PROPOSED LIDL FOODSTORE

Former Hayes Pool and Fitness Centre,
Central Avenue, Hayes Town

Addendum Transport Assessment:
Appendices J - Q
On behalf of Lidl UK

September 2016

Gateway TSP

Project:	Proposed Lidl Foodstore Former Hayes Pool and Fitness Centre, Central Avenue, Hayes Town
Client:	Lidl UK
Document:	Addendum Transport Assessment: Appendices J - Q
Gateway TSP ref:	MF/LF/16-0403 Appendices J - Q Cover
Issue date:	6th September 2016
Status:	v1.0
Authorised by:	LF

Gateway TSP

Transport Planning & Design

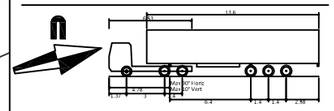
Surrey Technology Centre
40 Occam Road
Guildford
GU2 7YG

01483 685220
admin@gateway-tsp.co.uk
www.gateway-tsp.co.uk

CONTENTS

APPENDIX J

Site Access Swept Path Analysis



Refridgerated Articulated Vehicle (16.5m)

Overall Length	16.560m
Overall Width	2.600m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to Lock Time	6.00s
Kerb to Kerb Turning Radius	6.530m

rev	description	date
-	-	-

client

LIDL UK

project

BOTWELL LANE, HAYES

title

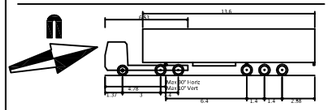
16.5 METRE ARTICULATED VEHICLE SERVICING THE SITE

Gateway TSP
Transport Planning & Design
Surrey Technology Centre, 40 Occam Road,
Guildford, Surrey GU2 7YG
www.gateway-tsp.co.uk
admin@gateway-tsp.co.uk
01483 685220

scale	drawn by	date
1/500 @ A3	MF	JUL 16

drawing number	rev
16/0403/TK10	-

EXISTING ZEBRA CROSSING
TO BE REMOVED



Refridgerated Articulated Vehicle (16.5m)

Overall Length	16.560m
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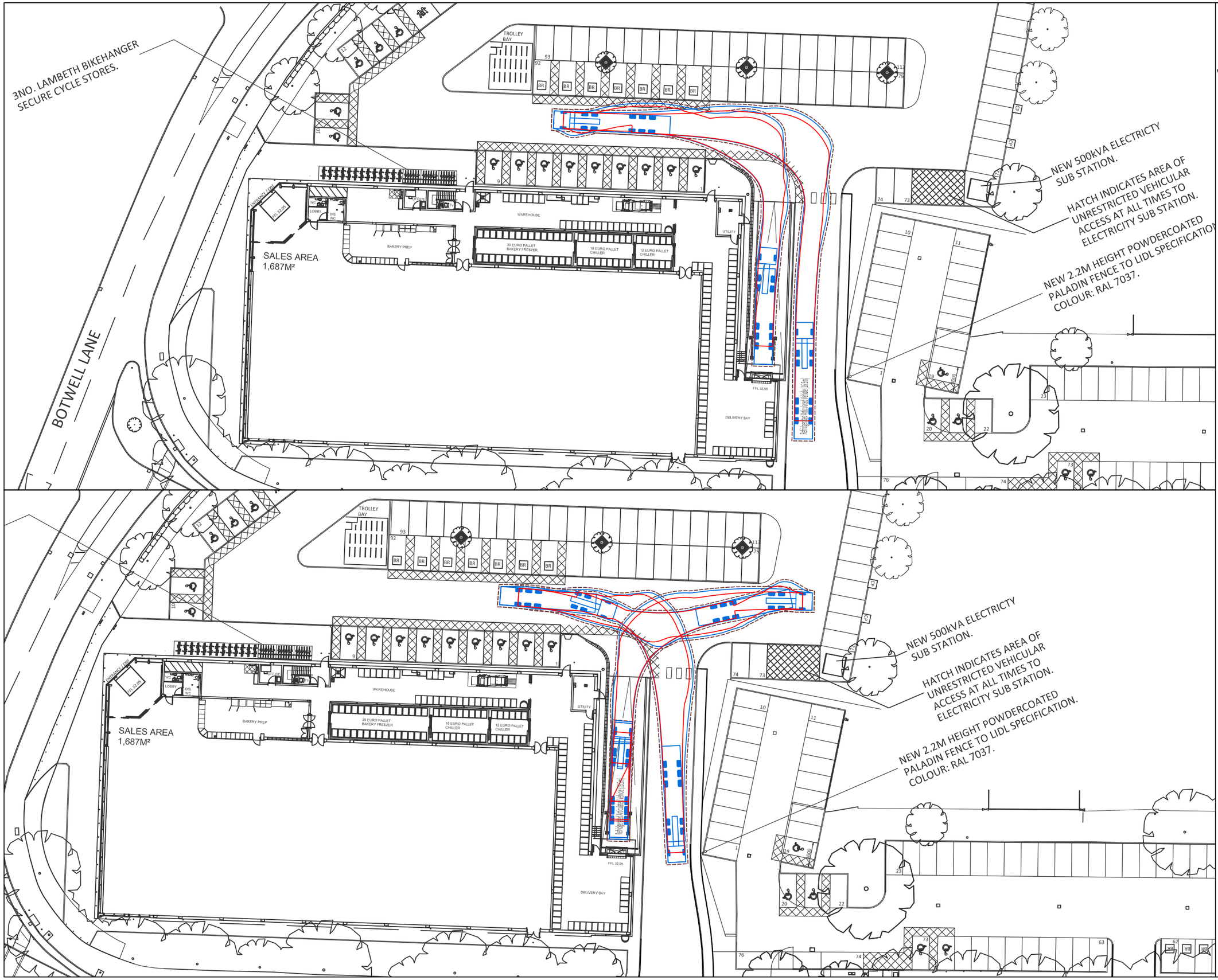
Kerb to Kerb Turning Radius	6.530m



rev	description	date
-	-	-

client

LIDL UK

project

BOTWELL LANE, HAYES

title

16.5 METRE ARTICULATED VEHICLE SERVICING THE SITE

Gateway TSP
Transport Planning & Design
Surrey Technology Centre, 40 Occam Road,
Guildford, Surrey GU2 7YG
www.gateway-tsp.co.uk
admin@gateway-tsp.co.uk
01483 685220

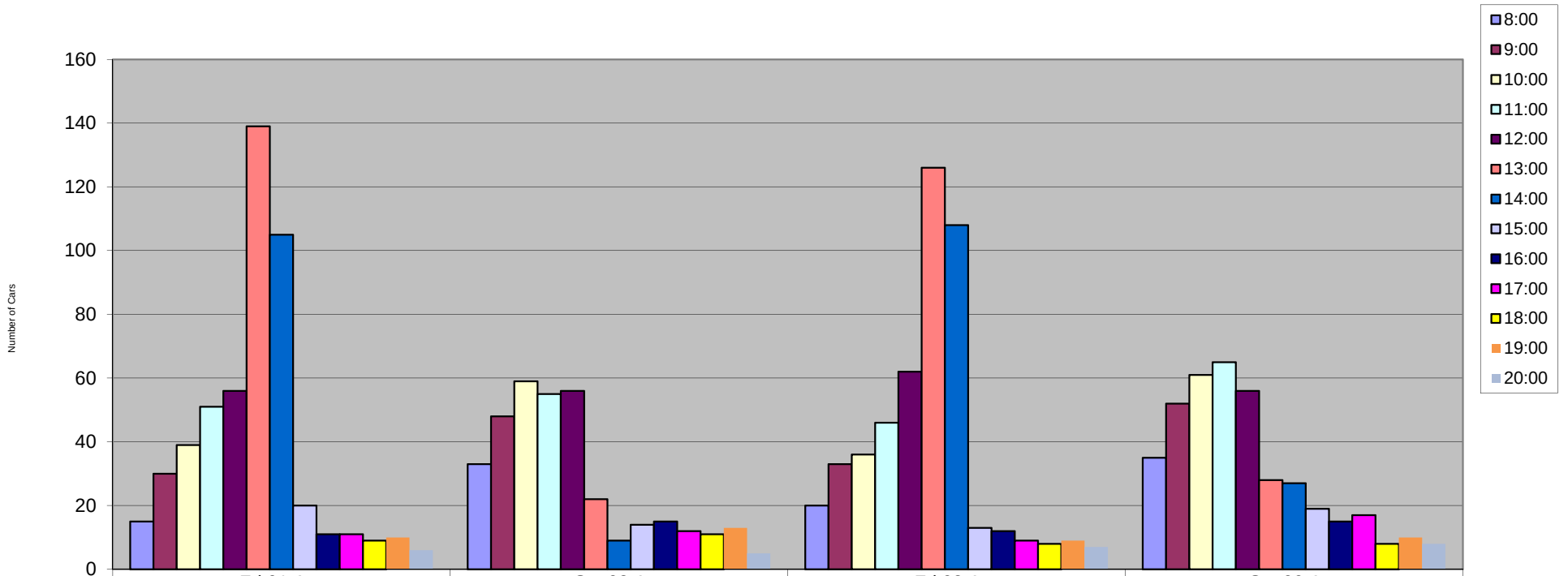
scale	drawn by	date
1/500 @ A3	MF	JUL 16

drawing number	rev
16/0403/TK11	-

APPENDIX K

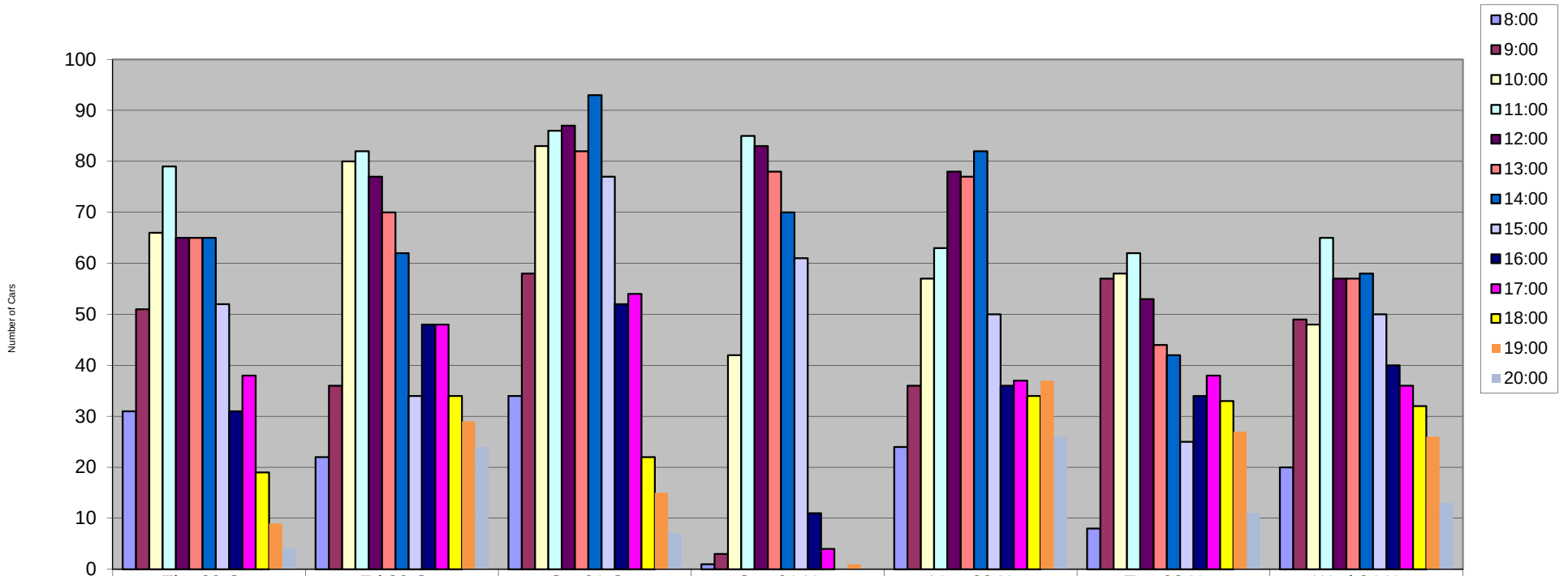
Lidl Edmonton and Lidl Welling ANPR Data

0517 Edmonton - Maximum Car Park Occupancy



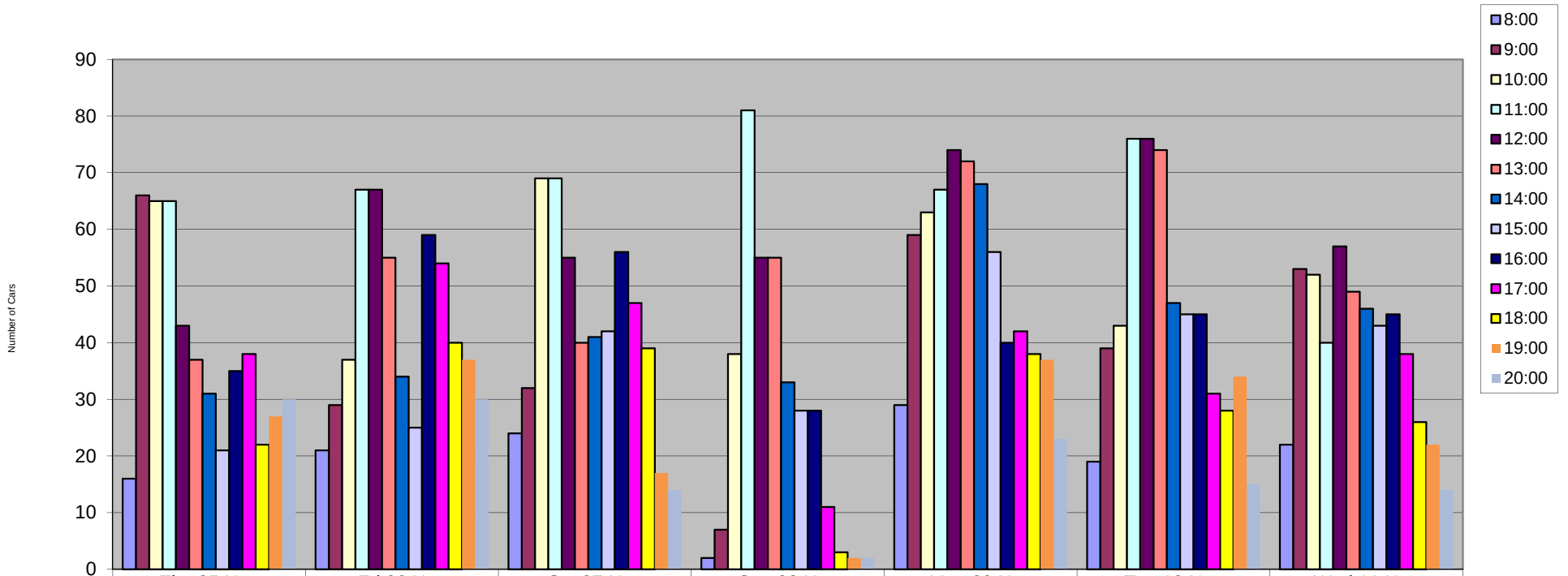
	Fri 01 Apr	Sat 02 Apr	Fri 08 Apr	Sat 09 Apr
8:00	15	33	20	35
9:00	30	48	33	52
10:00	39	59	36	61
11:00	51	55	46	65
12:00	56	56	62	56
13:00	139	22	126	28
14:00	105	9	108	27
15:00	20	14	13	19
16:00	11	15	12	15
17:00	11	12	9	17
18:00	9	11	8	8
19:00	10	13	9	10
20:00	6	5	7	8

0787 Welling - Maximum Car Park Occupancy



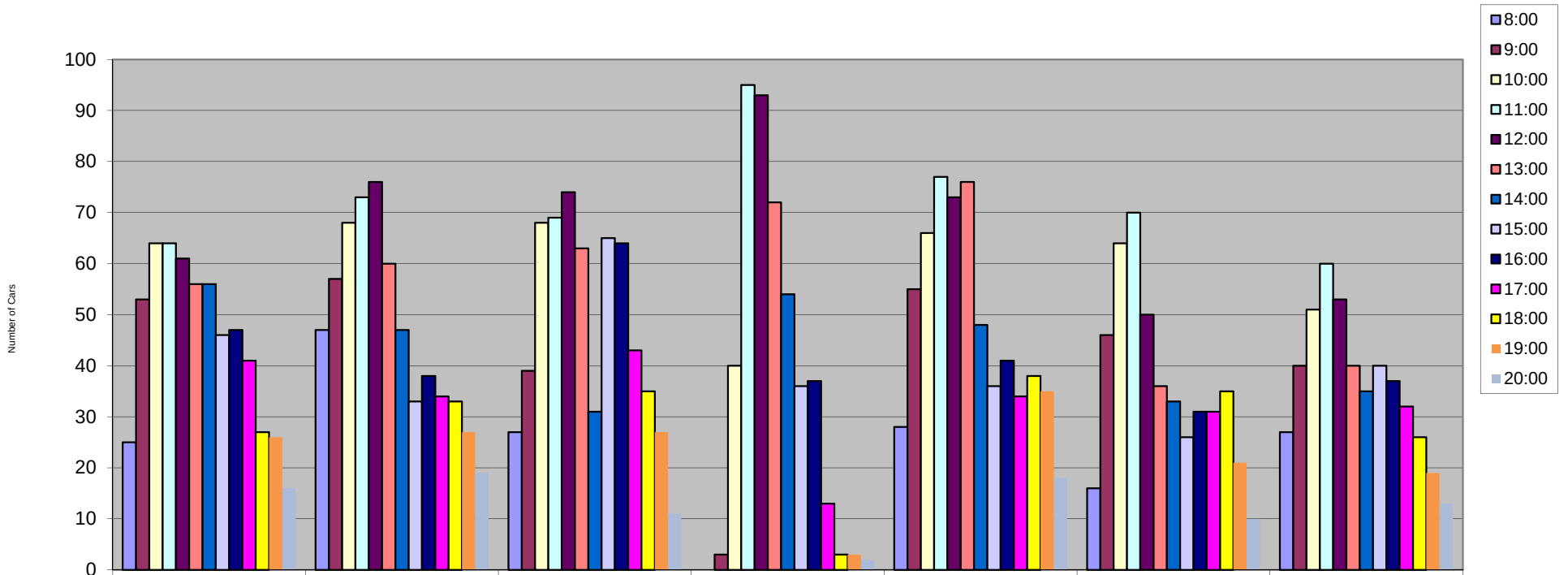
	Thu 29 Oct	Fri 30 Oct	Sat 31 Oct	Sun 01 Nov	Mon 02 Nov	Tue 03 Nov	Wed 04 Nov
8:00	31	22	34	1	24	8	20
9:00	51	36	58	3	36	57	49
10:00	66	80	83	42	57	58	48
11:00	79	82	86	85	63	62	65
12:00	65	77	87	83	78	53	57
13:00	65	70	82	78	77	44	57
14:00	65	62	93	70	82	42	58
15:00	52	34	77	61	50	25	50
16:00	31	48	52	11	36	34	40
17:00	38	48	54	4	37	38	36
18:00	19	34	22	0	34	33	32
19:00	9	29	15	1	37	27	26
20:00	4	24	7	0	26	11	13

0787 Welling - Maximum Car Park Occupancy



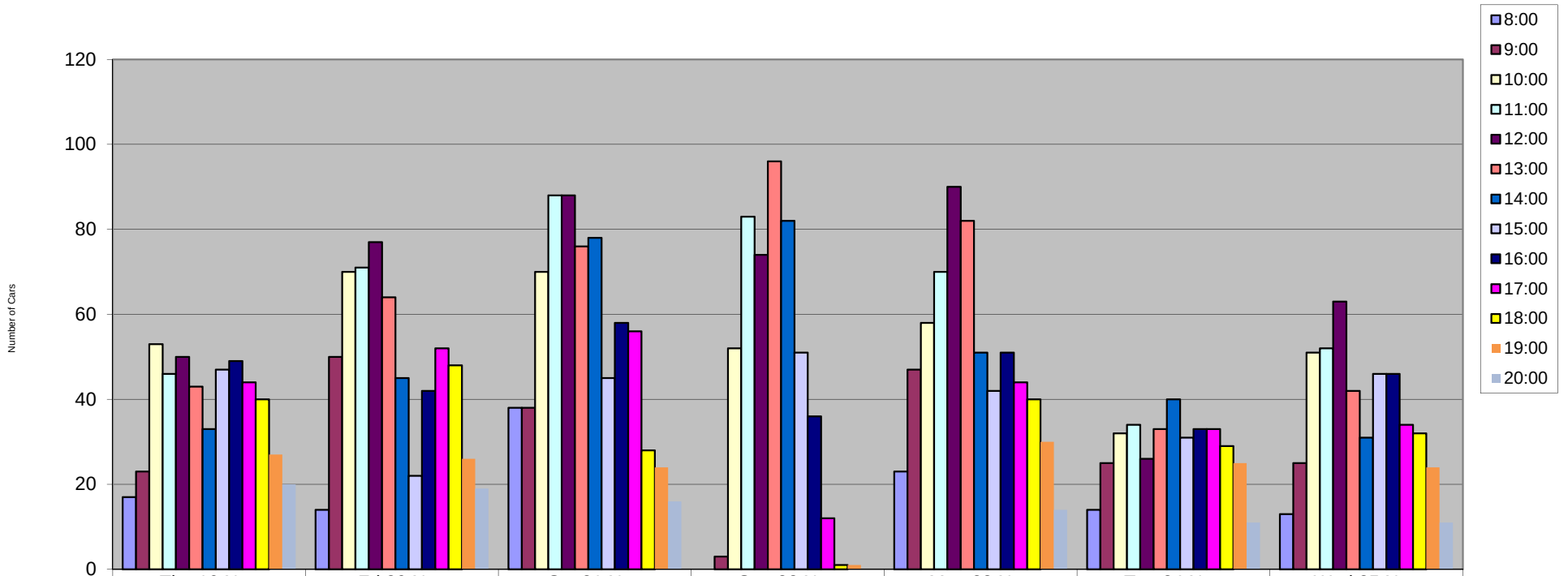
	Thu 05 Nov	Fri 06 Nov	Sat 07 Nov	Sun 08 Nov	Mon 09 Nov	Tue 10 Nov	Wed 11 Nov
8:00	16	21	24	2	29	19	22
9:00	66	29	32	7	59	39	53
10:00	65	37	69	38	63	43	52
11:00	65	67	69	81	67	76	40
12:00	43	67	55	55	74	76	57
13:00	37	55	40	55	72	74	49
14:00	31	34	41	33	68	47	46
15:00	21	25	42	28	56	45	43
16:00	35	59	56	28	40	45	45
17:00	38	54	47	11	42	31	38
18:00	22	40	39	3	38	28	26
19:00	27	37	17	2	37	34	22
20:00	30	30	14	2	23	15	14

0787 Welling - Maximum Car Park Occupancy



	Thu 12 Nov	Fri 13 Nov	Sat 14 Nov	Sun 15 Nov	Mon 16 Nov	Tue 17 Nov	Wed 18 Nov
8:00	25	47	27	0	28	16	27
9:00	53	57	39	3	55	46	40
10:00	64	68	68	40	66	64	51
11:00	64	73	69	95	77	70	60
12:00	61	76	74	93	73	50	53
13:00	56	60	63	72	76	36	40
14:00	56	47	31	54	48	33	35
15:00	46	33	65	36	36	26	40
16:00	47	38	64	37	41	31	37
17:00	41	34	43	13	34	31	32
18:00	27	33	35	3	38	35	26
19:00	26	27	27	3	35	21	19
20:00	16	19	11	2	18	10	13

0787 Welling - Maximum Car Park Occupancy



	Thu 19 Nov	Fri 20 Nov	Sat 21 Nov	Sun 22 Nov	Mon 23 Nov	Tue 24 Nov	Wed 25 Nov
8:00	17	14	38	0	23	14	13
9:00	23	50	38	3	47	25	25
10:00	53	70	70	52	58	32	51
11:00	46	71	88	83	70	34	52
12:00	50	77	88	74	90	26	63
13:00	43	64	76	96	82	33	42
14:00	33	45	78	82	51	40	31
15:00	47	22	45	51	42	31	46
16:00	49	42	58	36	51	33	46
17:00	44	52	56	12	44	33	34
18:00	40	48	28	1	40	29	32
19:00	27	26	24	1	30	25	24
20:00	20	19	16	0	14	11	11

APPENDIX L

Lidl Store Survey Data and Trip Rates

Proposed Lidl Foodstore, Central Avenue, Hayes
Trip Rate Analysis
Tooting (2016)

Friday

	Mode of travel by group - from survey, adjusted for sample & observed cars								
	Walk	**Bus**	**Cycle**	**Car**	**Car (disp)**	**Train**	**Tube**	**Other**	***Total***
No	No multi-modal survey available								
%									

Factor 100 sqm
Friday Daily Profile - Observed Units 1872 sqm

	Arrivals		**Departures**		**Totals**		***Accum***
Time Range	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	*4*
00:00-01:00							*4*
01:00-02:00							*4*
02:00-03:00							*4*
03:00-04:00							*4*
04:00-05:00							*4*
05:00-06:00							*4*
06:00-07:00							*4*
07:00-08:00	0.59	11	0.21	4	0.80	15	*11*
08:00-09:00	2.24	42	1.76	33	4.01	75	*20*
09:00-10:00	3.74	70	2.24	42	5.98	112	*48*
10:00-11:00	3.31	62	3.53	66	6.84	128	*44*
11:00-12:00	5.07	95	4.70	88	9.78	183	*51*
12:00-13:00	5.40	101	5.07	95	10.47	196	*57*
13:00-14:00	4.49	84	5.40	101	9.88	185	*40*
14:00-15:00	4.59	86	3.95	74	8.55	160	*52*
15:00-16:00	3.79	71	4.59	86	8.39	157	*37*
16:00-17:00	4.11	77	3.95	74	8.07	151	*40*
17:00-18:00	4.65	87	4.17	78	8.81	165	*49*
18:00-19:00	4.01	75	4.49	84	8.49	159	*40*
19:00-20:00	4.06	76	4.11	77	8.17	153	*39*
20:00-21:00	4.17	78	4.54	85	8.71	163	*32*
21:00-22:00	1.442	27	2.83	53	4.27	80	*6*
22:00-23:00							*6*
23:00-24:00							*6*
Daily:	**55.66**	**1,042**	**55.56**	**1,040**	**111.22**	**2,082**	

Proposed Lidl Foodstore, Central Avenue, Hayes
Trip Rate Analysis
Tooting (2016)

Saturday

	Mode of travel by group - from survey, adjusted for sample & observed cars								
	Walk	**Bus**	**Cycle**	**Car**	**Car (disp)**	**Train**	**Tube**	**Other**	***Total***
No	No multi-modal survey available								
%									

Factor 100 sqm
Saturday Daily Profile - Observed Units 1872 sqm

	Arrivals		**Departures**		**Totals**		***Accum***
Time Range	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	*3*
00:00-01:00							*3*
01:00-02:00							*3*
02:00-03:00							*3*
03:00-04:00							*3*
04:00-05:00							*3*
05:00-06:00							*3*
06:00-07:00							*3*
07:00-08:00	0.96	18	0.16	3	1.12	21	*18*
08:00-09:00	3.90	73	2.67	50	6.57	123	*41*
09:00-10:00	5.40	101	4.27	80	9.67	181	*62*
10:00-11:00	6.57	123	5.24	98	11.81	221	*87*
11:00-12:00	5.93	111	7.00	131	12.93	242	*67*
12:00-13:00	6.52	122	5.82	109	12.34	231	*80*
13:00-14:00	5.29	99	6.41	120	11.70	219	*59*
14:00-15:00	4.97	93	5.02	94	9.99	187	*58*
15:00-16:00	4.75	89	5.07	95	9.83	184	*52*
16:00-17:00	4.65	87	4.86	91	9.51	178	*48*
17:00-18:00	5.77	108	5.66	106	11.43	214	*50*
18:00-19:00	4.81	90	5.56	104	10.36	194	*36*
19:00-20:00	3.47	65	4.06	76	7.53	141	*25*
20:00-21:00	2.88	54	3.63	68	6.52	122	*11*
21:00-22:00	1.603	30	1.87	35	3.47	65	*6*
22:00-23:00							*6*
23:00-24:00							*6*
Daily:	**67.47**	**1,263**	**67.31**	**1,260**	**134.78**	**2,523**	

Proposed Lidl Foodstore, Central Avenue, Hayes
Trip Rate Analysis
Wallington (2015)

Friday

	Mode of travel by group - from survey, adjusted for sample & observed cars								
	Walk	**Bus**	**Cycle**	**Car**	**Car (disp)**	**Train**	**Tube**	**Other**	***Total***
No	No multi-modal survey available								
%									

Factor 100 sqm
Units 1543 sqm

Parking Accumulation - Observed

	Arrivals		**Departures**		**Totals**		***Accum***
Time Range	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	*26*
00:00-01:00							*26*
01:00-02:00							*26*
02:00-03:00							*26*
03:00-04:00							*26*
04:00-05:00							*26*
05:00-06:00							*26*
06:00-07:00							*26*
07:00-08:00							*26*
08:00-09:00	6.42	99	4.60	71	11.02	170	*54*
09:00-10:00	5.57	86	6.16	95	11.73	181	*45*
10:00-11:00	3.95	61	4.21	65	8.17	126	*41*
11:00-12:00	4.47	69	4.28	66	8.75	135	*44*
12:00-13:00	4.99	77	5.06	78	10.05	155	*43*
13:00-14:00	4.73	73	4.99	77	9.72	150	*39*
14:00-15:00	4.47	69	4.08	63	8.55	132	*45*
15:00-16:00	4.60	71	4.54	70	9.14	141	*46*
16:00-17:00	4.93	76	5.31	82	10.24	158	*40*
17:00-18:00	3.82	59	5.12	79	8.94	138	*20*
18:00-19:00	3.37	52	3.56	55	6.93	107	*17*
19:00-20:00	2.33	36	3.05	47	5.38	83	*6*
20:00-21:00	1.43	22	1.81	28	3.24	50	*0*
21:00-22:00							*0*
22:00-23:00							*0*
23:00-24:00							*0*
Daily:	**55.09**	**850**	**56.77**	**876**	**111.86**	**1,726**	

Proposed Lidl Foodstore, Central Avenue, Hayes
Trip Rate Analysis
Wallington (2015)

Saturday

	Mode of travel by group - from survey, adjusted for sample & observed cars								
	Walk	**Bus**	**Cycle**	**Car**	**Car (disp)**	**Train**	**Tube**	**Other**	***Total***
No	No multi-modal survey available								
%									

Factor 100 sqm
Units 1543 sqm

Saturday Daily Profile - Observed

	Arrivals		**Departures**		**Totals**		***Accum***
Time Range	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	*12*
00:00-01:00							*12*
01:00-02:00							*12*
02:00-03:00							*12*
03:00-04:00							*12*
04:00-05:00							*12*
05:00-06:00							*12*
06:00-07:00							*12*
07:00-08:00							*12*
08:00-09:00	5.83	90	4.08	63	9.92	153	*39*
09:00-10:00	5.64	87	5.83	90	11.47	177	*36*
10:00-11:00	5.96	92	5.44	84	11.41	176	*44*
11:00-12:00	6.80	105	6.55	101	13.35	206	*48*
12:00-13:00	5.83	90	5.64	87	11.47	177	*51*
13:00-14:00	7.65	118	7.58	117	15.23	235	*52*
14:00-15:00	6.80	105	7.13	110	13.93	215	*47*
15:00-16:00	5.38	83	5.44	84	10.82	167	*46*
16:00-17:00	4.15	64	4.67	72	8.81	136	*38*
17:00-18:00	5.06	78	5.44	84	10.50	162	*32*
18:00-19:00	3.76	58	5.06	78	8.81	136	*12*
19:00-20:00	2.20	34	2.53	39	4.73	73	*7*
20:00-21:00	1.94	30	2.40	37	4.34	67	*0*
21:00-22:00							*0*
22:00-23:00							*0*
23:00-24:00							*0*
Daily:	**67.01**	**1,034**	**67.79**	**1,046**	**134.80**	**2,080**	

Proposed Lidl Foodstore, Central Avenue, Hayes
Trip Rate Analysis
Average Trip Rates

Friday

	Mode of travel by group - from survey, adjusted for sample & observed cars								
	Walk	**Bus**	**Cycle**	**Car**	**Car (o/s)**	**Train**	**Tube**	**Other**	***Total***
No	580	287	47	976	60	18	3	16	*1,988*
%	*29%*	*14%*	*2%*	*49%*	*3%*	*1%*	*0%*	*1%*	*100%*

Factor 100 sqm
Friday Daily Profile Units 1708 sqm

	Arrivals		**Departures**		**Totals**		***Accum***
Time Range	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	
00:00-01:00							*0*
01:00-02:00							*0*
02:00-03:00							*0*
03:00-04:00							*0*
04:00-05:00							*0*
05:00-06:00							*0*
06:00-07:00							*0*
07:00-08:00	0.64	11	0.23	4	0.88	15	*7*
08:00-09:00	4.13	71	3.05	52	7.17	123	*26*
09:00-10:00	4.57	78	4.01	69	8.58	147	*35*
10:00-11:00	3.60	62	3.84	66	7.44	127	*31*
11:00-12:00	4.80	82	4.51	77	9.31	159	*36*
12:00-13:00	5.21	89	5.07	87	10.28	176	*39*
13:00-14:00	4.60	79	5.21	89	9.81	168	*28*
14:00-15:00	4.54	78	4.01	69	8.55	146	*37*
15:00-16:00	4.16	71	4.57	78	8.73	149	*30*
16:00-17:00	4.48	77	4.57	78	9.05	155	*29*
17:00-18:00	4.28	73	4.60	79	8.87	152	*23*
18:00-19:00	3.72	64	4.07	70	7.79	133	*17*
19:00-20:00	3.28	56	3.63	62	6.91	118	*11*
20:00-21:00	2.93	50	3.31	57	6.24	107	*5*
21:00-22:00	1.58	27	3.10	53	4.69	80	*-22*
22:00-23:00							*-22*
23:00-24:00							*-22*
Daily:	**56.52**	**965**	**57.77**	**987**	**114.29**	**1,952**	

Proposed Lidl Foodstore, Central Avenue, Hayes
Trip Rate Analysis
Average Trip Rates

Saturday

	Mode of travel by group - from survey, adjusted for sample & observed cars								
	Walk	**Bus**	**Cycle**	**Car**	**Car (o/s)**	**Train**	**Tube**	**Other**	***Total***
No	546	255	31	1,172	68	24	7	15	*2,119*
%	*26%*	*12%*	*1%*	*55%*	*3%*	*1%*	*0%*	*1%*	*100%*

Factor 100 sqm
Units 1708 sqm

Saturday Daily Profile

	Arrivals		**Departures**		**Totals**		***Accum***
Time Range	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	
00:00-01:00							*0*
01:00-02:00							*0*
02:00-03:00							*0*
03:00-04:00							*0*
04:00-05:00							*0*
05:00-06:00							*0*
06:00-07:00							*0*
07:00-08:00	1.05	18	0.18	3	1.23	21	*15*
08:00-09:00	4.77	82	3.31	57	8.08	138	*40*
09:00-10:00	5.51	94	4.98	85	10.48	179	*49*
10:00-11:00	6.30	108	5.33	91	11.63	199	*66*
11:00-12:00	6.33	108	6.79	116	13.12	224	*58*
12:00-13:00	6.21	106	5.74	98	11.95	204	*66*
13:00-14:00	6.35	109	6.94	119	13.29	227	*56*
14:00-15:00	5.80	99	5.97	102	11.77	201	*53*
15:00-16:00	5.04	86	5.24	90	10.28	176	*49*
16:00-17:00	4.42	76	4.77	82	9.19	157	*43*
17:00-18:00	5.45	93	5.56	95	11.01	188	*41*
18:00-19:00	4.33	74	5.33	91	9.66	165	*24*
19:00-20:00	2.90	50	3.37	58	6.27	107	*16*
20:00-21:00	2.46	42	3.07	53	5.53	95	*6*
21:00-22:00	1.76	30	2.05	35	3.81	65	*1*
22:00-23:00							*1*
23:00-24:00							*1*
Daily:	**68.67**	**1,173**	**68.64**	**1,172**	**137.31**	**2,345**	

APPENDIX M

Proposed Lidl Hayes Trip Rates and Trips

Proposed Lidl Foodstore, Central Avenue, Hayes
Trip Rate Analysis

Friday

	Mode of travel by group - from survey, adjusted for sample & observed cars								
	Walk	**Bus**	**Cycle**	**Car**	**Car (o/s)**	**Train**	**Tube**	**Other**	***Total***
No	490	242	40	1,436	51	15	3	14	*1,680*
%	*29%*	*14%*	*2%*	*49%*	*3%*	*1%*	*0%*	*1%*	*100%*

Factor 100 sqm
Friday Daily Profile Units 2639 sqm

	Arrivals		**Departures**		**Totals**		***Accum***
Time Range	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	*3*
00:00-01:00							*3*
01:00-02:00							*3*
02:00-03:00							*3*
03:00-04:00							*3*
04:00-05:00							*3*
05:00-06:00							*3*
06:00-07:00							*3*
07:00-08:00							*3*
08:00-09:00	4.13	109	3.05	80	7.17	189	*32*
09:00-10:00	4.57	121	4.01	106	8.58	227	*47*
10:00-11:00	3.60	95	3.84	101	7.44	196	*41*
11:00-12:00	4.80	127	4.51	119	9.31	246	*49*
12:00-13:00	5.21	138	5.07	134	10.28	272	*53*
13:00-14:00	4.60	121	5.21	138	9.81	259	*36*
14:00-15:00	4.54	120	4.01	106	8.55	226	*50*
15:00-16:00	4.16	110	4.57	121	8.73	231	*39*
16:00-17:00	4.48	118	4.57	121	9.05	239	*36*
17:00-18:00	4.28	113	4.60	121	8.87	234	*28*
18:00-19:00	3.72	98	4.07	107	7.79	205	*19*
19:00-20:00	3.28	87	3.63	96	6.91	183	*10*
20:00-21:00	2.93	77	3.31	87	6.24	164	*0*
21:00-22:00							*0*
22:00-23:00							*0*
23:00-24:00							*0*
Daily:	**54.29**	**1,434**	**54.44**	**1,437**	**108.73**	**2,871**	

Proposed Lidl Foodstore, Central Avenue, Hayes
Trip Rate Analysis

Saturday

	Mode of travel by group - from survey, adjusted for sample & observed cars								
	Walk	**Bus**	**Cycle**	**Car**	**Car (o/s)**	**Train**	**Tube**	**Other**	***Total***
No	464	216	26	1,745	58	21	6	13	*1,798*
%	*26%*	*12%*	*1%*	*55%*	*3%*	*1%*	*0%*	*1%*	*100%*

Factor 100 sqm
Saturday Daily Profile Units 2639 sqm

	Arrivals		**Departures**		**Totals**		***Accum***
Time Range	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	**Veh Trip Rate**	**Trips**	*15*
00:00-01:00							*15*
01:00-02:00							*15*
02:00-03:00							*15*
03:00-04:00							*15*
04:00-05:00							*15*
05:00-06:00							*15*
06:00-07:00							*15*
07:00-08:00							*15*
08:00-09:00	4.77	126	3.31	87	8.08	213	*54*
09:00-10:00	5.51	145	4.98	131	10.48	277	*68*
10:00-11:00	6.30	166	5.33	141	11.63	307	*93*
11:00-12:00	6.33	167	6.79	179	13.12	346	*81*
12:00-13:00	6.21	164	5.74	151	11.95	315	*93*
13:00-14:00	6.35	168	6.94	183	13.29	351	*78*
14:00-15:00	5.80	153	5.97	158	11.77	311	*73*
15:00-16:00	5.04	133	5.24	138	10.28	271	*68*
16:00-17:00	4.42	117	4.77	126	9.19	243	*58*
17:00-18:00	5.45	144	5.56	147	11.01	291	*55*
18:00-19:00	4.33	114	5.33	141	9.66	255	*29*
19:00-20:00	2.90	77	3.37	89	6.27	165	*17*
20:00-21:00	2.46	65	3.07	81	5.53	146	*0*
21:00-22:00							*0*
22:00-23:00							*0*
23:00-24:00							*0*
Daily:	**65.86**	**1,738**	**66.41**	**1,753**	**132.27**	**3,491**	

APPENDIX N

JUNCTIONS 9 PICADY Output – Site Access/Central Avenue

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.0.1.4646 []

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

Filename: 16-0403 Site Access Central Avenue Picady v2.0.j9
Path: G:\Projects\2016\16-0403 lidl hayes 5\Analysis\Modelling
Report generation date: 06/09/2016 15:50:03

Summary of junction performance

	PM				SAT			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	Proposed Junction Layout - 2016 Baseline with Development							
Stream B-C	0.1	7.92	0.07	A	0.1	8.36	0.10	A
Stream B-A	0.2	9.22	0.18	A	0.4	10.13	0.28	B
Stream C-AB	0.0	5.38	0.02	A	0.1	5.62	0.04	A
	Proposed Junction Layout - 2021 Baseline with Development							
Stream B-C	0.1	7.96	0.07	A	0.1	8.40	0.10	A
Stream B-A	0.2	9.34	0.19	A	0.4	10.27	0.28	B
Stream C-AB	0.0	5.31	0.02	A	0.1	5.57	0.04	A

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

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

File summary

File Description

Title	Site Access/Central Avenue Junction
Location	
Site number	
Date	06/09/2016
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	Gateway TSP
Description	

Units

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

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2016 Baseline with Development	PM	DIRECT	16:45	17:45	60	15
D2	2021 Baseline with Development	PM	DIRECT	16:45	17:45	60	15
D3	2016 Baseline with Development	SAT	DIRECT	12:45	13:45	60	15
D4	2021 Baseline with Development	SAT	DIRECT	12:45	13:45	60	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Proposed Junction Layout	100.000

Proposed Junction Layout - 2016 Baseline with Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	2.22	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Central Avenue (S)		Major
B	Site Access		Minor
C	Central Avenue (N)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	7.43			64.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	6.47	4.49	4.09	3.61	3.15		1.00	14	36

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/TS)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	137.748	0.094	0.238	0.150	0.340
1	B-C	136.808	0.079	0.199	-	-
1	C-B	152.757	0.222	0.222	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2016 Baseline with Development	PM	DIRECT	16:45	17:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A		✓	100.000
B		✓	100.000
C		✓	100.000

Origin-Destination Data

16:45 - 17:00

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	27.00	20.00
	B	22.00	0.00	8.00
	C	44.00	3.00	0.00

17:00 - 17:15

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	27.00	17.00
	B	22.00	0.00	8.00
	C	46.00	3.00	0.00

17:15 - 17:30

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	27.00	32.00
	B	22.00	0.00	8.00
	C	46.00	3.00	0.00

17:30 - 17:45

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	27.00	23.00
	B	22.00	0.00	8.00
	C	51.00	3.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-C	0.07	7.92	0.1	A
B-A	0.18	9.22	0.2	A
C-AB	0.02	5.38	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	8.00	124.22	0.064	7.93	0.1	7.736	A
B-A	22.00	122.77	0.179	21.78	0.2	8.894	A
C-AB	4.03	172.41	0.023	4.00	0.0	5.344	A
C-A	42.97			42.97			
A-B	27.00			27.00			
A-C	20.00			20.00			

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	8.00	124.72	0.064	8.00	0.1	7.710	A
B-A	22.00	123.19	0.179	22.00	0.2	8.894	A
C-AB	4.08	174.38	0.023	4.08	0.0	5.284	A
C-A	44.92			44.92			
A-B	27.00			27.00			
A-C	17.00			17.00			

17:15 - 17:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	8.00	121.66	0.066	8.00	0.1	7.918	A
B-A	22.00	119.61	0.184	21.99	0.2	9.219	A
C-AB	4.11	171.39	0.024	4.11	0.0	5.382	A
C-A	44.89			44.89			
A-B	27.00			27.00			
A-C	32.00			32.00			

17:30 - 17:45

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	8.00	123.44	0.065	8.00	0.1	7.795	A
B-A	22.00	121.01	0.182	22.00	0.2	9.091	A
C-AB	4.23	176.61	0.024	4.23	0.0	5.222	A
C-A	49.77			49.77			
A-B	27.00			27.00			
A-C	23.00			23.00			

Proposed Junction Layout - 2021 Baseline with Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	2.14	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D2	2021 Baseline with Development	PM	DIRECT	16:45	17:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A		✓	100.000
B		✓	100.000
C		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

16:45 - 17:00

		To		
		A	B	C
From	A	0.00	27.00	22.00
	B	22.00	0.00	8.00
	C	48.00	3.00	0.00

Demand (Veh/TS)

17:00 - 17:15

		To		
		A	B	C
From	A	0.00	27.00	19.00
	B	22.00	0.00	8.00
	C	50.00	3.00	0.00

17:15 - 17:30

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	27.00	35.00
	B	22.00	0.00	8.00
	C	50.00	3.00	0.00

17:30 - 17:45

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	27.00	26.00
	B	22.00	0.00	8.00
	C	55.00	3.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-C	0.07	7.96	0.1	A
B-A	0.19	9.34	0.2	A
C-AB	0.02	5.31	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	8.00	123.78	0.065	7.93	0.1	7.766	A
B-A	22.00	121.69	0.181	21.78	0.2	8.987	A
C-AB	4.14	174.74	0.024	4.11	0.0	5.274	A
C-A	46.86			46.86			
A-B	27.00			27.00			
A-C	22.00			22.00			

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	8.00	124.27	0.064	8.00	0.1	7.740	A
B-A	22.00	122.11	0.180	22.00	0.2	8.989	A
C-AB	4.19	176.71	0.024	4.19	0.0	5.218	A
C-A	48.81			48.81			
A-B	27.00			27.00			
A-C	19.00			19.00			

17:15 - 17:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	8.00	121.00	0.066	8.00	0.1	7.964	A
B-A	22.00	118.30	0.186	21.99	0.2	9.343	A
C-AB	4.22	173.55	0.024	4.22	0.0	5.314	A
C-A	48.78			48.78			
A-B	27.00			27.00			
A-C	35.00			35.00			

17:30 - 17:45

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	8.00	122.79	0.065	8.00	0.1	7.841	A
B-A	22.00	119.70	0.184	22.00	0.2	9.213	A
C-AB	4.34	178.76	0.024	4.34	0.0	5.161	A
C-A	53.66			53.66			
A-B	27.00			27.00			
A-C	26.00			26.00			

Proposed Junction Layout - 2016 Baseline with Development, SAT

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	3.37	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	2016 Baseline with Development	SAT	DIRECT	12:45	13:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A		✓	100.000
B		✓	100.000
C		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

12:45 - 13:00

		To		
		A	B	C
From	A	0.00	37.00	12.00
	B	34.00	0.00	12.00
	C	45.00	5.00	0.00

Demand (Veh/TS)

13:00 - 13:15

		To		
		A	B	C
From	A	0.00	37.00	11.00
	B	34.00	0.00	12.00
	C	48.00	5.00	0.00

Demand (Veh/TS)

13:15 - 13:30

		To		
		A	B	C
From	A	0.00	37.00	5.00
	B	34.00	0.00	12.00
	C	56.00	5.00	0.00

Demand (Veh/TS)

13:30 - 13:45

		To		
		A	B	C
From	A	0.00	37.00	9.00
	B	34.00	0.00	12.00
	C	35.00	5.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-C	0.10	8.36	0.1	A
B-A	0.28	10.13	0.4	B
C-AB	0.04	5.62	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

12:45 - 13:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	12.00	119.73	0.100	11.89	0.1	8.337	A
B-A	34.00	123.04	0.276	33.62	0.4	10.024	B
C-AB	6.76	172.69	0.039	6.71	0.1	5.421	A
C-A	43.24			43.24			
A-B	37.00			37.00			
A-C	12.00			12.00			

13:00 - 13:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	12.00	119.69	0.100	12.00	0.1	8.357	A
B-A	34.00	122.83	0.277	34.00	0.4	10.131	B
C-AB	6.91	174.95	0.039	6.91	0.1	5.358	A
C-A	46.09			46.09			
A-B	37.00			37.00			
A-C	11.00			11.00			

13:15 - 13:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	12.00	120.80	0.099	12.00	0.1	8.273	A
B-A	34.00	123.07	0.276	34.00	0.4	10.104	B
C-AB	7.25	181.59	0.040	7.25	0.1	5.162	A
C-A	53.75			53.75			
A-B	37.00			37.00			
A-C	5.00			5.00			

13:30 - 13:45

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	12.00	120.35	0.100	12.00	0.1	8.305	A
B-A	34.00	125.26	0.271	34.00	0.4	9.862	A
C-AB	6.34	166.47	0.038	6.34	0.1	5.623	A
C-A	33.66			33.66			
A-B	37.00			37.00			
A-C	9.00			9.00			

Proposed Junction Layout - 2021 Baseline with Development, SAT

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	3.27	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D4	2021 Baseline with Development	SAT	DIRECT	12:45	13:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A		✓	100.000
B		✓	100.000
C		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

12:45 - 13:00

		To		
		A	B	C
From	A	0.00	37.00	14.00
	B	34.00	0.00	12.00
	C	49.00	5.00	0.00

Demand (Veh/TS)

13:00 - 13:15

		To		
		A	B	C
From	A	0.00	37.00	13.00
	B	34.00	0.00	12.00
	C	53.00	5.00	0.00

Demand (Veh/TS)

13:15 - 13:30

		To		
		A	B	C
From	A	0.00	37.00	6.00
	B	34.00	0.00	12.00
	C	62.00	5.00	0.00

Demand (Veh/TS)

13:30 - 13:45

		To		
		A	B	C
From	A	0.00	37.00	11.00
	B	34.00	0.00	12.00
	C	38.00	5.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-C	0.10	8.40	0.1	A
B-A	0.28	10.27	0.4	B
C-AB	0.04	5.57	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

12:45 - 13:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	12.00	119.23	0.101	11.89	0.1	8.376	A
B-A	34.00	121.96	0.279	33.62	0.4	10.145	B
C-AB	6.94	175.03	0.040	6.89	0.1	5.351	A
C-A	47.06			47.06			
A-B	37.00			37.00			
A-C	14.00			14.00			

13:00 - 13:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	12.00	119.16	0.101	12.00	0.1	8.398	A
B-A	34.00	121.60	0.280	34.00	0.4	10.273	B
C-AB	7.14	177.98	0.040	7.14	0.1	5.268	A
C-A	50.86			50.86			
A-B	37.00			37.00			
A-C	13.00			13.00			

13:15 - 13:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	12.00	120.46	0.100	12.00	0.1	8.297	A
B-A	34.00	121.93	0.279	34.00	0.4	10.235	B
C-AB	7.53	185.49	0.041	7.53	0.1	5.059	A
C-A	59.47			59.47			
A-B	37.00			37.00			
A-C	6.00			6.00			

13:30 - 13:45

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
B-C	12.00	119.87	0.100	12.00	0.1	8.342	A
B-A	34.00	124.33	0.273	34.01	0.4	9.964	A
C-AB	6.47	168.11	0.039	6.47	0.1	5.568	A
C-A	36.53			36.53			
A-B	37.00			37.00			
A-C	11.00			11.00			

APPENDIX O

JUNCTIONS 9 PICADY Output – Central Avenue/Botwell Lane

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 16-0403 Botwell Lane Central Avenue Picady v2.0.j9
Path: G:\Projects\2016\16-0403 lidl hayes 5\Analysis\Modelling
Report generation date: 06/09/2016 15:43:51

Summary of junction performance

	PM				SAT			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	Existing Junction Layout - 2016 Baseline with Committed Development							
Stream B-C	0.3	12.71	0.25	B	0.4	12.30	0.31	B
Stream B-A	1.6	32.34	0.64	D	1.2	25.80	0.56	D
Stream C-AB	0.5	5.02	0.17	A	0.5	5.43	0.18	A
	Existing Junction Layout - 2021 Baseline with Committed Development							
Stream B-C	0.4	18.90	0.31	C	0.7	16.74	0.40	C
Stream B-A	2.6	47.99	0.76	E	1.8	36.32	0.67	E
Stream C-AB	0.7	5.04	0.20	A	0.7	5.50	0.22	A
	Existing Junction Layout - 2016 Baseline with Committed Development and Proposed Development							
Stream B-C	0.5	19.22	0.33	C	1.0	22.05	0.51	C
Stream B-A	2.6	47.27	0.76	E	2.5	44.88	0.74	E
Stream C-AB	0.9	5.74	0.28	A	1.0	6.31	0.31	A
	Existing Junction Layout - 2021 Baseline with Committed Development and Proposed Development							
Stream B-C	1.1	42.38	0.54	E	2.7	56.62	0.77	F
Stream B-A	4.4	74.32	0.88	F	4.8	78.87	0.90	F
Stream C-AB	1.1	5.85	0.31	A	1.2	6.39	0.35	A

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	Botwell Lane/Central Avenue Junction
Location	
Site number	
Date	06/09/2016
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	Gateway TSP
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	PCU	perTimeSegment	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 period length (min)	Time segment length (min)	Run automatically
D1	2016 Baseline with Committed Development	PM	DIRECT	16:45	17:45	60	15	✓
D2	2021 Baseline with Committed Development	PM	DIRECT	16:45	17:45	60	15	✓
D3	2016 Baseline with Committed Development and Proposed Development	PM	DIRECT	16:45	17:45	60	15	✓
D4	2021 Baseline with Committed Development and Proposed Development	PM	DIRECT	16:45	17:45	60	15	✓
D5	2016 Baseline with Committed Development	SAT	DIRECT	12:45	13:45	60	15	✓
D6	2021 Baseline with Committed Development	SAT	DIRECT	12:45	13:45	60	15	✓
D7	2016 Baseline with Committed Development and Proposed Development	SAT	DIRECT	12:45	13:45	60	15	✓
D8	2021 Baseline with Committed Development and Proposed Development	SAT	DIRECT	12:45	13:45	60	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Existing Junction Layout	✓	100.000	100.000

Existing Junction Layout - 2016 Baseline with Committed Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	4.33	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Botwell Lane (W)		Major
B	Central Avenue		Minor
C	Botwell Lane (Town Centre Arm)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	7.10			70.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	9.10	4.10	3.34	3.34	3.34		1.00	20	40

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/TS)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	136.311	0.095	0.239	0.150	0.341
1	B-C	180.151	0.105	0.266	-	-
1	C-B	153.625	0.227	0.227	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2016 Baseline with Committed Development	PM	DIRECT	16:45	17:45	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

16:45 - 17:00

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	28.00	126.00
	B	34.00	0.00	24.00
	C	128.00	9.00	0.00

17:00 - 17:15

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	24.00	124.00
	B	36.00	0.00	24.00
	C	123.00	10.00	0.00

17:15 - 17:30

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	36.00	139.00
	B	32.00	0.00	28.00
	C	142.00	13.00	0.00

17:30 - 17:45

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	30.00	135.00
	B	46.00	0.00	19.00
	C	140.00	10.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	7
	B	0	0	0
	C	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
B-C	0.25	12.71	0.3	B	23.75	95.00
B-A	0.64	32.34	1.6	D	37.00	148.00
C-AB	0.17	5.02	0.5	A	29.42	117.67
C-A					120.73	482.91
A-B					29.50	118.00
A-C					139.78	559.11

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	24.00	24.00	116.88	0.205	23.75	0.0	0.3	9.638	A
B-A	34.00	34.00	77.19	0.440	33.24	0.0	0.8	20.158	C
C-AB	23.73	23.73	216.13	0.110	23.48	0.0	0.2	4.808	A
C-A	119.42	119.42			119.42				
A-B	28.00	28.00			28.00				
A-C	134.44	134.44			134.44				

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	24.00	24.00	114.95	0.209	23.99	0.3	0.3	9.894	A
B-A	36.00	36.00	78.36	0.459	35.93	0.8	0.8	21.162	C
C-AB	25.44	25.44	213.35	0.119	25.40	0.2	0.3	4.935	A
C-A	113.47	113.47			113.47				
A-B	24.00	24.00			24.00				
A-C	132.31	132.31			132.31				

17:15 - 17:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	28.00	28.00	110.98	0.252	27.93	0.3	0.3	10.826	B
B-A	32.00	32.00	68.85	0.465	31.98	0.8	0.8	24.372	C
C-AB	39.08	39.08	223.80	0.175	38.83	0.3	0.5	5.022	A
C-A	122.73	122.73			122.73				
A-B	36.00	36.00			36.00				
A-C	148.31	148.31			148.31				

17:30 - 17:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	19.00	19.00	89.95	0.211	19.06	0.3	0.3	12.709	B
B-A	46.00	46.00	72.32	0.636	45.25	0.8	1.6	32.340	D
C-AB	29.43	29.43	223.93	0.131	29.61	0.5	0.3	4.790	A
C-A	127.29	127.29			127.29				
A-B	30.00	30.00			30.00				
A-C	144.05	144.05			144.05				

Existing Junction Layout - 2021 Baseline with Committed Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	6.27	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2021 Baseline with Committed Development	PM	DIRECT	16:45	17:45	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

16:45 - 17:00

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	31.00	137.00
	B	37.00	0.00	26.00
	C	139.00	10.00	0.00

17:00 - 17:15

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	26.00	135.00
	B	39.00	0.00	26.00
	C	134.00	11.00	0.00

17:15 - 17:30

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	40.00	151.00
	B	35.00	0.00	30.00
	C	155.00	14.00	0.00

17:30 - 17:45

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	33.00	147.00
	B	50.00	0.00	20.00
	C	153.00	11.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	7
	B	0	0	0
	C	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
B-C	0.31	18.90	0.4	C	25.50	102.00
B-A	0.76	47.99	2.6	E	40.25	161.00
C-AB	0.20	5.04	0.7	A	35.82	143.26
C-A					127.91	511.63
A-B					32.50	130.00
A-C					152.05	608.19

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	26.00	26.00	106.65	0.244	25.68	0.0	0.3	11.073	B
B-A	37.00	37.00	71.59	0.517	35.99	0.0	1.0	24.649	C
C-AB	28.98	28.98	222.40	0.130	28.66	0.0	0.3	4.786	A
C-A	126.69	126.69			126.69				
A-B	31.00	31.00			31.00				
A-C	146.18	146.18			146.18				

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	26.00	26.00	103.86	0.250	25.99	0.3	0.3	11.553	B
B-A	39.00	39.00	72.79	0.536	38.91	1.0	1.1	26.438	D
C-AB	30.73	30.73	219.76	0.140	30.69	0.3	0.4	4.916	A
C-A	120.70	120.70			120.70				
A-B	26.00	26.00			26.00				
A-C	144.05	144.05			144.05				

17:15 - 17:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	30.00	30.00	97.06	0.309	29.89	0.3	0.4	13.375	B
B-A	35.00	35.00	62.41	0.561	34.89	1.1	1.2	32.482	D
C-AB	47.28	47.28	231.66	0.204	46.98	0.4	0.7	5.042	A
C-A	129.16	129.16			129.16				
A-B	40.00	40.00			40.00				
A-C	161.12	161.12			161.12				

17:30 - 17:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	20.00	20.00	67.65	0.296	20.01	0.4	0.4	18.899	C
B-A	50.00	50.00	66.12	0.756	48.64	1.2	2.6	47.990	E
C-AB	36.27	36.27	231.88	0.156	36.47	0.7	0.5	4.776	A
C-A	135.08	135.08			135.08				
A-B	33.00	33.00			33.00				
A-C	156.85	156.85			156.85				

Existing Junction Layout - 2016 Baseline with Committed Development and Proposed Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	6.81	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D3	2016 Baseline with Committed Development and Proposed Development	PM	DIRECT	16:45	17:45	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

16:45 - 17:00

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	36.00	127.00
	B	38.00	0.00	28.00
	C	130.00	16.00	0.00

17:00 - 17:15

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	32.00	125.00
	B	40.00	0.00	28.00
	C	124.00	17.00	0.00

17:15 - 17:30

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	44.00	141.00
	B	36.00	0.00	32.00
	C	144.00	20.00	0.00

17:30 - 17:45

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	38.00	137.00
	B	51.00	0.00	23.00
	C	142.00	17.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	7
	B	0	0	0
	C	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
B-C	0.33	19.22	0.5	C	27.75	111.00
B-A	0.76	47.27	2.6	E	41.25	165.00
C-AB	0.28	5.74	0.9	A	50.17	200.70
C-A					108.81	435.22
A-B					37.50	150.00
A-C					141.25	564.98

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	28.00	28.00	108.00	0.259	27.66	0.0	0.3	11.156	B
B-A	38.00	38.00	72.83	0.522	36.97	0.0	1.0	24.467	C
C-AB	43.24	43.24	216.27	0.200	42.67	0.0	0.6	5.340	A
C-A	109.00	109.00			109.00				
A-B	36.00	36.00			36.00				
A-C	135.38	135.38			135.38				

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	28.00	28.00	105.10	0.266	27.99	0.3	0.4	11.668	B
B-A	40.00	40.00	74.00	0.541	39.90	1.0	1.1	26.268	D
C-AB	44.10	44.10	212.83	0.207	44.09	0.6	0.6	5.509	A
C-A	102.85	102.85			102.85				
A-B	32.00	32.00			32.00				
A-C	133.25	133.25			133.25				

17:15 - 17:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	32.00	32.00	99.40	0.322	31.89	0.4	0.5	13.310	B
B-A	36.00	36.00	63.89	0.564	35.90	1.1	1.2	31.950	D
C-AB	61.95	61.95	224.01	0.277	61.65	0.6	0.9	5.735	A
C-A	108.96	108.96			108.96				
A-B	44.00	44.00			44.00				
A-C	150.31	150.31			150.31				

17:30 - 17:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	23.00	23.00	69.78	0.330	22.98	0.5	0.5	19.219	C
B-A	51.00	51.00	67.41	0.757	49.64	1.2	2.6	47.267	E
C-AB	51.41	51.41	224.16	0.229	51.55	0.9	0.7	5.410	A
C-A	114.41	114.41			114.41				
A-B	38.00	38.00			38.00				
A-C	146.04	146.04			146.04				

Existing Junction Layout - 2021 Baseline with Committed Development and Proposed Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	11.07	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D4	2021 Baseline with Committed Development and Proposed Development	PM	DIRECT	16:45	17:45	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

16:45 - 17:00

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	38.00	138.00
	B	41.00	0.00	30.00
	C	141.00	16.00	0.00

17:00 - 17:15

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	33.00	136.00
	B	43.00	0.00	30.00
	C	135.00	17.00	0.00

17:15 - 17:30

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	47.00	153.00
	B	38.00	0.00	34.00
	C	157.00	21.00	0.00

17:30 - 17:45

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	40.00	149.00
	B	54.00	0.00	24.00
	C	154.00	17.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	7
	B	0	0	0
	C	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
B-C	0.54	42.38	1.1	E	29.50	118.00
B-A	0.88	74.32	4.4	F	44.00	176.00
C-AB	0.31	5.85	1.1	A	56.55	226.21
C-A					114.99	459.96
A-B					39.50	158.00
A-C					153.50	614.02

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	30.00	30.00	95.85	0.313	29.55	0.0	0.4	13.488	B
B-A	41.00	41.00	67.47	0.608	39.58	0.0	1.4	30.923	D
C-AB	47.53	47.53	222.76	0.213	46.88	0.0	0.6	5.272	A
C-A	116.24	116.24			116.24				
A-B	38.00	38.00			38.00				
A-C	147.11	147.11			147.11				

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	30.00	30.00	91.56	0.328	29.97	0.4	0.5	14.601	B
B-A	43.00	43.00	68.63	0.627	42.85	1.4	1.6	34.536	D
C-AB	48.41	48.41	219.47	0.221	48.40	0.6	0.7	5.446	A
C-A	110.07	110.07			110.07				
A-B	33.00	33.00			33.00				
A-C	144.98	144.98			144.98				

17:15 - 17:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	34.00	34.00	83.80	0.406	33.82	0.5	0.7	17.933	C
B-A	38.00	38.00	57.29	0.663	37.77	1.6	1.8	45.234	E
C-AB	73.03	73.03	232.10	0.315	72.58	0.7	1.1	5.850	A
C-A	112.51	112.51			112.51				
A-B	47.00	47.00			47.00				
A-C	163.10	163.10			163.10				

17:30 - 17:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	24.00	24.00	44.38	0.541	23.58	0.7	1.1	42.378	E
B-A	54.00	54.00	61.55	0.877	51.42	1.8	4.4	74.318	F
C-AB	57.25	57.25	231.61	0.247	57.49	1.1	0.9	5.383	A
C-A	121.14	121.14			121.14				
A-B	40.00	40.00			40.00				
A-C	158.83	158.83			158.83				

Existing Junction Layout - 2016 Baseline with Committed Development, SAT

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	4.08	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D5	2016 Baseline with Committed Development	SAT	DIRECT	12:45	13:45	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

12:45 - 13:00

		To		
		A	B	C
From	A	0.00	23.00	124.00
	B	35.00	0.00	30.00
	C	104.00	13.00	0.00

Demand (Veh/TS)

13:00 - 13:15

		To		
		A	B	C
From	A	0.00	23.00	108.00
	B	33.00	0.00	35.00
	C	132.00	12.00	0.00

Demand (Veh/TS)

13:15 - 13:30

		To		
		A	B	C
From	A	0.00	16.00	121.00
	B	43.00	0.00	33.00
	C	128.00	12.00	0.00

Demand (Veh/TS)

13:30 - 13:45

		To		
		A	B	C
From	A	0.00	19.00	132.00
	B	30.00	0.00	25.00
	C	135.00	14.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	6
	B	0	0	0
	C	6	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
B-C	0.31	12.30	0.4	B	30.75	123.00
B-A	0.56	25.80	1.2	D	35.25	141.00
C-AB	0.18	5.43	0.5	A	32.98	131.92
C-A					112.01	448.02
A-B					20.25	81.00
A-C					128.16	512.65

Main Results for each time segment

12:45 - 13:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	30.00	30.00	119.40	0.251	29.67	0.0	0.3	9.993	A
B-A	35.00	35.00	79.90	0.438	34.25	0.0	0.8	19.482	C
C-AB	28.99	28.99	199.86	0.145	28.63	0.0	0.4	5.425	A
C-A	94.25	94.25			94.25				
A-B	23.00	23.00			23.00				
A-C	131.07	131.07			131.07				

13:00 - 13:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	35.00	35.00	121.32	0.288	34.93	0.3	0.4	10.409	B
B-A	33.00	33.00	83.85	0.394	33.08	0.8	0.7	17.767	C
C-AB	32.17	32.17	224.50	0.143	32.14	0.4	0.4	4.848	A
C-A	119.75	119.75			119.75				
A-B	23.00	23.00			23.00				
A-C	114.16	114.16			114.16				

13:15 - 13:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	33.00	33.00	106.08	0.311	32.96	0.4	0.4	12.297	B
B-A	43.00	43.00	76.81	0.560	42.47	0.7	1.2	25.801	D
C-AB	31.51	31.51	220.38	0.143	31.51	0.4	0.4	4.950	A
C-A	116.17	116.17			116.17				
A-B	16.00	16.00			16.00				
A-C	127.90	127.90			127.90				

13:30 - 13:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	25.00	25.00	118.07	0.212	25.17	0.4	0.3	9.707	A
B-A	30.00	30.00	73.64	0.407	30.49	1.2	0.7	21.080	C
C-AB	39.25	39.25	223.54	0.176	39.13	0.4	0.5	5.074	A
C-A	117.85	117.85			117.85				
A-B	19.00	19.00			19.00				
A-C	139.52	139.52			139.52				

Existing Junction Layout - 2021 Baseline with Committed Development, SAT

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	5.56	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D6	2021 Baseline with Committed Development	SAT	DIRECT	12:45	13:45	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

12:45 - 13:00

		To		
		A	B	C
From	A	0.00	25.00	136.00
	B	38.00	0.00	33.00
	C	114.00	15.00	0.00

Demand (Veh/TS)

13:00 - 13:15

		To		
		A	B	C
From	A	0.00	25.00	118.00
	B	36.00	0.00	38.00
	C	145.00	14.00	0.00

Demand (Veh/TS)

13:15 - 13:30

		To		
		A	B	C
From	A	0.00	18.00	132.00
	B	47.00	0.00	36.00
	C	140.00	14.00	0.00

Demand (Veh/TS)

13:30 - 13:45

		To		
		A	B	C
From	A	0.00	20.00	145.00
	B	33.00	0.00	27.00
	C	148.00	16.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	6
	B	0	0	0
	C	6	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
B-C	0.40	16.74	0.7	C	33.50	134.00
B-A	0.67	36.32	1.8	E	38.50	154.00
C-AB	0.22	5.50	0.7	A	42.24	168.98
C-A					117.46	469.84
A-B					22.00	88.00
A-C					140.32	561.27

Main Results for each time segment

12:45 - 13:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	33.00	33.00	109.27	0.302	32.58	0.0	0.4	11.673	B
B-A	38.00	38.00	73.62	0.516	36.99	0.0	1.0	23.972	C
C-AB	36.48	36.48	205.23	0.178	36.01	0.0	0.5	5.503	A
C-A	99.36	99.36			99.36				
A-B	25.00	25.00			25.00				
A-C	143.75	143.75			143.75				

13:00 - 13:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	38.00	38.00	112.22	0.339	37.92	0.4	0.5	12.099	B
B-A	36.00	36.00	77.20	0.466	36.11	1.0	0.9	21.977	C
C-AB	41.71	41.71	232.71	0.179	41.65	0.5	0.5	4.897	A
C-A	125.99	125.99			125.99				
A-B	25.00	25.00			25.00				
A-C	124.73	124.73			124.73				

13:15 - 13:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	36.00	36.00	89.45	0.402	35.85	0.5	0.7	16.736	C
B-A	47.00	47.00	69.94	0.672	46.07	0.9	1.8	36.318	E
C-AB	40.66	40.66	227.69	0.179	40.66	0.5	0.5	5.016	A
C-A	121.74	121.74			121.74				
A-B	18.00	18.00			18.00				
A-C	139.52	139.52			139.52				

13:30 - 13:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	27.00	27.00	105.82	0.255	27.31	0.7	0.3	11.508	B
B-A	33.00	33.00	66.96	0.493	33.81	1.8	1.0	27.762	D
C-AB	50.13	50.13	231.63	0.216	49.99	0.5	0.7	5.166	A
C-A	122.75	122.75			122.75				
A-B	20.00	20.00			20.00				
A-C	153.27	153.27			153.27				

Existing Junction Layout - 2016 Baseline with Committed Development and Proposed Development, SAT

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	7.95	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D7	2016 Baseline with Committed Development and Proposed Development	SAT	DIRECT	12:45	13:45	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

12:45 - 13:00

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	33.00	126.00
	B	43.00	0.00	38.00
	C	106.00	23.00	0.00

13:00 - 13:15

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	33.00	109.00
	B	41.00	0.00	43.00
	C	134.00	22.00	0.00

13:15 - 13:30

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	27.00	122.00
	B	51.00	0.00	41.00
	C	130.00	22.00	0.00

13:30 - 13:45

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	29.00	134.00
	B	38.00	0.00	32.00
	C	137.00	24.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	6
	B	0	0	0
	C	6	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
B-C	0.51	22.05	1.0	C	38.50	154.00
B-A	0.74	44.88	2.5	E	43.25	173.00
C-AB	0.31	6.31	1.0	A	60.50	241.98
C-A					96.48	385.93
A-B					30.50	122.00
A-C					129.75	518.99

Main Results for each time segment

12:45 - 13:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	38.00	38.00	103.00	0.369	37.43	0.0	0.6	13.612	B
B-A	43.00	43.00	72.62	0.592	41.65	0.0	1.3	27.999	D
C-AB	52.67	52.67	199.28	0.264	51.98	0.0	0.7	6.306	A
C-A	82.59	82.59			82.59				
A-B	33.00	33.00			33.00				
A-C	133.18	133.18			133.18				

13:00 - 13:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	43.00	43.00	106.19	0.405	42.91	0.6	0.7	14.197	B
B-A	41.00	41.00	76.19	0.538	41.13	1.3	1.2	25.813	D
C-AB	60.56	60.56	224.37	0.270	60.46	0.7	0.8	5.703	A
C-A	103.35	103.35			103.35				
A-B	33.00	33.00			33.00				
A-C	115.21	115.21			115.21				

13:15 - 13:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	41.00	41.00	81.16	0.505	40.69	0.7	1.0	22.054	C
B-A	51.00	51.00	68.64	0.743	49.76	1.2	2.5	44.884	E
C-AB	59.43	59.43	220.13	0.270	59.43	0.8	0.8	5.836	A
C-A	100.24	100.24			100.24				
A-B	27.00	27.00			27.00				
A-C	128.95	128.95			128.95				

13:30 - 13:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	32.00	32.00	98.02	0.326	32.48	1.0	0.5	13.828	B
B-A	38.00	38.00	66.74	0.569	39.04	2.5	1.4	33.563	D
C-AB	69.32	69.32	223.34	0.310	69.15	0.8	1.0	6.083	A
C-A	99.76	99.76			99.76				
A-B	29.00	29.00			29.00				
A-C	141.64	141.64			141.64				

Existing Junction Layout - 2021 Baseline with Committed Development and Proposed Development, SAT

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	14.79	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D8	2021 Baseline with Committed Development and Proposed Development	SAT	DIRECT	12:45	13:45	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000

Origin-Destination Data

12:45 - 13:00

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	35.00	137.00
	B	46.00	0.00	40.00
	C	116.00	24.00	0.00

13:00 - 13:15

Demand (Veh/TS)

		To		
		A	B	C
From	A	0.00	35.00	119.00
	B	43.00	0.00	45.00
	C	146.00	23.00	0.00

Demand (Veh/TS)

13:15 - 13:30

		To		
		A	B	C
From	A	0.00	28.00	134.00
	B	55.00	0.00	43.00
	C	142.00	23.00	0.00

Demand (Veh/TS)

13:30 - 13:45

		To		
		A	B	C
From	A	0.00	30.00	146.00
	B	40.00	0.00	34.00
	C	150.00	25.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	6
	B	0	0	0
	C	6	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
B-C	0.77	56.62	2.7	F	40.50	162.00
B-A	0.90	78.87	4.8	F	46.00	184.00
C-AB	0.35	6.39	1.2	A	69.86	279.43
C-A					100.56	402.25
A-B					32.00	128.00
A-C					141.64	566.55

Main Results for each time segment

12:45 - 13:00

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	40.00	40.00	88.66	0.451	39.21	0.0	0.8	17.930	C
B-A	46.00	46.00	66.64	0.690	44.05	0.0	1.9	37.252	E
C-AB	59.93	59.93	204.90	0.292	59.11	0.0	0.8	6.387	A
C-A	86.91	86.91			86.91				
A-B	35.00	35.00			35.00				
A-C	144.81	144.81			144.81				

13:00 - 13:15

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	45.00	45.00	94.75	0.475	44.91	0.8	0.9	18.014	C
B-A	43.00	43.00	69.69	0.617	43.23	1.9	1.7	34.449	D
C-AB	69.98	69.98	231.90	0.302	69.85	0.8	1.0	5.784	A
C-A	107.64	107.64			107.64				
A-B	35.00	35.00			35.00				
A-C	125.78	125.78			125.78				

13:15 - 13:30

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	43.00	43.00	55.65	0.773	41.21	0.9	2.7	56.618	F
B-A	55.00	55.00	61.13	0.900	51.89	1.7	4.8	78.867	F
C-AB	68.82	68.82	227.54	0.302	68.80	1.0	1.0	5.928	A
C-A	104.56	104.56			104.56				
A-B	28.00	28.00			28.00				
A-C	141.64	141.64			141.64				

13:30 - 13:45

Stream	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	34.00	34.00	77.45	0.439	35.85	2.7	0.8	22.505	C
B-A	40.00	40.00	59.66	0.671	42.52	4.8	2.3	57.549	F
C-AB	80.71	80.71	231.69	0.348	80.48	1.0	1.2	6.227	A
C-A	103.14	103.14			103.14				
A-B	30.00	30.00			30.00				
A-C	154.32	154.32			154.32				

APPENDIX P

JUNCTIONS 9 ARCADY Output – Botwell Lane/Church Road

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.1.4646 []

Filename: 16-0403 Botwell Lane Church Road Arcady v2.0.j9
Path: G:\Projects\2016\16-0403 lidl hayes 5\Analysis\Modelling
Report generation date: 06/09/2016 15:55:35

Summary of junction performance

	PM				SAT			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	Existing Junction Layout - 2016 Baseline with Committed Development							
Arm 1	1.5	7.18	0.60	A	0.9	5.72	0.47	A
Arm 2	0.4	5.27	0.28	A	0.6	5.40	0.35	A
Arm 3	1.7	7.83	0.63	A	2.6	10.24	0.72	B
	Existing Junction Layout - 2021 Future Year Baseline with Committed Development							
Arm 1	1.9	8.21	0.65	A	1.1	6.36	0.52	A
Arm 2	0.5	5.68	0.32	A	0.7	5.93	0.40	A
Arm 3	2.2	9.31	0.69	A	3.8	13.44	0.80	B
	Existing Junction Layout - 2016 Future Year Baseline with Committed and Proposed Development							
Arm 1	1.6	7.53	0.62	A	1.0	6.07	0.50	A
Arm 2	0.4	5.40	0.29	A	0.6	5.60	0.37	A
Arm 3	1.8	8.17	0.64	A	2.9	11.02	0.74	B
	Existing Junction Layout - 2021 Future Year Baseline with Committed and Proposed Development							
Arm 1	2.0	8.66	0.67	A	1.2	6.74	0.55	A
Arm 2	0.5	5.84	0.33	A	0.7	6.18	0.41	A
Arm 3	2.4	9.71	0.70	A	4.2	14.51	0.81	B

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	Botwell Lane/Church Road Roundabout Junction
Location	Hayes
Site number	
Date	06/09/2016
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	Gateway TSP
Description	

Units

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

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	2016 Baseline with Committed Development	PM	DIRECT	16:45	17:45	60	15
D5	2021 Future Year Baseline with Committed Development	PM	DIRECT	16:45	17:45	60	15
D7	2016 Future Year Baseline with Committed and Proposed Development	PM	DIRECT	16:45	17:45	60	15
D9	2021 Future Year Baseline with Committed and Proposed Development	PM	DIRECT	16:45	17:45	60	15
D10	2016 Baseline with Committed Development	SAT	DIRECT	12:45	13:45	60	15
D11	2021 Future Year Baseline with Committed Development	SAT	DIRECT	12:45	13:45	60	15
D12	2016 Future Year Baseline with Committed and Proposed Development	SAT	DIRECT	12:45	13:45	60	15
D13	2021 Future Year Baseline with Committed and Proposed Development	SAT	DIRECT	12:45	13:45	60	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Existing Junction Layout	100.000

Existing Junction Layout - 2016 Baseline with Committed Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Botwell Lane/Church Road Roundabout	Standard Roundabout	7.17	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Botwell Lane (NW)	
2	Church Road	
3	Botwell Lane (SE)	Town Centre Approach Arm

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.50	5.50	3.3	15.0	17.0	15.0	
2	3.50	4.70	4.9	25.0	17.0	12.5	
3	3.30	5.10	5.6	35.0	17.0	14.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
1	0.597	328.200
2	0.616	338.226
3	0.621	341.709

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	2016 Baseline with Committed Development	PM	DIRECT	16:45	17:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1		✓	100.000
2		✓	100.000
3		✓	100.000

Origin-Destination Data

16:45 - 17:00

Demand (Veh/TS)

		To		
		1	2	3
From	1	0.00	35.00	148.00
	2	38.00	0.00	19.00
	3	142.00	21.00	0.00

17:00 - 17:15

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	32.00	122.00
	2	34.00	0.00	33.00
	3	167.00	23.00	1.00

17:15 - 17:30

Demand (Veh/TS)

		To		
		1	2	3
From	1	3.00	41.00	121.00
	2	37.00	0.00	16.00
	3	154.00	24.00	1.00

17:30 - 17:45

Demand (Veh/TS)

		To		
		1	2	3
From	1	0.00	37.00	123.00
	2	37.00	0.00	20.00
	3	123.00	22.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	3
	2	2	0	16
	3	3	16	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.60	7.18	1.5	A
2	0.28	5.27	0.4	A
3	0.63	7.83	1.7	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	188.03	24.13	313.81	0.599	186.53	1.5	7.184	A
2	60.86	151.81	244.75	0.249	60.51	0.4	5.206	A
3	170.98	38.57	317.77	0.538	169.78	1.2	6.330	A

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	159.15	27.55	311.77	0.510	159.57	1.1	6.087	A
2	73.03	128.50	259.10	0.282	72.95	0.4	5.268	A
3	200.12	35.73	319.54	0.626	199.61	1.7	7.828	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	169.11	28.77	311.04	0.544	168.99	1.2	6.488	A
2	56.35	129.07	258.75	0.218	56.48	0.3	4.735	A
3	187.85	40.76	316.41	0.594	188.01	1.6	7.365	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	164.18	25.53	312.97	0.525	164.24	1.1	6.214	A
2	61.00	127.22	259.89	0.235	60.97	0.3	4.841	A
3	152.51	37.80	318.26	0.479	153.09	1.0	5.750	A

Existing Junction Layout - 2021 Future Year Baseline with Committed Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Botwell Lane/Church Road Roundabout	Standard Roundabout	8.30	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D5	2021 Future Year Baseline with Committed Development	PM	DIRECT	16:45	17:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1		✓	100.000
2		✓	100.000
3		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

16:45 - 17:00

		To		
		1	2	3
From	1	0.00	38.00	160.00
	2	41.00	0.00	21.00
	3	154.00	23.00	0.00

Demand (Veh/TS)

17:00 - 17:15

		To		
		1	2	3
From	1	1.00	34.00	133.00
	2	37.00	0.00	36.00
	3	182.00	25.00	1.00

Demand (Veh/TS)

17:15 - 17:30

		To		
		1	2	3
From	1	3.00	44.00	132.00
	2	40.00	0.00	17.00
	3	167.00	26.00	1.00

Demand (Veh/TS)

17:30 - 17:45

		To		
		1	2	3
From	1	0.00	40.00	134.00
	2	40.00	0.00	22.00
	3	134.00	24.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	3
	2	2	0	16
	3	3	16	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.65	8.21	1.9	A
2	0.32	5.68	0.5	A
3	0.69	9.31	2.2	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	203.44	26.40	312.45	0.651	201.57	1.9	8.209	A
2	66.24	163.92	237.29	0.279	65.83	0.4	5.594	A
3	185.69	41.60	315.89	0.588	184.23	1.5	7.095	A

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	172.52	29.83	310.40	0.556	173.08	1.3	6.757	A
2	79.57	139.98	252.03	0.316	79.48	0.5	5.682	A
3	217.93	38.79	317.64	0.686	217.18	2.2	9.313	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	183.49	31.09	309.66	0.593	183.33	1.5	7.291	A
2	60.58	140.42	251.76	0.241	60.74	0.3	5.013	A
3	203.59	43.83	314.51	0.647	203.84	2.0	8.558	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	178.56	27.87	311.57	0.573	178.62	1.4	6.953	A
2	66.38	138.60	252.89	0.263	66.34	0.4	5.163	A
3	166.19	40.86	316.36	0.525	166.98	1.2	6.372	A

Existing Junction Layout - 2016 Future Year Baseline with Committed and Proposed Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Botwell Lane/Church Road Roundabout	Standard Roundabout	7.48	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D7	2016 Future Year Baseline with Committed and Proposed Development	PM	DIRECT	16:45	17:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1		✓	100.000
2		✓	100.000
3		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

16:45 - 17:00

		To		
		1	2	3
From	1	0.00	35.00	153.00
	2	38.00	0.00	21.00
	3	145.00	23.00	0.00

Demand (Veh/TS)

17:00 - 17:15

		To		
		1	2	3
From	1	1.00	32.00	127.00
	2	34.00	0.00	35.00
	3	170.00	25.00	1.00

Demand (Veh/TS)

17:15 - 17:30

		To		
		1	2	3
From	1	3.00	41.00	126.00
	2	37.00	0.00	18.00
	3	157.00	26.00	1.00

Demand (Veh/TS)

17:30 - 17:45

		To		
		1	2	3
From	1	0.00	37.00	128.00
	2	37.00	0.00	22.00
	3	126.00	24.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

	To			
		1	2	3
From	1	0	0	3
	2	2	0	15
	3	3	15	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.62	7.53	1.6	A
2	0.29	5.40	0.4	A
3	0.64	8.17	1.8	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	193.05	26.23	312.55	0.618	191.43	1.6	7.533	A
2	62.97	156.72	241.73	0.261	62.60	0.4	5.351	A
3	176.21	38.57	317.78	0.555	174.93	1.3	6.552	A

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	164.19	29.65	310.51	0.529	164.65	1.2	6.353	A
2	75.00	133.57	255.98	0.293	74.93	0.4	5.402	A
3	205.34	35.73	319.54	0.643	204.78	1.8	8.175	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	174.16	30.87	309.78	0.562	174.03	1.3	6.784	A
2	58.50	134.11	255.65	0.229	58.62	0.3	4.863	A
3	193.06	40.76	316.42	0.610	193.22	1.7	7.680	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	169.22	27.66	311.70	0.543	169.29	1.2	6.484	A
2	63.10	132.26	256.79	0.246	63.07	0.3	4.968	A
3	157.73	37.80	318.26	0.496	158.36	1.0	5.941	A

Existing Junction Layout - 2021 Future Year Baseline with Committed and Proposed Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Botwell Lane/Church Road Roundabout	Standard Roundabout	8.68	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D9	2021 Future Year Baseline with Committed and Proposed Development	PM	DIRECT	16:45	17:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1		✓	100.000
2		✓	100.000
3		✓	100.000

Origin-Destination Data

16:45 - 17:00

Demand (Veh/TS)

		To		
		1	2	3
From	1	0.00	38.00	165.00
	2	41.00	0.00	23.00
	3	157.00	25.00	0.00

17:00 - 17:15

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	34.00	138.00
	2	37.00	0.00	38.00
	3	184.00	27.00	1.00

Demand (Veh/TS)

17:15 - 17:30

		To		
		1	2	3
From	1	3.00	44.00	136.00
	2	40.00	0.00	19.00
	3	170.00	28.00	1.00

Demand (Veh/TS)

17:30 - 17:45

		To		
		1	2	3
From	1	0.00	40.00	139.00
	2	40.00	0.00	24.00
	3	137.00	26.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

	To			
		1	2	3
From	1	0	0	3
	2	2	0	15
	3	3	15	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.67	8.66	2.0	A
2	0.33	5.84	0.5	A
3	0.70	9.71	2.4	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	208.45	28.51	311.19	0.670	206.42	2.0	8.663	A
2	68.36	168.79	234.29	0.292	67.92	0.4	5.762	A
3	190.93	41.59	315.90	0.604	189.36	1.6	7.374	A

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	177.55	31.95	309.14	0.574	178.17	1.4	7.087	A
2	81.55	145.06	248.91	0.328	81.46	0.5	5.841	A
3	222.12	38.79	317.64	0.699	221.34	2.4	9.708	A

17:15 - 17:30

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	187.49	33.20	308.39	0.608	187.34	1.6	7.604	A
2	62.73	144.43	249.29	0.252	62.89	0.4	5.138	A
3	208.81	43.83	314.51	0.664	209.04	2.1	8.979	A

17:30 - 17:45

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	183.59	30.02	310.29	0.592	183.64	1.5	7.295	A
2	68.49	143.61	249.80	0.274	68.45	0.4	5.309	A
3	171.42	40.86	316.35	0.542	172.28	1.3	6.610	A

Existing Junction Layout - 2016 Baseline with Committed Development, SAT

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Botwell Lane/Church Road Roundabout	Standard Roundabout	7.78	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D10	2016 Baseline with Committed Development	SAT	DIRECT	12:45	13:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1		✓	100.000
2		✓	100.000
3		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

12:45 - 13:00

		To		
		1	2	3
From	1	2.00	24.00	115.00
	2	50.00	0.00	19.00
	3	183.00	30.00	1.00

Demand (Veh/TS)

13:00 - 13:15

		To		
		1	2	3
From	1	1.00	23.00	116.00
	2	56.00	0.00	23.00
	3	162.00	29.00	0.00

13:15 - 13:30

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	20.00	120.00
	2	56.00	0.00	24.00
	3	160.00	34.00	1.00

13:30 - 13:45

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	42.00	100.00
	2	54.00	0.00	37.00
	3	148.00	30.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

	To			
		1	2	3
From	1	0	0	3
	2	1	0	14
	3	3	11	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.47	5.72	0.9	A
2	0.35	5.40	0.6	A
3	0.72	10.24	2.6	B

Main Results for each time segment

12:45 - 13:00

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	144.11	33.81	308.03	0.468	143.22	0.9	5.551	A
2	72.34	120.35	264.12	0.274	71.95	0.4	4.900	A
3	222.70	52.41	309.19	0.720	220.13	2.6	10.242	B

13:00 - 13:15

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	143.13	32.18	309.00	0.463	143.13	0.9	5.549	A
2	82.98	120.14	264.25	0.314	82.90	0.5	5.210	A
3	198.96	57.74	305.88	0.650	199.55	2.0	8.869	A

13:15 - 13:30

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	144.24	38.57	305.19	0.473	144.22	0.9	5.719	A
2	84.12	125.19	261.14	0.322	84.10	0.5	5.345	A
3	203.44	57.78	305.86	0.665	203.39	2.0	9.154	A

13:30 - 13:45

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	145.70	33.31	308.33	0.473	145.70	0.9	5.638	A
2	96.90	103.85	274.28	0.353	96.82	0.6	5.397	A
3	185.65	55.77	307.11	0.605	186.06	1.6	7.782	A

Existing Junction Layout - 2021 Future Year Baseline with Committed Development, SAT

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Botwell Lane/Church Road Roundabout	Standard Roundabout	9.60	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D11	2021 Future Year Baseline with Committed Development	SAT	DIRECT	12:45	13:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1		✓	100.000
2		✓	100.000
3		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

12:45 - 13:00

		To		
		1	2	3
From	1	2.00	27.00	126.00
	2	55.00	0.00	21.00
	3	200.00	33.00	1.00

Demand (Veh/TS)

13:00 - 13:15

		To		
		1	2	3
From	1	1.00	26.00	127.00
	2	61.00	0.00	25.00
	3	178.00	32.00	0.00

13:15 - 13:30

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	22.00	132.00
	2	61.00	0.00	26.00
	3	175.00	37.00	1.00

13:30 - 13:45

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	46.00	110.00
	2	59.00	0.00	41.00
	3	162.00	33.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	3
	2	1	0	14
	3	3	11	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.52	6.36	1.1	A
2	0.40	5.93	0.7	A
3	0.80	13.44	3.8	B

Main Results for each time segment

12:45 - 13:00

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	158.40	36.95	306.16	0.517	157.32	1.1	6.136	A
2	79.69	131.49	257.26	0.310	79.22	0.5	5.286	A
3	243.53	57.43	306.07	0.796	239.77	3.8	13.444	B

13:00 - 13:15

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	157.43	35.55	306.99	0.513	157.43	1.1	6.151	A
2	90.33	131.44	257.29	0.351	90.23	0.6	5.654	A
3	218.76	62.80	302.74	0.723	219.71	2.8	11.425	B

13:15 - 13:30

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	158.56	41.88	303.22	0.523	158.53	1.1	6.361	A
2	91.47	137.50	253.56	0.361	91.44	0.6	5.836	A
3	222.21	62.84	302.72	0.734	222.19	2.8	11.647	B

13:30 - 13:45

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	159.97	36.68	306.32	0.522	159.97	1.1	6.265	A
2	106.53	114.15	267.94	0.398	106.42	0.7	5.931	A
3	203.39	60.83	303.96	0.669	204.06	2.2	9.464	A

Existing Junction Layout - 2016 Future Year Baseline with Committed and Proposed Development, SAT

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Botwell Lane/Church Road Roundabout	Standard Roundabout	8.29	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D12	2016 Future Year Baseline with Committed and Proposed Development	SAT	DIRECT	12:45	13:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1		✓	100.000
2		✓	100.000
3		✓	100.000

Origin-Destination Data

12:45 - 13:00

Demand (Veh/TS)

		To		
		1	2	3
From	1	2.00	24.00	123.00
	2	50.00	0.00	22.00
	3	188.00	32.00	1.00

13:00 - 13:15

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	23.00	124.00
	2	56.00	0.00	26.00
	3	168.00	31.00	0.00

13:15 - 13:30

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	20.00	128.00
	2	56.00	0.00	27.00
	3	165.00	36.00	1.00

13:30 - 13:45

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	42.00	107.00
	2	54.00	0.00	40.00
	3	153.00	32.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	3
	2	1	0	12
	3	3	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.50	6.07	1.0	A
2	0.37	5.60	0.6	A
3	0.74	11.02	2.9	B

Main Results for each time segment

12:45 - 13:00

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	152.20	35.87	306.80	0.496	151.21	1.0	5.871	A
2	75.43	128.35	259.19	0.291	75.00	0.4	5.108	A
3	229.78	52.40	309.19	0.743	226.91	2.9	11.020	B

13:00 - 13:15

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	151.22	34.31	307.73	0.491	151.23	1.0	5.875	A
2	86.01	128.23	259.27	0.332	85.92	0.5	5.443	A
3	207.10	57.74	305.88	0.677	207.72	2.2	9.607	A

13:15 - 13:30

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	152.33	40.68	303.93	0.501	152.30	1.0	6.065	A
2	87.13	133.27	256.16	0.340	87.11	0.5	5.588	A
3	210.53	57.77	305.86	0.688	210.50	2.3	9.828	A

13:30 - 13:45

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	152.78	35.44	307.06	0.498	152.79	1.0	5.941	A
2	99.72	110.94	269.91	0.369	99.64	0.6	5.604	A
3	192.77	55.77	307.10	0.628	193.24	1.8	8.273	A

Existing Junction Layout - 2021 Future Year Baseline with Committed and Proposed Development, SAT

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Botwell Lane/Church Road Roundabout	Standard Roundabout	10.26	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D13	2021 Future Year Baseline with Committed and Proposed Development	SAT	DIRECT	12:45	13:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1		✓	100.000
2		✓	100.000
3		✓	100.000

Origin-Destination Data

12:45 - 13:00

Demand (Veh/TS)

		To		
		1	2	3
From	1	2.00	27.00	133.00
	2	55.00	0.00	23.00
	3	204.00	35.00	1.00

13:00 - 13:15

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	26.00	134.00
	2	61.00	0.00	28.00
	3	182.00	34.00	0.00

13:15 - 13:30

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	22.00	139.00
	2	61.00	0.00	29.00
	3	180.00	39.00	1.00

13:30 - 13:45

Demand (Veh/TS)

		To		
		1	2	3
From	1	1.00	46.00	116.00
	2	59.00	0.00	44.00
	3	167.00	35.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	3
	2	1	0	13
	3	3	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.55	6.74	1.2	A
2	0.41	6.18	0.7	A
3	0.81	14.51	4.2	B

Main Results for each time segment

12:45 - 13:00

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	165.46	38.84	305.03	0.542	164.27	1.2	6.477	A
2	81.78	138.44	252.98	0.323	81.29	0.5	5.481	A
3	249.42	57.42	306.08	0.815	245.23	4.2	14.511	B

13:00 - 13:15

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	164.48	37.54	305.80	0.538	164.48	1.2	6.505	A
2	93.52	138.49	252.95	0.370	93.41	0.6	5.924	A
3	224.68	62.80	302.74	0.742	225.74	3.1	12.332	B

13:15 - 13:30

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	165.61	43.81	302.06	0.548	165.58	1.2	6.739	A
2	94.65	144.54	249.23	0.380	94.63	0.6	6.120	A
3	229.12	62.84	302.72	0.757	229.08	3.2	12.701	B

13:30 - 13:45

Arm	Total Demand (PCU/TS)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	LOS
1	166.02	38.67	305.13	0.544	166.02	1.2	6.591	A
2	109.59	120.21	264.21	0.415	109.48	0.7	6.184	A
3	210.34	60.84	303.96	0.692	211.10	2.4	10.178	B

APPENDIX Q

Hayes Town Centre VISSIM Model Report

Proposed Lidl Food Store, Hayes

Impact Assessment Report

Carl Moreno | Luke Best

Friday, 05 August 2016

Version control and approval

Version	Date	Prepared by	Approved by
B	05th August 2016	CM	LB

Prepared for

Mark Fitzgerald
Senior Transport Planner

Gateway TSP
Surrey Technology Centre,
40 Occam Road,
Surrey Research Park,
Guildford GU2 7YG

Carl Moreno | Transport Modelling | Principal Consultant
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

Table of Contents

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

Proposed Lidl Food Store Impact Assessment

1. Introduction

1.1. Multimodal Ltd have been commissioned by Gateway TSP to test the impact of a proposed Lidl Food store on the surrounding network in Hayes town centre. The new food store is to be located on the former Hayes Pool / Fitness Centre site adjacent to Botwell Lane and accessed via a new link onto Central Avenue.

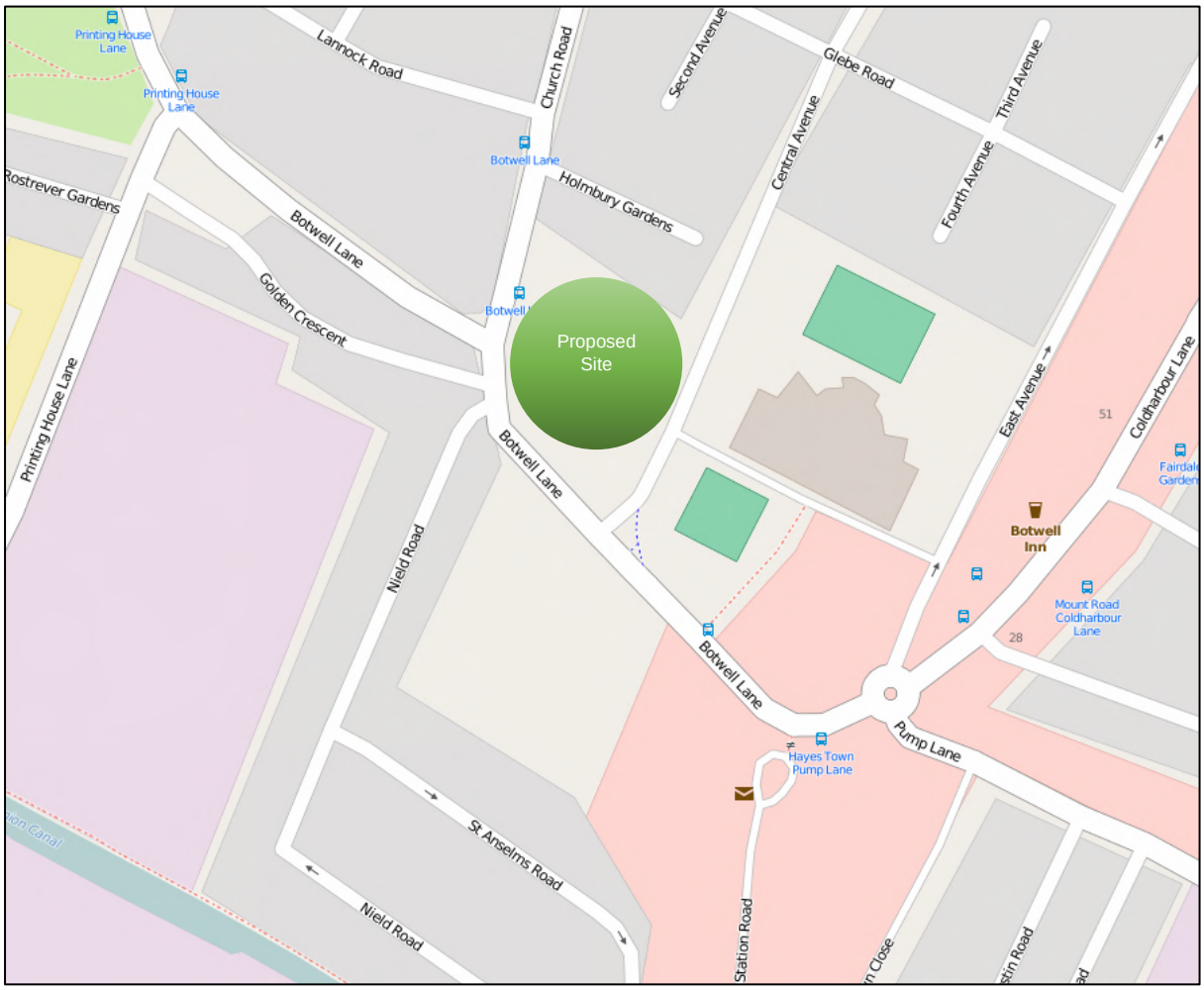


Figure 1: Site Location

1.2. The site is expected to generate:

- 114 arrivals and 117 departures in the PM Peak;
- 161 arrivals and 177 departures in the Saturday Peak.

1.3. The AM Peak trips are not considered in this assessment.

1.4. The following paragraphs summarise the traffic modelling undertaken to assess the impact of the proposed Lidl Food store.

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

2. Previous Modelling

2.1. To take into account the proposed re-opening of Station Road (works currently ongoing), which may impact the assignment of trips in the area of interest, a Hayes Town Centre model, produced by Steer Davies Gleave has been used as the base on which to test the proposed site. This model, built in VISSIM version 5.4, has caused a lot of issues due to the inherent possibility of locking up as a result of the coding methodology and internal routing. As a result, a revised model extent has been produced, 'cutting down' the original model so that only the immediate area is assessed. Figure 2 shows the original model and the edited extents.

Figure 2: Hayes Town Centre VISSIM model

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

3. Trip Distribution

3.1. The development traffic flows have been distributed based on the observed turning proportions at the following junctions:

- The Site Access/Central Avenue junction, from passing traffic flows;
- The Central Avenue/Botwell Lane junction; and
- The Botwell Lane/Church Road junction.

3.2. Beyond this area, traffic to the east of the site has been distributed on a gravity model basis as follows:

- 40% of traffic turning left out and right into Central Avenue is distributed along Coldharbour Lane;
- 40% of traffic turning left out and right into Central Avenue is distributed along Station Road; and
- 20% of traffic turning left out and right into Central Avenue is distributed along Pump Lane.

3.3. These distributions replicate those included within the Addendum Transport Assessment prepared by Gateway TSP, which provides full details of the traffic distribution methodology. Figures 3 & 4 show the food store trips for the PM and Saturday peaks respectively.

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

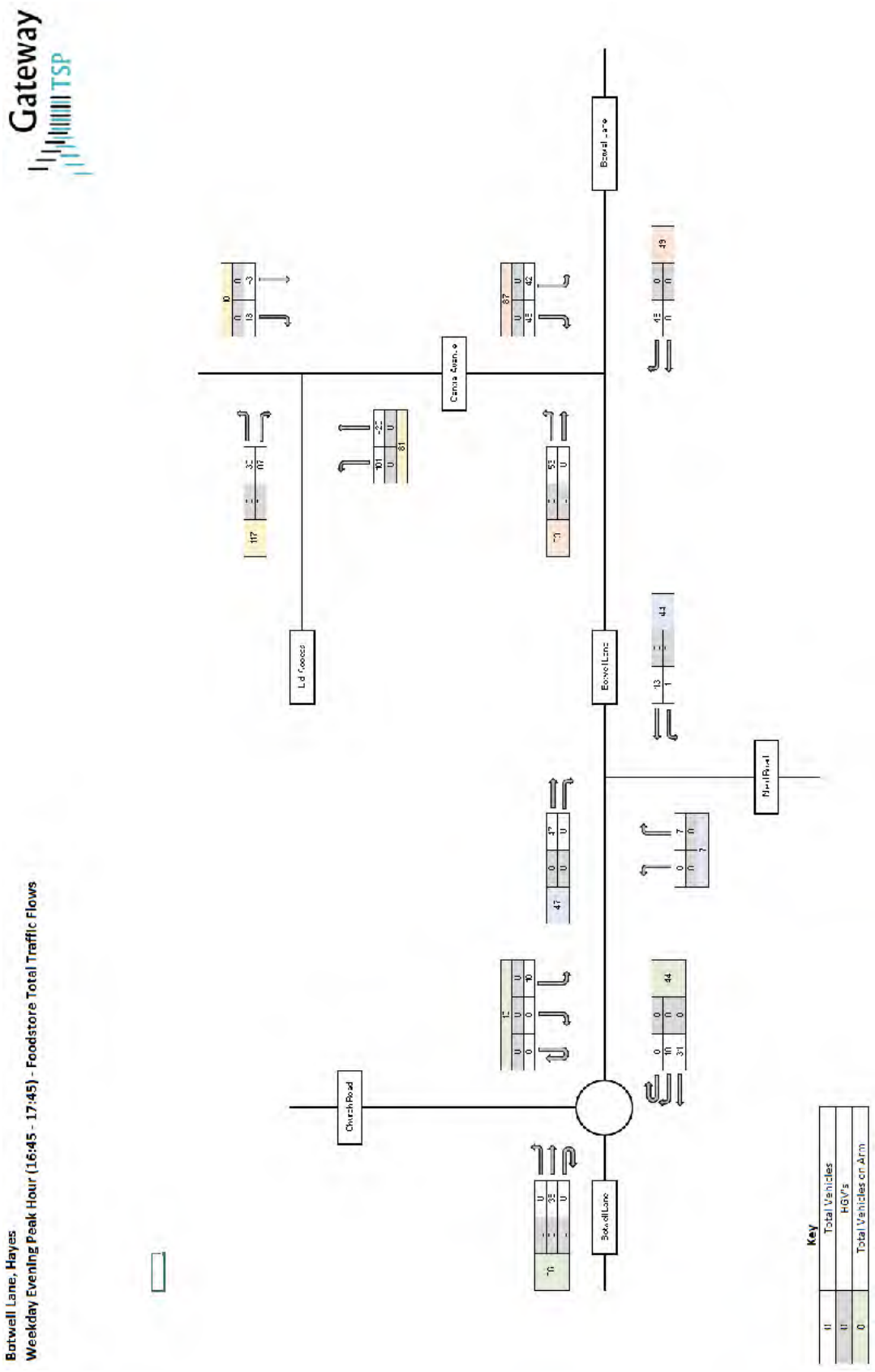


Figure 3: PM Peak Food Store Total Trips

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

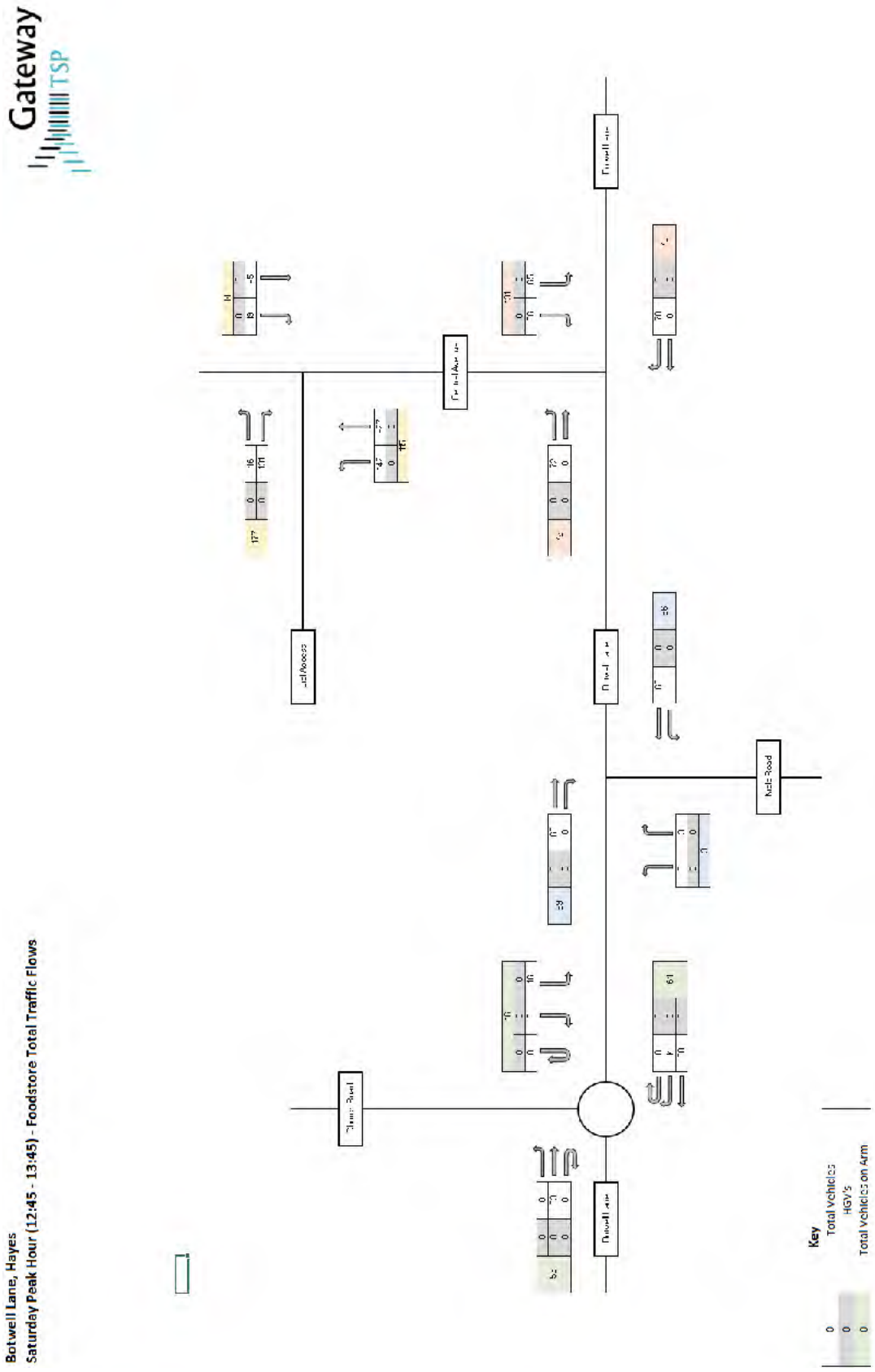


Figure 4: Saturday Peak Food Store Total Trips

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

4. Assessment Years

4.1. The impact of the proposed food store has been assessed for:

- The opening year (planned for 2016).

The following growth factors have been used to uplift background traffic in the models to the assessment year, as shown in Table 1.

Time Period	Weekday PM Growth Factor	Saturday Daytime Growth Factor
2015-2016	1.0174	1.0183

Table 1: Tempro Growth Factors*

**source: Page 29 Transport Assessment On behalf of Lidl UK - Gateway TSP*

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

5. VISSIM Model Specification

5.1. Based on the Hayes Town Centre modelling already undertaken, the traffic models have been developed using the following specification:

VISSIM Version – 5.40-13.

Testing Year – 2016.

Time Periods

- PM Peak period between 16:30 and 18:30 (includes 30-minute warm up and cool down periods); and
- Saturday Peak period between 12:15 and 14:15 (includes 30-minute warm up and cool down periods).

Evaluation Periods

- PM Peak period between 17:00 and 18:00; and
- Saturday Peak period between 12:45 and 13:45.

6. Model Results Comparison

6.1. The models have been run for results over 10 random seeds to reflect day to day variation in arrival patterns and averaged for comparison.
The models have been assessed for:

- Junction Delays;
- Overall Network Performance; and
- Average and Average Maximum Queues.

7. 2016 Junction Delays

7.1. Appendix A summarises the junction delay comparison between the *2016 Base* and *2016 with Development* Scenarios.

7.2. In the PM Peak, the 2016 with/without development scenarios have very similar levels of delay with small fluctuations which are considered negligible for the majority of the network. Broadly speaking, the differences in delay are within 1-10 seconds. The most significant difference is on the Central Avenue approach to the Botwell Lane / Central Avenue Junction, where there is a large increase in delay due to traffic leaving the proposed site, in the region of 120 seconds;

7.3. The Saturday Peak has a similar outcome with generally small fluctuations between the 2016 with/without development scenarios. There are larger delays for traffic exiting Nield Road, particularly for right turners with increases of around 23 seconds, most likely attributed to the combination of an increase in development traffic turning right onto Botwell Lane, and queueing/blocking conditions heading southeast-bound on Botwell Lane. Delays on Central Avenue due to development traffic leaving the proposed site are higher than in the PM Peak with a delay increase between 140 to 150 seconds.

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

7.4. Interestingly in the Saturday Peak, there appears to be a reduction in delay on Church Road of around 60 seconds for right turning traffic and a smaller six seconds delay reduction for left turning traffic. Although these results may seem counterintuitive, watching the models it is apparent that as the southeast exit becomes increasingly blocked due to an increase in slow moving traffic travelling along Botwell Lane, traffic turning right out of Church Road have more opportunities due to yellow box behaviour, whereby traffic does not enter the roundabout unless it can exit (travelling southeast).

8. 2016 Network Performance

8.1. Table 2 summarises an overall network performance comparison between the *2016 Base and 2016 with Development* Scenarios. The main conclusions from this comparison are:

- There is a general increase in delay across the network, in both moving and stopped delay, leading to reduced average speeds in both peaks.
- The results show that both peaks end up producing similar performance statistics. This demonstrates the development having a greater impact on the PM peak, where the difference between the base and development measures is larger;
- However, overall the results show that the *2016 with Development* Scenario has a reasonably small impact on delay per trip in the PM Peak with a 3.08% increase. The Saturday Peaks shows a lower increase in delay per trip of 2.36%.

	PM PEAK		SAT PEAK	
Network Performance Data 2016	**Base**	**With Development**	**Base**	**With Development**
Total travel time (hr)	169.69	179.80	174.53	179.51
Average Delay per vehicle (secs)	153.97	176.10	194.53	216.94
Average Stopped Delay per vehicle (secs)	70.52	80.52	100.52	112.24
Average speed (mph)	5.22	4.76	4.60	4.23
Total delay time (hr)	111.89	124.10	121.81	129.51
Percentage delay per trip (%)	**65.94%**	**69.02%**	**69.79%**	**72.15%**
Number of vehicles in the network at end of simulation	169.60	182.40	184.80	195.80

Table 2: 2016 Network Performance

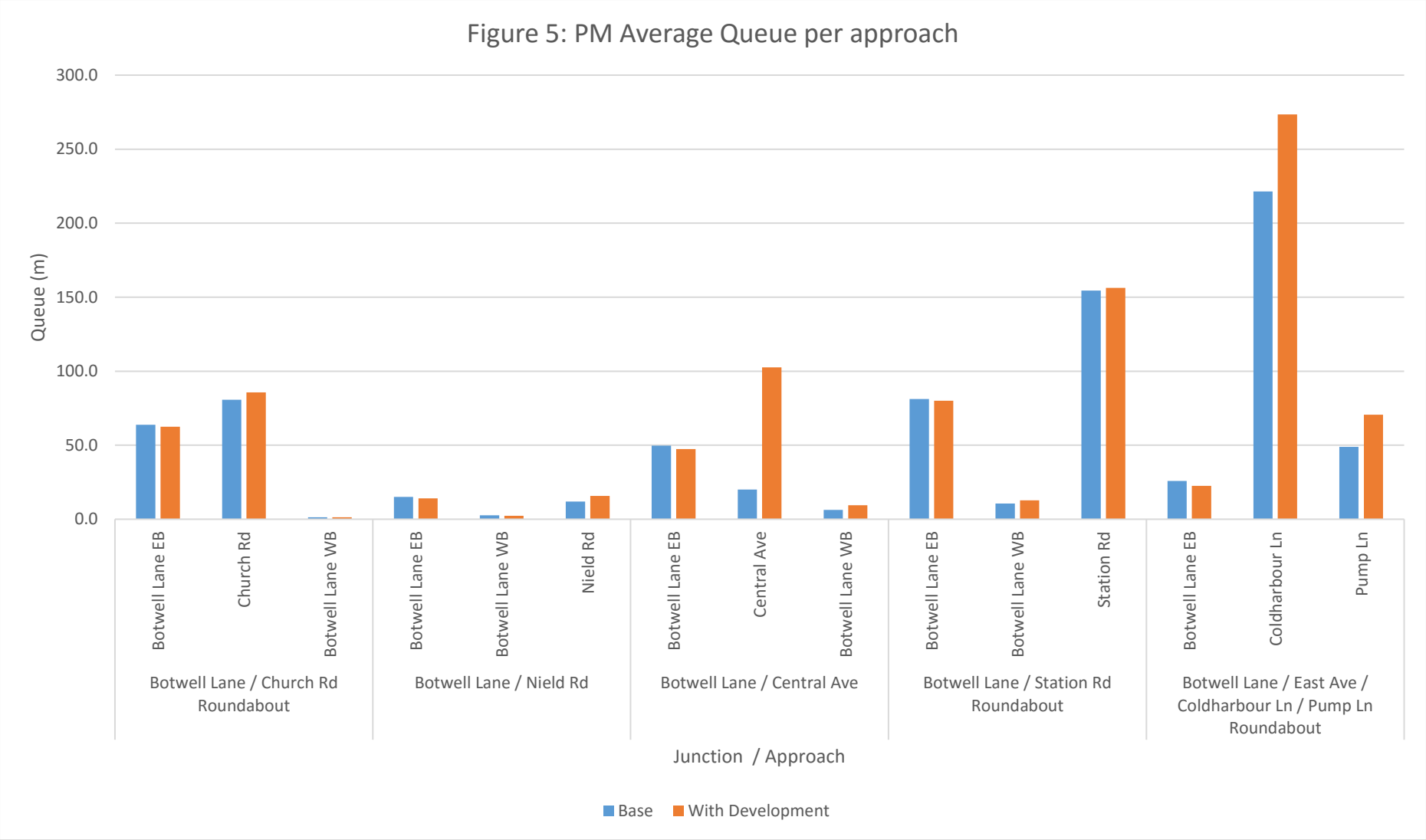
9. 2016 Queue comparison

9.1. Figures 5 to 8 show the PM and Saturday Peak Average and Average Maximum queue lengths for each junction approach. Overall, the *2016 Base and 2016 with Development* Scenarios have similar queue profiles, suggesting the additional development vehicles have minimal impact on the wider network.

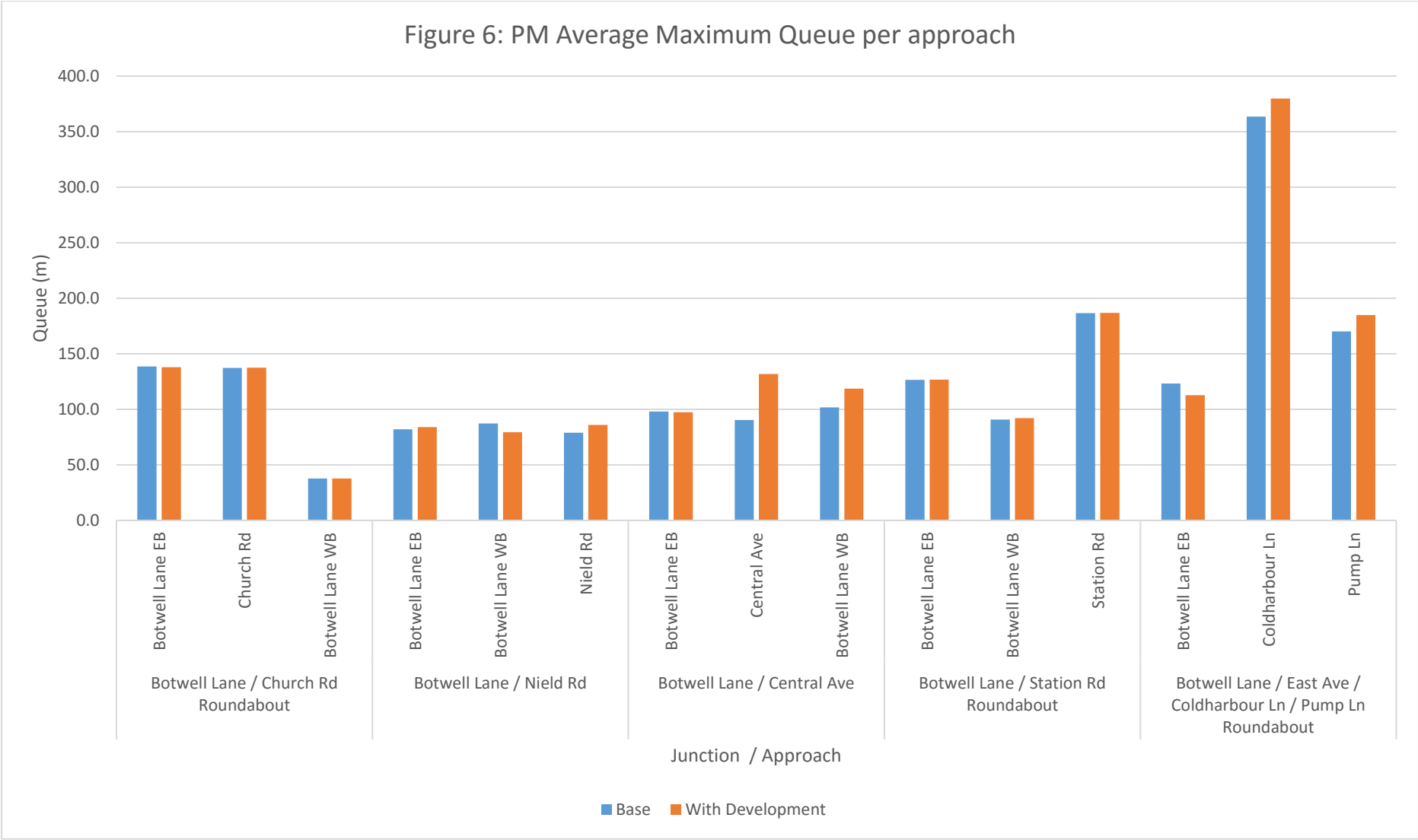
Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

9.2. There is more of a noticeable effect at the main development junction itself (Central Avenue/Botwell Lane) which can be purely attributed to development traffic.

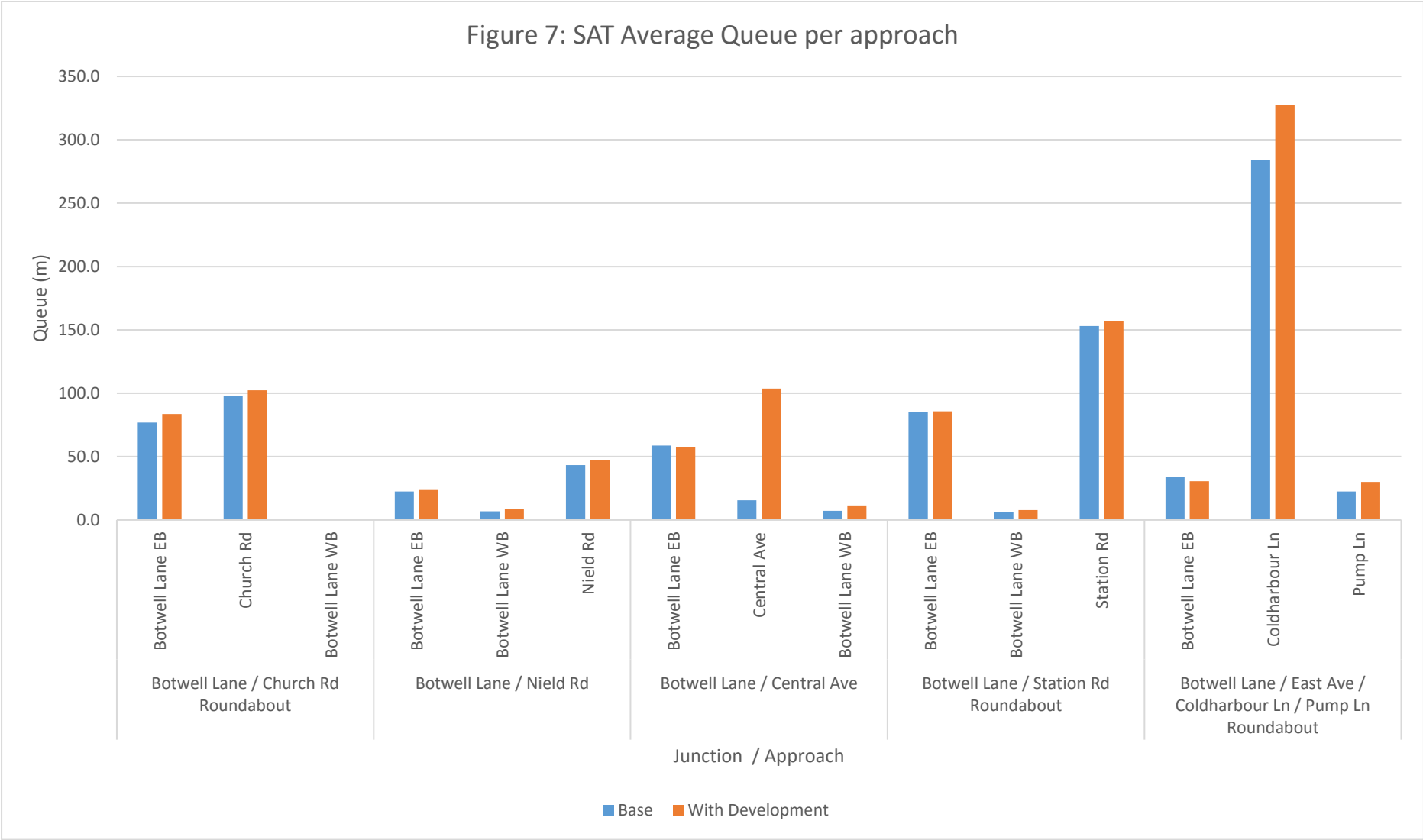
Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd



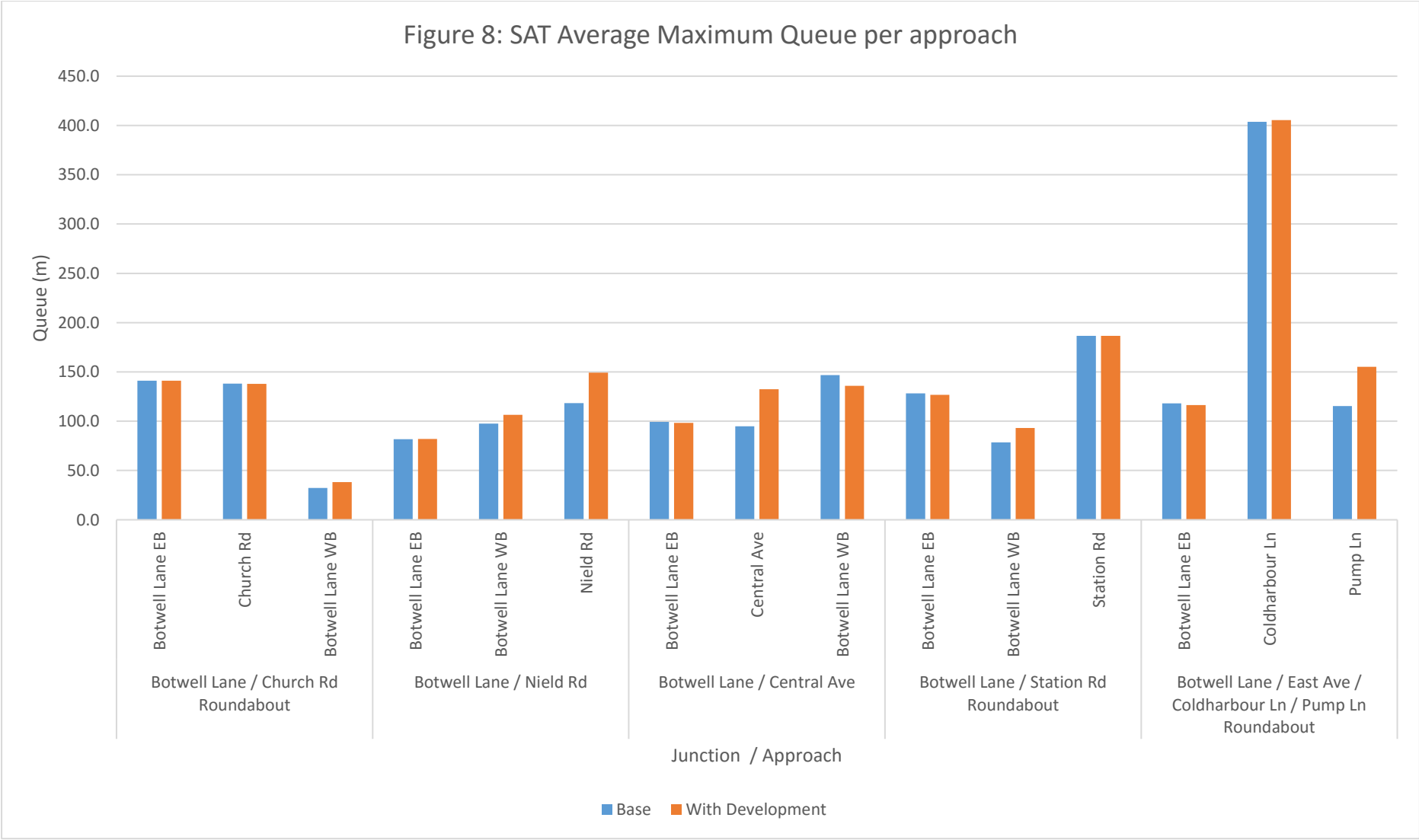
Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd



Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd



Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd



Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

10. Conclusion

10.1. The testing undertaken using the Hayes Town Centre model to assess the impact of a proposed food store located adjacent to Botwell Lane and accessed via Central Avenue shows that the increase of development trips has minimal impact on the surrounding network in both the PM and Saturday Peaks. However, the PM peak appears to be worst affected with an overall increase in delay per trip of 3.08%, compared to a 2.36% increase to delay per trip on Saturday.

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

APPENDIX A – JUNCTION DELAYS

Junction Delays			PM PEAK				SAT PEAK			
			Base	With Development			Base	With Development		
	Movement		Delay (s)		Diff.	% Diff.	Delay (s)		Diff.	% Diff.
Junction	Approach	Turn								
Botwell Lane / Church Rd Roundabout	Botwell Lane EB	Church Rd	60.3	54.0	-6.3	-10.4%	101.0	91.8	-9.2	-9.1%
		Ahead	67.3	62.1	-5.2	-7.7%	128.5	128.7	0.1	0.1%
	Church Rd	Left	210.8	205.7	-5.1	-2.4%	450.2	444.5	-5.7	-1.3%
		Right	185.7	183.8	-1.9	-1.0%	461.8	402.6	-59.2	-12.8%
	Botwell Lane WB	Ahead	1.7	1.7	0.0	1.5%	1.1	1.5	0.3	30.4%
		Church Rd	2.0	2.0	0.0	0.0%	2.1	2.9	0.8	37.1%
	Junction Total		**527.7**	**509.2**	**-18.5**	**-3.5%**	**1144.8**	**1071.9**	**-72.9**	**-6.4%**
Botwell Lane / Nield Rd	Botwell Lane EB	Ahead	21.3	18.3	-2.9	-13.8%	35.7	32.5	-3.3	-9.1%
		Nield Rd	14.3	13.7	-0.6	-4.4%	16.5	15.2	-1.3	-8.0%
	Botwell Lane WB	Nield Rd	3.9	4.0	0.1	3.9%	6.7	8.7	2.0	30.1%
		Ahead	6.2	5.9	-0.4	-5.8%	11.0	11.5	0.5	4.4%
	Nield Rd	Left	33.2	42.2	8.9	26.9%	128.4	134.3	5.8	4.5%
		Right	72.3	81.4	9.1	12.6%	181.4	204.6	23.2	12.8%
	Junction Total		**151.2**	**165.4**	**14.3**	**9.4%**	**379.7**	**406.7**	**27.0**	**7.1%**
Botwell Lane / Central Ave	Botwell Lane EB	Central Ave	41.6	36.5	-5.1	-12.3%	52.0	53.3	1.3	2.4%
		Ahead	56.3	51.0	-5.2	-9.3%	75.2	69.7	-5.5	-7.3%
	Central Ave	Left	55.6	179.2	123.6	222.1%	58.5	198.2	139.7	238.8%
		Right	44.6	165.2	120.7	270.7%	42.7	192.9	150.2	351.6%
	Botwell Lane WB	Ahead	7.6	10.0	2.3	30.7%	8.1	11.0	2.9	35.2%
		Central Ave	11.9	17.0	5.2	43.5%	10.2	16.0	5.8	56.8%
	Junction Total		**217.5**	**458.9**	**241.4**	**111.0%**	**246.8**	**541.2**	**294.4**	**119.3%**
Botwell Lane / Station Rd Roundabout	Botwell Lane EB	Ahead	82.6	76.7	-5.9	-7.2%	98.6	93.5	-5.0	-5.1%
		Station Rd	86.8	82.1	-4.8	-5.5%	96.3	96.3	-0.1	-0.1%
	Botwell Lane WB	Station Rd	8.9	9.0	0.1	0.6%	8.3	8.2	-0.1	-1.0%
		Ahead	10.8	11.3	0.4	4.0%	9.8	10.6	0.8	7.9%
	Station Rd	Left	164.7	175.9	11.2	6.8%	174.8	180.3	5.5	3.2%
		Right	166.8	174.5	7.7	4.6%	176.3	180.6	4.3	2.4%
	Junction Total		**520.8**	**529.5**	**8.7**	**1.7%**	**564.1**	**569.5**	**5.4**	**1.0%**
Botwell Lane / East Ave / Coldharbour Ln / Pump Ln Roundabout	Botwell Lane EB	East Ave	8.9	8.6	-0.3	-3.2%	11.4	10.8	-0.5	-4.7%
		Coldharbour Ln	15.1	15.5	0.4	2.6%	17.5	16.2	-1.3	-7.2%
		Pump Ln	12.7	12.4	-0.3	-2.7%	14.7	13.7	-1.0	-6.5%
	Coldharbour Ln	Pump Ln	96.9	96.7	-0.2	-0.2%	97.5	99.9	2.4	2.5%
		Botwell Lane WB	102.1	102.8	0.8	0.8%	99.2	103.7	4.5	4.5%
		East Ave	97.5	97.3	-0.2	-0.2%	101.0	92.7	-8.3	-8.2%
	Pump Ln	Botwell Lane WB	54.5	64.4	9.9	18.2%	33.8	40.2	6.4	18.9%
		East Ave	45.5	55.8	10.2	22.5%	27.4	33.5	6.2	22.6%
		Coldharbour Ln	54.7	64.5	9.7	17.8%	35.7	41.6	5.9	16.6%
	Junction Total		**487.9**	**517.9**	**30.0**	**6.1%**	**438.2**	**452.6**	**14.3**	**3.3%**
		Network Total	**1905.1**	**2180.9**	**275.8**	**25%**	**2773.7**	**3041.9**	**268.2**	**25%**

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

APPENDIX B – TRAFFIC FLOW COMPARISON

Traffic Flow Comparison			PM PEAK				SAT PEAK			
			Base	With Development			Base	With Development		
	Movement		All Vehicles		Diff.	% Diff.	All Vehicles		Diff.	% Diff.
Junction	Approach	Turn								
Botwell Lane / Church Rd Roundabout	Botwell Lane EB	Church Rd	115.5	116.1	0.6	0.5%	43.8	41.8	-2.0	-4.6%
		Ahead	375.4	412.8	37.4	10.0%	278.0	305.2	27.2	9.8%
	Church Rd	Left	78.3	86.3	8.0	10.2%	48.8	58.0	9.2	18.9%
		Right	118.8	119.5	0.8	0.6%	62.2	59.2	-3.0	-4.8%
	Botwell Lane WB	Ahead	546.9	547.5	0.6	0.1%	449.8	464.0	14.2	3.2%
		Church Rd	204.3	203.3	-1.0	-0.5%	152.0	154.2	2.2	1.4%
Botwell Lane / Nield Rd	Botwell Lane EB	Ahead	432.9	478.9	46.0	10.6%	303.2	338.2	35.0	11.5%
		Nield Rd	19.8	19.9	0.1	0.6%	21.6	22.2	0.6	2.8%
	Botwell Lane WB	Nield Rd	19.1	19.1	0.0	0.0%	26.6	25.2	-1.4	-5.3%
		Ahead	625.0	624.5	-0.5	-0.1%	536.6	554.8	18.2	3.4%
	Nield Rd	Left	127.0	126.0	-1.0	-0.8%	64.8	63.6	-1.2	-1.9%
		Right	54.3	57.6	3.4	6.2%	85.8	82.2	-3.6	-4.2%
Botwell Lane / Central Ave	Botwell Lane EB	Central Ave	101.1	145.4	44.3	43.8%	61.8	100.0	38.2	61.8%
		Ahead	382.3	390.5	8.3	2.2%	322.0	315.4	-6.6	-2.0%
	Central Ave	Left	123.8	141.6	17.9	14.4%	129.8	158.8	29.0	22.3%
		Right	151.4	169.8	18.4	12.1%	94.2	130.0	35.8	38.0%
	Botwell Lane WB	Ahead	493.3	474.3	-19.0	-3.9%	469.2	450.4	-18.8	-4.0%
		Central Ave	69.0	105.6	36.6	53.1%	67.6	122.0	54.4	80.5%
Botwell Lane / Station Rd Roundabout	Botwell Lane EB	Ahead	415.6	425.5	9.9	2.4%	391.0	398.2	7.2	1.8%
		Station Rd	80.8	95.6	14.9	18.4%	50.8	70.6	19.8	39.0%
	Botwell Lane WB	Station Rd	145.9	141.5	-4.4	-3.0%	96.2	93.8	-2.4	-2.5%
		Ahead	407.3	425.4	18.1	4.5%	402.6	430.6	28.0	7.0%
	Station Rd	Left	152.5	151.9	-0.6	-0.4%	124.4	135.4	11.0	8.8%
		Right	247.1	234.3	-12.9	-5.2%	252.4	235.4	-17.0	-6.7%
Botwell Lane / East Ave / Coldharbour Ln / Pump Ln Roundabout	Botwell Lane EB	East Ave	33.8	32.0	-1.8	-5.2%	44.6	41.0	-3.6	-8.1%
		Coldharbour Ln	257.0	265.4	8.4	3.3%	214.0	228.0	14.0	6.5%
		Pump Ln	369.1	361.4	-7.8	-2.1%	404.2	383.4	-20.8	-5.1%
	Coldharbour Ln	Pump Ln	161.4	157.6	-3.8	-2.3%	171.2	162.4	-8.8	-5.1%
		Botwell Lane WB	272.1	279.4	7.3	2.7%	280.2	290.4	10.2	3.6%
		East Ave	40.6	40.8	0.1	0.3%	21.0	18.8	-2.2	-10.5%
	Pump Ln	Botwell Lane WB	281.4	287.6	6.3	2.2%	240.0	253.6	13.6	5.7%
		East Ave	53.3	53.0	-0.3	-0.5%	43.4	43.4	0.0	0.0%
		Coldharbour Ln	129.6	129.5	-0.1	-0.1%	176.0	176.4	0.4	0.2%

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

APPENDIX C – AVERAGE QUEUE DATA

Average Queue per movement

			PM PEAK				SAT PEAK			
	Movement		Base	With Development			Base	With Development		
Junction	Approach	Turn	Average Q (m)		Diff.	% Diff.	Average Q (m)		Diff.	% Diff.
Botwell Lane / Church Rd Roundabout	Botwell Lane EB	Church Rd	63.8	62.5	-1.3	-2.1%	76.8	83.7	6.9	9.0%
		Ahead	63.8	62.5	-1.3	-2.1%	76.8	83.7	6.9	9.0%
	Church Rd	Left	80.7	85.6	4.9	6.1%	97.7	102.3	4.6	4.7%
		Right	80.7	85.6	4.9	6.1%	97.7	102.3	4.6	4.7%
	Botwell Lane WB	Ahead	1.4	1.4	0.0	-2.7%	0.6	1.1	0.4	68.8%
		Church Rd	1.4	1.4	0.0	-2.7%	0.6	1.1	0.4	68.8%
Botwell Lane / Nield Rd	Botwell Lane EB	Ahead	15.1	14.1	-0.9	-6.2%	22.5	23.6	1.1	4.9%
		Nield Rd	15.1	14.1	-0.9	-6.2%	22.5	23.6	1.1	4.9%
	Botwell Lane WB	Nield Rd	1.4	1.2	-0.2	-15.9%	4.5	5.7	1.2	27.4%
		Ahead	4.0	3.3	-0.6	-16.1%	9.4	11.2	1.8	18.9%
	Nield Rd	Left	12.0	15.8	3.8	31.4%	43.3	47.0	3.7	8.6%
		Right	11.9	15.7	3.8	31.8%	43.2	46.9	3.7	8.7%
Botwell Lane / Central Ave	Botwell Lane EB	Central Ave	45.1	42.9	-2.2	-4.9%	54.1	53.1	-1.0	-1.8%
		Ahead	54.2	51.9	-2.2	-4.2%	63.5	62.5	-1.0	-1.5%
	Central Ave	Left	20.2	102.7	82.5	409.4%	15.6	103.9	88.3	567.6%
		Right	20.0	102.5	82.5	411.9%	15.4	103.7	88.3	573.2%
	Botwell Lane WB	Ahead	8.8	11.3	2.5	28.6%	9.6	12.6	3.0	31.3%
		Central Ave	3.8	7.6	3.9	102.7%	5.0	10.5	5.5	110.4%
Botwell Lane / Station Rd Roundabout	Botwell Lane EB	Ahead	81.2	80.0	-1.1	-1.4%	85.0	85.8	0.7	0.9%
		Station Rd	81.2	80.0	-1.1	-1.4%	85.0	85.8	0.7	0.9%
	Botwell Lane WB	Station Rd	10.6	12.8	2.2	20.9%	6.2	7.9	1.8	28.6%
		Ahead	10.6	12.8	2.2	20.9%	6.2	7.9	1.8	28.6%
	Station Rd	Left	154.5	156.3	1.8	1.2%	153.1	157.0	3.9	2.5%
		Right	154.5	156.3	1.8	1.2%	153.1	157.0	3.9	2.5%
Botwell Lane / East Ave / Coldharbour Ln / Pump Ln Roundabout	Botwell Lane EB	East Ave	25.9	22.6	-3.3	-12.9%	34.1	30.6	-3.5	-10.2%
		Coldharbour Ln	25.9	22.6	-3.3	-12.9%	34.1	30.6	-3.5	-10.2%
		Pump Ln	25.9	22.6	-3.3	-12.9%	34.1	30.6	-3.5	-10.2%
	Coldharbour Ln	Pump Ln	221.3	273.5	52.1	23.6%	284.3	327.6	43.4	15.3%
		Botwell Lane WB	221.3	273.5	52.1	23.6%	284.3	327.6	43.4	15.3%
		East Ave	221.3	273.5	52.1	23.6%	284.3	327.6	43.4	15.3%
	Pump Ln	Botwell Lane WB	49.0	70.6	21.6	44.2%	22.5	30.0	7.5	33.4%
		East Ave	49.0	70.6	21.6	44.2%	22.5	30.0	7.5	33.4%
		Coldharbour Ln	49.0	70.6	21.6	44.2%	22.5	30.0	7.5	33.4%

Average Queue per approach

		PM PEAK				SAT PEAK			
		Base	With Development			Base	With Development		
Junction	Movement Approach	Average Q (m)		Diff.	% Diff.	Average Q (m)		Diff.	% Diff.
Botwell Lane / Church Rd Roundabout	Botwell Lane EB	63.8	62.5	-1.3	-2.1%	76.8	83.7	6.9	9.0%
	Church Rd	80.7	85.6	4.9	6.1%	97.7	102.3	4.6	4.7%
	Botwell Lane WB	1.4	1.4	0.0	-2.7%	0.6	1.1	0.4	68.8%
Botwell Lane / Nield Rd	Botwell Lane EB	15.1	14.1	-0.9	-6.2%	22.5	23.6	1.1	4.9%
	Botwell Lane WB	2.7	2.3	-0.4	-16.0%	7.0	8.5	1.5	21.6%
	Nield Rd	11.9	15.7	3.8	31.6%	43.2	47.0	3.7	8.6%
Botwell Lane / Central Ave	Botwell Lane EB	49.7	47.4	-2.2	-4.5%	58.8	57.8	-1.0	-1.7%
	Central Ave	20.1	102.6	82.5	410.6%	15.5	103.8	88.3	570.4%
	Botwell Lane WB	6.3	9.5	3.2	50.7%	7.3	11.6	4.3	58.4%
Botwell Lane / Station Rd Roundabout	Botwell Lane EB	81.2	80.0	-1.1	-1.4%	85.0	85.8	0.7	0.9%
	Botwell Lane WB	10.6	12.8	2.2	20.9%	6.2	7.9	1.8	28.6%
	Station Rd	154.5	156.3	1.8	1.2%	153.1	157.0	3.9	2.5%
Botwell Lane / East Ave / Coldharbour Ln / Pump Ln Roundabout	Botwell Lane EB	25.9	22.6	-3.3	-12.9%	34.1	30.6	-3.5	-10.2%
	Coldharbour Ln	221.3	273.5	52.1	23.6%	284.3	327.6	43.4	15.3%
	Pump Ln	49.0	70.6	21.6	44.2%	22.5	30.0	7.5	33.4%

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

APPENDIX D – MAXIMUM QUEUE DATA

Junction	Approach	Turn	PM PEAK Avg Max Q (m) Base	PM PEAK Avg Max Q (m) With Development	PM PEAK Diff.	PM PEAK % Diff.	SAT PEAK Avg Max Q (m) Base	SAT PEAK Avg Max Q (m) With Development	SAT PEAK Diff.	SAT PEAK % Diff.
Botwell Lane / Church Rd Roundabout	Botwell Lane EB	Church Rd	138.6	137.9	-0.7	-0.5%	141.1	141.1	0.0	0.0%
		Ahead	138.6	137.9	-0.7	-0.5%	141.1	141.1	0.0	0.0%
	Church Rd	Left	137.3	137.6	0.3	0.2%	138.1	137.9	-0.2	-0.2%
		Right	137.3	137.6	0.3	0.2%	138.1	137.9	-0.2	-0.2%
	Botwell Lane WB	Ahead	37.7	37.8	0.1	0.2%	32.3	38.3	6.0	18.7%
		Church Rd	37.7	37.8	0.1	0.2%	32.3	38.3	6.0	18.7%
Botwell Lane / Nield Rd	Botwell Lane EB	Ahead	82.1	84.0	1.9	2.3%	81.7	82.0	0.4	0.4%
		Nield Rd	82.1	84.0	1.9	2.3%	81.7	82.0	0.4	0.4%
	Botwell Lane WB	Nield Rd	74.0	66.0	-8.0	-10.9%	84.3	93.1	8.7	10.4%
		Ahead	100.7	92.7	-8.0	-8.0%	111.0	119.8	8.7	7.9%
	Nield Rd	Left	79.1	86.0	6.8	8.6%	118.4	149.2	30.8	26.0%
		Right	79.0	85.9	6.8	8.7%	118.3	149.1	30.8	26.0%
Botwell Lane / Central Ave	Botwell Lane EB	Central Ave	92.5	92.0	-0.6	-0.6%	93.8	92.8	-1.1	-1.1%
		Ahead	103.4	102.9	-0.6	-0.6%	104.7	103.7	-1.1	-1.0%
	Central Ave	Left	90.5	131.8	41.3	45.6%	95.0	132.5	37.5	39.5%
		Right	90.3	131.6	41.3	45.7%	94.8	132.3	37.5	39.6%
	Botwell Lane WB	Ahead	104.2	118.1	13.9	13.3%	164.2	137.5	-26.7	-16.3%
		Central Ave	99.4	119.3	19.9	20.1%	129.3	134.6	5.3	4.1%
Botwell Lane / Station Rd Roundabout	Botwell Lane EB	Ahead	126.6	126.7	0.1	0.1%	128.2	126.9	-1.3	-1.0%
		Station Rd	126.6	126.7	0.1	0.1%	128.2	126.9	-1.3	-1.0%
	Botwell Lane WB	Station Rd	90.9	92.1	1.1	1.3%	78.5	93.2	14.6	18.6%
		Ahead	90.9	92.1	1.1	1.3%	78.5	93.2	14.6	18.6%
	Station Rd	Left	186.6	186.8	0.1	0.1%	186.6	186.5	0.0	0.0%
		Right	186.6	186.8	0.1	0.1%	186.6	186.5	0.0	0.0%
Botwell Lane / East Ave / Coldharbour Ln / Pump Ln Roundabout	Botwell Lane EB	East Ave	123.3	112.8	-10.5	-8.5%	118.2	116.3	-1.9	-1.6%
		Coldharbour Ln	123.3	112.8	-10.5	-8.5%	118.2	116.3	-1.9	-1.6%
		Pump Ln	123.3	112.8	-10.5	-8.5%	118.2	116.3	-1.9	-1.6%
	Coldharbour Ln	Pump Ln	363.6	379.8	16.2	4.5%	403.8	405.4	1.6	0.4%
		Botwell Lane WB	363.6	379.8	16.2	4.5%	403.8	405.4	1.6	0.4%
		East Ave	363.6	379.8	16.2	4.5%	403.8	405.4	1.6	0.4%
	Pump Ln	Botwell Lane WB	170.2	184.8	14.6	8.6%	115.5	155.1	39.6	34.3%
		East Ave	170.2	184.8	14.6	8.6%	115.5	155.1	39.6	34.3%
		Coldharbour Ln	170.2	184.8	14.6	8.6%	115.5	155.1	39.6	34.3%

Junction	Approach	PM PEAK Avg Max Q (m) Base	PM PEAK Avg Max Q (m) With Development	PM PEAK Diff.	PM PEAK % Diff.	SAT PEAK Avg Max Q (m) Base	SAT PEAK Avg Max Q (m) With Development	SAT PEAK Diff.	SAT PEAK % Diff.
Botwell Lane / Church Rd Roundabout	Botwell Lane EB	138.6	137.9	-0.7	-0.5%	141.1	141.1	0.0	0.0%
	Church Rd	137.3	137.6	0.3	0.2%	138.1	137.9	-0.2	-0.2%
	Botwell Lane WB	37.7	37.8	0.1	0.2%	32.3	38.3	6.0	18.7%
Botwell Lane / Nield Rd	Botwell Lane EB	82.1	84.0	1.9	2.3%	81.7	82.0	0.4	0.4%
	Botwell Lane WB	87.4	79.4	-8.0	-9.2%	97.7	106.4	8.7	8.9%
	Nield Rd	79.1	85.9	6.8	8.7%	118.4	149.2	30.8	26.0%
Botwell Lane / Central Ave	Botwell Lane EB	98.0	97.4	-0.6	-0.6%	99.3	98.2	-1.1	-1.1%
	Central Ave	90.4	131.7	41.3	45.7%	94.9	132.4	37.5	39.6%
	Botwell Lane WB	101.8	118.7	16.9	16.6%	146.7	136.0	-10.7	-7.3%
Botwell Lane / Station Rd Roundabout	Botwell Lane EB	126.6	126.7	0.1	0.1%	128.2	126.9	-1.3	-1.0%
	Botwell Lane WB	90.9	92.1	1.1	1.3%	78.5	93.2	14.6	18.6%
	Station Rd	186.6	186.8	0.1	0.1%	186.6	186.5	0.0	0.0%
Botwell Lane / East Ave / Coldharbour Ln / Pump Ln Roundabout	Botwell Lane EB	123.3	112.8	-10.5	-8.5%	118.2	116.3	-1.9	-1.6%
	Coldharbour Ln	363.6	379.8	16.2	4.5%	403.8	405.4	1.6	0.4%
	Pump Ln	170.2	184.8	14.6	8.6%	115.5	155.1	39.6	34.3%

Carl Moreno | Transport Modelling | Principal Modeller
Multimodal | Seven House | High Street | Longbridge | Birmingham | B31 2UQ
Mobile: +44 (0)7540 106609
Email: carl.moreno@multimodaluk.com
Webpage: Multimodal Ltd

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Mobile: +44 (0)7540 106609
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