capacity problem at the junction of Graveley Road/North Road (RFC 1.117 and queue of 21 vehicles on North Road). But this problem exists in the weekday PM peak when the Garden Centre trading is small. The small increase in traffic

- Control of the junction is already available through traffic signal stage settings.

10.8 The proposal will not have a material effect on the accident frequency or road safety.

10.9 The site is accessible on foot, cycle or by bus. A new pedestrian route is to be provided to link the main building entrance with the bus stops on Graveley Road, to suit a desire line. Cycle parking for 34 cycles is to be provided to encourage use of this means of transport. An extensive network of cycle routes exist in the Stevenage area. Bus stops lie on Graveley Road and North Road within 400m of the site. A number of services pass the site including the 55 Letchworth – Stevenage route which offers a 20 minute frequency service in both directions. Due to the nature of the goods sold at the Garden Centre it must be accepted that a significant proportion of customers will not choose to visit the site other than by private car. However it is hoped that, due to facilities provided, and the travel to work areas for walking and cycling, which include much of Stevenage, Letchworth and Hitchin, staff will be encouraged to use sustainable transport methods to get to work. Car sharing will be encouraged with staff.

APPENDICES

APPENDIX B

ACCIDENT DATA

APPENDIX D

PICADY CALCULATIONS

APPENDIX F

LOCAL CYCLE NETWORK

APPENDIX H

BUS TIMETABLES

APPENDIX C

TRICS 7.1.1

Trip Rate F Gross floor area

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 01 - RETAIL

Category A - FOOD SUPERSTORE

VEHICLES

Selected regions and areas:

2 SOUTH EAST

ES EAST SUS 1 days

HC HAMPSHIRE 1 days

KC KENT 2 days

SC SURREY 1 days

WN WINDSOR 1 days

WS WEST SUSSEX 1 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 displayed.

Parameter: Gross floor area

Actual Range 4830 to 8376 (units: sqm)

Range Selected 5000 to 9000 (units: sqm)

Public Transport Provision:

Selection b Include all surveys

Date Range 01/01/00 to 24/11/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are displayed.

Selected survey days:

Wednesday 1 days

Thursday 1 days

Friday 5 days

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

Selected survey types:

Manual count 7 days

Directional 0 days

This data displays the total number of surveys whilst ATC surveys are undertaken using machines.

Selected Locations:

Town Centre 0

Edge of Town 0

Suburban / Rural 1

Edge of Town 6

Neighbourhood 0

Free Stand 0

Not Known 0

This data displays the total number of surveys by location: Edge of Town, Suburban / Rural, Neighbourhood, Edge of Town, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone 0

Commercial 0

Developme	0
Residential	4
Retail Zone	2
Built-Up Zc	0
Village	0
Out of Tow	0
High Street	0
No Sub Ca	1

This data d Industrial z Developm Residential Retail Zon Built-Up Zc Village Out of Tow High Stree

Filtering Stage 3 selection:

Use Class:

A1 7 days

This data d which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,1 days

5,001 to 10,1 days

10,001 to 12 days

15,001 to 21 days

20,001 to 22 days

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

Population within 5 miles:

25,001 to 12 days

50,001 to 1 days

75,001 to 1 days

100,001 to 2 days

125,001 to 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 1 days

1.1 to 1.5 5 days

1.6 to 2.0 1 days

This data d within a radius of 5-miles of selected survey sites.

Petrol filling station:

PFS is pre: 3 days

PFS is pre: 3 days

There is nc 1 days

This data d and the number of surveys that do not.

Travel Plan:

Not Known 3 days

Yes 1 days

No 3 days

This data d and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 ES-01-A-1 TESCO EAST SUSSEX
LOTTBRIDGE DROVE

EASTBOURNE
Suburban Area (PPS6 Out of Centre)

Retail Zone
Total Gross floor area: 8376 sqm
Survey date: FRIDAY ##### Survey Type: MANUAL
2 HC-01-A-0: SAFEWAY HAMPSHIRE
LAKESMERE ROAD
CAUSEWAY
HORNDEAN
Edge of Town
Residential Zone
Total Gross floor area: 5017 sqm
Survey date: WEDNESDAY ##### Survey Type: MANUAL
3 KC-01-A-1: SAINSBURY KENT
MARGATE ROAD
WESTWOOD
BROADSTAIRS
Edge of Town
Retail Zone
Total Gross floor area: 4830 sqm
Survey date: FRIDAY ##### Survey Type: MANUAL
4 KC-01-A-1: SAFEWAY KENT
COLDHARBOUR ROAD
NORTHFLEET
GRAVESEND
Edge of Town
Residential Zone
Total Gross floor area: 5439 sqm
Survey date: THURSDAY ##### Survey Type: MANUAL
5 SC-01-A-1: SAINSBURY SURREY
REDDING WAY
KNAPHILL
WOKING
Edge of Town
Residential Zone
Total Gross floor area: 8250 sqm
Survey date: FRIDAY ##### Survey Type: MANUAL
6 WN-01-A-C: SAINSBURY WINDSOR & MAIDENHEAD
LAKE END ROAD
LENT RISE
SLOUGH
Edge of Town
Residential Zone
Total Gross floor area: 6065 sqm
Survey date: FRIDAY ##### Survey Type: MANUAL
7 WS-01-A-1: TESCO WEST SUSSEX
FISHBOURNE ROAD EAST
FISHBOURNE
CHICHESTER
Edge of Town
No Sub Category
Total Gross floor area: 6003 sqm
Survey date: FRIDAY ##### Survey Type: MANUAL

This section displays the selected day of and whether the survey was a manual classified count or

Manually Deselected Sites

Site Ref Reason for Deselection
 ES-01-A-1 too big
 HC-01-A-0 too big
 SC-01-A-0 town centre
 SC-01-A-0 town centre
 WS-01-A-1 too small

TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE

Calculation Factor: 100 sqm

Count Type: VEHICLES

ARRIVALS				DEPARTURES				TOTALS	
No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.		
Time Rang	GFA	Rate	Days	GFA	Rate	Days	GFA		
00:00-01:00	1	8376	0.31	1	8376	0.382	1	8376	
01:00-02:00	1	8376	0.167	1	8376	0.155	1	8376	
02:00-03:00	1	8376	0.239	1	8376	0.215	1	8376	
03:00-04:00	1	8376	0.131	1	8376	0.131	1	8376	
04:00-05:00	1	8376	0.191	1	8376	0.143	1	8376	
05:00-06:00	1	8376	0.394	1	8376	0.275	1	8376	
06:00-07:00	3	6424	1.002	3	6424	0.436	3	6424	
07:00-08:00	7	6283	2.108	7	6283	1.31	7	6283	
08:00-09:00	7	6283	4.054	7	6283	2.988	7	6283	
09:00-10:00	7	6283	5.953	7	6283	4.329	7	6283	
10:00-11:00	7	6283	6.226	7	6283	5.935	7	6283	
11:00-12:00	7	6283	6.128	7	6283	6.298	7	6283	
12:00-13:00	7	6283	6.187	7	6283	6.287	7	6283	
13:00-14:00	7	6283	5.621	7	6283	6.035	7	6283	
14:00-15:00	7	6283	6.062	7	6283	5.757	7	6283	
15:00-16:00	7	6283	5.914	7	6283	6.071	7	6283	
16:00-17:00	7	6283	5.857	7	6283	6.041	7	6283	
17:00-18:00	7	6283	6.116	7	6283	6.305	7	6283	
18:00-19:00	7	6283	5.935	7	6283	6.232	7	6283	
19:00-20:00	6	6494	4.199	6	6494	5.046	6	6494	
20:00-21:00	6	6494	2.49	6	6494	3.437	6	6494	
21:00-22:00	6	6494	1.568	6	6494	2.051	6	6494	
22:00-23:00	3	6815	0.846	3	6815	1.321	3	6815	
23:00-24:00	1	8376	0.836	1	8376	1.194	1	8376	
Daily Trip Rates:			78.534				78.374		

Parameter summary

Trip rate per 4830 - 8376 (units: sqm)

Survey date 01/01/00 - 24/11/12

Number of 7

Number of 0

Number of 0

Surveys made 4

This section followed by the total number of survey days that have been manually removed from the

parameter range are included in the trip rate calculation.

range are included in the trip rate calculation.

t and No Sub Category.

an ATC count.

Trip
Rate

0.692
0.322
0.454
0.262
0.334
0.669
1.438
3.418
7.042
10.282
12.161
12.426
12.474
11.656
11.819
11.985
11.898
12.421
12.167
9.245
5.927
3.619
2.167
2.03
156.908

he selected set outside of the standard filtering procedure are displayed.

TRICS 7.1.1

Trip Rate Parameter: Gross floor area

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 01 - RETAIL
Category A - FOOD SUPERSTORE
VEHICLES

Selected regions and areas:

2 SOUTH EAST
ES EAST SUS 2 days
HC HAMPSHIF 1 days
HF HERTFOR 1 days
KC KENT 2 days
WN WINDSOR 1 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 r

Parameter: Gross floor area
Actual Range: 4500 to 6920 (units: sqm)
Range Selected by U 5000 to 9000 (units: sqm)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/00 to 24/11/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range ar

Selected survey days:

Saturday 7 days

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

Selected survey types:

Manual count 7 days

Directional ATC Cour 0 days

This data displays the the total at whilst ATC surveys are undertaking using machines.

Selected Locations:

Town Centre 0
Edge of Town Centre 0
Suburban Area (PPS) 3
Edge of Town 4
Neighbourhood Centr 0
Free Standing (PPS6) 0
Not Known 0

This data displays the Edge of Tc Suburban Neighbour Edge of Tc Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone 0

Commercial Zone	0
Development Zone	0
Residential Zone	4
Retail Zone	2
Built-Up Zone	0
Village	0
Out of Town	0
High Street	0
No Sub Category	1

This data displays the Industrial Development Residential Retail Zone Built-Up Zone Village Out of Town High Street

Filtering Stage 3 selection:

Use Class:

A1 7 days

This data displays the which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	2 days
20,001 to 25,000	2 days
25,001 to 50,000	1 days
50,001 to 100,000	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	1 days
50,001 to 75,000	1 days
75,001 to 100,000	1 days
100,001 to 125,000	2 days
125,001 to 250,000	1 days
250,001 to 500,000	1 days

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

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	5 days
1.6 to 2.0	1 days

This data displays the within a radius of 5-miles of selected survey sites.

Petrol filling station:

PFS is present at the 4 days

PFS is present at the 0 days

There is no PFS at the 3 days

This data displays the and the number of surveys that do not.

Travel Plan:

Yes 1 days

No 6 days

This data displays the and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

- 1 ES-01-A-1: SAINSBURY EAST SUSSEX
LEWES ROAD

BRIGHTON
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Gross floor area: 5900 sqm
Survey date: SATURDAY ##### Survey Type: MANUAL
- 2 ES-01-A-1: ASDA EAST SUSSEX
BATTLE ROAD
ST LEONARDS ON SEA
HASTINGS
Suburban Area (PPS6 Out of Centre)
Retail Zone
Total Gross floor area: 6920 sqm
Survey date: SATURDAY ##### Survey Type: MANUAL
- 3 HC-01-A-0: SAINSBURY HAMPSHIRE
BADGER FARM ROAD

WINCHESTER
Edge of Town
Residential Zone
Total Gross floor area: 6800 sqm
Survey date: SATURDAY ##### Survey Type: MANUAL
- 4 HF-01-A-0: MORRISON HERTFORDSHIRE
BLACK FAN ROAD
PANSHANGER
WELWYN GARDEN CITY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 4500 sqm
Survey date: SATURDAY ##### Survey Type: MANUAL
- 5 KC-01-A-1: SAINSBURY KENT
MARGATE ROAD
WESTWOOD
BROADSTAIRS
Edge of Town
Retail Zone
Total Gross floor area: 4830 sqm
Survey date: SATURDAY ##### Survey Type: MANUAL
- 6 KC-01-A-1: SAFEWAY KENT
COLDHARBOUR ROAD
NORTHFLEET
GRAVESEND
Edge of Town
Residential Zone
Total Gross floor area: 5439 sqm
Survey date: SATURDAY ##### Survey Type: MANUAL
- 7 WN-01-A-C: SAINSBURY WINDSOR & MAIDENHEAD
LAKE END ROAD
LENT RISE
SLOUGH

Edge of Town
 Residential Zone
 Total Gross floor area: 6065 sqm
 Survey date: SATURDAY ##### Survey Type: MANUAL

This section provides it displays the selected day of and whether the survey was a manual classified count or

Manually Deselected Sites

Site Ref	Reason for Deselection
BU-01-A-01	town centre
EX-01-A-02	too small
SC-01-A-11	too big
WS-01-A-11	too small
WS-01-A-11	too small

TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE

Calculation Factor: 100 sqm

Count Type: VEHICLES

Time Range	ARRIVALS			DEPARTURES			TOTALS	
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA
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	2	5448	0.716	2	5448	0.138	2	5448
07:00-08:00	7	5779	1.419	7	5779	0.828	7	5779
08:00-09:00	7	5779	3.574	7	5779	2.531	7	5779
09:00-10:00	7	5779	5.243	7	5779	4.252	7	5779
10:00-11:00	7	5779	6.533	7	5779	5.698	7	5779
11:00-12:00	7	5779	7.285	7	5779	7.206	7	5779
12:00-13:00	7	5779	7.478	7	5779	7.364	7	5779
13:00-14:00	7	5779	6.842	7	5779	6.852	7	5779
14:00-15:00	7	5779	6.785	7	5779	6.608	7	5779
15:00-16:00	7	5779	6.907	7	5779	6.852	7	5779
16:00-17:00	7	5779	6.454	7	5779	7.164	7	5779
17:00-18:00	7	5779	5.854	7	5779	6.768	7	5779
18:00-19:00	7	5779	4.296	7	5779	5.245	7	5779
19:00-20:00	7	5779	2.675	7	5779	3.404	7	5779
20:00-21:00	7	5779	1.533	7	5779	1.975	7	5779
21:00-22:00	7	5779	0.675	7	5779	0.976	7	5779
22:00-23:00	1	6065	0	1	6065	0.099	1	6065
23:00-24:00								
Daily Trip Rates:			74.269			73.96		

Parameter summary

Trip rate parameter range 4500 - 6920 (units: sqm)

Survey date range 01/01/00 - 24/11/12

Number of weekdays 0

Number of Saturdays 7

Number of Sundays: 0

Surveys manually removed 5

This section displays followed by the total number of survey days that have been manually removed from the

ange are included in the trip rate calculation.

e included in the trip rate calculation.

t and No Sub Category.

r an ATC count.

Trip
Rate

0.854
2.247
6.105
9.495
12.231
14.491
14.842
13.694
13.393
13.759
13.618
12.622
9.541
6.079
3.508
1.651
0.099

148.229

he selected set outside of the standard filtering procedure are displayed.

APPENDIX D

PICADY

GUI Version: 5.1 AE
Analysis Program Release: 5.0 (MAY 2010)

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E-mail: software@trl.co.uk
Web: www.trlsoftware.co.uk

The user of this computer program for the solution of an engineering problem is in no way relieved of their responsibility for the correctness of the solution

Run Analysis

Parameter	Values
File Run	Q:\14-066 - Stevenage Garden Centre\Trans\Picady\Site Access.vpi
Date Run	27 February 2014
Time Run	09:55:06
Driving Side	Drive On The Left

Arm Names and Flow Scaling Factors

Arm	Arm Name	Flow Scaling Factor (%)
Arm A	Graveley Road E	100
Arm B	Site Access	100
Arm C	Graveley Road W	100

Stream Labelling Convention

Stream A-B contains traffic going from A to B etc.

Run Information

Parameter	Values
Run Title	Stevenage Garden Centre
Location	-
Date	25 February 2014
Enumerator	phebbard [ODYSSEY-9D40AE1]
Job Number	14-066
Status	-
Client	-
Description	Steveange Garden Centre Access

Errors and Warnings

Parameter	Values
Warning	No Errors Or Warnings

Geometric Data

Geometric Parameters

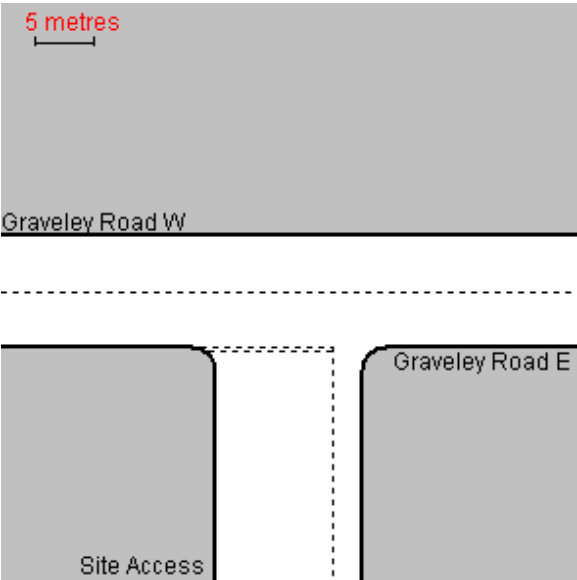
Parameter	Minor Arm B
Major Road Carriageway Width (m)	7.30
Major Road Kerbed Central Reserve Width (m)	0.00
Major Road Right Turning Lane Width (m)	2.20
Minor Road Width 0m Back from Junction (m)	10.00
Minor Road Width 5m Back from Junction (m)	5.50
Minor Road Width 10m Back from Junction (m)	3.00
Minor Road Width 15m Back from Junction (m)	3.00
Minor Road Width 20m Back from Junction (m)	3.00
Minor Road Derived Flare Length (PCU)	1.000
Minor Road Visibility To Right (m)	120
Minor Road Visibility To Left (m)	120
Major Road Right Turn Visibility (m)	120
Major Road Right Turn Blocks Traffic	Yes (if over 0 veh)

Slope and Intercept Values

Stream	Intercept for Stream	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	0.000	0.000	0.000	0.000	0.000
B-C	0.000	0.000	0.000	-	-
C-B	643.456	0.235	0.235	-	-

Note: Streams may be combined in which case capacity will be adjusted
These values do not allow for any site-specific corrections

Junction Diagram



Demand Data

Modelling Periods

Parameter	Period	Duration (min)	Segment Length (min)
First Modelling Period	16:30-18:00	90	15
Second Modelling Period	12:30-14:00	90	15

ODTAB Turning Counts

Demand Set: Existing Weekday PM Peak
Modelling Period: 16:30-18:00

From/To	Arm A	Arm B	Arm C
Arm A	0.0	6.0	221.0
Arm B	9.0	0.0	11.0
Arm C	177.0	1.0	0.0

Demand Set: Existing Saturday Peak**Modelling Period:** 12:30-14:00

From/To	Arm A	Arm B	Arm C
Arm A	0.0	14.0	143.0
Arm B	10.0	0.0	12.0
Arm C	160.0	9.0	0.0

Demand Set: Weekday PM Peak with foodstore**Modelling Period:** 16:30-18:00

From/To	Arm A	Arm B	Arm C
Arm A	0.0	341.0	170.0
Arm B	185.0	0.0	226.0
Arm C	168.0	57.0	0.0

Demand Set: Saturday Peak with Foodstore**Modelling Period:** 12:30-14:00

From/To	Arm A	Arm B	Arm C
Arm A	0.0	271.0	102.0
Arm B	202.0	0.0	243.0
Arm C	134.0	174.0	0.0

ODTAB Synthesised Flows

Demand Set: Existing Weekday PM Peak**Modelling Period:** 16:30-18:00

Arm	Rising Time	Rising Flow (veh/min)	Peak Time	Peak Flow (veh/min)	Falling Time	Falling Flow (veh/min)
Arm A	16:45	2.838	17:15	4.256	17:45	2.838
Arm B	16:45	0.250	17:15	0.375	17:45	0.250
Arm C	16:45	2.225	17:15	3.337	17:45	2.225

Heavy Vehicles Percentages

Demand Set: Existing Weekday PM Peak**Modelling Period:** 16:30-18:00

From/To	Arm A	Arm B	Arm C
Arm A	-	10.0	10.0
Arm B	10.0	-	10.0
Arm C	10.0	10.0	-

Demand Set: Existing Saturday Peak

Modelling Period: 12:30-14:00

From/To	Arm A	Arm B	Arm C
Arm A	-	10.0	10.0
Arm B	10.0	-	10.0
Arm C	10.0	10.0	-

Demand Set: Weekday PM Peak with foodstore

Modelling Period: 16:30-18:00

From/To	Arm A	Arm B	Arm C
Arm A	-	10.0	10.0
Arm B	10.0	-	10.0
Arm C	10.0	10.0	-

Demand Set: Saturday Peak with Foodstore

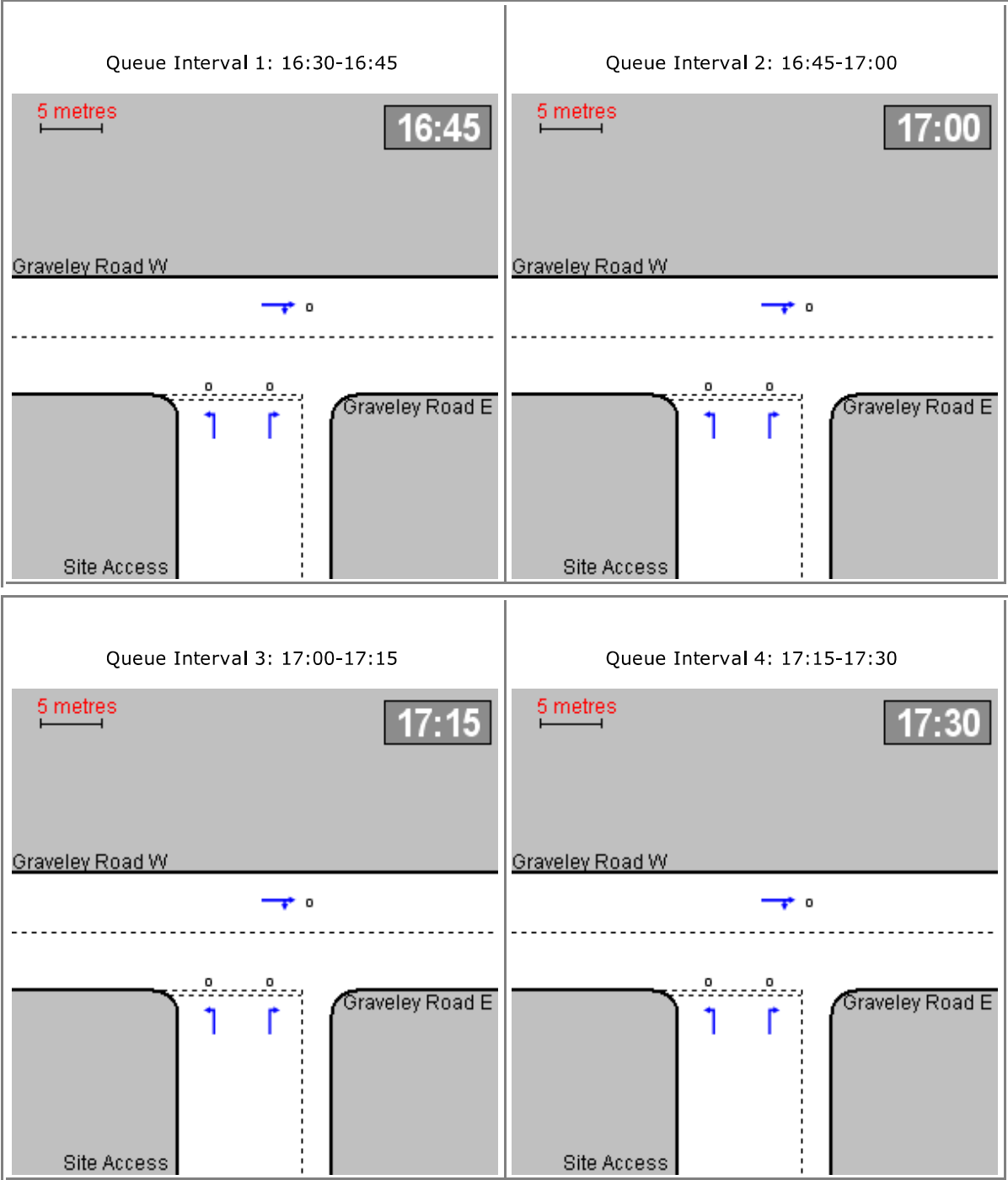
Modelling Period: 12:30-14:00

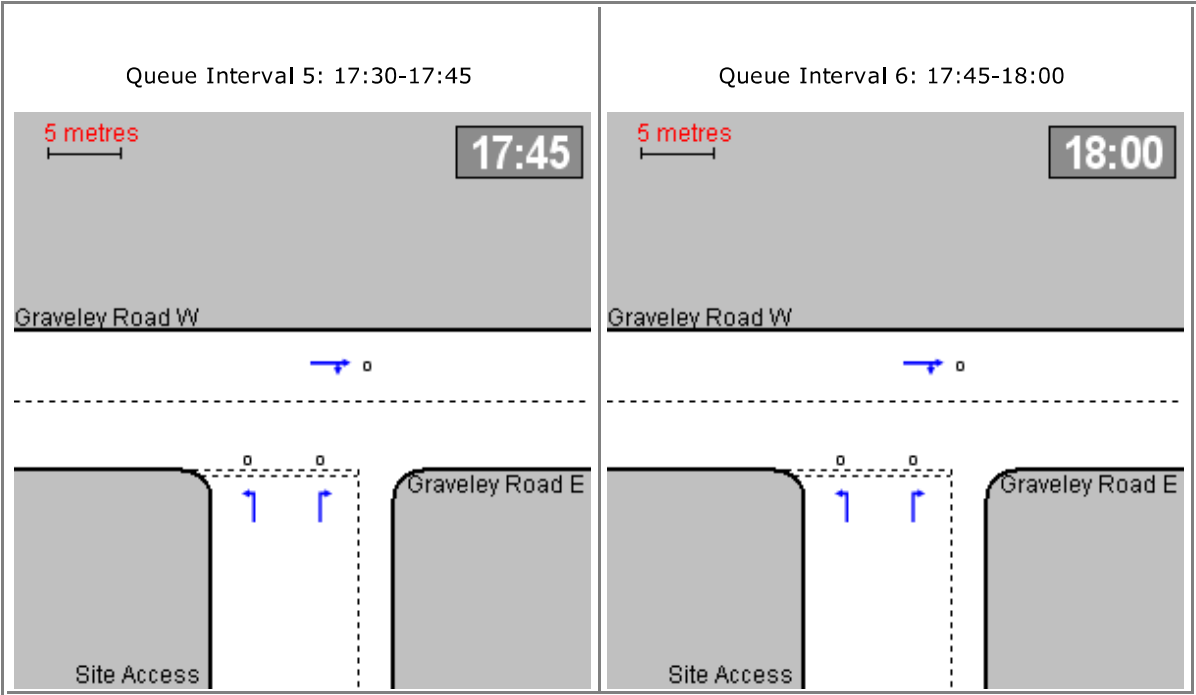
From/To	Arm A	Arm B	Arm C
Arm A	-	10.0	10.0
Arm B	10.0	-	10.0
Arm C	10.0	10.0	-

Default proportions of heavy vehicles are used

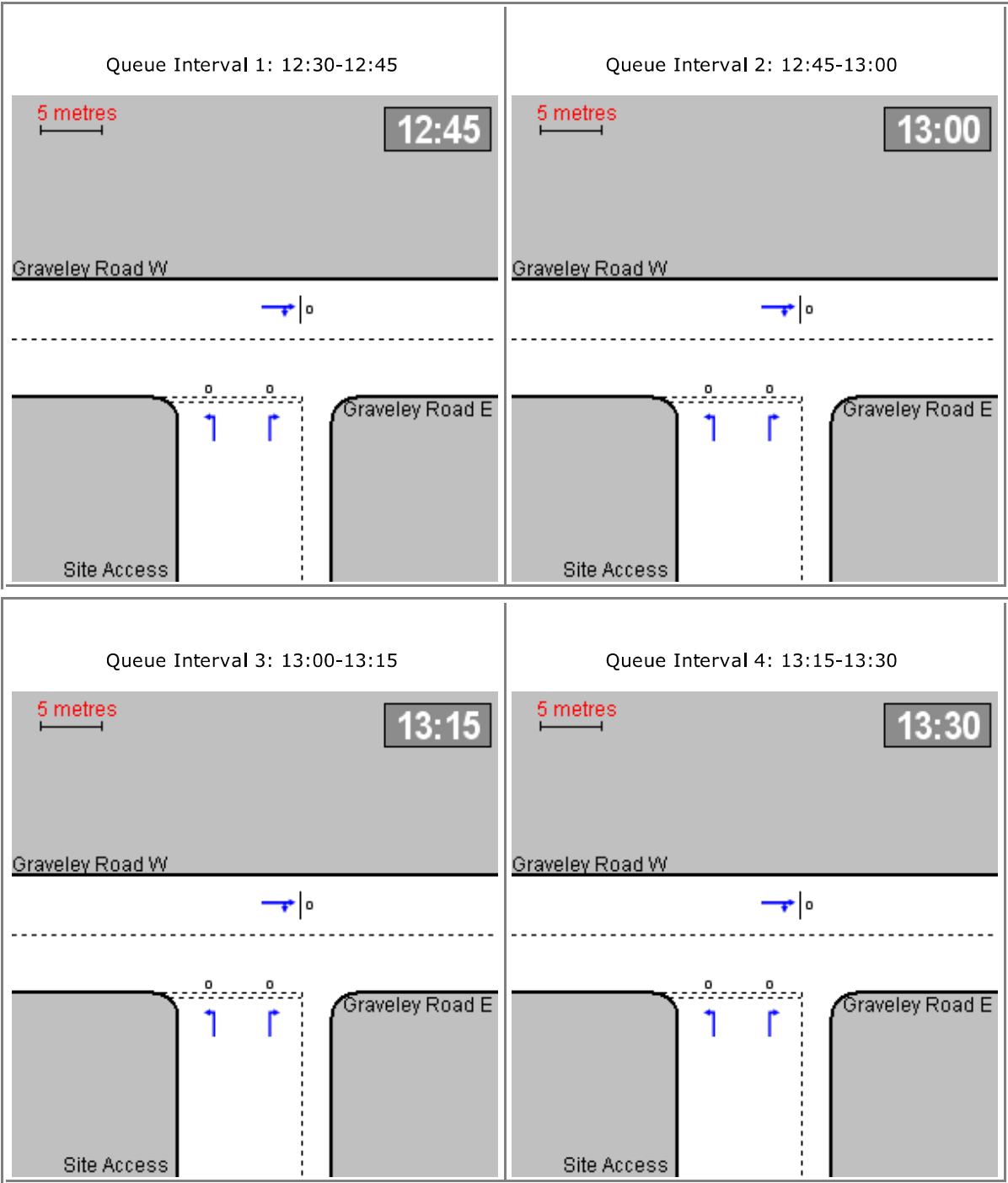
Queue Diagrams

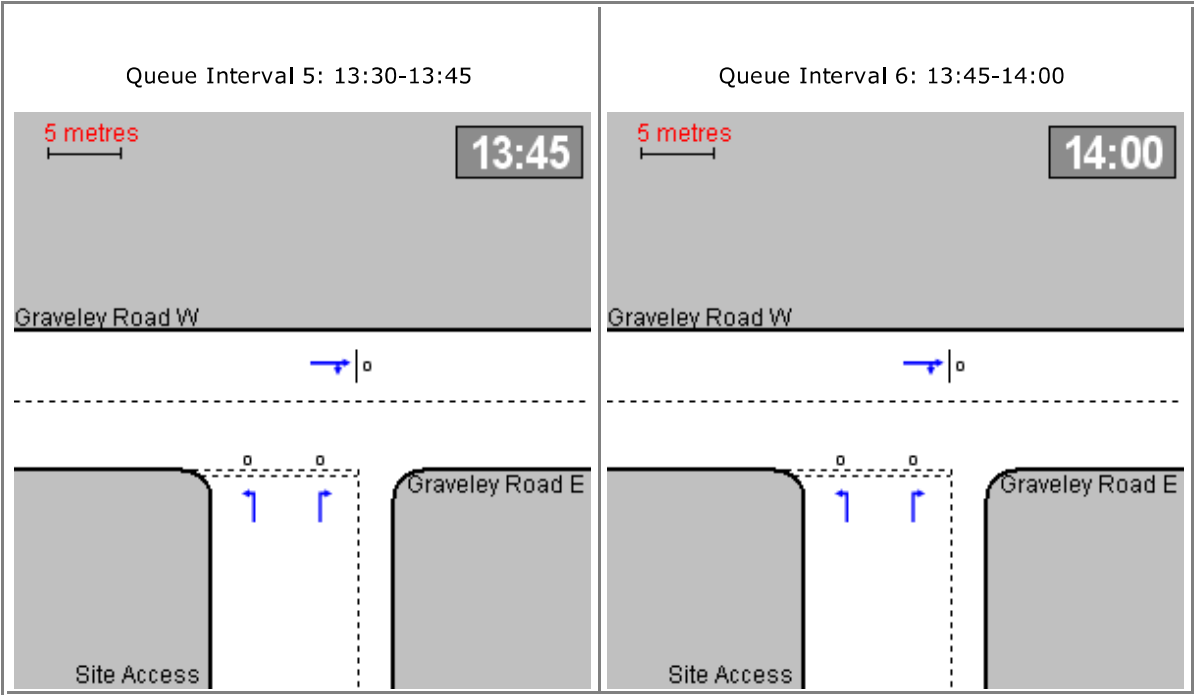
Demand Set: Existing Weekday PM Peak
Modelling Period: 16:30-18:00
View Extent: 40m



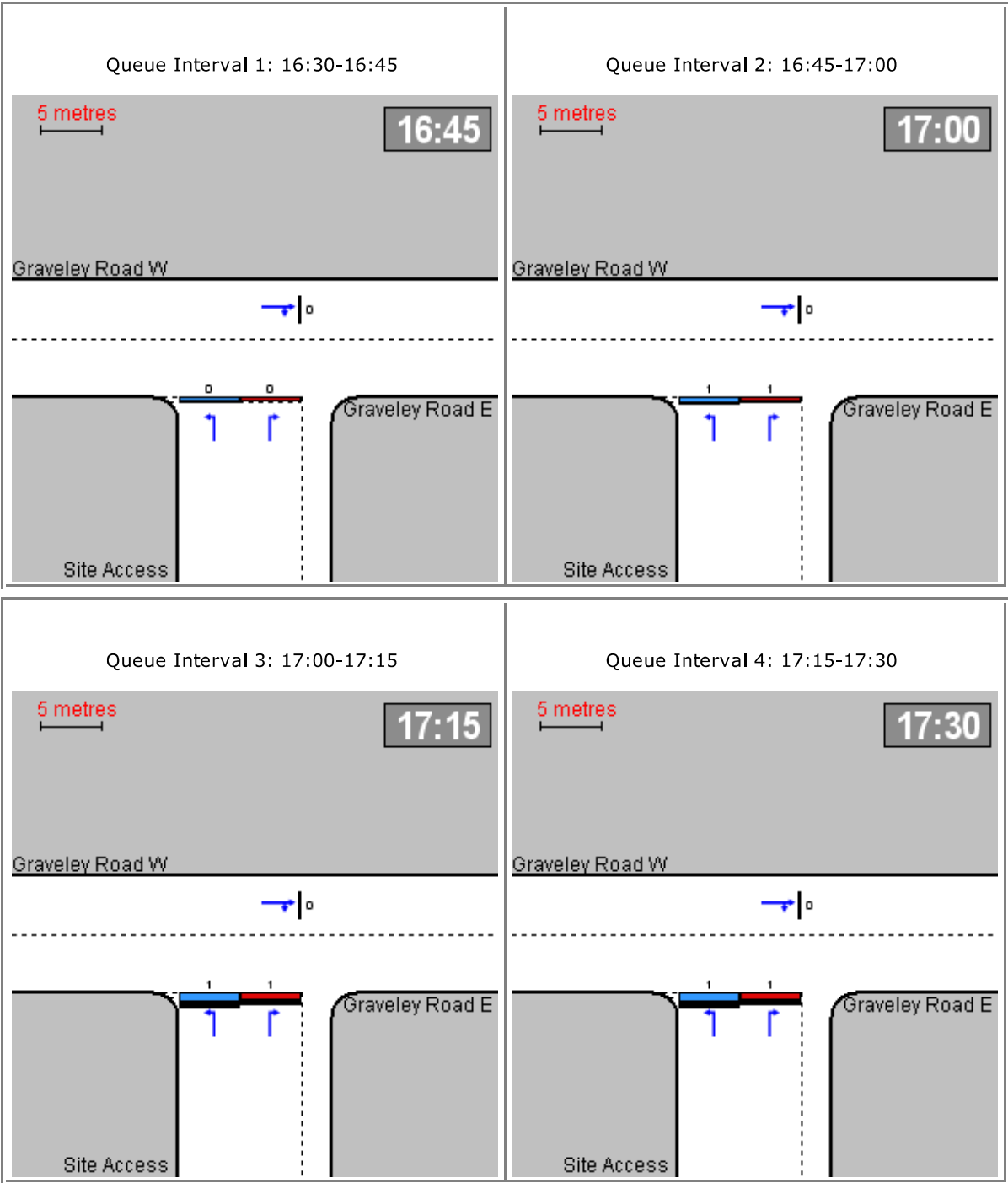


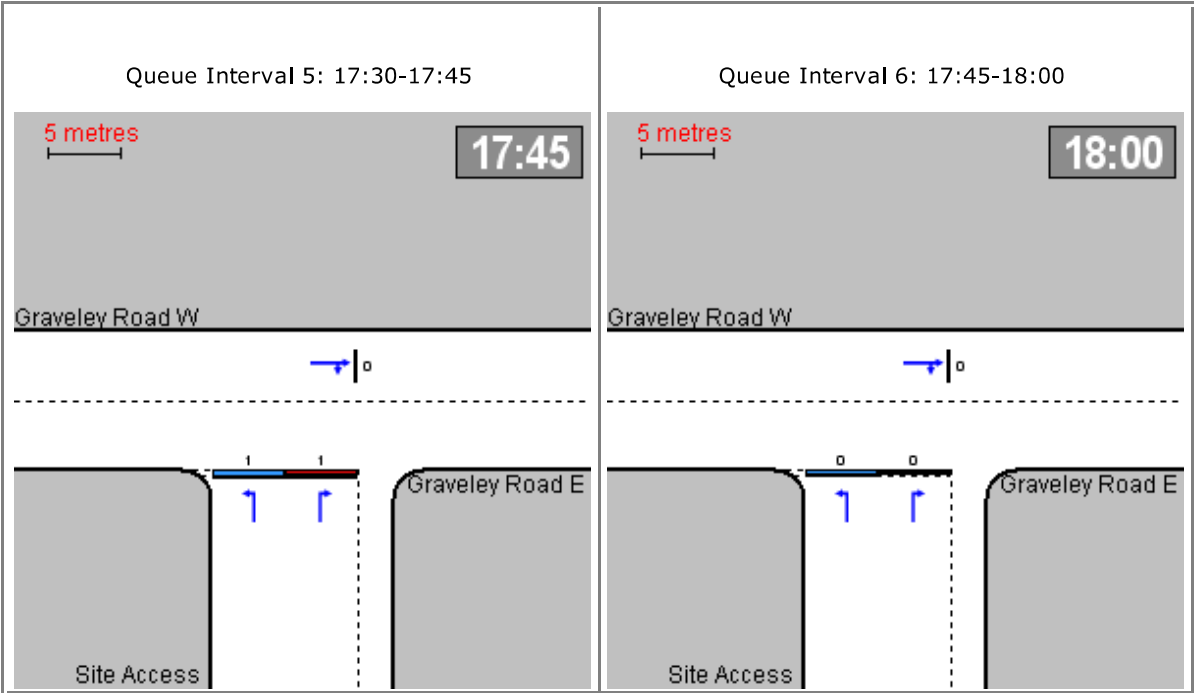
Demand Set: Existing Saturday Peak
Modelling Period: 12:30-14:00
View Extent: 40m



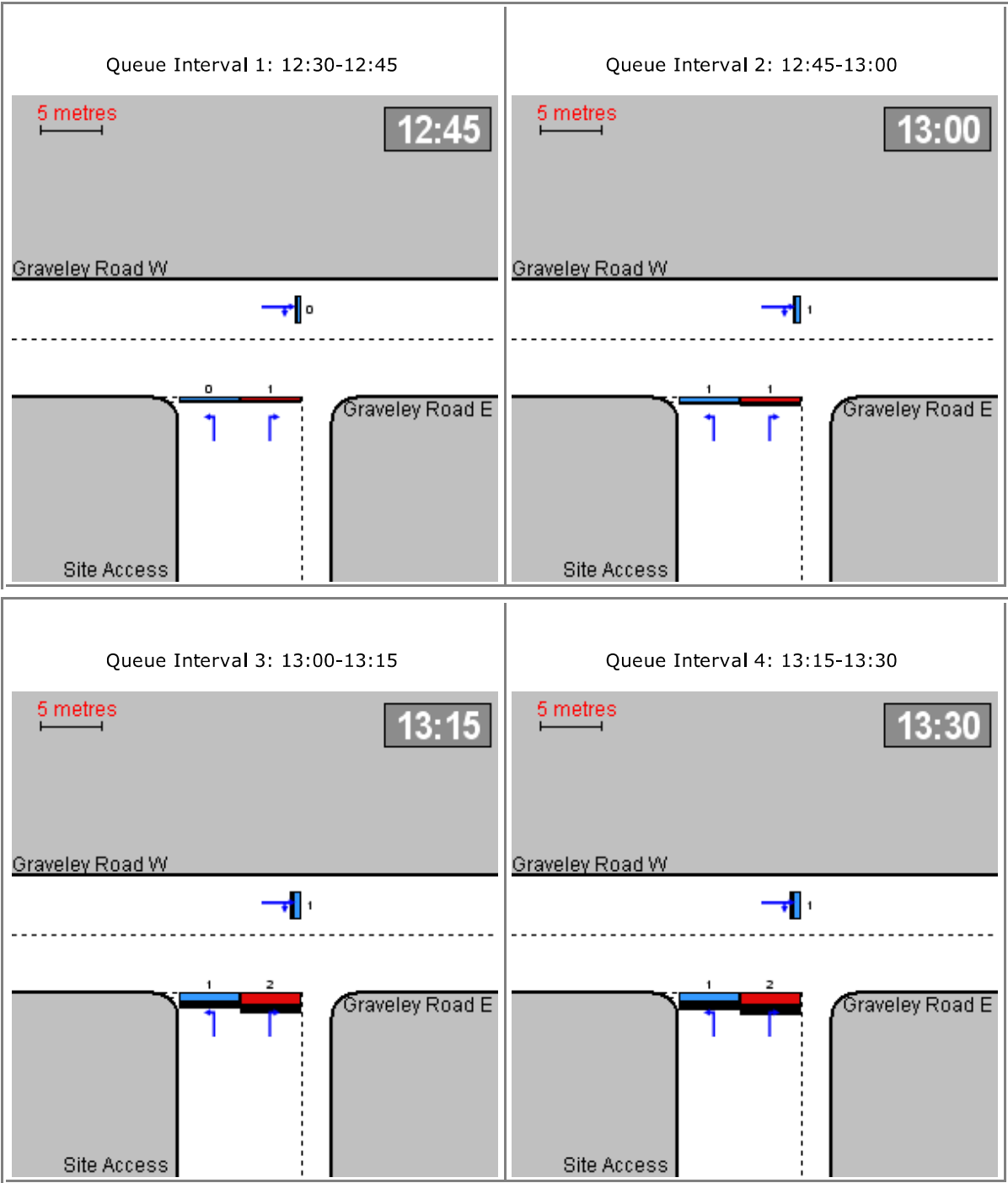


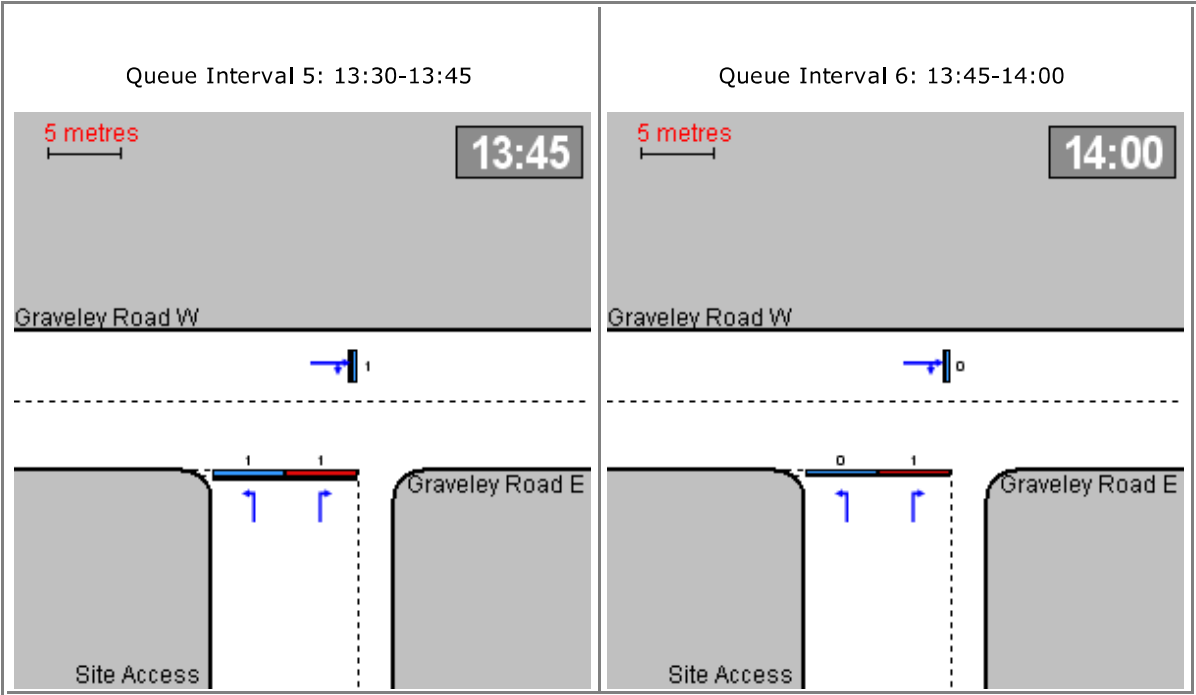
Demand Set: Weekday PM Peak with foodstore
Modelling Period: 16:30-18:00
View Extent: 40m





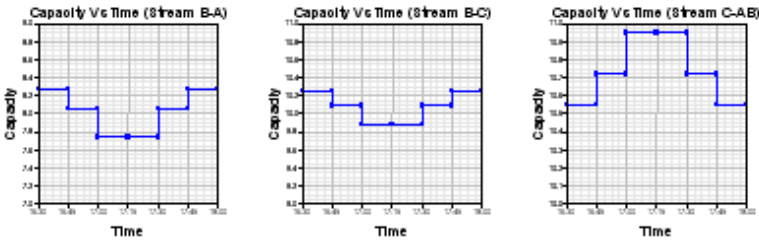
Demand Set: Saturday Peak with Foodstore
Modelling Period: 12:30-14:00
View Extent: 40m



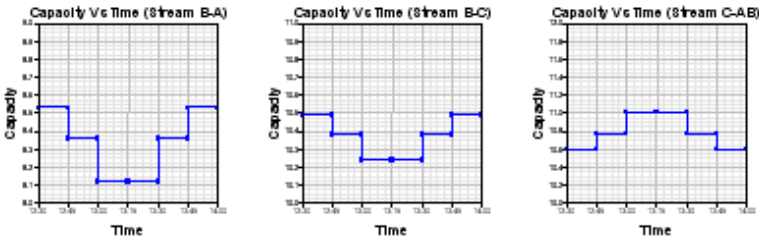


Capacity Graph

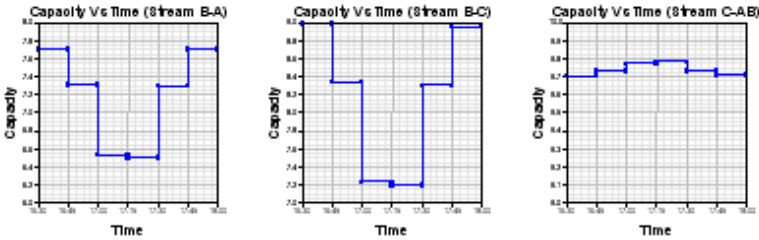
Demand Set: Existing Weekday PM Peak
Modelling Period: 16:30-18:00



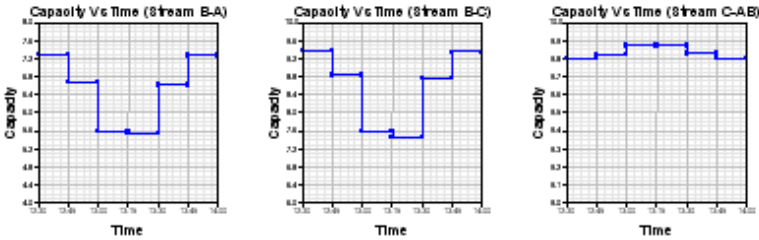
Demand Set: Existing Saturday Peak
Modelling Period: 12:30-14:00



Demand Set: Weekday PM Peak with foodstore
Modelling Period: 16:30-18:00

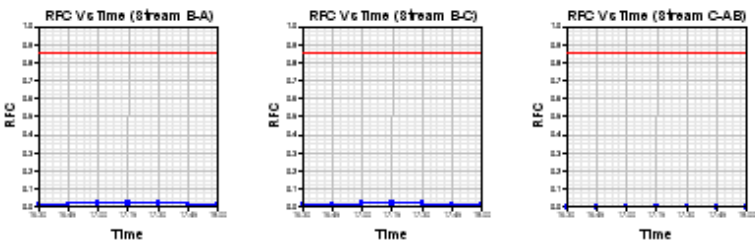


Demand Set: Saturday Peak with Foodstore
Modelling Period: 12:30-14:00

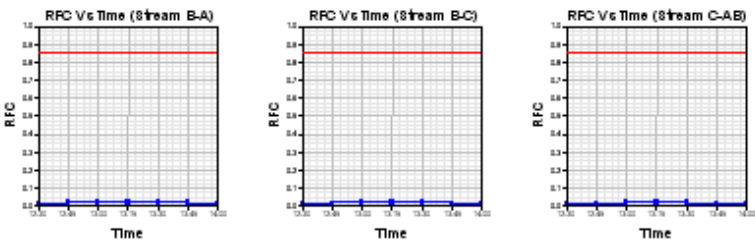


RFC Graph

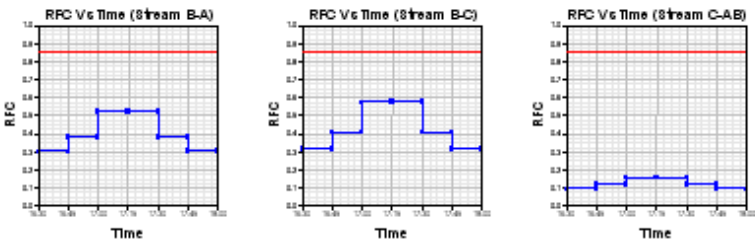
Demand Set: Existing Weekday PM Peak
Modelling Period: 16:30-18:00



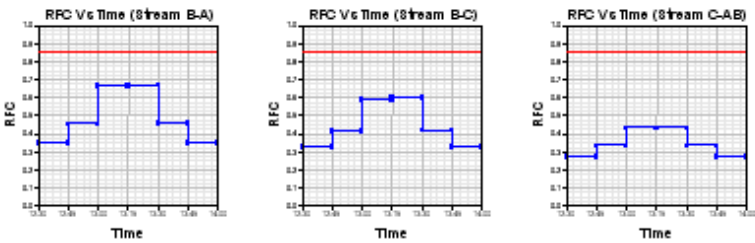
Demand Set: Existing Saturday Peak
Modelling Period: 12:30-14:00



Demand Set: Weekday PM Peak with foodstore
Modelling Period: 16:30-18:00

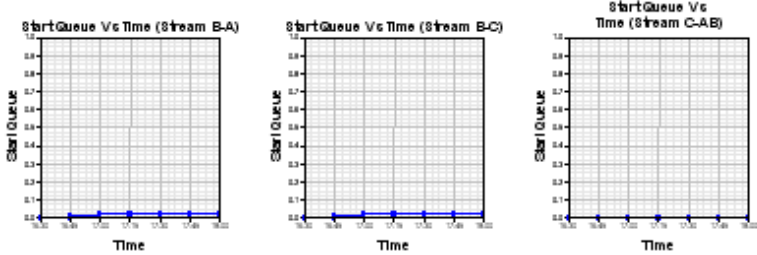


Demand Set: Saturday Peak with Foodstore
Modelling Period: 12:30-14:00

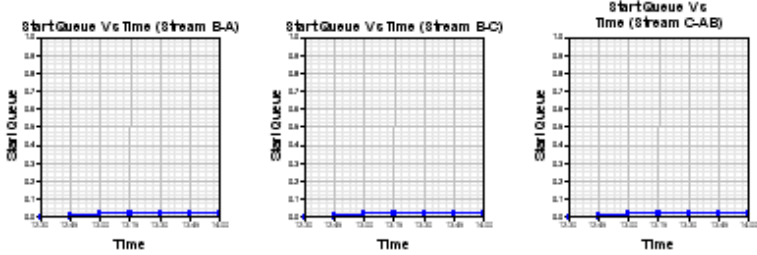


Start Queue Graph

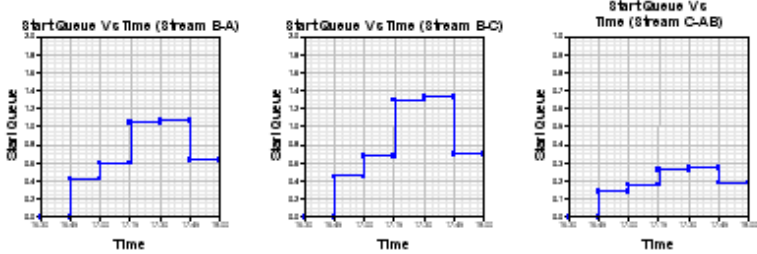
Demand Set: Existing Weekday PM Peak
Modelling Period: 16:30-18:00



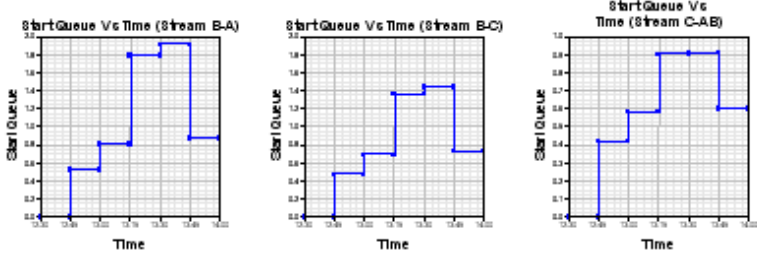
Demand Set: Existing Saturday Peak
Modelling Period: 12:30-14:00



Demand Set: Weekday PM Peak with foodstore
Modelling Period: 16:30-18:00

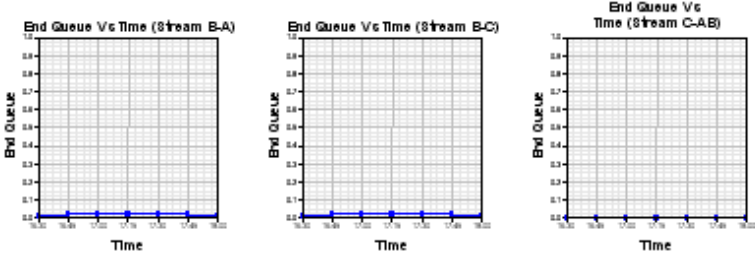


Demand Set: Saturday Peak with Foodstore
Modelling Period: 12:30-14:00

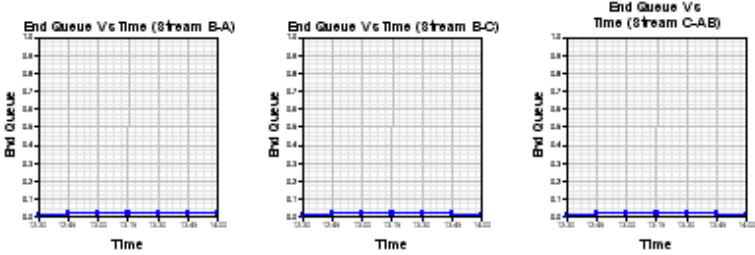


End Queue Graph

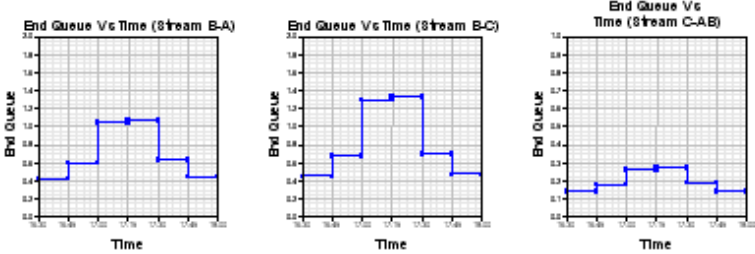
Demand Set: Existing Weekday PM Peak
Modelling Period: 16:30-18:00



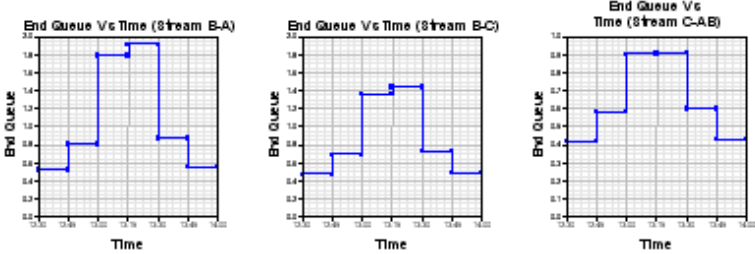
Demand Set: Existing Saturday Peak
Modelling Period: 12:30-14:00



Demand Set: Weekday PM Peak with foodstore
Modelling Period: 16:30-18:00

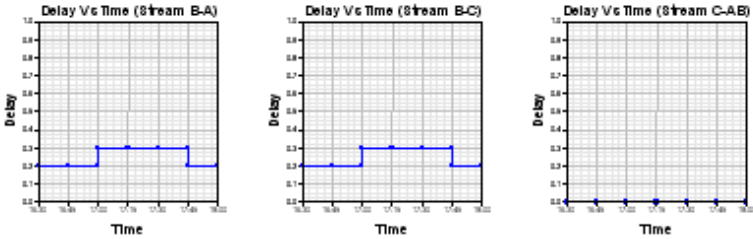


Demand Set: Saturday Peak with Foodstore
Modelling Period: 12:30-14:00

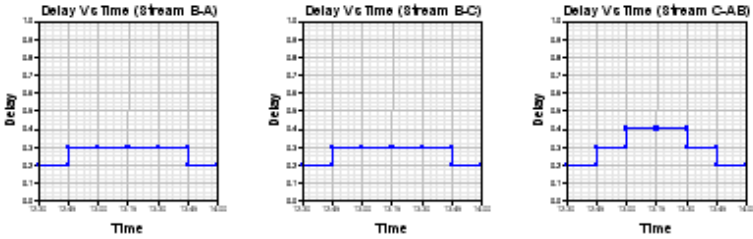


Delay Graph

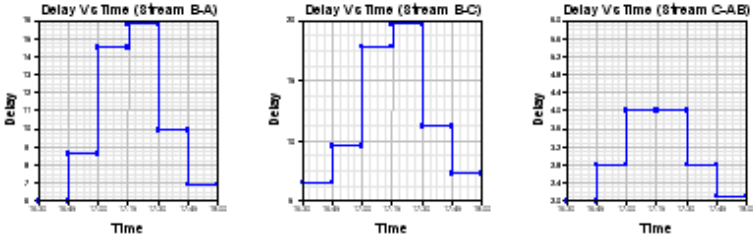
Demand Set: Existing Weekday PM Peak
Modelling Period: 16:30-18:00



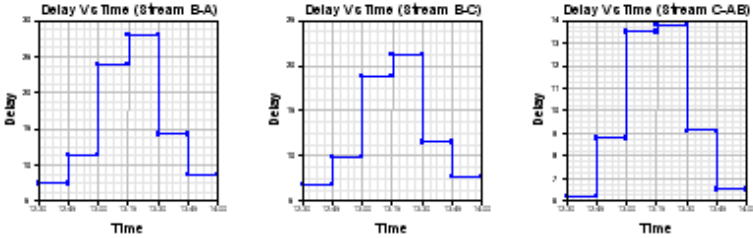
Demand Set: Existing Saturday Peak
Modelling Period: 12:30-14:00



Demand Set: Weekday PM Peak with foodstore
Modelling Period: 16:30-18:00



Demand Set: Saturday Peak with Foodstore
Modelling Period: 12:30-14:00



Queues & Delays

Demand Set: Existing Weekday PM Peak

Modelling Period: 16:30-18:00

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
16:30- 16:45	B-A	0.11	8.27	0.014	-	0.00	0.01	-	0.2	0.12
	B-C	0.14	10.25	0.013	-	0.00	0.01	-	0.2	0.10
	C-AB	0.02	10.55	0.001	-	0.00	0.00	-	0.0	0.09
	C-A	2.22	-	-	-	-	-	-	-	-
	A-B	0.08	-	-	-	-	-	-	-	-
	A-C	2.77	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
16:45- 17:00	B-A	0.13	8.05	0.017	-	0.01	0.02	-	0.2	0.13
	B-C	0.16	10.09	0.016	-	0.01	0.02	-	0.2	0.10
	C-AB	0.02	10.72	0.002	-	0.00	0.00	-	0.0	0.09
	C-A	2.65	-	-	-	-	-	-	-	-
	A-B	0.09	-	-	-	-	-	-	-	-
	A-C	3.31	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
17:00- 17:15	B-A	0.17	7.74	0.021	-	0.02	0.02	-	0.3	0.13
	B-C	0.20	9.88	0.020	-	0.02	0.02	-	0.3	0.10
	C-AB	0.03	10.95	0.002	-	0.00	0.00	-	0.0	0.09
	C-A	3.24	-	-	-	-	-	-	-	-
	A-B	0.11	-	-	-	-	-	-	-	-
	A-C	4.06	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
17:15- 17:30	B-A	0.17	7.74	0.021	-	0.02	0.02	-	0.3	0.13
	B-C	0.20	9.88	0.020	-	0.02	0.02	-	0.3	0.10
	C-AB	0.03	10.95	0.002	-	0.00	0.00	-	0.0	0.09
	C-A	3.24	-	-	-	-	-	-	-	-
	A-B	0.11	-	-	-	-	-	-	-	-
	A-C	4.06	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
17:30-17:45	B-A	0.13	8.05	0.017	-	0.02	0.02	-	0.3	0.13
	B-C	0.16	10.09	0.016	-	0.02	0.02	-	0.3	0.10
	C-AB	0.02	10.72	0.002	-	0.00	0.00	-	0.0	0.09
	C-A	2.65	-	-	-	-	-	-	-	-
	A-B	0.09	-	-	-	-	-	-	-	-
	A-C	3.31	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
17:45-18:00	B-A	0.11	8.27	0.014	-	0.02	0.01	-	0.2	0.12
	B-C	0.14	10.25	0.013	-	0.02	0.01	-	0.2	0.10
	C-AB	0.02	10.55	0.001	-	0.00	0.00	-	0.0	0.09
	C-A	2.22	-	-	-	-	-	-	-	-
	A-B	0.08	-	-	-	-	-	-	-	-
	A-C	2.77	-	-	-	-	-	-	-	-

Demand Set: Existing Saturday Peak

Modelling Period: 12:30-14:00

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
12:30-12:45	B-A	0.13	8.53	0.015	-	0.00	0.01	-	0.2	0.12
	B-C	0.15	10.49	0.014	-	0.00	0.01	-	0.2	0.10
	C-AB	0.14	10.60	0.013	-	0.00	0.01	-	0.2	0.10
	C-A	1.98	-	-	-	-	-	-	-	-
	A-B	0.18	-	-	-	-	-	-	-	-
	A-C	1.79	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
12:45-13:00	B-A	0.15	8.36	0.018	-	0.01	0.02	-	0.3	0.12
	B-C	0.18	10.38	0.017	-	0.01	0.02	-	0.3	0.10
	C-AB	0.17	10.77	0.016	-	0.01	0.02	-	0.3	0.09
	C-A	2.36	-	-	-	-	-	-	-	-
	A-B	0.21	-	-	-	-	-	-	-	-
	A-C	2.14	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
13:00- 13:15	B-A	0.18	8.12	0.023	-	0.02	0.02	-	0.3	0.13
	B-C	0.22	10.24	0.022	-	0.02	0.02	-	0.3	0.10
	C-AB	0.22	11.01	0.020	-	0.02	0.02	-	0.4	0.09
	C-A	2.88	-	-	-	-	-	-	-	-
	A-B	0.26	-	-	-	-	-	-	-	-
	A-C	2.62	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
13:15- 13:30	B-A	0.18	8.12	0.023	-	0.02	0.02	-	0.3	0.13
	B-C	0.22	10.24	0.022	-	0.02	0.02	-	0.3	0.10
	C-AB	0.22	11.01	0.020	-	0.02	0.02	-	0.4	0.09
	C-A	2.88	-	-	-	-	-	-	-	-
	A-B	0.26	-	-	-	-	-	-	-	-
	A-C	2.62	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
13:30- 13:45	B-A	0.15	8.36	0.018	-	0.02	0.02	-	0.3	0.12
	B-C	0.18	10.38	0.017	-	0.02	0.02	-	0.3	0.10
	C-AB	0.17	10.77	0.016	-	0.02	0.02	-	0.3	0.09
	C-A	2.36	-	-	-	-	-	-	-	-
	A-B	0.21	-	-	-	-	-	-	-	-
	A-C	2.14	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
13:45- 14:00	B-A	0.13	8.53	0.015	-	0.02	0.02	-	0.2	0.12
	B-C	0.15	10.49	0.014	-	0.02	0.01	-	0.2	0.10
	C-AB	0.14	10.60	0.013	-	0.02	0.01	-	0.2	0.10
	C-A	1.98	-	-	-	-	-	-	-	-
	A-B	0.18	-	-	-	-	-	-	-	-
	A-C	1.79	-	-	-	-	-	-	-	-

Demand Set: Weekday PM Peak with foodstore**Modelling Period:** 16:30-18:00

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
16:30-16:45	B-A	2.32	7.70	0.301	-	0.00	0.42	-	6.0	0.18
	B-C	2.84	8.98	0.316	-	0.00	0.45	-	6.5	0.16
	C-AB	0.91	9.70	0.093	-	0.00	0.14	-	2.0	0.11
	C-A	1.92	-	-	-	-	-	-	-	-
	A-B	4.28	-	-	-	-	-	-	-	-
	A-C	2.13	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
16:45-17:00	B-A	2.77	7.31	0.379	-	0.42	0.60	-	8.6	0.22
	B-C	3.39	8.34	0.406	-	0.45	0.67	-	9.6	0.20
	C-AB	1.15	9.73	0.119	-	0.14	0.18	-	2.8	0.12
	C-A	2.22	-	-	-	-	-	-	-	-
	A-B	5.11	-	-	-	-	-	-	-	-
	A-C	2.55	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
17:00-17:15	B-A	3.39	6.53	0.520	-	0.60	1.04	-	14.5	0.31
	B-C	4.15	7.23	0.574	-	0.67	1.29	-	17.8	0.32
	C-AB	1.53	9.77	0.156	-	0.18	0.26	-	4.0	0.12
	C-A	2.60	-	-	-	-	-	-	-	-
	A-B	6.26	-	-	-	-	-	-	-	-
	A-C	3.12	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
17:15-17:30	B-A	3.39	6.50	0.522	-	1.04	1.07	-	15.8	0.32
	B-C	4.15	7.19	0.577	-	1.29	1.33	-	19.7	0.33
	C-AB	1.53	9.78	0.157	-	0.26	0.27	-	4.0	0.12
	C-A	2.60	-	-	-	-	-	-	-	-
	A-B	6.26	-	-	-	-	-	-	-	-
	A-C	3.12	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
17:30-17:45	B-A	2.77	7.29	0.380	-	1.07	0.63	-	9.9	0.22
	B-C	3.39	8.30	0.408	-	1.33	0.70	-	11.2	0.21
	C-AB	1.16	9.73	0.119	-	0.27	0.19	-	2.8	0.12
	C-A	2.22	-	-	-	-	-	-	-	-
	A-B	5.11	-	-	-	-	-	-	-	-
	A-C	2.55	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
17:45-18:00	B-A	2.32	7.70	0.302	-	0.63	0.44	-	6.9	0.19
	B-C	2.84	8.95	0.317	-	0.70	0.47	-	7.3	0.16
	C-AB	0.91	9.71	0.094	-	0.19	0.14	-	2.1	0.11
	C-A	1.91	-	-	-	-	-	-	-	-
	A-B	4.28	-	-	-	-	-	-	-	-
	A-C	2.13	-	-	-	-	-	-	-	-

Demand Set: Saturday Peak with Foodstore

Modelling Period: 12:30-14:00

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
12:30-12:45	B-A	2.53	7.29	0.348	-	0.00	0.52	-	7.4	0.21
	B-C	3.05	9.38	0.325	-	0.00	0.47	-	6.8	0.16
	C-AB	2.63	9.80	0.269	-	0.00	0.42	-	6.2	0.14
	C-A	1.23	-	-	-	-	-	-	-	-
	A-B	3.40	-	-	-	-	-	-	-	-
	A-C	1.28	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
12:45-13:00	B-A	3.03	6.67	0.454	-	0.52	0.81	-	11.4	0.27
	B-C	3.64	8.84	0.412	-	0.47	0.69	-	9.9	0.19
	C-AB	3.28	9.82	0.334	-	0.42	0.58	-	8.8	0.15
	C-A	1.33	-	-	-	-	-	-	-	-
	A-B	4.06	-	-	-	-	-	-	-	-
	A-C	1.53	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
13:00-13:15	B-A	3.71	5.59	0.663	-	0.81	1.79	-	23.9	0.50
	B-C	4.46	7.58	0.588	-	0.69	1.36	-	18.8	0.31
	C-AB	4.26	9.87	0.432	-	0.58	0.90	-	13.5	0.18
	C-A	1.39	-	-	-	-	-	-	-	-
	A-B	4.97	-	-	-	-	-	-	-	-
	A-C	1.87	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
13:15-13:30	B-A	3.71	5.54	0.669	-	1.79	1.91	-	28.0	0.54
	B-C	4.46	7.46	0.598	-	1.36	1.44	-	21.2	0.33
	C-AB	4.26	9.87	0.432	-	0.90	0.91	-	13.8	0.18
	C-A	1.39	-	-	-	-	-	-	-	-
	A-B	4.97	-	-	-	-	-	-	-	-
	A-C	1.87	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
13:30-13:45	B-A	3.03	6.62	0.457	-	1.91	0.87	-	14.2	0.29
	B-C	3.64	8.76	0.416	-	1.44	0.73	-	11.5	0.20
	C-AB	3.29	9.83	0.334	-	0.91	0.60	-	9.1	0.15
	C-A	1.33	-	-	-	-	-	-	-	-
	A-B	4.06	-	-	-	-	-	-	-	-
	A-C	1.53	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
13:45-14:00	B-A	2.53	7.26	0.349	-	0.87	0.55	-	8.6	0.21
	B-C	3.05	9.34	0.326	-	0.73	0.49	-	7.7	0.16
	C-AB	2.64	9.80	0.270	-	0.60	0.43	-	6.5	0.14
	C-A	1.22	-	-	-	-	-	-	-	-
	A-B	3.40	-	-	-	-	-	-	-	-
	A-C	1.28	-	-	-	-	-	-	-	-

Entry capacities marked with an '(X)' are dominated by a pedestrian crossing in that time segment.

In time segments marked with a '(B)', traffic leaving the junction may block back from a crossing so impairing normal operation of the junction.

Delays marked with '##' could not be calculated.

Overall Queues & Delays

Queueing Delay Information Over Whole Period

Demand Set: Existing Weekday PM Peak

Modelling Period: 16:30-18:00

Stream	Total Demand (veh)	Total Demand (veh/h)	Queueing Delay (min)	Queueing Delay (min/veh)	Inclusive Delay (min)	Inclusive Delay (min/veh)
B-A	12.4	8.3	1.6	0.1	1.6	0.1
B-C	15.1	10.1	1.5	0.1	1.5	0.1
C-AB	1.8	1.2	0.2	0.1	0.2	0.1
C-A	243.2	162.1	-	-	-	-
A-B	8.3	5.5	-	-	-	-
A-C	304.2	202.8	-	-	-	-
All	585.0	390.0	3.3	0.0	3.3	0.0

Demand Set: Existing Saturday Peak

Modelling Period: 12:30-14:00

Stream	Total Demand (veh)	Total Demand (veh/h)	Queueing Delay (min)	Queueing Delay (min/veh)	Inclusive Delay (min)	Inclusive Delay (min/veh)
B-A	13.8	9.2	1.7	0.1	1.7	0.1
B-C	16.5	11.0	1.6	0.1	1.6	0.1
C-AB	16.0	10.7	1.7	0.1	1.7	0.1
C-A	216.6	144.4	-	-	-	-
A-B	19.3	12.8	-	-	-	-
A-C	196.8	131.2	-	-	-	-
All	479.0	319.3	5.0	0.0	5.0	0.0

Demand Set: Weekday PM Peak with foodstore

Modelling Period: 16:30-18:00

Stream	Total Demand (veh)	Total Demand (veh/h)	Queueing Delay (min)	Queueing Delay (min/veh)	Inclusive Delay (min)	Inclusive Delay (min/veh)
B-A	254.6	169.8	61.8	0.2	61.8	0.2
B-C	311.1	207.4	72.1	0.2	72.1	0.2
C-AB	107.8	71.9	17.6	0.2	17.6	0.2
C-A	201.9	134.6	-	-	-	-
A-B	469.4	312.9	-	-	-	-
A-C	234.0	156.0	-	-	-	-
All	1578.8	1052.5	151.5	0.1	151.5	0.1

Demand Set: Saturday Peak with Foodstore

Modelling Period: 12:30-14:00

Stream	Total Demand (veh)	Total Demand (veh/h)	Queueing Delay (min)	Queueing Delay (min/veh)	Inclusive Delay (min)	Inclusive Delay (min/veh)
B-A	278.0	185.4	93.5	0.3	93.5	0.3
B-C	334.5	223.0	75.9	0.2	75.9	0.2
C-AB	305.6	203.7	57.8	0.2	57.8	0.2
C-A	118.4	78.9	-	-	-	-
A-B	373.0	248.7	-	-	-	-
A-C	140.4	93.6	-	-	-	-
All	1549.9	1033.2	227.2	0.1	227.2	0.1

Delay is that occurring only within the time period.

Inclusive delay includes delay suffered by vehicles which are still queuing after the end of the time period.

These will only be significantly different if there is a large queue remaining at the end of the time period.

PICADY 5 Run Successful