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Dover District Council

NORTH DEAL STUDY

Data Collection Report

70036467
FEBRUARY 2018

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Dover District Council

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Dover **District Council**

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Data Collection Report

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INTRODUCTION

1. INTRODUCTION

1.1. INTRODUCTION

1.1.1. WSP have been commissioned by Dover District Council (DDC) to enhance the 2015 Dover Transportation Model with traffic data from the Deal area. WSP will be working in close collaboration with Kent County Council (KCC) and Highways England (HE) on the project. The primary purpose this strategic transportation study is to support the development of the District Local Plan which will cover the period up to 2037.

1.2. BACKGROUND

Dover Transportation Model

1.2.1. The Dover Transportation Model (DTM) was created using VISUM software that was agreed by HE and KCC as being 'fit for purpose'. The DTM was used to inform and support the development of DDC's Adopted Core Strategy (2010) and Land Allocations Local Plan (2015).

1.2.2. In 2015 agreement was reached with DDC, HE and KCC to refresh the model with up-to-date traffic counts for the Dover area. Work on the DTM was then 'paused' until the distribution of development had been agreed with Dover District Council.

Local Plan Review

1.2.3. On the 1st March 2017 Dover District Council's Cabinet agreed that there was the need to commence with work on a Local Plan Review. Policy CP1 in the Council's existing Adopted Local Plan currently identifies Deal as a District Centre and a focus for urban scale development second only to Dover. Historically, Deal's ability to accommodate significant development has been constrained by transport, access and environmental considerations. At the time of writing the CS, the section regarding spatial issues in Deal (pages 48 to 50 in the Core Strategy), made a commitment to investigate these constraints, especially in and adjoining the northern area, to see whether solutions could be found for the benefit of existing residents and to create potential for further development.

1.2.4. Initial work was undertaken in 2011 by GVA/MVA Consultants as part of the work on the Council's Land Allocations Local Plan but unfortunately, this failed to identify a deliverable solution for the North Deal area and concluded that there was only limited development potential around the Albert Road area for new development https://www.dover.gov.uk/Planning/Planning-Policy-and-Regeneration/Evidence-Base/Flooding.aspx This work resulted in planning permission being granted and work is currently underway to create a new access road and a mixed use development on land at Albert Road (DOV/15/01290). Work on this study started by reviewing all of the information that was undertaken in 2011.

Traffic Surveys Undertaken in Deal

1.2.5. This report sets out the data collection undertaken in November and December 2017 on several roads in and around the area of Deal. The survey results collected will be fed into the calibration and validation of the DDTM.

1.2.6. The following data collection methods were employed as part of the surveys:

- Automatic Traffic Counts (ATC) from installed rubber tubes; and

- Manual Classified Counts (MCC) from video footage.

1.2.7. Each of these methods is described in more detail in the following chapter of this report. Furthermore, a comparative analysis has been carried out between the ATCs and MCCs to understand the consistency of the data. The trend between the 2015 and 2017 data has also been analysed.

2. HIGHWAY DATA

2.1. WHAT WAS COMMISSIONED

2.1.1. WSP commissioned a large-scale survey of key roads and junctions in the Deal area. These surveys were designed in order to provide a complete set of observed counts to compare against traffic volumes within the DDTM.

2.2. DATA COLLECTION TECHNIQUES

2.2.1. Details of the two data collection techniques used are provided below.

Automatic Traffic Counts (ATC)

2.2.2. Automatic Traffic Counts (ATC) were carried out at 40 locations as shown in Figure 1. At each location, ATC tubes were placed for two consecutive weeks, in order to allow an average weeks' worth of data to be extracted reliably. The details of the ATC sites are given in Appendix A.

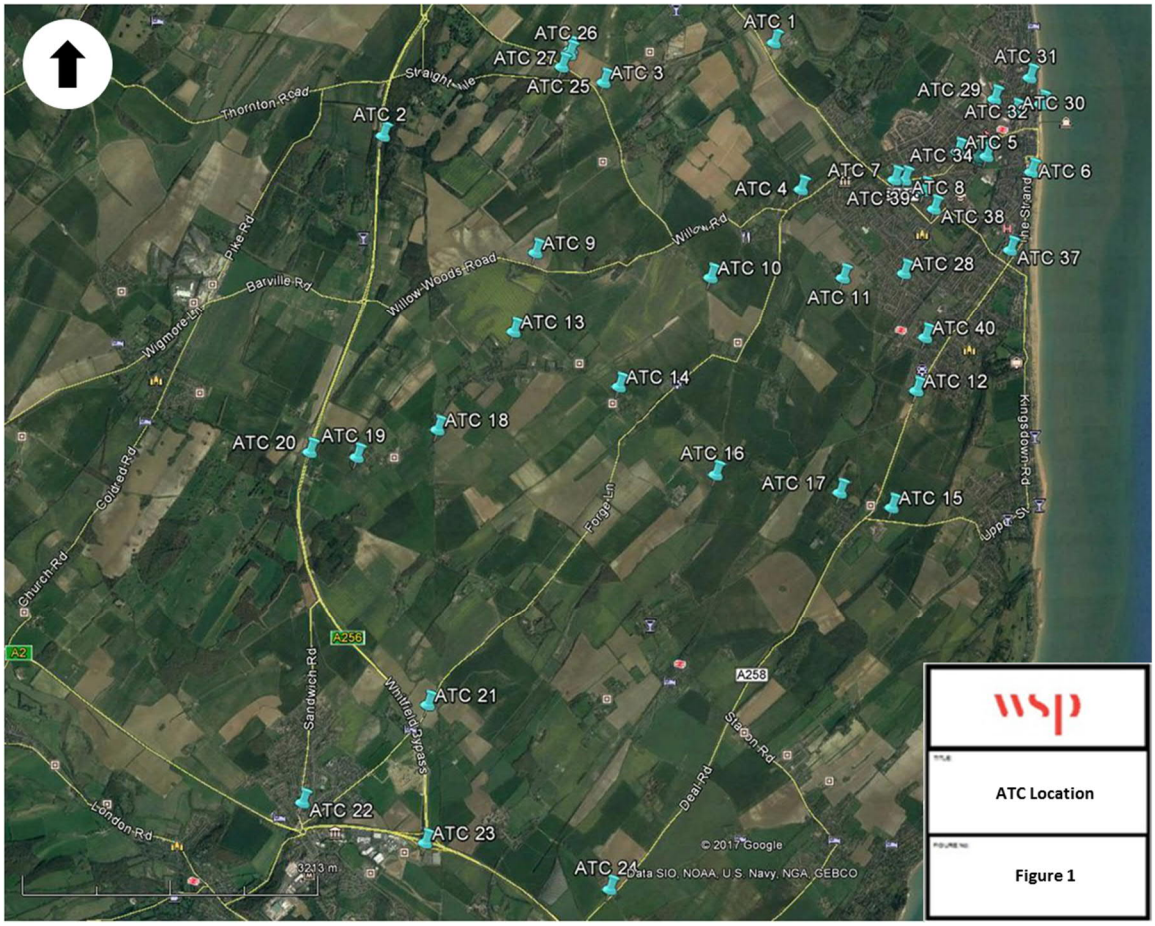


Figure 1: ATC Locations

2.2.3. Table 1 shows the date and duration of the ATC surveys as well as the dates taken into consideration for the data analysis. The data for the neutral weekdays' i.e. Tuesday, Wednesday and Thursday are averaged over two weeks throughout 24 hours.

Table 1: Average Weekday ATC Survey Dates

Sites	Survey Dates	Data Analysis Dates
All Sites except 6, 17 and 19	Monday, 20th November - Sunday, 3rd December 2017	Tuesday-Thursday, 21-23th November 2017, Tuesday-Thursday, 28-30th November 2017
Sites 6 and 17	Monday, 20th November – Saturday, 9rd December 2017	Tuesday-Thursday,28-30th November and Tuesday-Thursday,5-7th December 2017
Site 19	Monday, 26th November – Saturday, 9rd December 2017	Tuesday-Thursday,28-30th November and Tuesday-Thursday,5-7th December 2017

2.2.4. There were issues with Site 19 which meant the ATC data was collected a week later than all the other sites. Sites 6 and 17 were left down for an additional week and removed at the same time as site 9.

2.2.5. The data was collected in 15 minute time intevals and fully classified by vehicle class (ARX SYSTEM). In order to reduce the complexity during the data analysis, the vehicle categories have been broadly classified into Car (Class 2), LGV (Class 3 and 4) and HGV (Class 5-10). Motorcycles (Class 1) have been ignored in the analysis.

2.2.6. Average weekday hourly volume has been calculated from 15-minutes period vehicle count data. Any time periods within the data analysis dates containing unreliable count data (e.g. ATC tubes are broken returning zero counts), have been excluded from the averages.

2.2.7. As shown in Figure 2, for Site 5 - London Road [30M] – in the Northbound direction it was observed that the traffic volume for 22nd November reduces significantly during the time period of 10:00-12:00 and 16:00-17:00, therefore data for these time period has been excluded from further calculations.

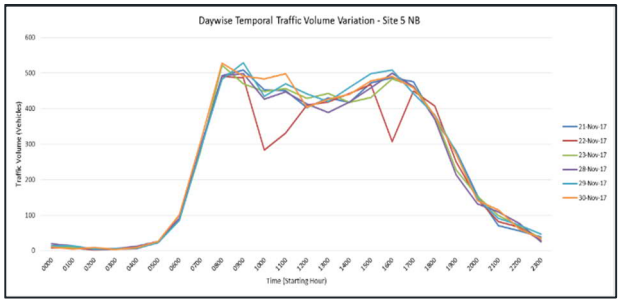
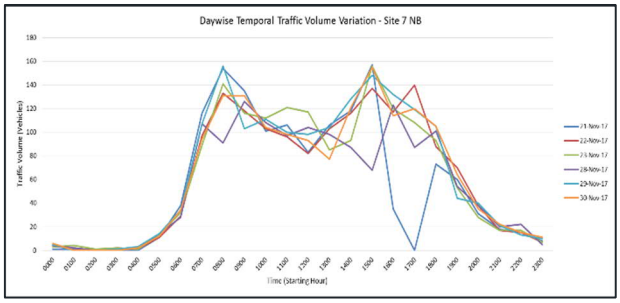
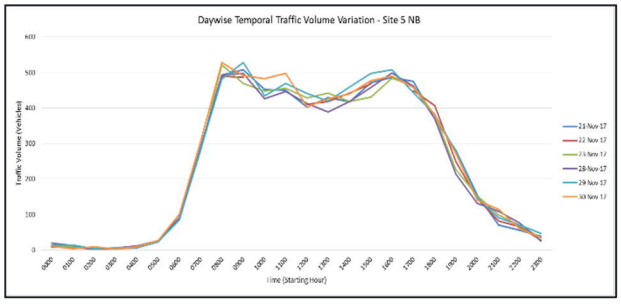
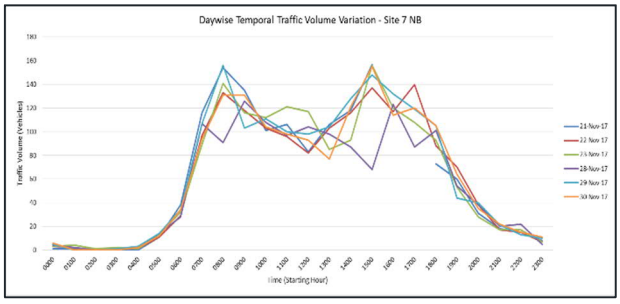
	
Site 5: London Road [30M] Northbound – Daily average hourly variation with outliers	Site 7: Rectory Road [30M] Northbound – Daily average hourly variation with outliers
	
Site 5: London Road [30M] Northbound – Daily average hourly variation after removing outliers	Site 7: Rectory Road [30M] Northbound – Daily average hourly variation after removing outliers

Figure 2: Examples of Inconsistent Data – Removing Outliers

2.2.8. All the outliers observed in the data are tabulated in Table 2.

Table 2: ATC Survey Outliers

Site Number	Site Name	Direction	Date	Time	Reason
2	A256	SB	29-11-17	0000-0100	Too high volume
5	LONDON RD	NB	22-11-17	1000-1200 1600-1700	Too high volume
5	LONDON RD	SB	22-11-17	1000-1200 1600-1700	Too high volume
7	RECTORY RD	NB	21-11-17 28-11-17	1600-1800 1500-1800	Too low volume
7	RECTORY RD	SB	21-11-17	1600-1800	Too low volume
16	WINKLANDS OAKS LN.	NB	21-11-17	1700-1800	Too high volume
23	HONEYWOOD PARK	NB	22-11-17	1000-1100	Zero count in raw data from 1000 to 1015
32	BEACH ST.	NB	30-11-17	2100-2200	Zero count in raw data from 2115 to 2145
32	BEACH ST.	SB	21-11-17	1300-1400	Vehicle count reduces unexpectedly for the quarter 1345 to 1400

2.2.9. Figure 3 shows some of the samples of consistent data

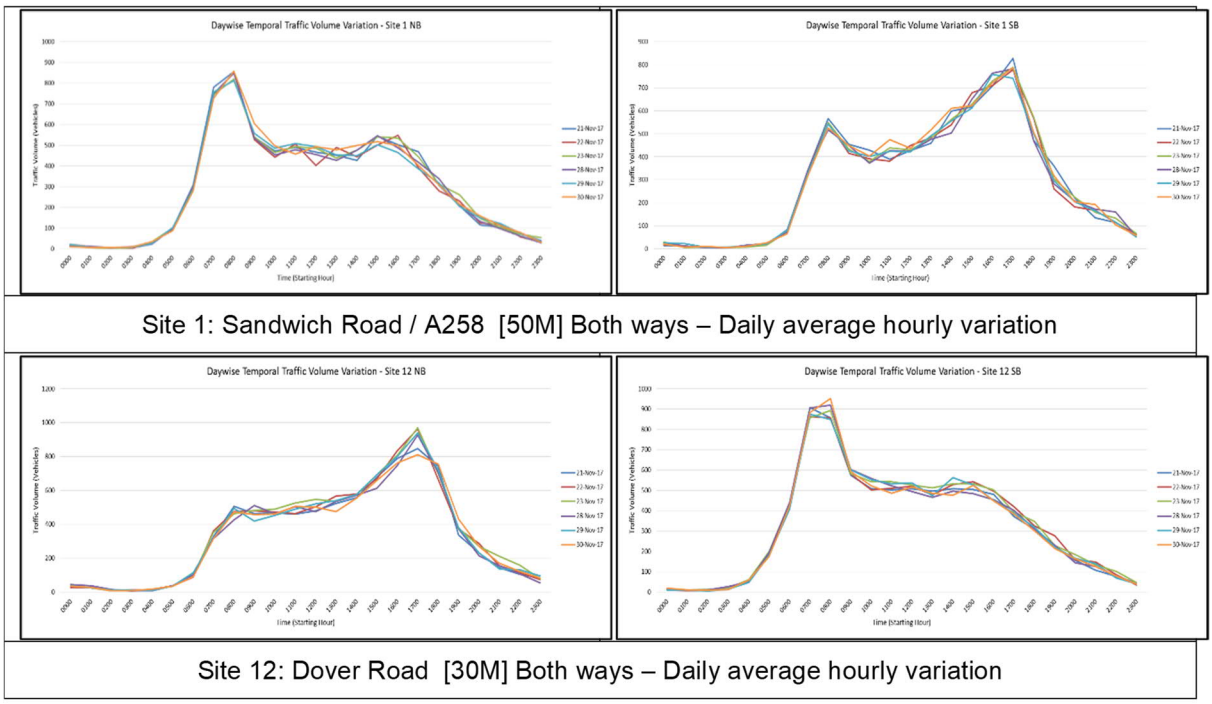


Figure 3: Examples of Consistent Data

2.2.10. Plots of average hourly variation of average weekday by directions are shown in **Appendix A** for all the 40 ATC sites.

Discrepancy of Data at Site 6:

2.2.11. The ATC tube at The Strand – Site 6 shows high variation between the traffic counts of each day. The traffic counts are available for 3 weeks. An unfruitful attempt was made to remove the data of some days in order to get some consistent data.

2.2.12. Figure 4 shows the variation of traffic for neutral days of the 3 weeks for both directions. The possible reason for such high degree of variation in recorded traffic counts may be due to cars parked alongside the road, which might have interfered with the functioning of ATC tube. Given the variation all records were used and the average flows inputted into the DDTM.

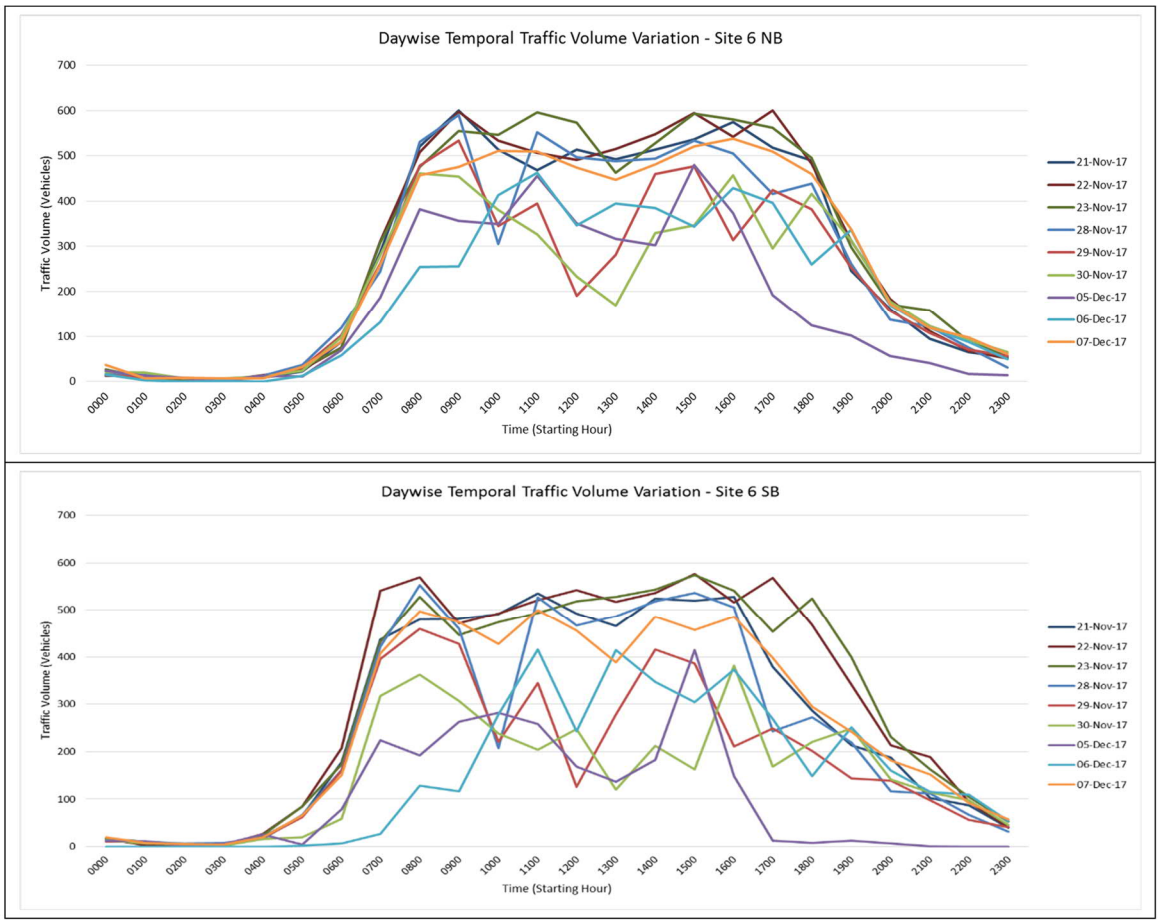


Figure 4: Daily Traffic Variation at Site 6

2.3. MANUAL CLASSIFIED COUNTS (MCC)

2.3.1. Manual Classified turning Counts were carried out at 9 junctions. Figure 5 shows the location map of the MCC sites. The details of the junctions are given in Appendix A.

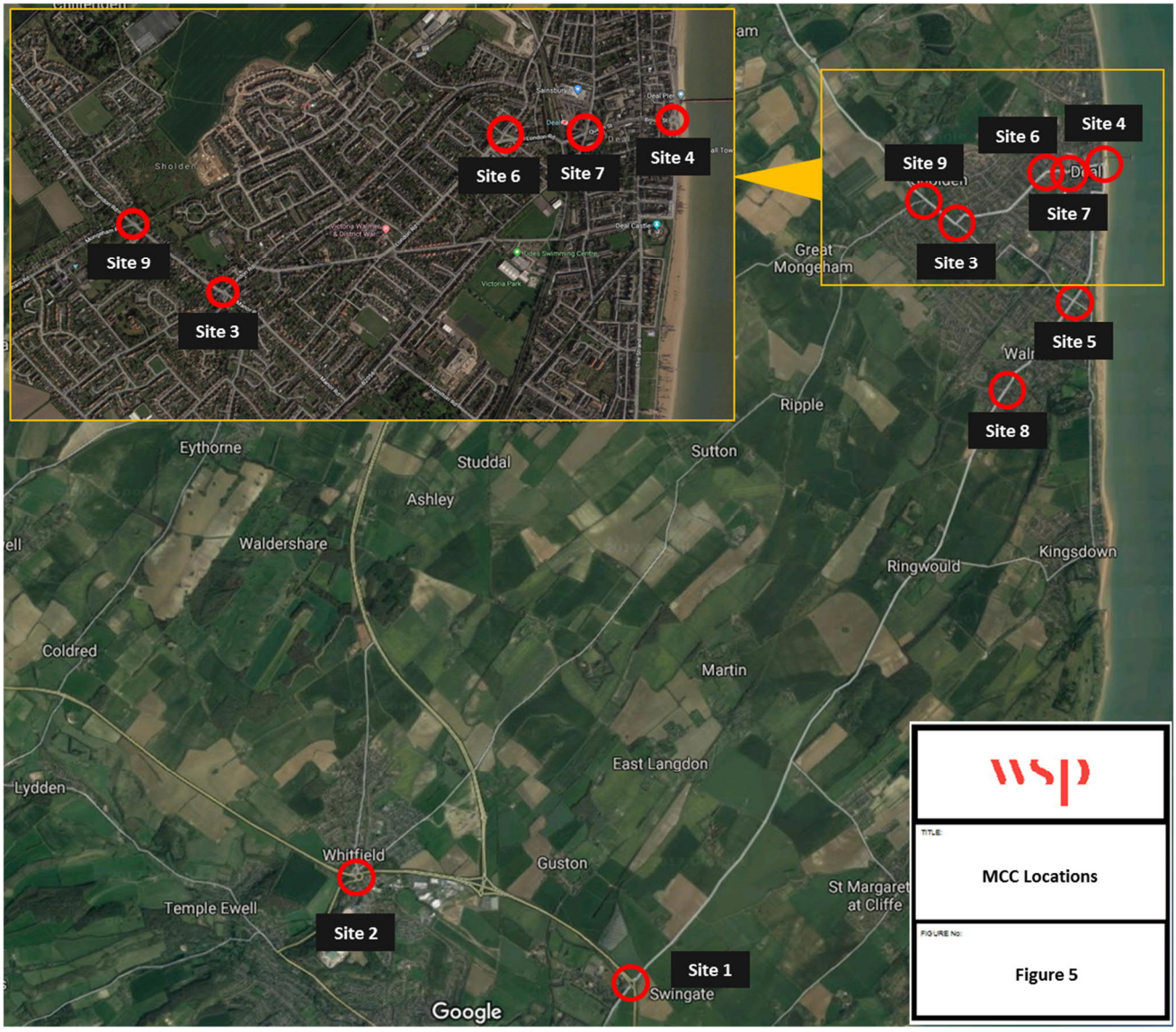


Figure 5: MCC Locations

2.3.2. The data was extracted for the peak hours, i.e. AM Peak hour (08:00 – 09:00) and PM Peak hour (17:00 – 18:00). The data was enumerated for the peak hours for a neutral weekday i.e. Wednesday, 22nd November 2017. The enumerated data covers the count of vehicle numbers in each 15-minute period, broken down by direction of travel and 3 vehicles categories Car, LGV and HGV. The category of HGV includes OGV1, OGV2 and PSV.

2.3.3. Table 3 to Table 11 presents the MCC analysis for each of the junctions.

Table 3: MCC Analysis of Site 1 - A2 / Deal Road / Jubilee Way / A258

Site Number	Arm	Arm Name	Entry/ Exit	AM				PM			
				Car	LGV	HGV	Total	Car	LGV	HGV	Total
1	A	A2	Entry	1010	171	162	**1343**	937	101	92	**1130**
			Exit	891	136	113	**1140**	806	95	101	**1002**
	B	Deal Road	Entry	982	107	33	**1122**	455	72	9	**536**
			Exit	503	134	24	**661**	1068	100	17	**1185**
	C	Jubilee Way	Entry	381	91	111	**583**	794	86	101	**981**
			Exit	688	109	162	**959**	303	43	88	**434**
	D	A258	Entry	455	70	10	**535**	424	39	8	**471**
			Exit	746	60	17	**823**	433	60	4	**497**

Table 4: MCC Analysis of Site 2 - Sandwich Road / A2 / Honeywood Road / Whitfield Hill

Site Number	Arm	Arm Name	Entry/ Exit	AM				PM			
				Car	LGV	HGV	Total	Car	LGV	HGV	Total
2	A	Sandwich Road	Entry	606	66	17	**689**	407	52	7	**466**
			Exit	437	68	24	**529**	645	88	9	**742**
	B	A2 (East)	Entry	583	75	96	**754**	457	67	86	**610**
			Exit	638	120	140	**898**	657	74	83	**814**
	C	Honeywood Road	Entry	530	85	59	**674**	755	57	19	**831**
			Exit	619	75	35	**729**	461	42	45	**548**
	D	A256	Entry	592	79	26	**697**	703	90	10	**803**
			Exit	674	100	24	**798**	697	70	7	**774**
	E	A2 (West)	Entry	700	158	144	**1002**	655	74	102	**831**
			Exit	643	100	119	**862**	517	66	80	**663**

Table 5: MCC Analysis of Site 3 - London Road / Manor Road / Rectory Road

Site Number	Arm	Arm Name	Entry/ Exit	AM				PM			
				Car	LGV	HGV	Total	Car	LGV	HGV	Total
3	A	London Rod (North East)	Entry	587	75	14	**676**	381	52	5	**438**
			Exit	469	86	25	**580**	537	61	8	**606**
	B	Manor Road	Entry	328	29	7	**364**	248	25	4	**277**
			Exit	190	44	6	**240**	327	27	2	**356**
	C	Rectory Road	Entry	132	11	4	**147**	127	11	1	**139**
			Exit	95	11	6	**112**	153	13	2	**168**
	D	London Road (North West)	Entry	483	111	22	**616**	679	68	7	**754**
			Exit	776	85	10	**871**	418	55	5	**478**

Table 6: MCC Analysis of Site 4 - Beach Street / Broad Street

Site Number	Arm	Arm Name	Entry/ Exit	AM				PM			
				Car	LGV	HGV	Total	Car	LGV	HGV	Total
4	A	Broad Street	Entry	166	43	20	**229**	272	15	7	**294**
			Exit	217	36	14	**267**	264	29	6	**299**
	B	Beach Street (North)	Entry	211	35	9	**255**	196	22	3	**221**
			Exit	228	47	1	**276**	281	17	1	**299**
	C	Beach Street (South East)	Entry	354	66	13	**433**	430	37	6	**473**
			Exit	285	60	27	**372**	347	27	9	**383**
	D	Beach Street (South West)	Entry	0	0	0	**0**	0	0	0	**0**
			Exit	1	1	0	**2**	6	1	0	**7**

Table 7: MCC Analysis of Site 5 - Cornwall Road / Dover Road / Archery Square

Site Number	Arm	Arm Name	Entry/ Exit	AM				PM			
				Car	LGV	HGV	Total	Car	LGV	HGV	Total
5	A	Cornwell Road	Entry	141	24	4	**169**	112	14	2	**128**

			Exit	110	13	4	**127**	137	8	3	**148**
	B	Dover Road (North)	Entry	373	68	26	**467**	346	38	9	**393**
			Exit	400	66	14	**480**	504	49	6	**559**
	C	Archery Square	Entry	16	2	0	**18**	13	1	0	**14**
			Exit	29	9	0	**38**	33	1	0	**34**
	D	Dover Road (South)	Entry	461	70	15	**546**	578	50	7	**635**
			Exit	452	76	27	**555**	375	45	9	**429**

Table 8: MCC Analysis of Site 6 - Albert Road / Sutherland Road / London Road / Beechwood Avenue

Site Number	Arm	Arm Name	Entry/ Exit	AM				PM			
				Car	LGV	HGV	Total	Car	LGV	HGV	Total
6	A	Sutherland Road	Entry	10	0	0	**10**	8	1	0	**9**
			Exit	2	0	0	**2**	4	0	0	**4**
	B	Albert Road	Entry	213	53	8	**274**	141	16	1	**158**
			Exit	143	47	10	**200**	165	17	0	**182**
	C	London Road (East)	Entry	248	36	15	**299**	341	36	6	**383**
			Exit	274	56	19	**349**	314	22	8	**344**
	D	Beechwood Avenue	Entry	0	0	0	**0**	0	0	0	**0**
			Exit	35	6	0	**41**	18	1	0	**19**
	E	Londor Road (South West)	Entry	365	71	24	**460**	393	25	7	**425**
			Exit	382	51	18	**451**	382	38	6	**426**

Table 9: MCC Analysis of Site 7 - West Street / Queen Street / Blenheim Road

Site Number	Arm	Arm Name	Entry/ Exit	AM				PM			
				Car	LGV	HGV	Total	Car	LGV	HGV	Total
7	A	West Street	Entry	232	25	6	**263**	337	21	0	**358**

			Exit	237	30	8	**275**	329	23	1	**353**
	B	Queen Street	Entry	176	33	14	**223**	244	27	6	**277**
			Exit	165	43	18	**226**	207	12	7	**226**
	C	Blenheim Road	Entry	0	0	0	**0**	0	0	0	**0**
			Exit	78	11	2	**91**	95	3	0	**98**
	D	Queen Street	Entry	300	59	22	**381**	357	26	8	**391**
			Exit	228	33	14	**275**	307	36	6	**349**

Table 10: MCC Analysis of Site 8 - Dover Road / Station Road / Gram's Road

Site Number	Arm	Arm Name	Entry/ Exit	AM				PM			
				Car	LGV	HGV	Total	Car	LGV	HGV	Total
8	A	Station Road	Entry	165	26	9	**200**	119	12	2	**133**
			Exit	106	20	10	**136**	267	35	3	**305**
	B	Dover Road (North)	Entry	640	77	27	**744**	352	45	9	**406**
			Exit	376	73	16	**465**	647	62	3	**712**
	C	Gram's Road	Entry	66	8	0	**74**	33	2	0	**35**
			Exit	61	16	3	**80**	67	1	1	**69**
	D	Dover Road (South)	Entry	420	90	22	**532**	883	93	6	**982**
			Exit	748	92	29	**869**	406	54	10	**470**

Table 11: MCC Analysis of Site 9 - London Road / Mongeham Road

Site Number	Arm	Arm Name	Entry/ Exit	AM				PM			
				Car	LGV	HGV	Total	Car	LGV	HGV	Total
9	A	London Road (North West)	Entry	501	114	24	**639**	712	64	7	**783**
			Exit	788	80	11	**879**	396	50	5	**451**
	B	London Road (South East)	Entry	777	83	10	**870**	403	53	5	**461**
			Exit	477	108	22	**607**	689	65	7	**761**
	C	Mongeham Road	Entry	174	17	2	**193**	155	11	0	**166**
			Exit	187	26	3	**216**	185	13	0	**198**

2.4. MCC AND ATC COMPARISON

2.4.1. The MCC was undertaken during the two week ATC period and in order to check the consistency of data, a comparison was made between the MCC and ATC sites for the AM peak (08:00-09:00) and PM peak (17:00-18:00). The traffic counts for the common sites/arms between the MCC and ATC were recorded in Table 12 along with the percent variation observed.

Table 12: MCC and ATC traffic comparison for common sites

MCC Site Number	Arm	Arm Name	Entry/ Exit	MCC		ATC Site Number	ATC		% Difference	
				AM	PM		AM	PM	AM	PM
1	B	Deal Road	Entry	1122	536	24	1125	523	-0.3%	2.4%
			Exit	661	1185		579	1167	12.4%	1.5%
3	B	Manor Road	Entry	364	277	8	312	272	14.3%	1.8%
			Exit	240	356		236	362	1.7%	-1.7%
3	C	Rectory Road	Entry	147	139	7	133	140	9.5%	-0.7%
			Exit	112	168		110	171	1.8%	-1.8%
4	B	Beach Street (North)	Entry	255	221	32	260	225	-2.0%	-1.8%
			Exit	276	299		278	299	-0.7%	0.0%
5	A	Cornwell Road	Entry	169	128	37	160	122	5.3%	4.7%
			Exit	127	148		121	141	4.7%	4.7%
7	A	West Street	Entry	263	358	30	264	338	-0.4%	5.6%
			Exit	275	353		268	332	2.5%	5.9%
8	A	Station Road	Entry	200	133	40	180	131	10.0%	1.5%
			Exit	136	305		139	305	-2.2%	0.0%
9	C	Mongeham Road	Entry	193	166	4	**121**	**220**	**37.3%**	**-32.5%**
			Exit	216	198		**241**	**114**	**-11.6%**	**42.4%**

2.4.2. From Table 12, it is observed that the data remains constant across all the sites, except for the MCC 9.

2.4.3. The high percentage difference between ATC and MCC is observed at MCC site 9. The possible reason might be narrow Mongehan Road where ATC tube was laid. Due to which, vehicles in one direction might have to wait to let pass the vehicles of opposite direction. ATC tube might not have given the correct count due to the waiting traffic.

2.5. COMPARISON OF 2015 AND 2017 ATC DATA

2.5.1. During 2015, ATC surveys have been carried was carried out at 4 sites (21, 22, 23 and 24) in the Dover area and the comparison is made between the 24-hour traffic profiles of 2015 and 2017 to understand the possible change in traffic flow.

2.5.2. Table 13 the list of identified sites that are common in 2015 and 2017 surveys. Figure 6 shows the location of these sites. Figure 7 to Figure 14 shows the variation of the traffic flow for each site between the years.

Table 13 - 2015 and 2017 Common ATC Sites Number

Description	2015 Site Number	2017 Site Number
Forge Lane	7	21
Sandwich Road	18	22
Honeywood Parkway	20 A & 20 B	23
Deal Road	3	24

Figure 6: Common ATC Sites Locations for Comparison of 2015 and 2017 Data

Comparison of Flows at Forge Lane

2.5.3. An overall decrease of 10.54% is observed in daily traffic in 2017 in accordance with 2015. The decrease in the traffic is observed across all categories i.e., 4.79% in Car, 42.78% in LGV and 72.38% in HGV.

2.5.4. In northbound direction, a decrease of 23.49% is observed in daily traffic while in southbound direction shows an increase of 6.06% in daily traffic.

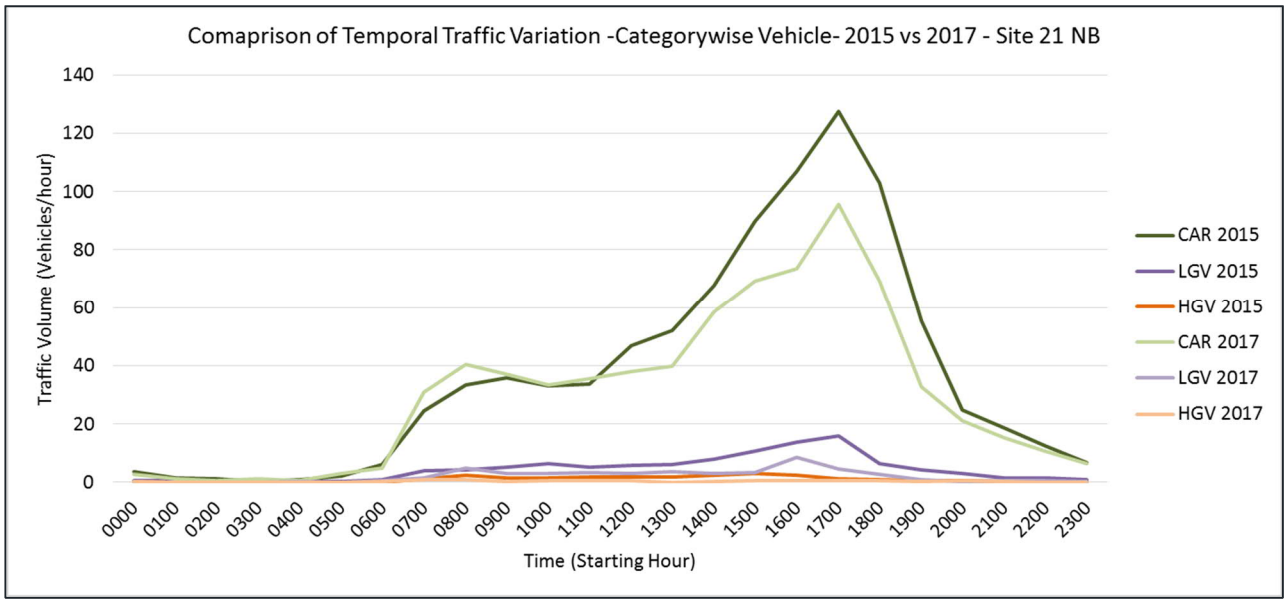


Figure 7: Comparison of Temporal Variation – by Vehicle Type – 2015 vs 2017 – Forge Lane Northbound

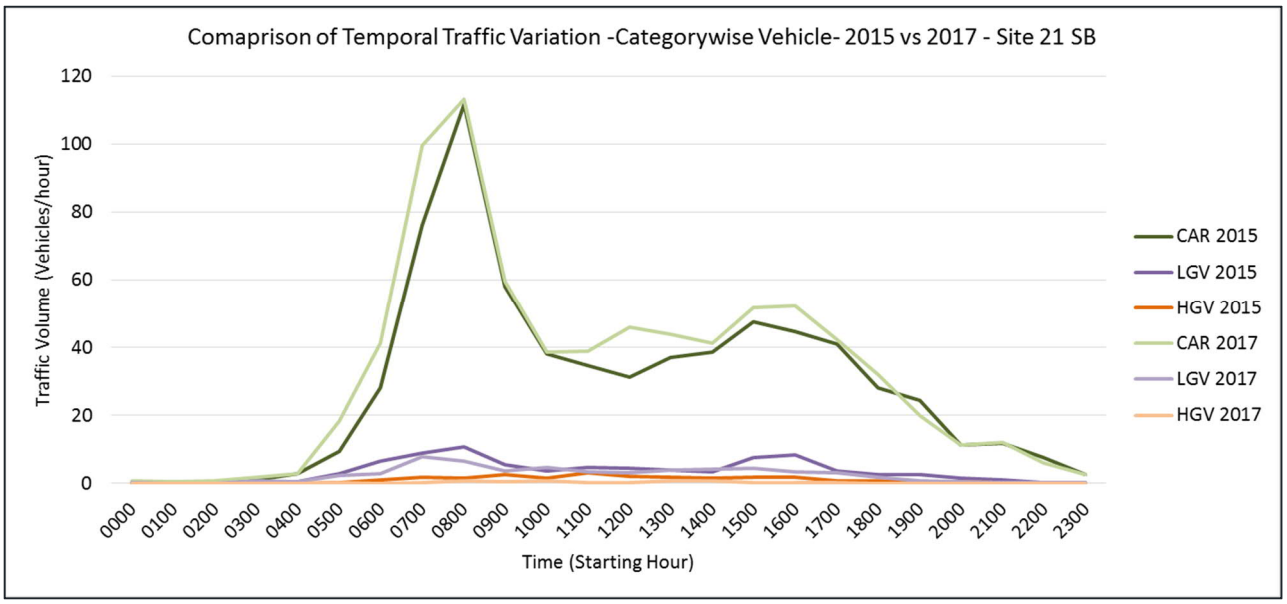


Figure 8: Comparison of Temporal Variation – by Vehicle Type – 2015 vs 2017 – Forge Lane Southbound

Comparison of Flows at Sandwich Road

2.5.5. From the data comparison, an overall increase of 1.15% is observed in average daily traffic with an increase of 6.17% in Car and decrease in 23.49% in LGV and 8.38% in HGV.

2.5.6. In northbound direction, an increase of 4.25% in daily traffic while in the southbound direction a decrease of 1.78% in daily traffic is observed.

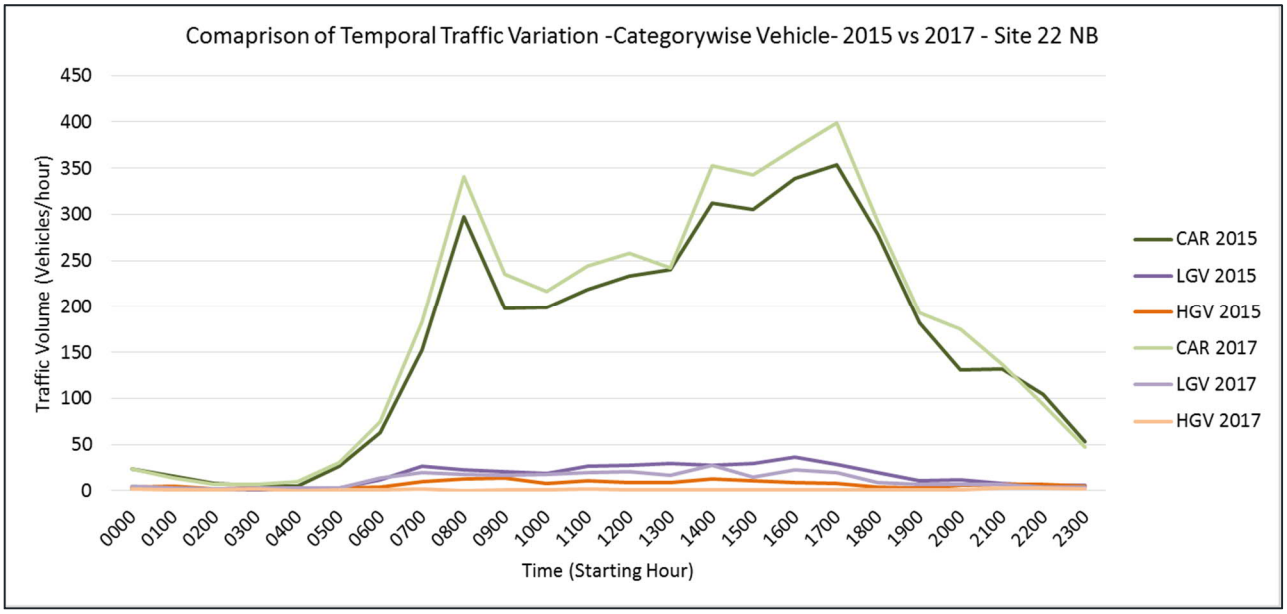


Figure 9: Comparison of Temporal Variation – by Vehicle Type – 2015 vs 2017 – Sandwich Road Northbound

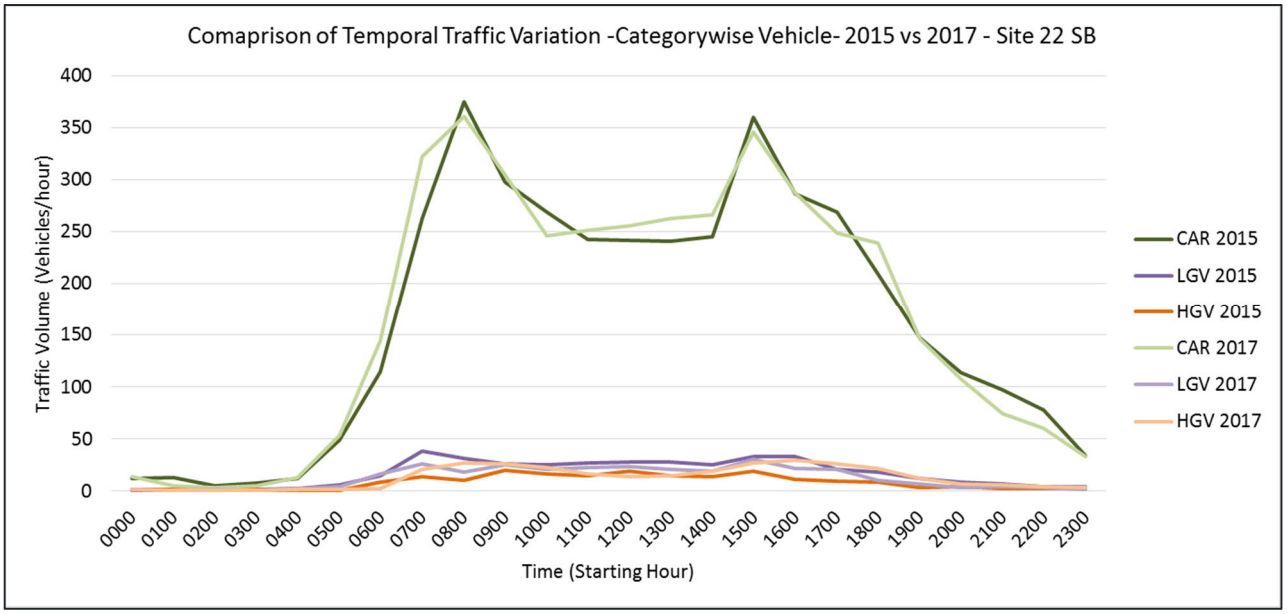


Figure 10: Comparison of Temporal Variation – by Vehicle Type – 2015 vs 2017 – Sandwich Road Southbound

Comparison of flows at Honeywood Parkway

2.5.7. An overall increase of 14.76% is observed in the daily traffic in 2017 with an increase of 27.14% in Car and decrease of 32.73% in LGV and 31.60% in HGV.

2.5.8. The comparison shows an increase of 43.41% in the northbound direction and a decrease of 2.67% in the southbound direction.

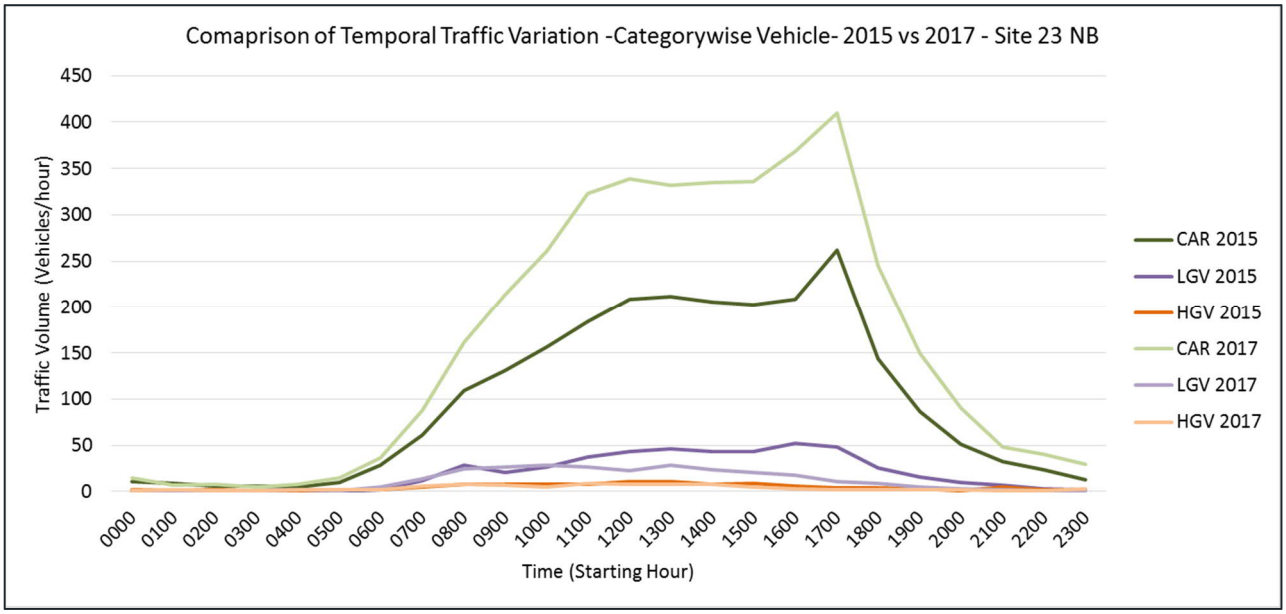


Figure 11: Comparison of Temporal Variation – by Vehicle Type – 2015 vs 2017 – Honeywood Parkway Northbound

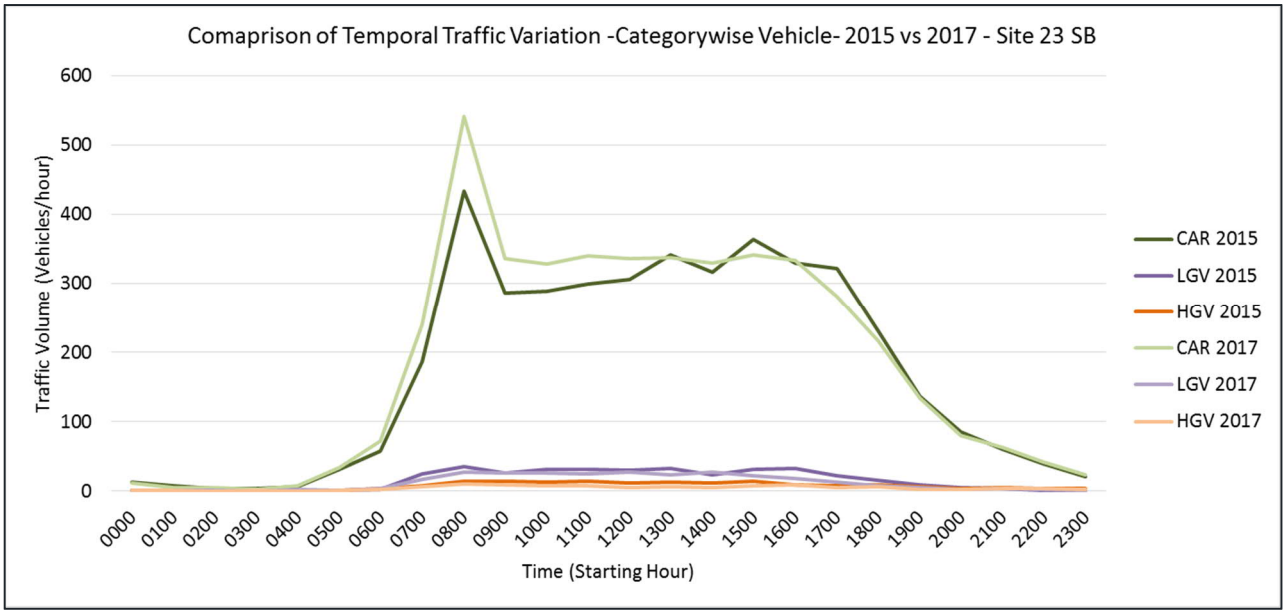


Figure 12: Comparison of Temporal Variation – by Vehicle Typs – 2015 vs 2017 – Honeywood Parkway Southbound

Comparison of Flows Deal Road

2.5.9. From the data comparison, an increase of 13.25% is observed in average daily traffic with an increase of 18.93% in Car and a decrease of 8.82% in LGV and 70.59% in HGV.

2.5.10. The comparison shows an increase of 20.53% in the northbound direction and 6.77% in the southbound direction.

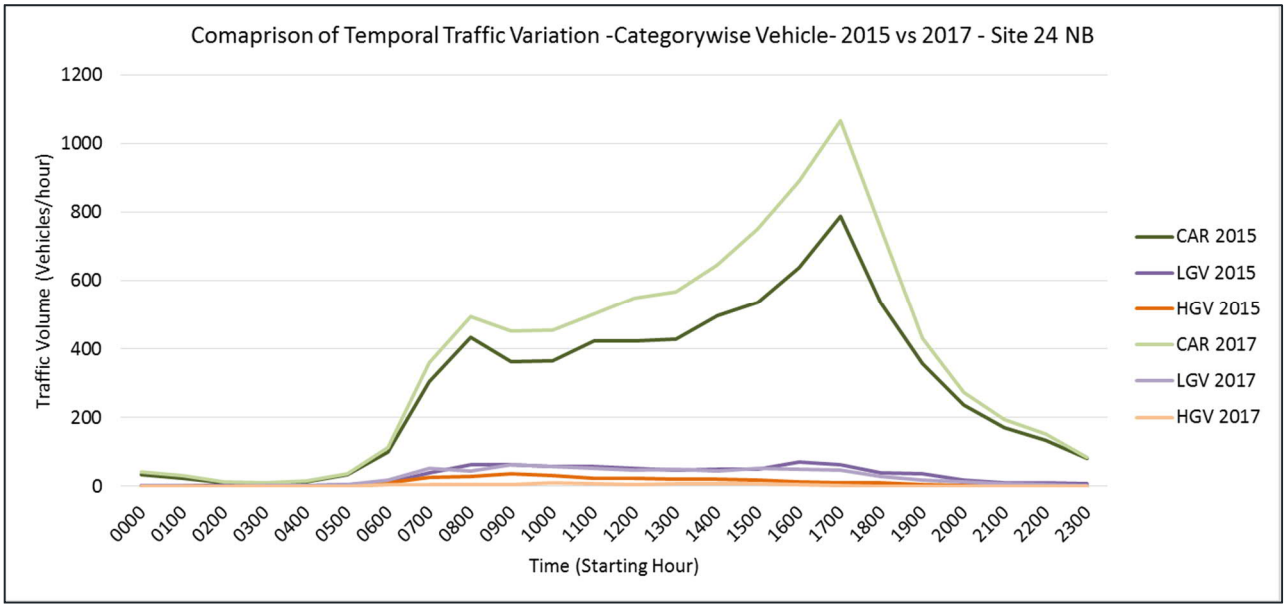


Figure 13: Comparison of Temporal Variation – by Vehicle Type – 2015 vs 2017 – Deal Road Northbound

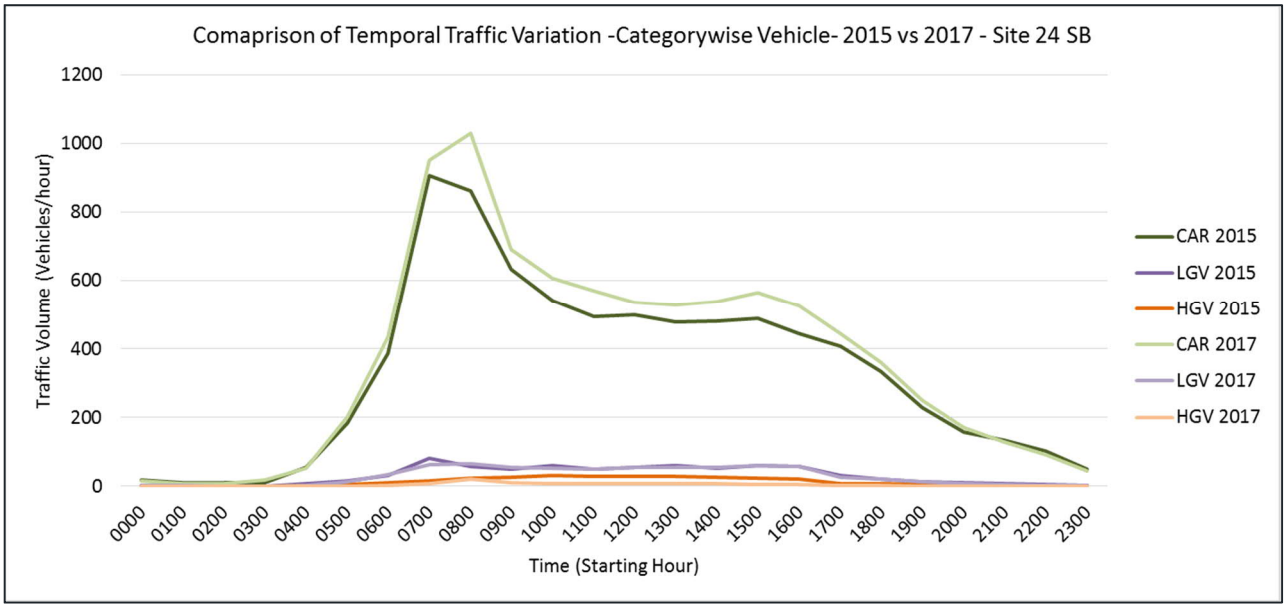


Figure 14: Comparison of Temporal Variation – by Vehicle Type – 2015 vs 2017 – Deal Road Southbound

2.6. COMPARISON OF 2015 AND 2017 MCC DATA

2.6.1. In 2015, a MCC was carried out at A2 / Deal Road / Jubilee Way / A258 (Site 1 in Figure 5) and Sandwich Road / A2 / Honeywood Road / Whitfield Hill (Site 2 in Figure 5) junctions.

2.6.2. A comparison was made between the MCC of 2015 and 2017 for these 2 sites to understand the possible variation in the traffic flow.

Site 1: Duke of York Roundabout (A2 / Deal Road / Jubilee Way / A258)

2.6.3. Figure 15 shows the Site 1 and the labels given to the arms.

- Arm A: A2
- Arm B: Deal Road – A258
- Arm C: Jubilee Way
- Arm D: A258

2.6.4. The comparison of the traffic counts between 2015 and 2017 are shown in Table 14 and Table 15 for the morning and evening peak hours, which are 08:00-09:00 and 17:00-18:00 respectively.

2.6.5. Figure 16 and Figure 17 show the graphs for the comparison of the total traffic for each turning movement for morning and evening peak hour respectively.

2.6.6. The 'Junction Total' in the Table 14 and Table 15 includes U-turns. But since their numbers are low, they have not been shown as separate rows in the respective tables and bar graphs.

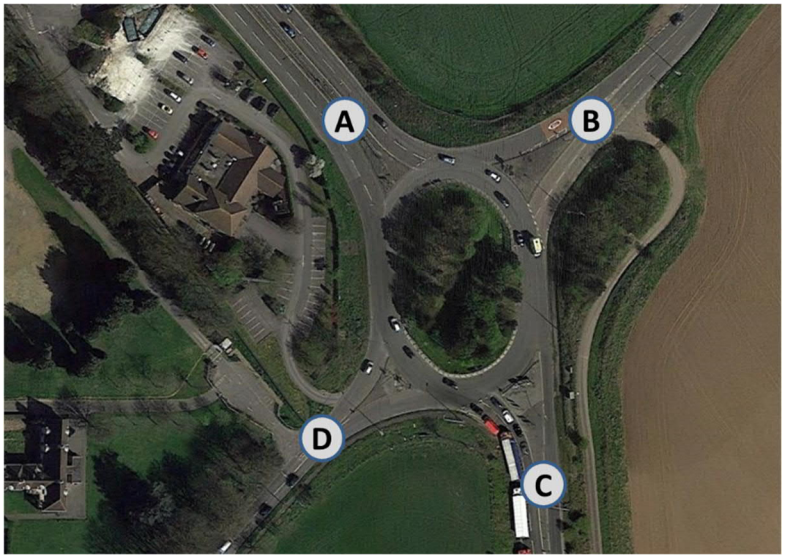


Figure 15: Site 1 Duke of York Roundabout Arms

Table 14: MCC Comparison between 2015 and 2017 for AM Peak Hour- Site 1

Arm	AM Peak Hour (8:00-9:00)											
	2015				2017				% Change in Traffic			
	Car	LGV	HGV	Total	Car	LGV	HGV	Total	Car	LGV	HGV	Total
A-B	221	63	10	**294**	233	72	13	**318**	5.4%	14.3%	30.0%	**8.2%**
A-C	285	44	93	**422**	321	65	141	**527**	12.6%	47.7%	51.6%	**24.9%**
A-D	462	46	7	**515**	456	34	7	**497**	-1.3%	-26.1%	0.0%	**-3.5%**
B-A	384	46	5	**435**	343	43	5	**391**	-10.7%	-6.5%	0.0%	**-10.1%**
B-C	306	17	8	**331**	353	41	18	**412**	15.4%	141.2%	125.0%	**24.5%**
B-D	300	17	8	**325**	286	23	10	**319**	-4.7%	35.3%	25.0%	**-1.8%**
C-A	193	38	81	**312**	255	51	101	**407**	32.1%	34.2%	24.7%	**30.4%**
C-B	112	33	4	**149**	121	37	7	**165**	8.0%	12.1%	75.0%	**10.7%**
C-D	5	2	0	**7**	4	2	0	**6**	-20.0%	0.0%	0.0%	**-14.3%**
D-A	280	20	4	**304**	293	42	6	**341**	4.6%	110.0%	50.0%	**12.2%**
D-B	107	16	4	**127**	149	25	4	**178**	39.3%	56.3%	0.0%	**40.2%**
D-C	7	2	0	**9**	13	2	0	**15**	85.7%	0.0%	0.0%	**66.7%**
Junction Total	2682	348	226	**3256**	2828	439	316	**3583**	5.4%	26.1%	0.0%	**10.0%**

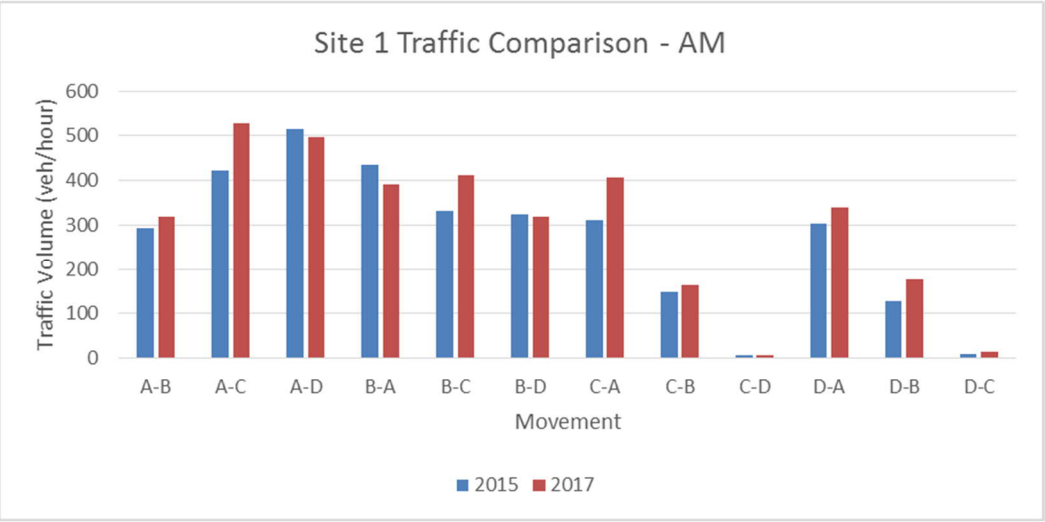


Figure 16: Graph showing Traffic MCC Comparison for AM Peak Hour (08:00-09:00) – Duke of York Roundabout

Table 15: MCC Comparison between 2015 and 2017 for PM Peak Hour- Duke of York Roundabout

Arm	PM Peak Hour (17:00-18:00)											
	2015				2017				% Change in Traffic			
	Car	LGV	HGV	Total	Car	LGV	HGV	Total	Car	LGV	HGV	Total
A-B	374	28	4	**406**	460	38	4	**502**	23.0%	35.7%	0.0%	**23.6%**
A-C	104	17	56	**177**	172	25	85	**282**	65.4%	47.1%	51.8%	**59.3%**
A-D	207	12	5	**224**	282	36	1	**319**	36.2%	200.0%	-80.0%	**42.4%**
B-A	223	33	1	**257**	187	30	6	**223**	-16.1%	-9.1%	500.0%	**-13.2%**
B-C	69	6	0	**75**	125	18	1	**144**	81.2%	200.0%	0.0%	**92.0%**
B-D	141	20	3	**164**	143	24	2	**169**	1.4%	20.0%	-33.3%	**3.0%**
C-A	396	24	82	**502**	368	41	88	**497**	-7.1%	70.8%	7.3%	**-1.0%**
C-B	303	28	0	**331**	418	45	10	**473**	38.0%	60.7%	0.0%	**42.9%**
C-D	133	15	0	**148**	8	0	1	**9**	-94.0%	-100.0%	0.0%	**-93.9%**
D-A	264	22	3	**289**	228	22	5	**255**	-13.6%	0.0%	66.7%	**-11.8%**
D-B	238	16	0	**254**	190	17	3	**210**	-20.2%	6.3%	0.0%	**-17.3%**
D-C	2	3	1	**6**	6	0	0	**6**	200.0%	-100.0%	-100.0%	**0.0%**
Junction Total	2462	224	159	**2845**	2610	298	210	**3118**	6.0%	33.0%	0.0%	**9.6%**

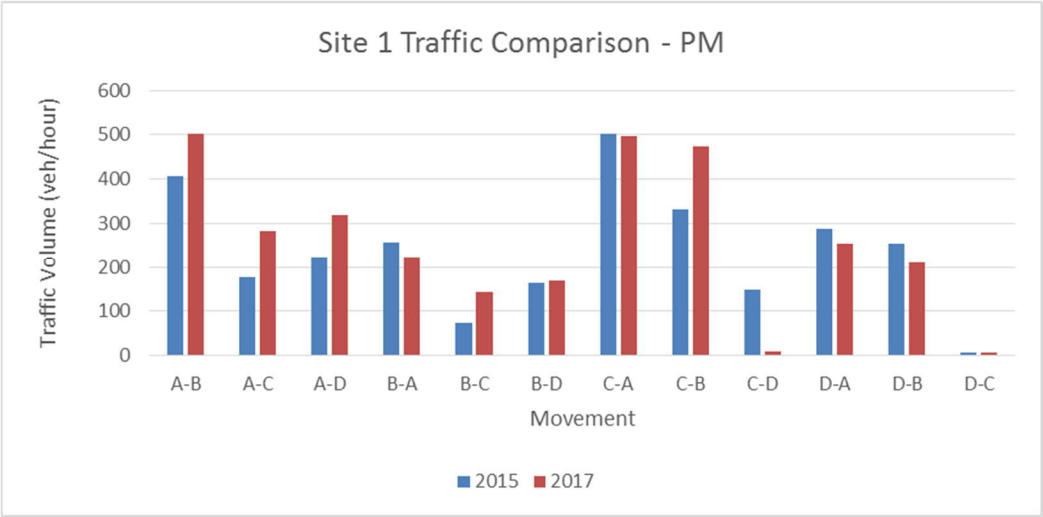


Figure 17: Graph showing Traffic MCC Comparison for PM Peak Hour (17:00-18:00) – Duke of York Roundabout

2.6.7. From comparing the total traffic on the junction, there is about 10% rise in the traffic at the intersection in 2017 as compared to 2015.

Site 2: Whitfield Roundabout (Sandwich Road / A2 / Honeywood Road / Whitfield Hill)

2.6.8. Figure 18 shows the Site 2 and the designation given to the arms.

- Arm A : Sandwich Road
- Arm B: A2 – Dover side
- Arm C: Honeywood Road
- Arm D: Whitfield Road / A256
- Arm E: A2 – London side

2.6.9. Since the arms were labelled differently in 2015 and 2017, the labelling as per 2017 was considered for further comparison in this report.

2.6.10. The comparison of the traffic counts between 2015 and 2017 are shown in Table 16 and Table 17 for the morning and evening peak hours, which are 08:00-09:00 and 17:00-18:00 respectively.

2.6.11. Figure 19 and Figure 20 shows the graphs for the comparison of the total traffic for each turning movement for morning and evening peak hour respectively.

2.6.12. The 'Junction Total' in the Table 16 and Table 17 includes U-turns. But since their numbers are low, they have not been shown as separate rows in the respective tables and bar graphs.

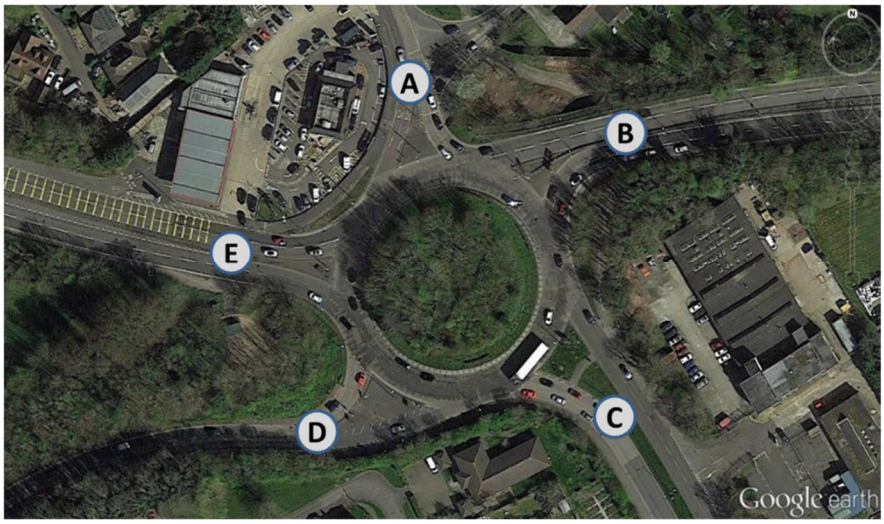


Figure 18: Plan of Site 2 showing arm labels

Table 16: MCC Comparison between 2015 and 2017 for AM Peak Hour- Site 2

Arm	AM Peak Hour (8:00-9:00)											
	2015				2017				% Change in Traffic			
	Car	LGV	HGV	Total	Car	LGV	HGV	Total	Car	LGV	HGV	Total
A-B	110	7	1	**118**	118	10	4	**132**	7.3%	42.9%	300.0%	**11.9%**
A-C	185	14	8	**207**	179	20	8	**207**	-3.2%	42.9%	0.0%	**0.0%**
A-D	232	18	3	**253**	214	23	2	**239**	-7.8%	27.8%	-33.3%	**-5.5%**
A-E	94	5	0	**99**	95	12	2	**109**	1.1%	140.0%	0.0%	**10.1%**
B-A	48	9	2	**59**	61	17	5	**83**	27.1%	88.9%	150.0%	**40.7%**
B-C	50	12	8	**70**	51	2	7	**60**	2.0%	-83.3%	-12.5%	**-14.3%**
B-D	253	28	10	**291**	183	19	6	**208**	-27.7%	-32.1%	-40.0%	**-28.5%**
B-E	213	17	53	**283**	282	36	78	**396**	32.4%	111.8%	47.2%	**39.9%**
C-A	157	16	8	**181**	176	19	14	**209**	12.1%	18.8%	75.0%	**15.5%**
C-B	54	8	11	**73**	68	7	13	**88**	25.9%	-12.5%	18.2%	**20.5%**
C-D	158	31	8	**197**	155	32	8	**195**	-1.9%	3.2%	0.0%	**-1.0%**
C-E	73	13	13	**99**	117	24	24	**165**	60.3%	84.6%	84.6%	**66.7%**
D-A	184	25	1	**210**	161	19	3	**183**	-12.5%	-24.0%	200.0%	**-12.9%**
D-B	153	22	3	**178**	129	21	5	**155**	-15.7%	-4.5%	66.7%	**-12.9%**
D-C	218	26	7	**251**	191	17	11	**219**	-12.4%	-34.6%	57.1%	**-12.7%**
D-E	110	21	7	**138**	111	22	7	**140**	0.9%	4.8%	0.0%	**1.4%**
E-A	41	11	6	**58**	39	12	1	**52**	-4.9%	9.1%	-83.3%	**-10.3%**
E-B	315	60	74	**449**	317	81	118	**516**	0.6%	35.0%	59.5%	**14.9%**
E-C	187	26	13	**226**	184	33	9	**226**	-1.6%	26.9%	-30.8%	**0.0%**
E-D	156	30	6	**192**	122	26	8	**156**	-21.8%	-13.3%	33.3%	**-18.8%**

Junction Total	3043	409	242	**3694**	3011	463	342	**3816**	-1.1%	13.2%	41.3%	**3.3%**

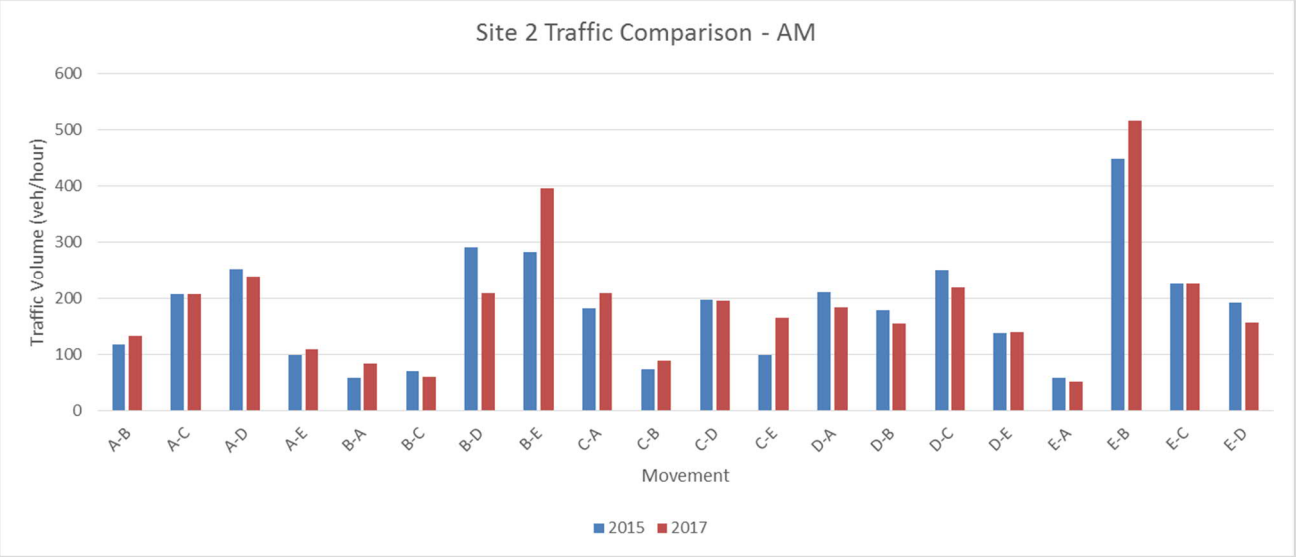


Figure 19: Graph showing Traffic MCC Comparison for AM Peak Hour (08:00-09:00) – Site 2

Table 17: MCC Comparison between 2015 and 2017 for PM Peak Hour- Site 2

Arm	PM Peak Hour (17:00-18:00)											
	2015				2017				% Change in Traffic			
	Car	LGV	HGV	Total	Car	LGV	HGV	Total	Car	LGV	HGV	Total
A-B	24	1	1	**26**	81	13	0	**94**	237.5%	1200.0%	-100.0%	**261.5%**
A-C	128	13	6	**147**	124	11	6	**141**	-3.1%	-15.4%	0.0%	**-4.1%**
A-D	165	25	0	**190**	167	21	1	**189**	1.2%	-16.0%	0.0%	**-0.5%**
A-E	38	4	1	**43**	35	7	0	**42**	-7.9%	75.0%	-100.0%	**-2.3%**
B-A	60	4	1	**65**	86	16	0	**102**	43.3%	300.0%	-100.0%	**56.9%**
B-C	34	2	16	**52**	30	4	16	**50**	-11.8%	100.0%	0.0%	**-3.8%**
B-D	191	13	5	**209**	123	13	0	**136**	-35.6%	0.0%	-100.0%	**-34.9%**
B-E	201	33	56	**290**	215	33	70	**318**	7.0%	0.0%	25.0%	**9.7%**
C-A	244	9	8	**261**	209	21	6	**236**	-14.3%	133.3%	-25.0%	**-9.6%**
C-B	43	2	2	**47**	107	5	3	**115**	148.8%	150.0%	50.0%	**144.7%**
C-D	289	28	5	**322**	290	21	2	**313**	0.3%	-25.0%	-60.0%	**-2.8%**
C-E	123	11	5	**139**	145	10	8	**163**	17.9%	-9.1%	60.0%	**17.3%**
D-A	306	26	0	**332**	282	42	2	**326**	-7.8%	61.5%	0.0%	**-1.8%**
D-B	131	16	3	**150**	162	17	2	**181**	23.7%	6.3%	-33.3%	**20.7%**
D-C	169	12	7	**188**	151	16	4	**171**	-10.7%	33.3%	-42.9%	**-9.0%**
D-E	98	10	3	**111**	68	9	1	**78**	-30.6%	-10.0%	-66.7%	**-29.7%**
E-A	42	6	5	**53**	68	9	1	**78**	61.9%	50.0%	-80.0%	**47.2%**
E-B	61	8	119	**188**	304	38	78	**420**	398.4%	375.0%	-34.5%	**123.4%**
E-C	95	12	40	**147**	152	11	19	**182**	60.0%	-8.3%	-52.5%	**23.8%**
E-D	82	10	28	**120**	115	15	4	**134**	40.2%	50.0%	-85.7%	**11.7%**

Junction Total	2553	246	314	**3113**	2939	334	223	**3496**	15.1%	35.8%	-29.0%	**12.3%**

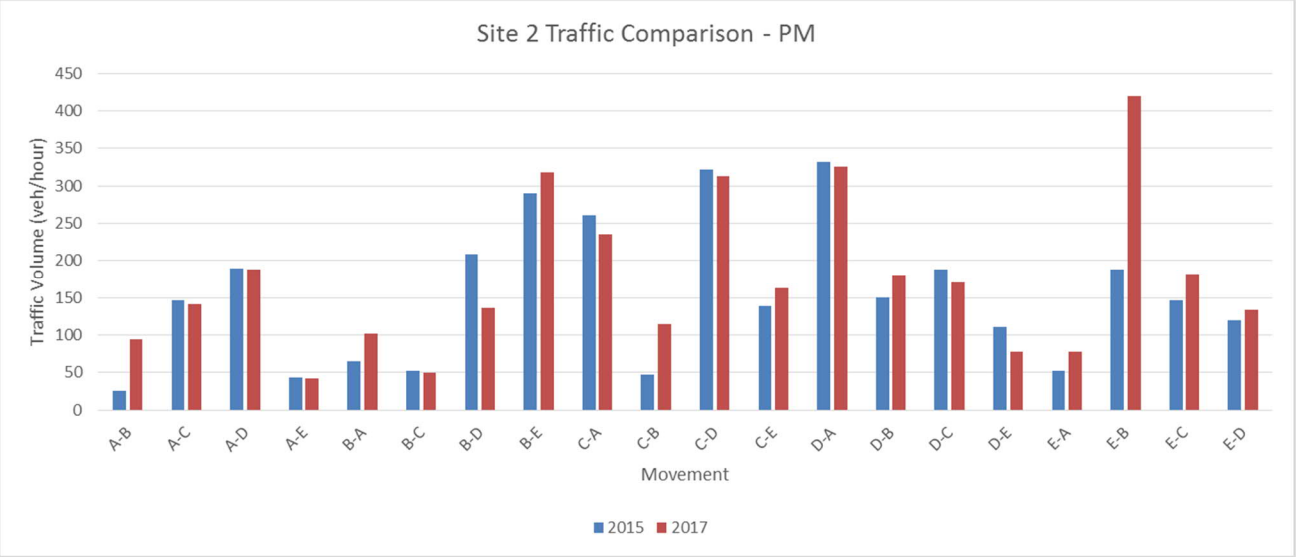


Figure 20: Graph showing Traffic MCC Comparison for PM Peak Hour (17:00-18:00) – Site 2

2.6.13. At this junction, there is 12.3% rise in the PM traffic in 2017 as compared to 2015, where as 3.3% rise is observed in AM traffic.

2.6.14. Also, there is large increase observed in evening traffic going from A2- London side to A2- Dover Side.

Appendix A

SURVEY LOCATIONS (ATC & MCC)

ATC Survey Location details:

No.	Road/ Location
1	Sandwich Rd / A258 [50m]
2	A 256 [70m]
3	Northbourne Road [60m]
4	Mongeham Road [30m]
5	London Road [30m]
6	The Strand [30m]
7	Rectory Road [30m]
8	Manor Road [30m]
9	Willow Woods Road [60m]
10	Beacon Hill [60m]
11	Ellens Road [60m]
12	Dover Road [30m]
13	Stoneheap Road [30m]
14	Church Hill [60m]
15	Ringwould Road [50m]
16	Winklands Oaks Lane [60m]
17	Sutton Lane [30m]
18	Roman Road [30m]
19	Waldershare Road [60m]
20	A 256 [70m]
21	Forge Lane [60m]
22	Sandwich Road [30m]
23	Honeywood Park [30m]
24	A258 [50m]
25	Straight Mile [60m]
26	Northbourne Road [60m]
27	Northbourne Lane [60m]
28	St. Richard's Road [30m]
29	Albert Road [30m]
30	West Street [30m]
31	High Street [30m]
32	Beach Street [30m]
33	Mill Road [30m]

34	Park Avenue [30m]
35	Mill Road [30m]
36	Park Avenue [30m]
37	Cornwall Road [30m]
38	Manor Road [30m]
39	St. Leonard's Road [30m]
40	Station Road [30m]

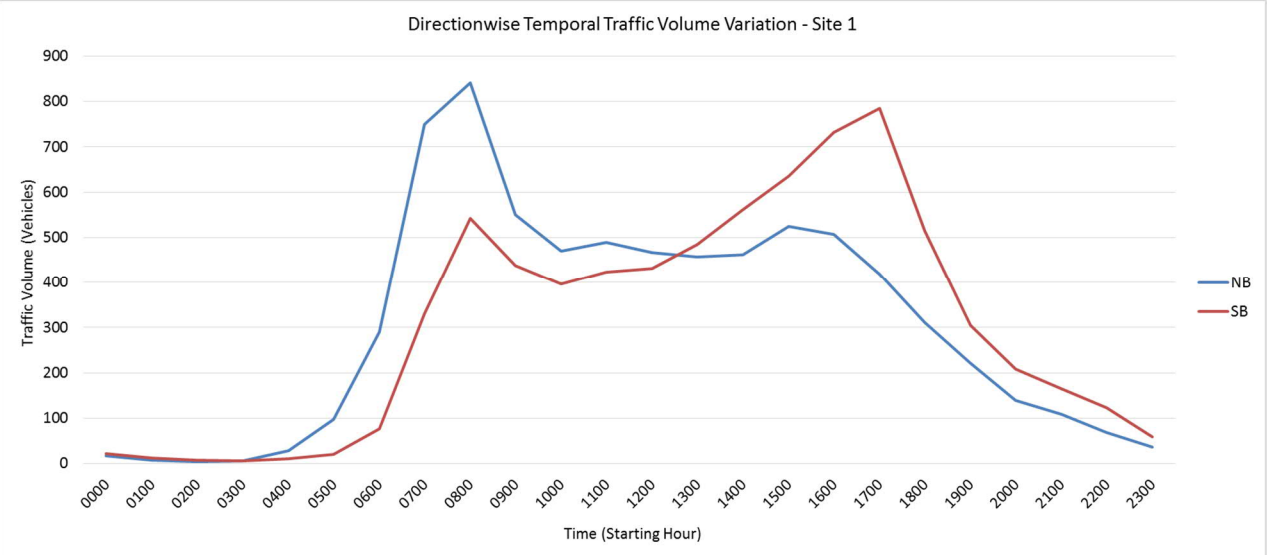
MCC Survey Location details:

Site No	Junction
1	A2 / Deal Road / Jubilee Way / A258
2	Sandwich Road / A2 / Honeywood Road / Whitfield Hill
3	London Road / Manor Road / Rectory Road
4	Beach Street / Broad Street
5	Cornwall Road / Dover Road / Archery Square
6	Albert Road / Sutherland Road / London Road / Beechwood Avenue
7	West Street / Queen Street / Blenheim Road
8	Dover Road / Station Road / Gram's Road
9	London Road / Manor Road / Rectory Road

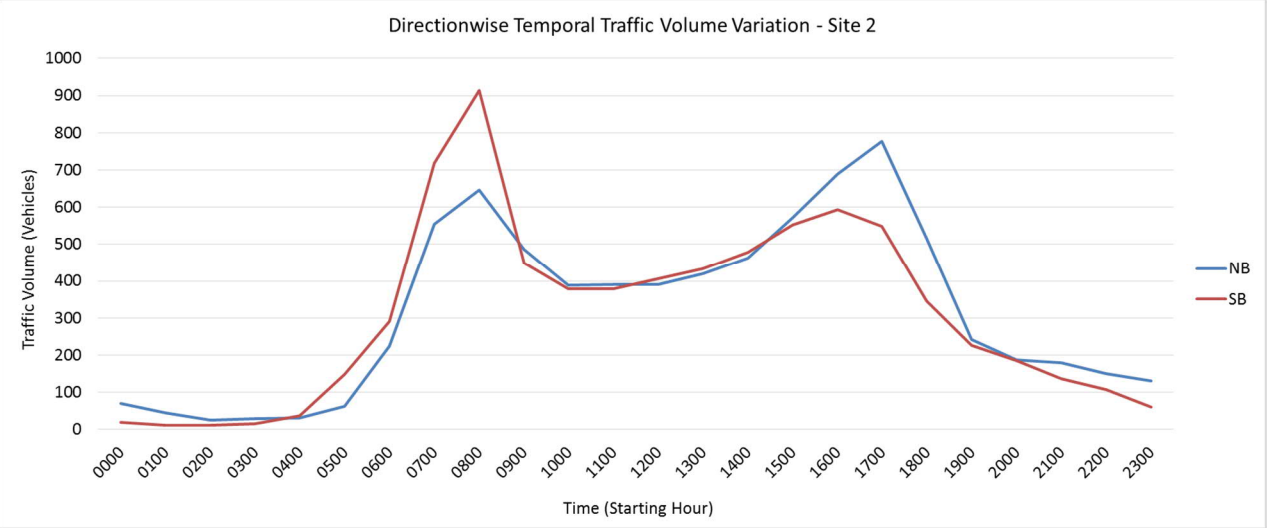
Appendix B

ATC SURVEY RESULTS APPENDIX TITLE

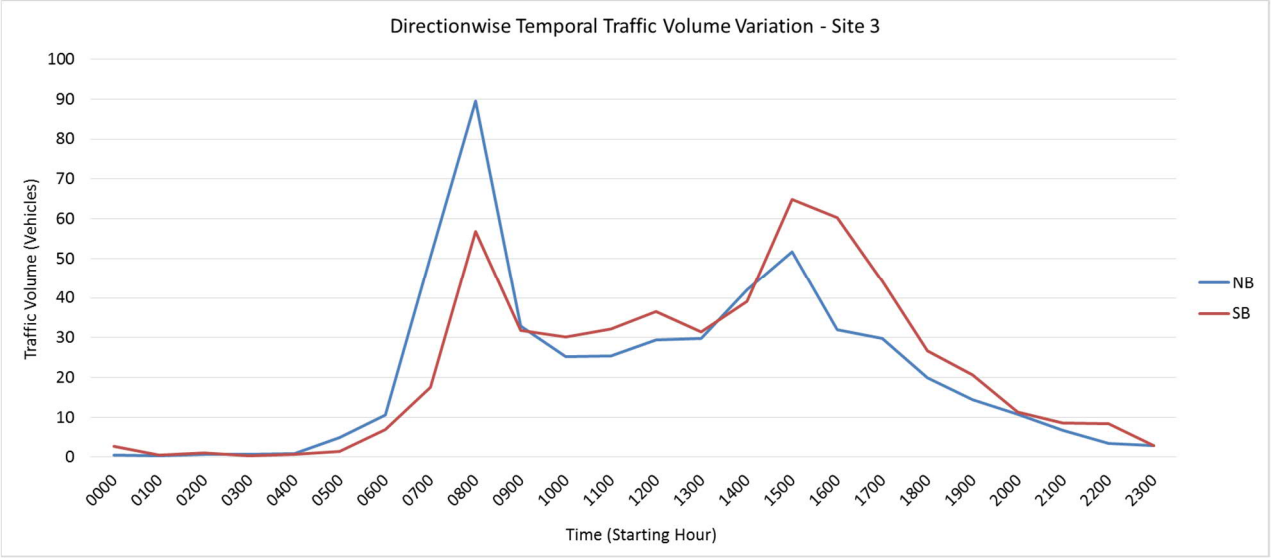
Site 1: SANDWICH ROAD / A258 – Average hourly variation



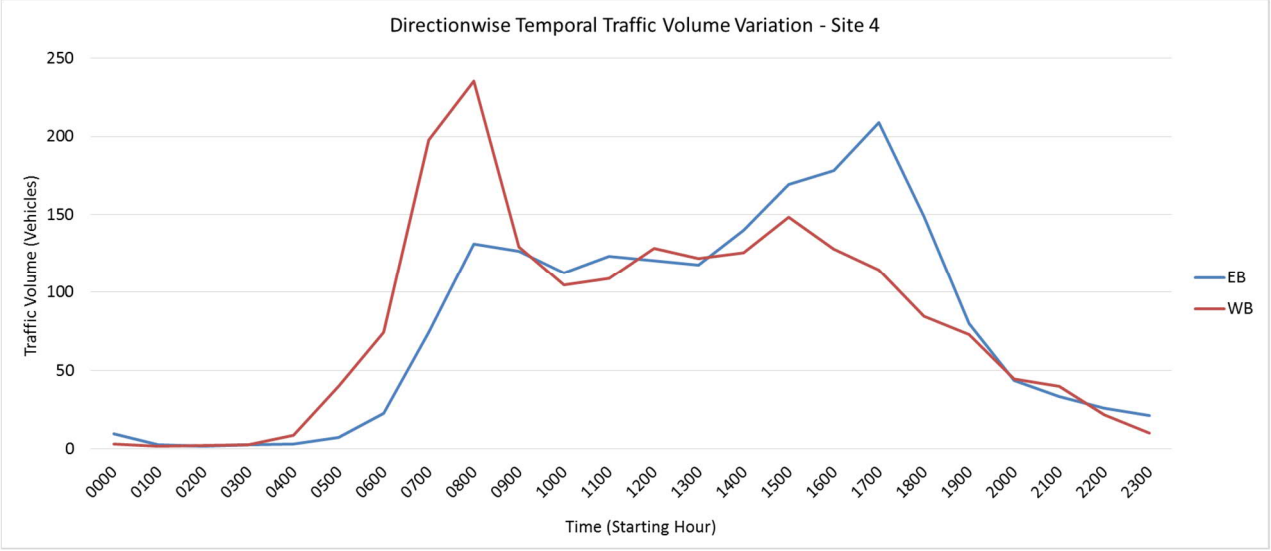
Site 2: A 256 – Average hourly variation



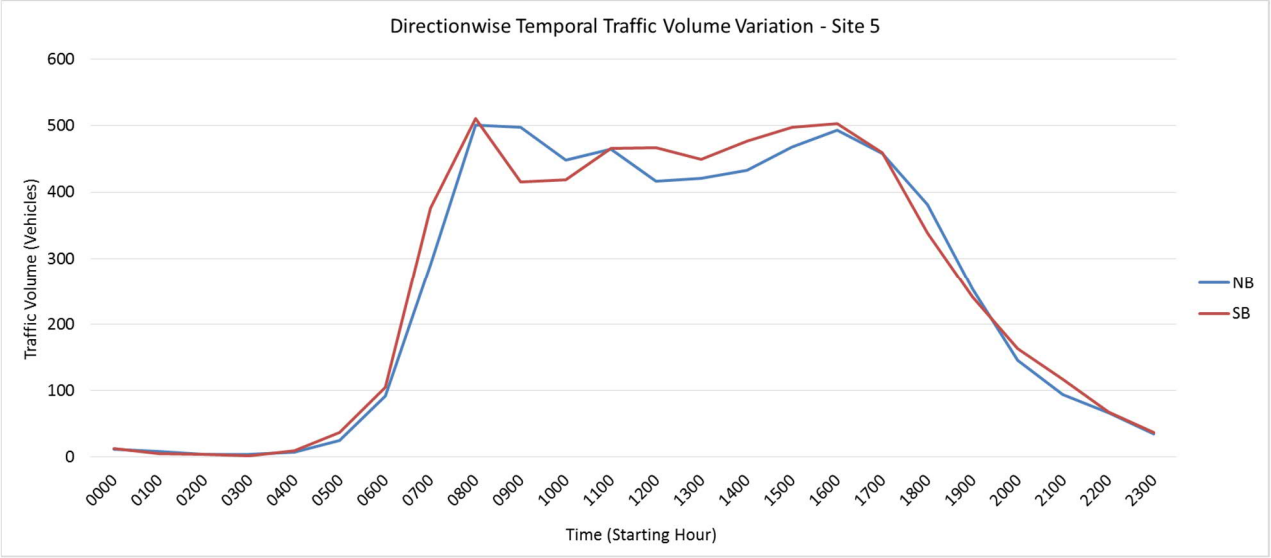
Site 3: NORTHBOURNE ROAD – Average hourly variation



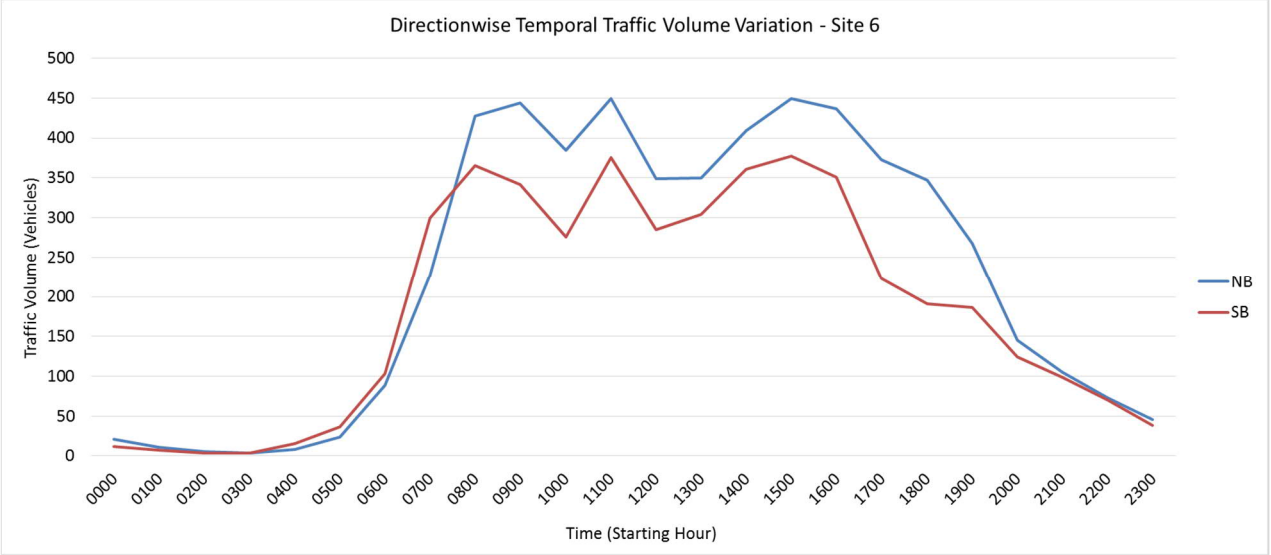
Site 4: MONGEHAM ROAD – Average hourly variation



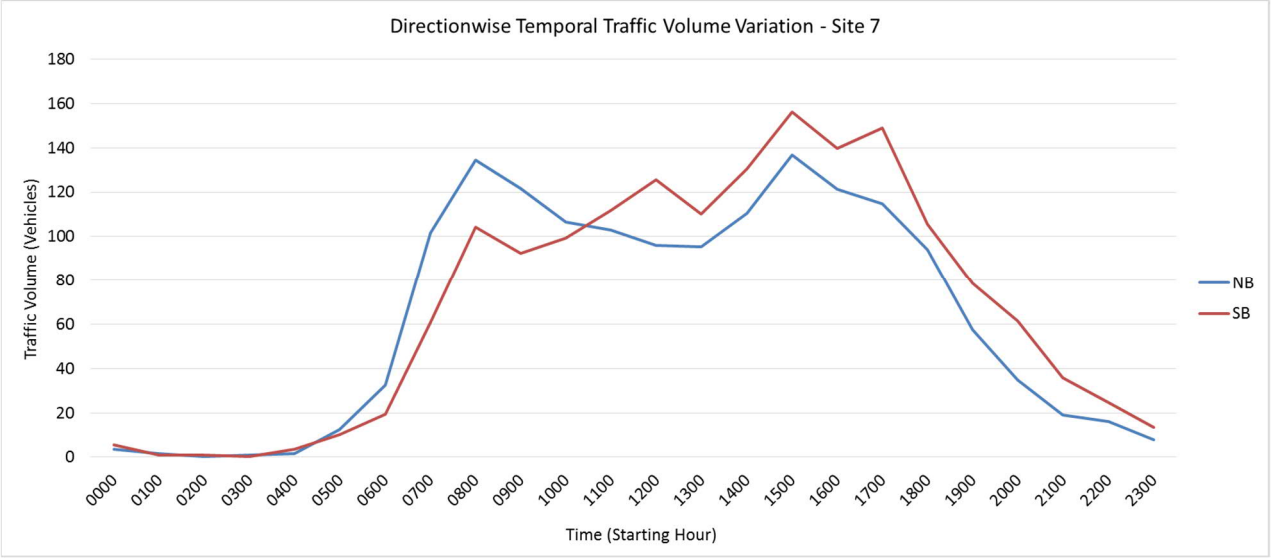
Site 5: LONDON ROAD – Average hourly variation



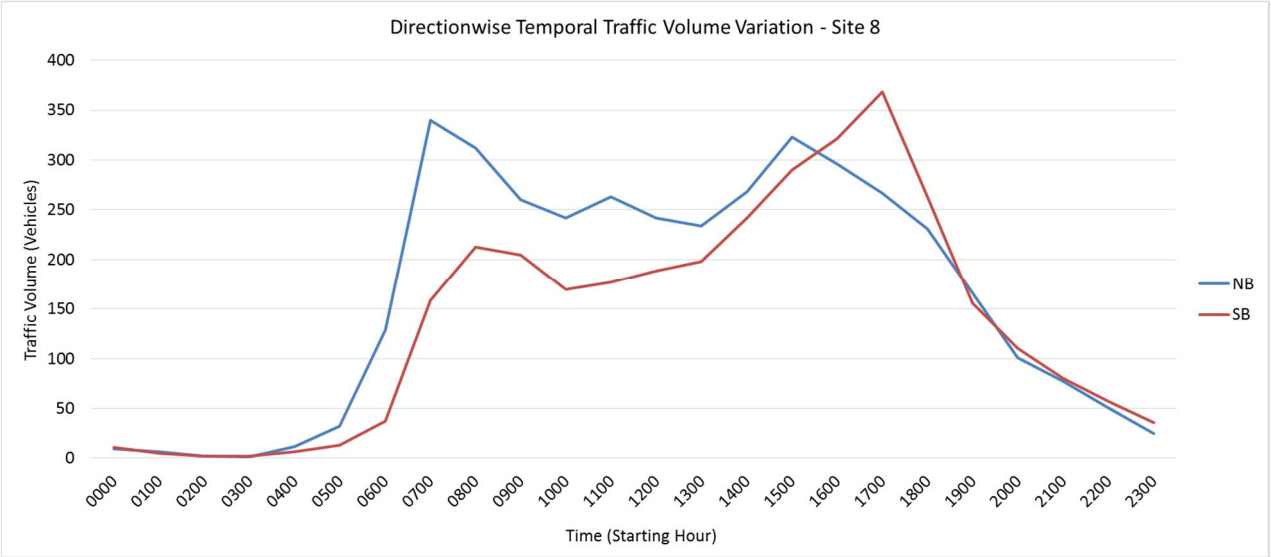
Site 6: THE STRAND – Average hourly variation



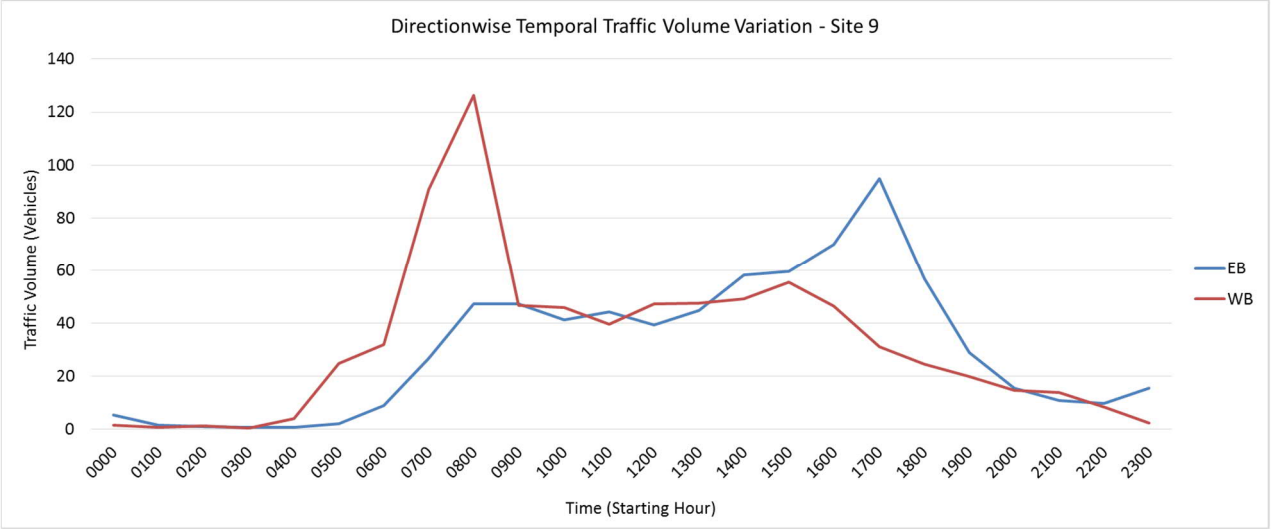
Site 7: RECTORY ROAD – Average hourly variation



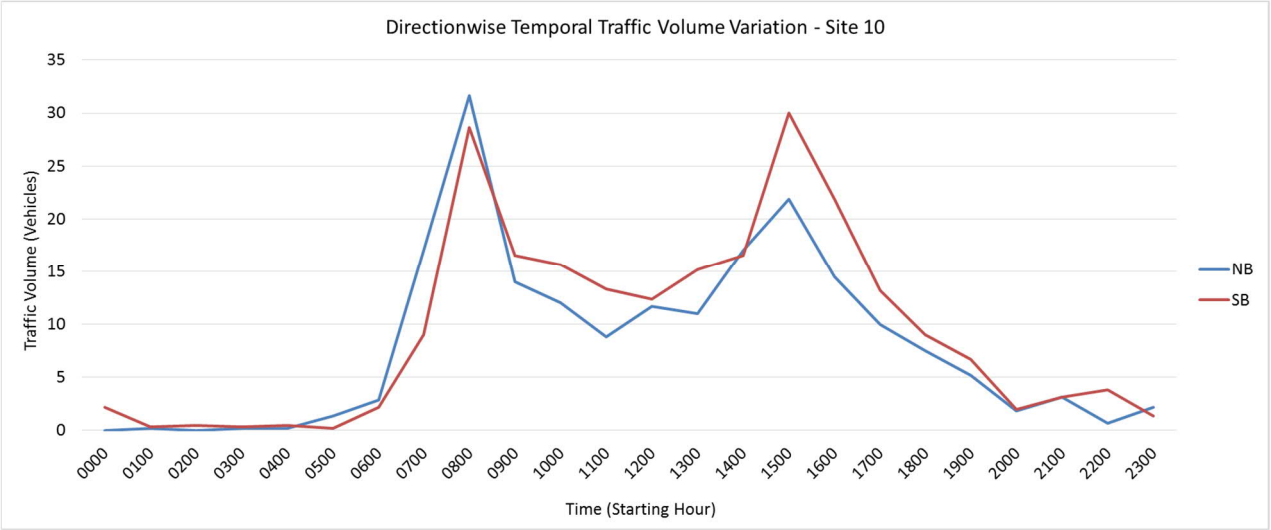
Site 8: MANOR ROAD – Average hourly variation



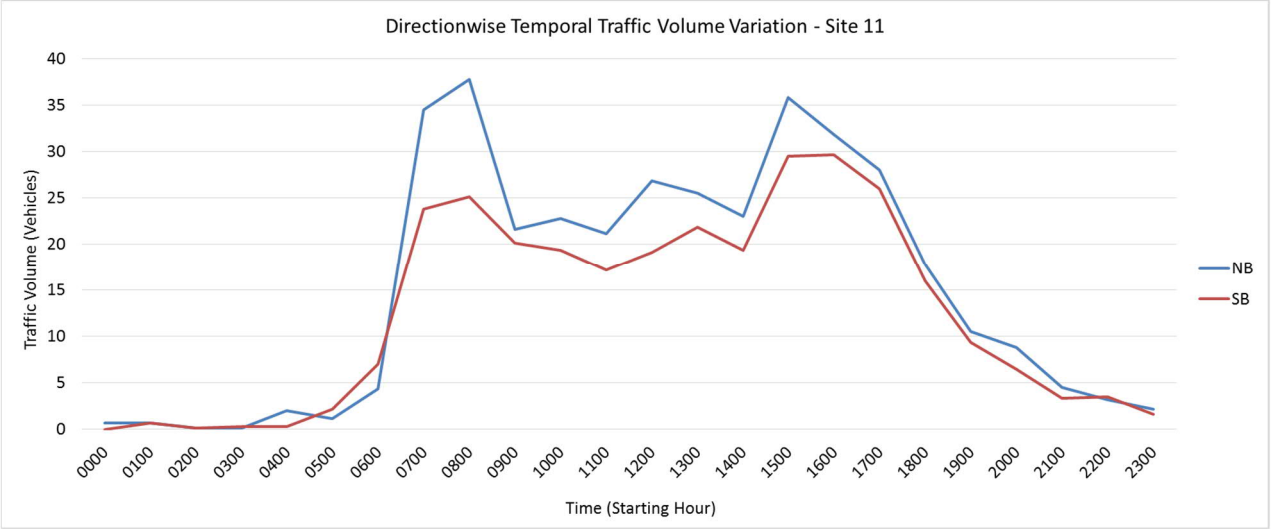
Site 9: WILLOW WOODS ROAD – Average hourly variation



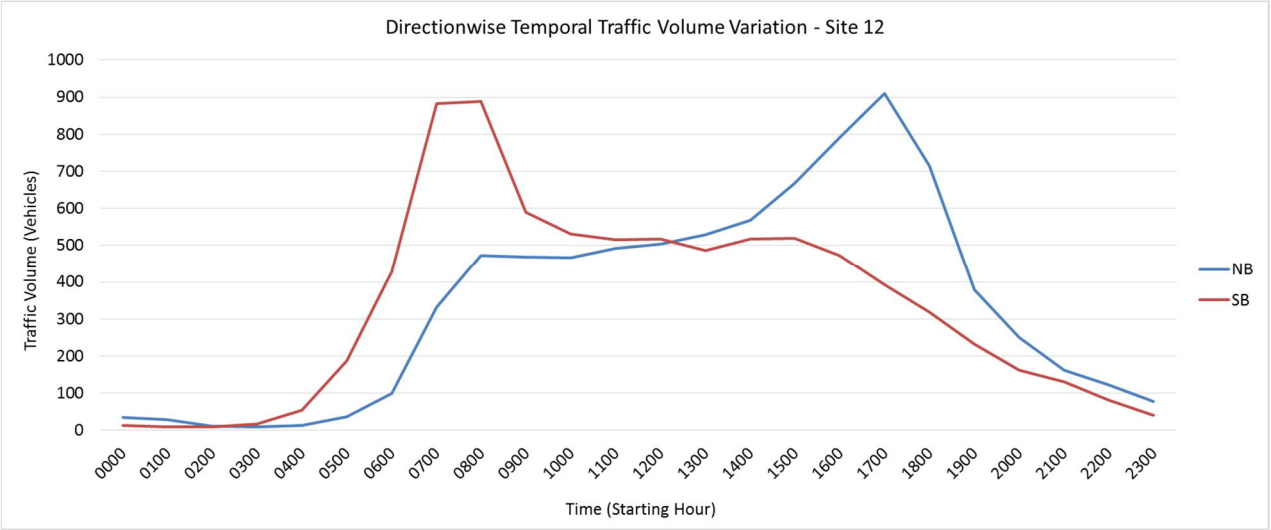
Site 10: BEACON HILL – Average hourly variation



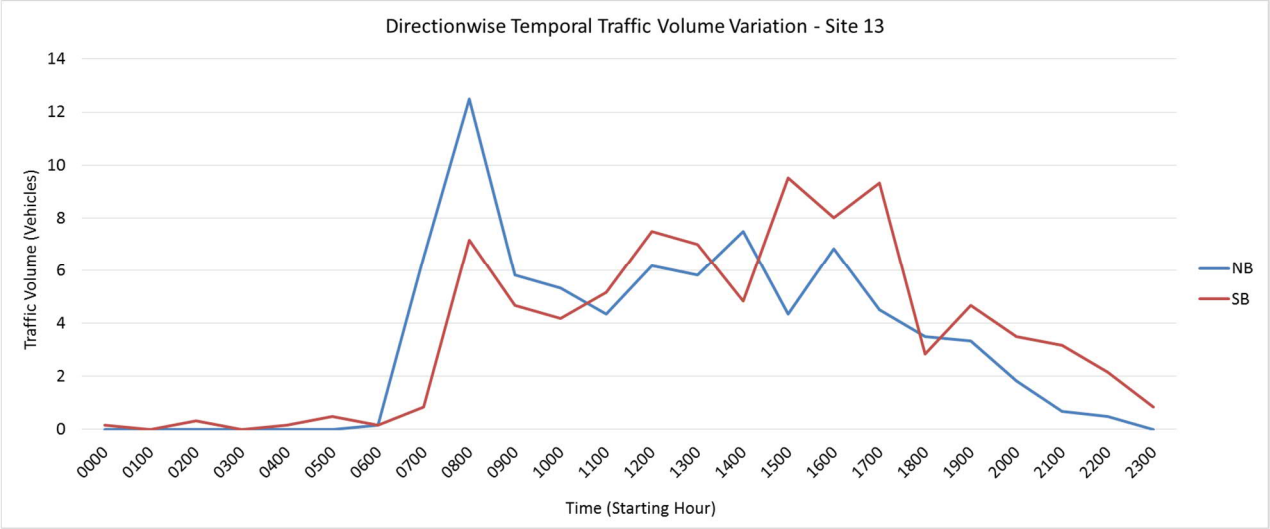
Site 11: ELLENS ROAD – Average hourly variation



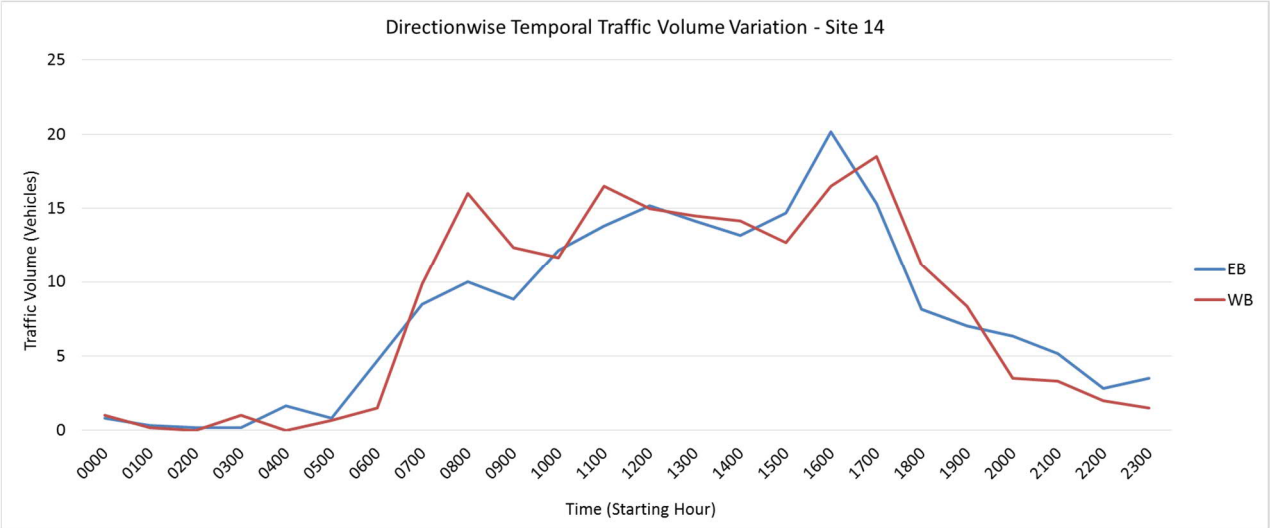
Site 12: DOVER ROAD – Average hourly variation



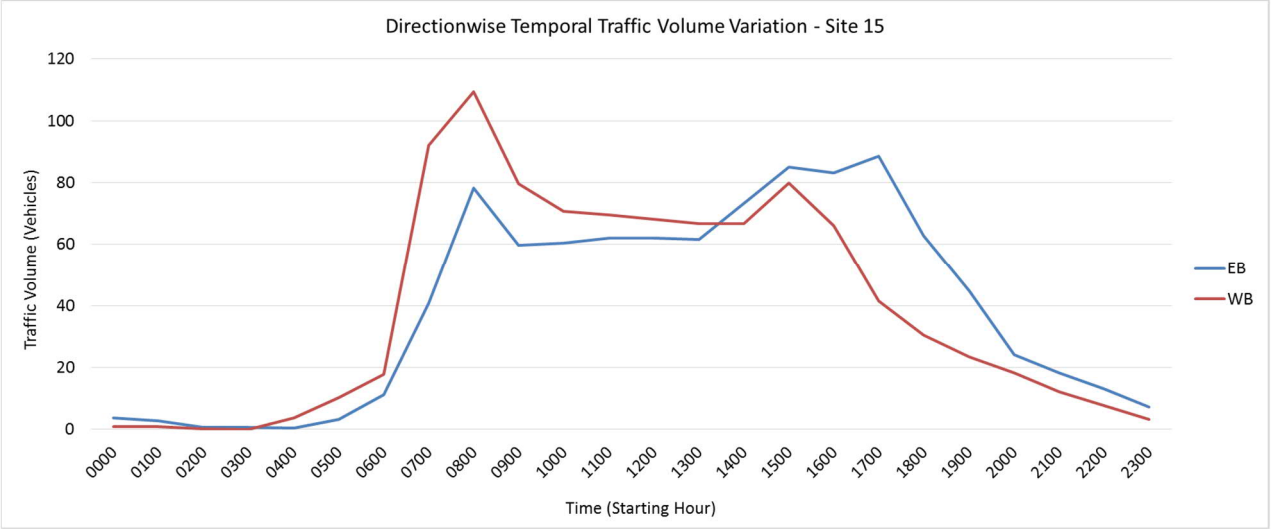
Site 13: STONEHEAP ROAD – Average hourly variation



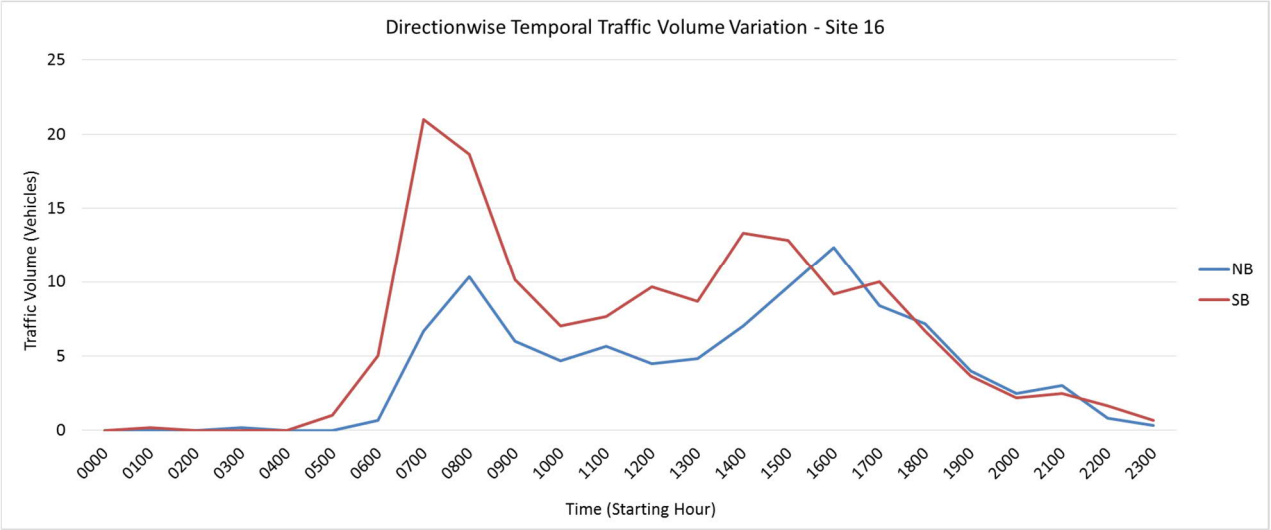
Site 14: CHURCH HILL – Average hourly variation



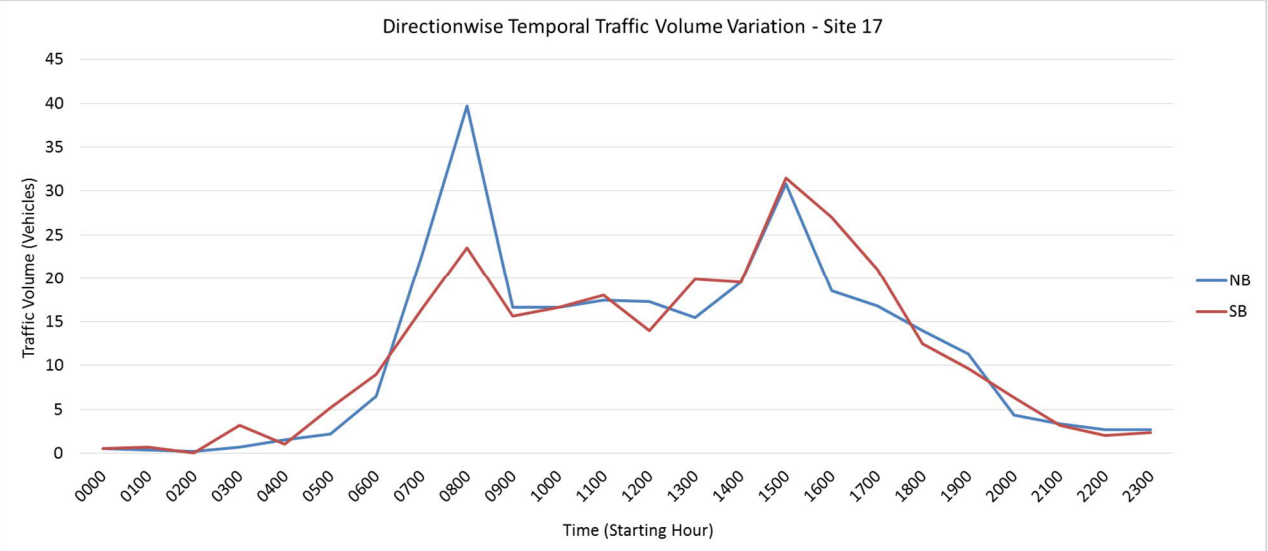
Site 15: RINGWOULD RD – Average hourly variation



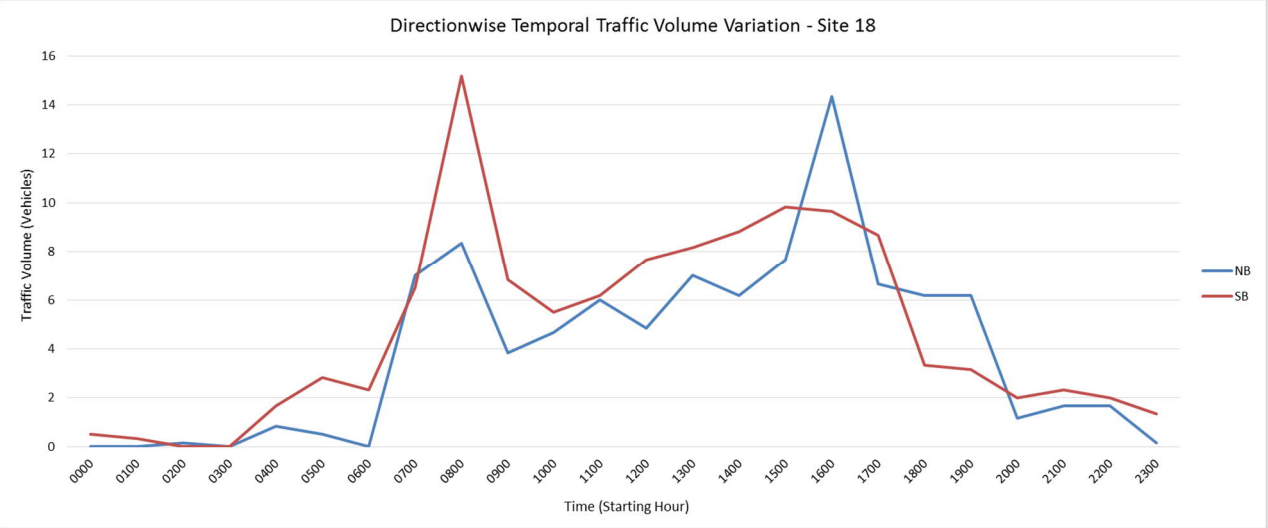
Site 16: WINKLANDS OAKS LANE – Average hourly variation



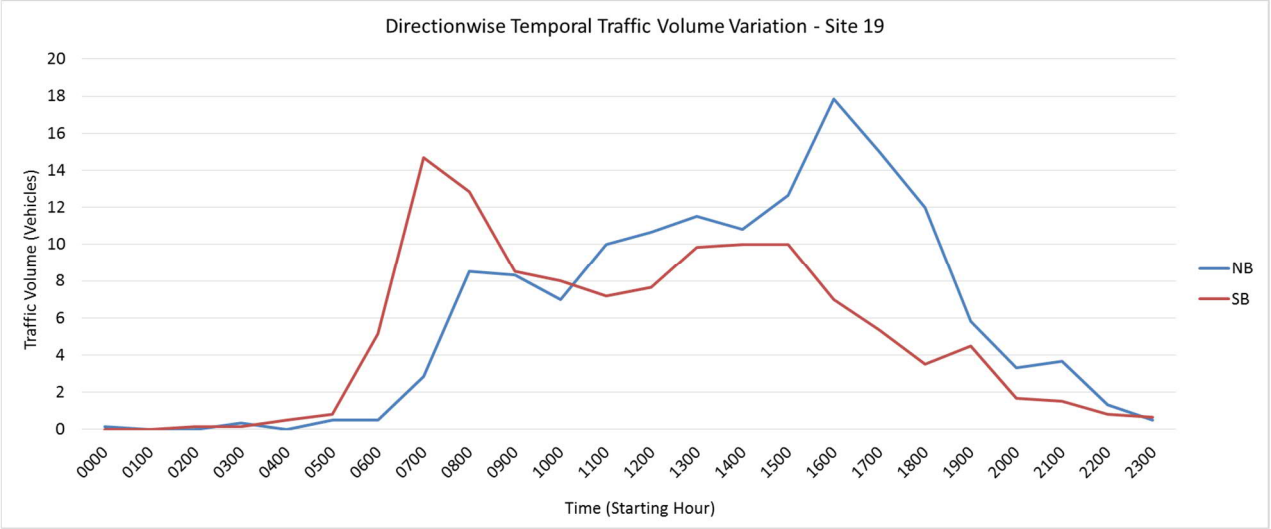
Site 17: SUTTON LANE – Average hourly variation



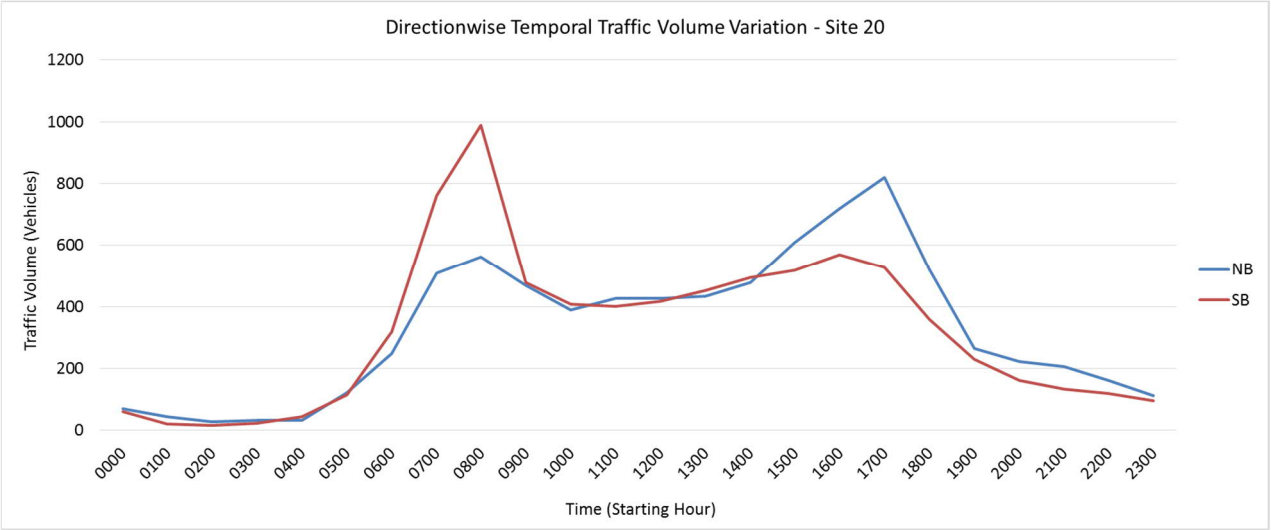
Site 18: ROMAN ROAD – Average hourly variation



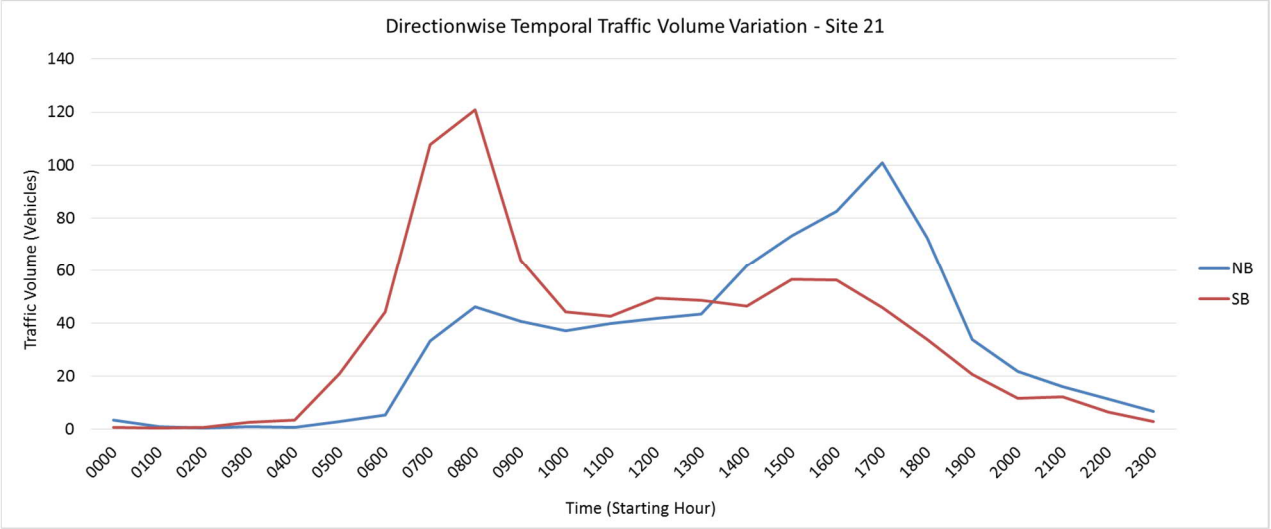
Site 19: WALDERSHARE ROAD – Average hourly variation



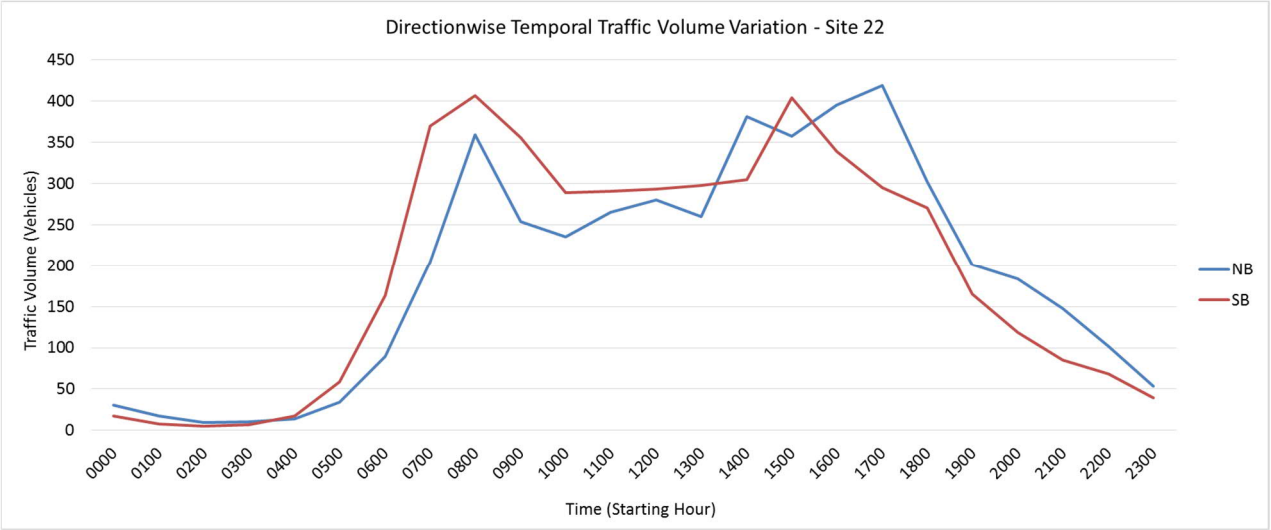
Site 20: A 256 – Average hourly variation



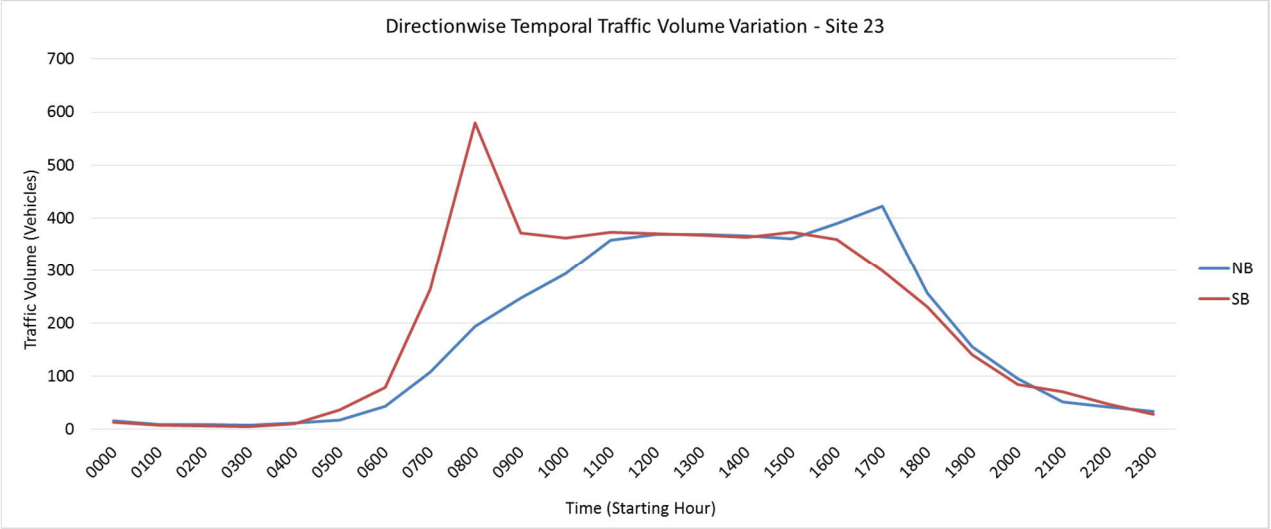
Site 21: FORGE LANE – Average hourly variation



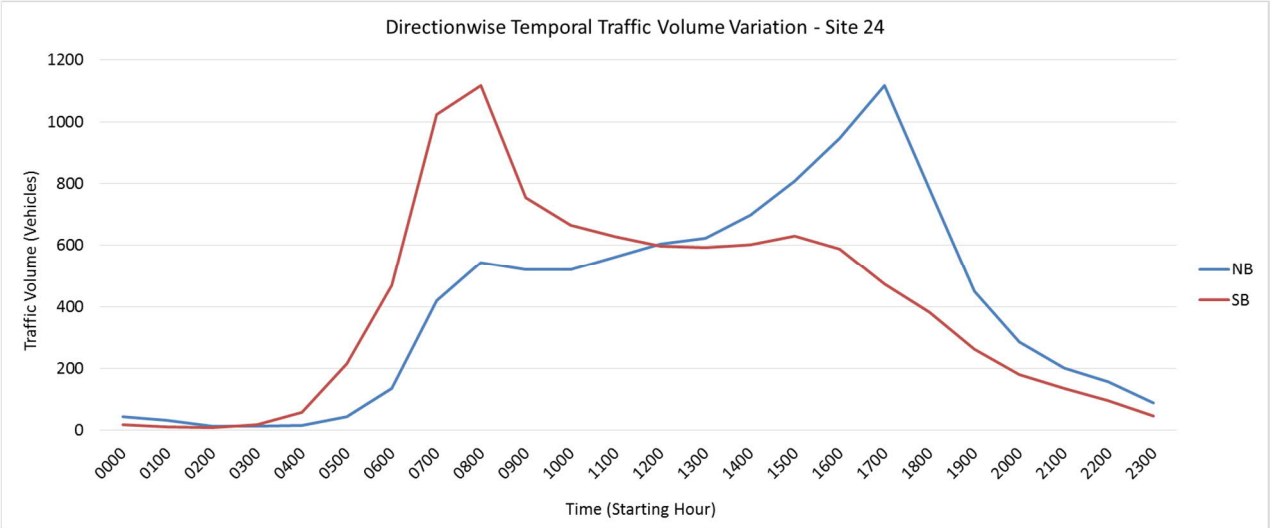
Site 22: SANDWICH ROAD – Average hourly variation



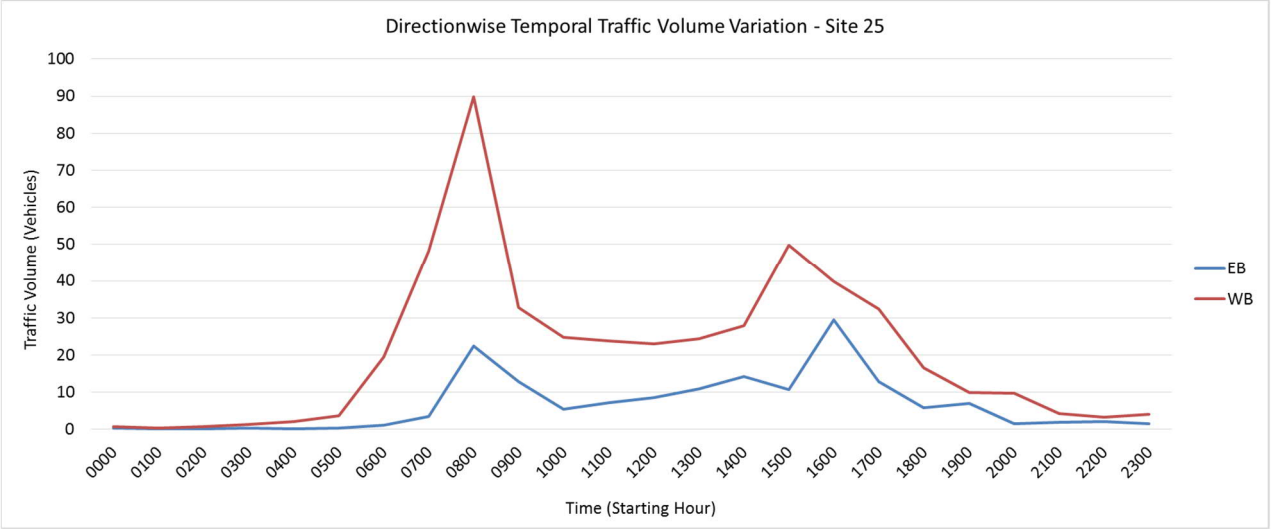
Site 23: HONEYWOOD PARK – Average hourly variation



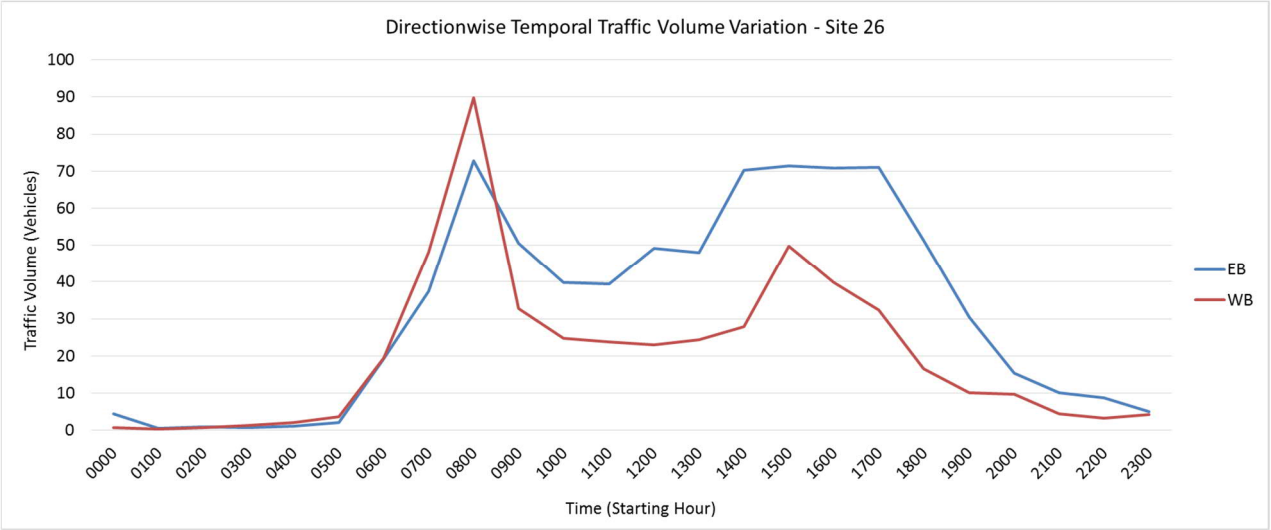
Site 24: A258 – Average hourly variation



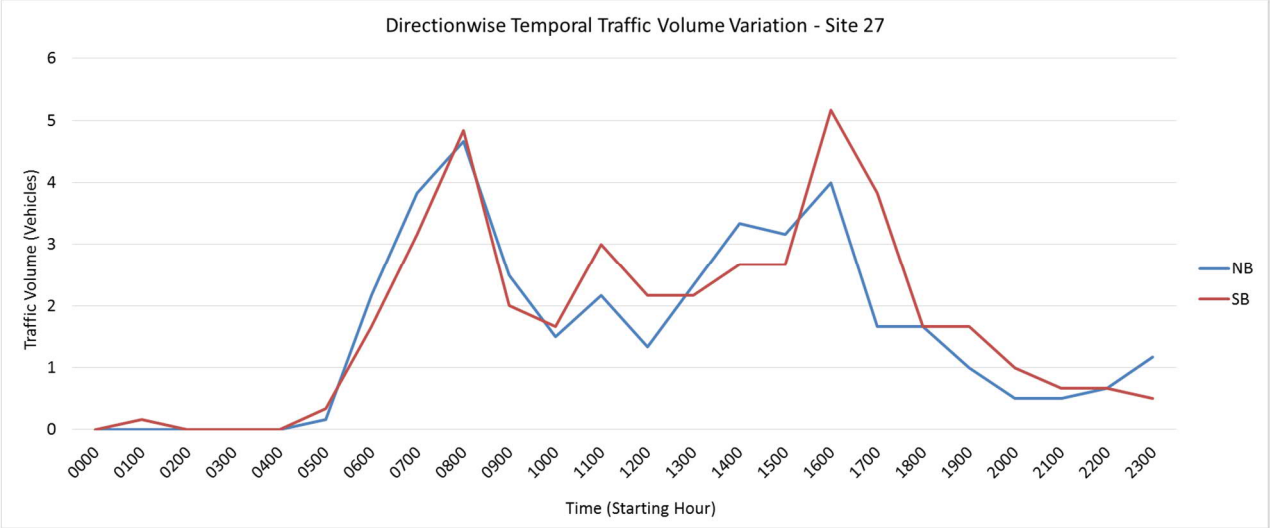
Site 25: STRAIGHT MILE – Average hourly variation



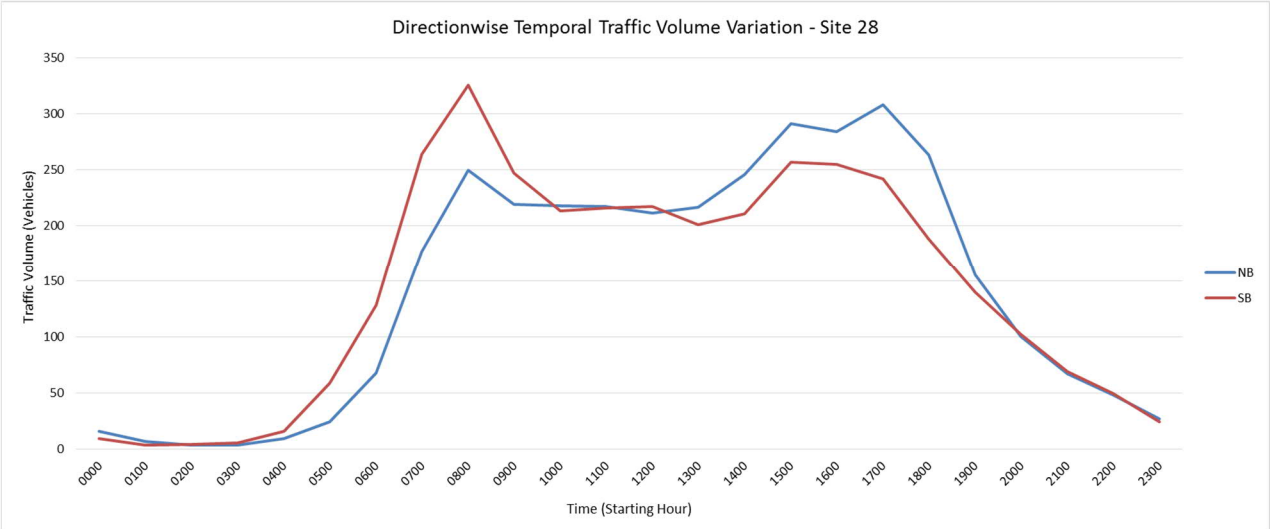
Site 26: NORTHBOURNE ROAD – Average hourly variation



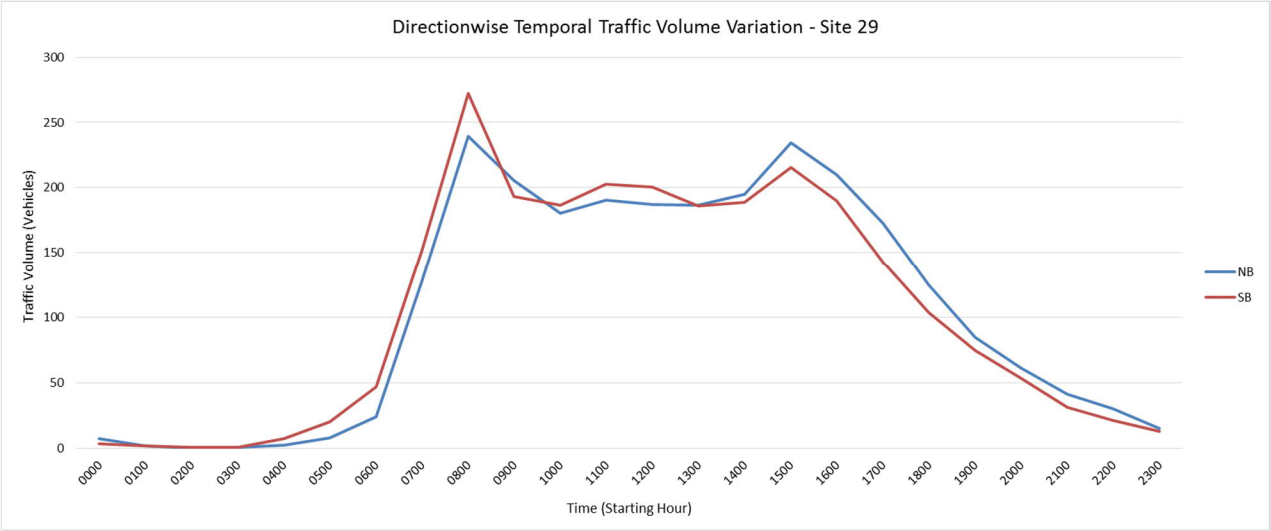
Site 27: NORTHBOURNE LANE – Average hourly variation



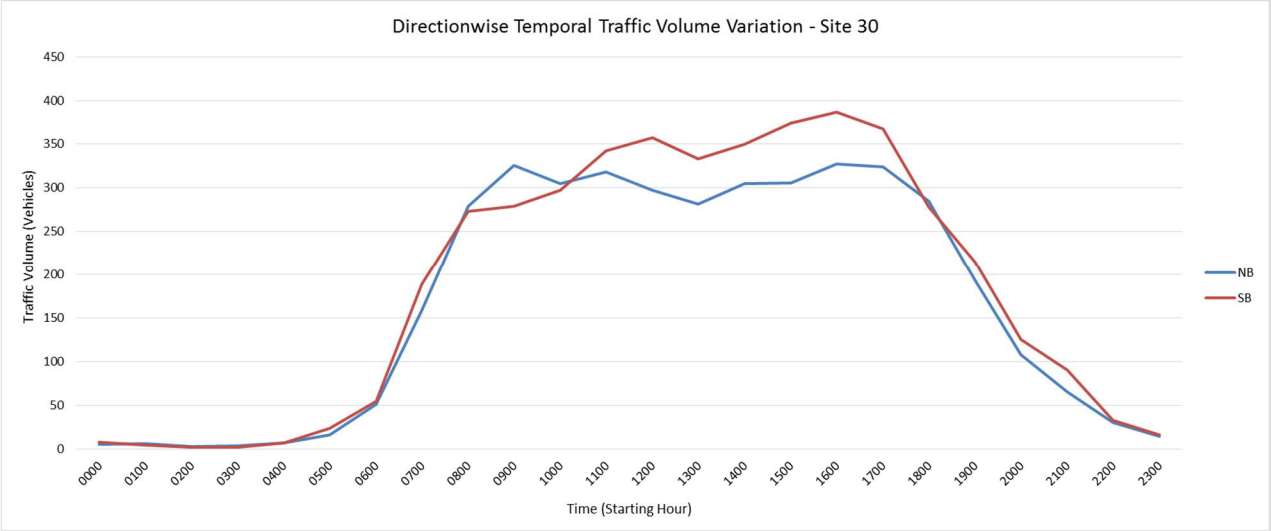
Site 28: ST. RICHARD'S RD. – Average hourly variation



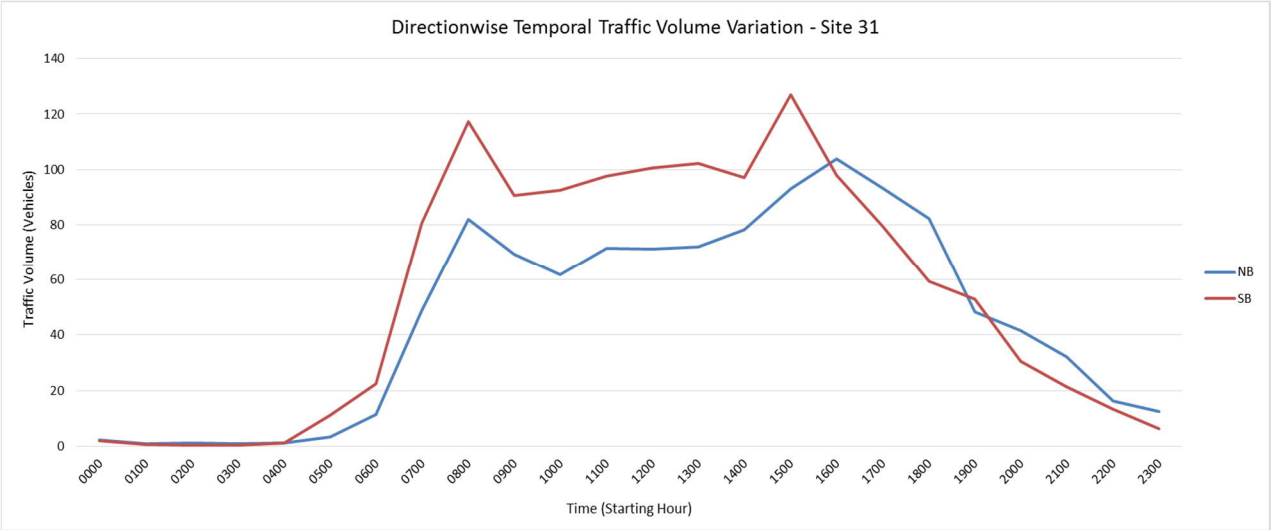
Site 29: ALBERT RD – Average hourly variation



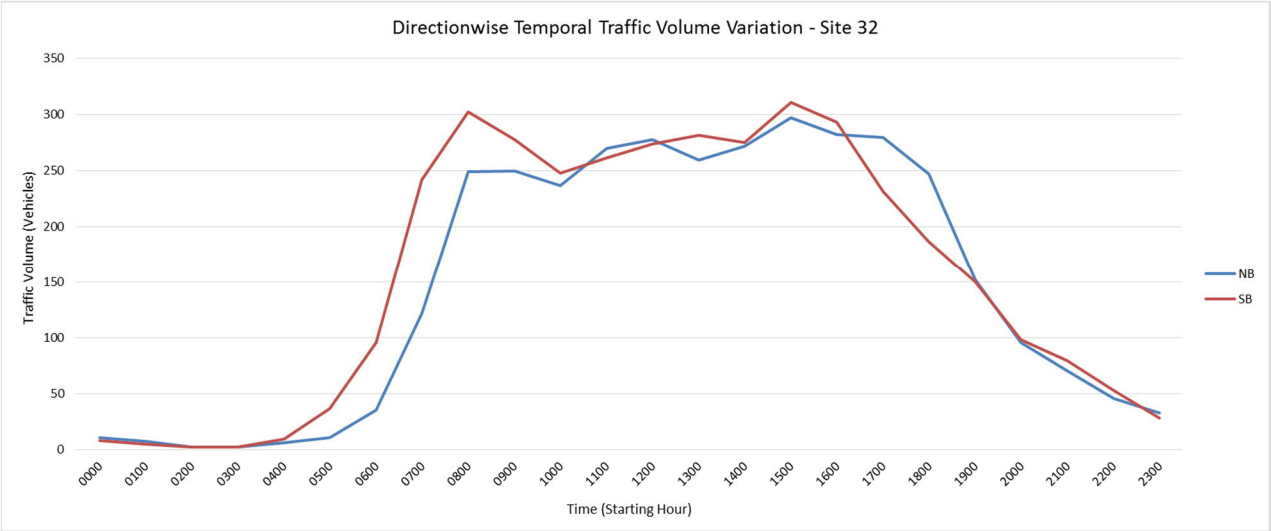
Site 30: WEST STREET – Average hourly variation



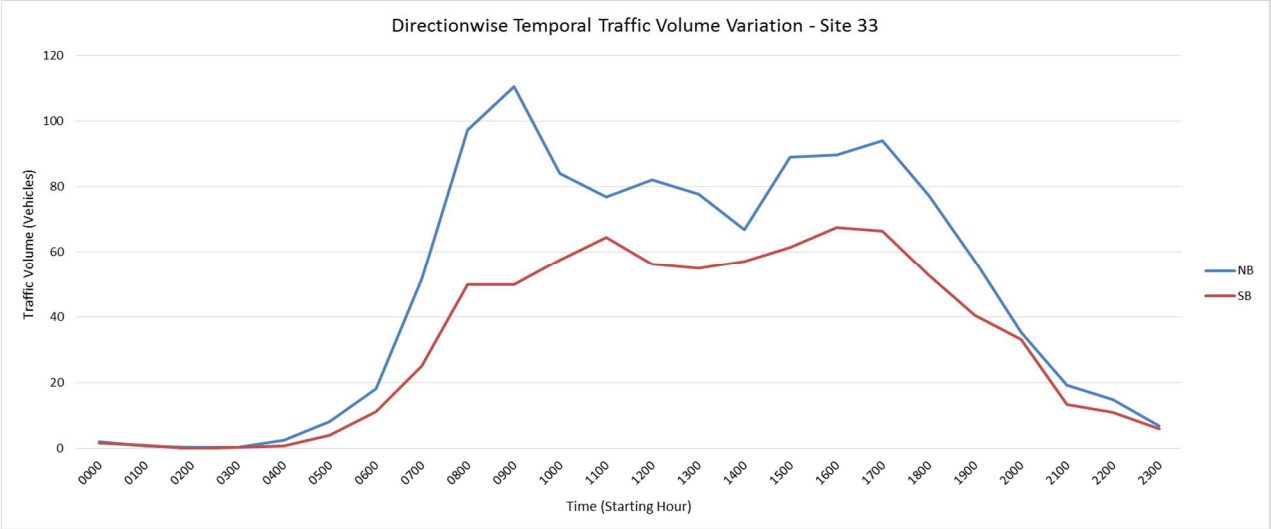
Site 31: HIGH STREET – Average hourly variation



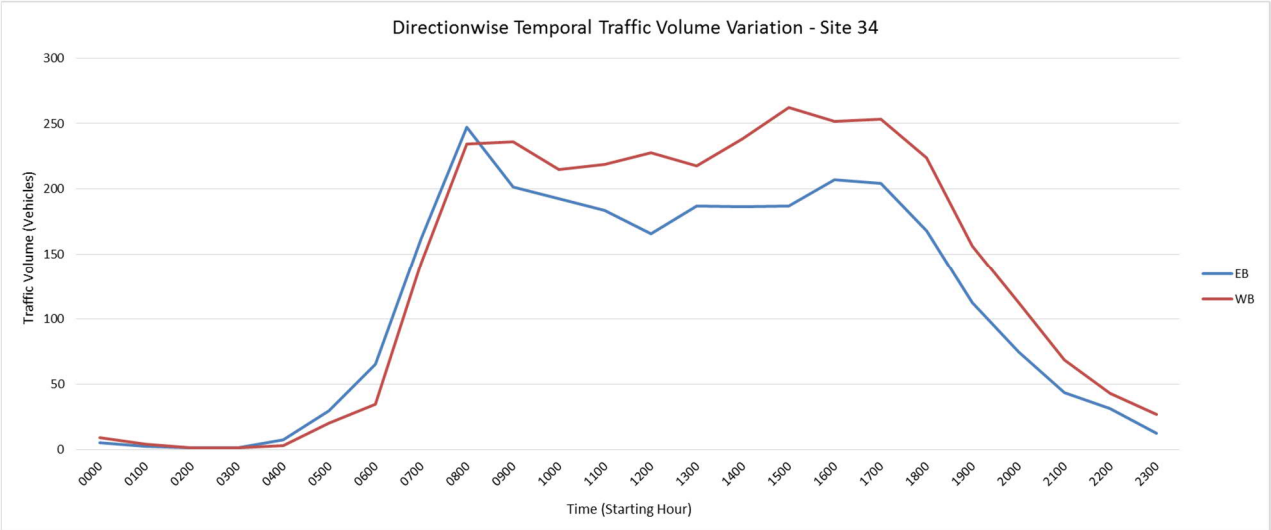
Site 32: BEACH ST. – Average hourly variation



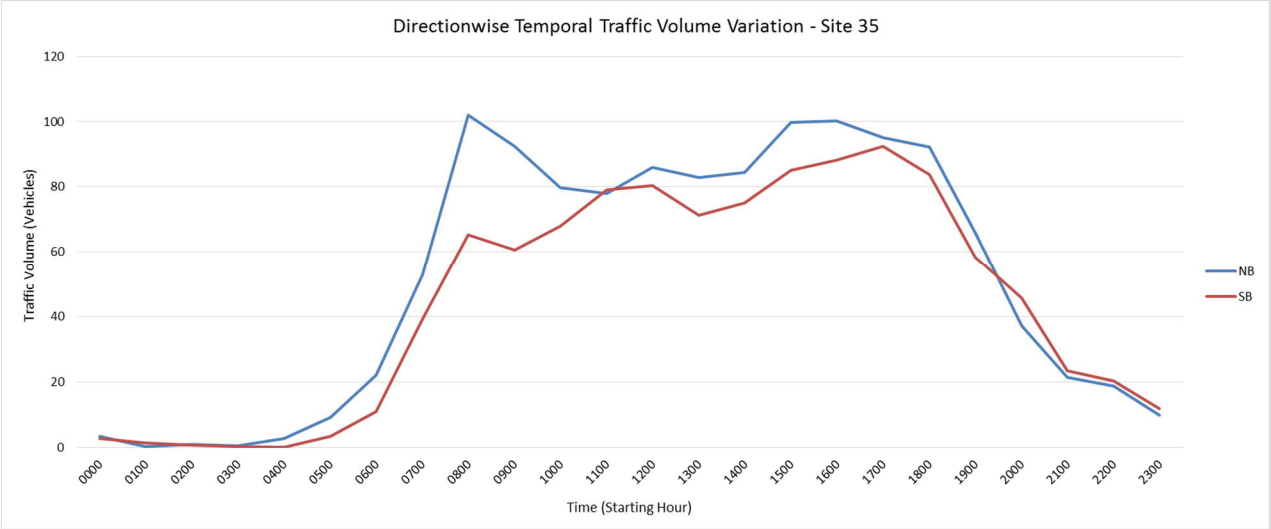
Site 33: MILL RD. – Average hourly variation



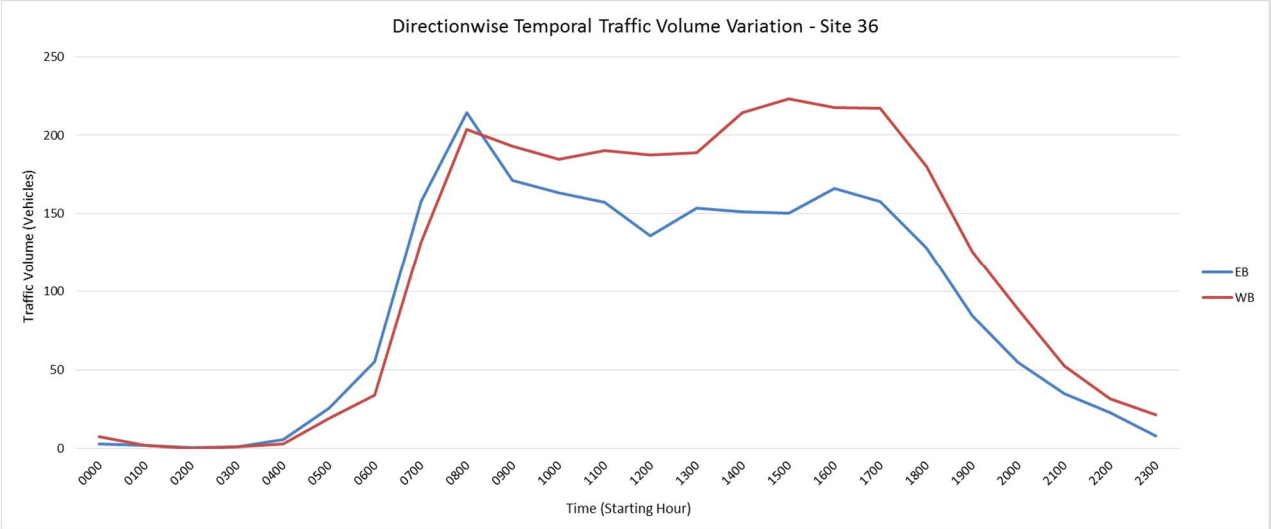
Site 34: PARK AVE – Average hourly variation



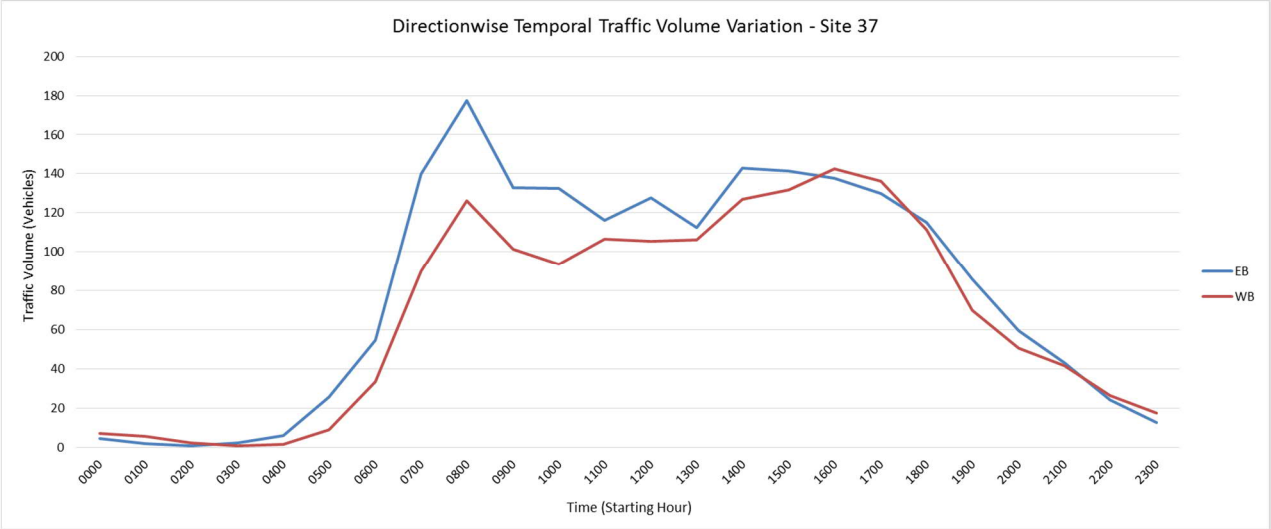
Site 35: MILL RD. – Average hourly variation



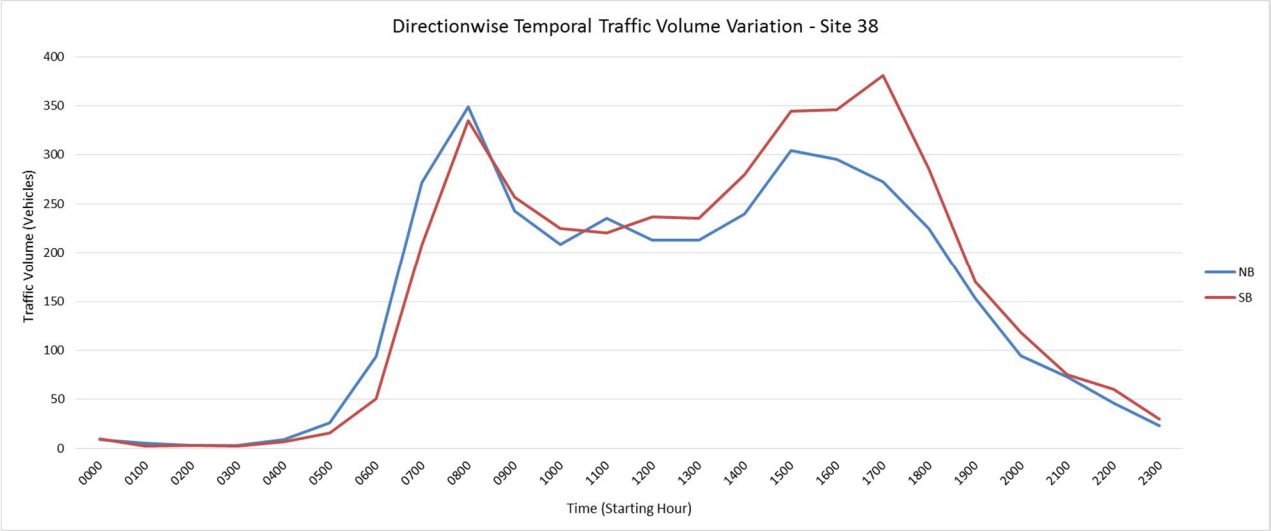
Site 36: PARK AVE – Average hourly variation



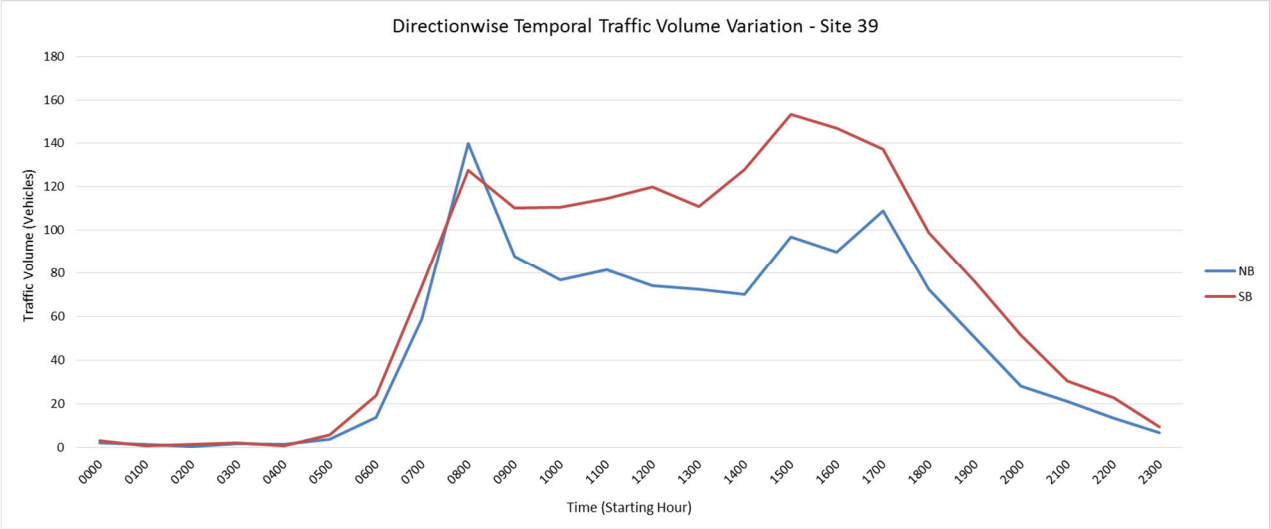
Site 37: CORNWALL RD. – Average hourly variation



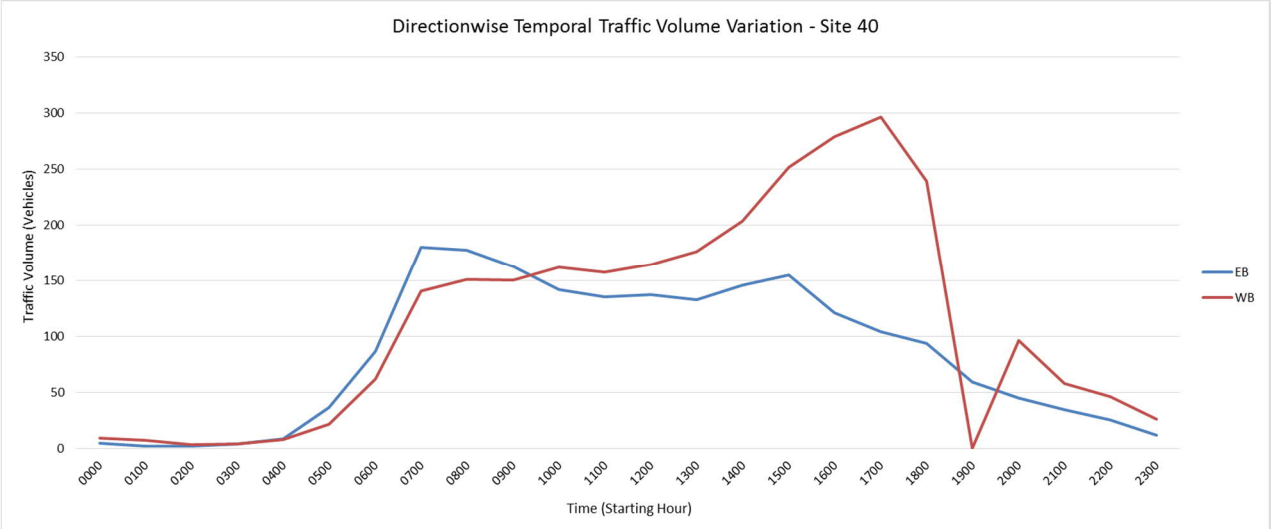
Site 38: MANOR RD. – Average hourly variation



Site 39: ST. LEONARD'S RD. – Average hourly variation



Site 40: STATION RD – Average hourly variation



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