



Technical Note TN15009 Issue 1.1

**Upper Gungate 2015 Review
Modelling Evaluations**

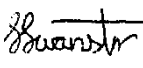

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Technical Note 15009
Issue 1.1

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Previous Revisions
None

0.0 About this technical note

This technical note is intended for use by personnel experienced in traffic engineering and familiar with the area being analysed/designed. It is designed to help these technical personnel in the decision making process and its contents may be subsumed into a more comprehensive report without permission. This technical note should always be read in conjunction with models, drawing and or supplementary text and documents as outlined throughout the note. This is not intended to be a comprehensive report for the consumption of a wider and potentially non-technical audience. A technical note rather than a more descriptive report has been produced at the client's request. JCT are happy to provide supplementary information to others and provide information on the tasks undertaken in alternative format on instruction.

1.0 Background Information

- 1.0.1 In 2012 Staffordshire County Council (SCC) commissioned JCT Consultancy to evaluate the Upper Gungate road network, Tamworth. The corridor consists of sections of the A513 and B5493 from the Ashby Road / Comberford Road / Upper Gungate junction (Fountain's junction) to the Lichfield Street / Silver Street / Church Street / Aldergate junction. It included four traffic signal junctions.
- 1.0.2 JCT were tasked with producing calibrated and validated LinSig models representing the network, identify improvements that would improve performance and establish what level of additional traffic could be accommodated by the improved network. This work was included in TN12028.1 and TN12028.2.
- 1.0.3 Since this work was complete, JCT were asked to review modelling work that supported an additional 1000 housing development north of the corridor. This work was included in TN14034 and TN15005.
- 1.0.4 Following on from TN12028, SCC have now completed a number of improvements to the network. These include:
 - Installation of a formal crossing south of Fountain's junction;
 - Widening at the junction with Lichfield Street, which allows the heavier traffic flows from Aldergate and Lichfield Street to run together;
 - Adjustments to phase delays and pedestrian facilities at the Offadrive and Hospital Street junctions;
 - Provision of a right-turn bay for northbound traffic turning into Croft Street.

2.0 Brief

2.0.1 Following the completion of junction improvements, together with the attraction of future developments to the area, SCC commissioned JCT to conduct further evaluations of the network. The tasks required were as follows:

- Organise new traffic surveys to be taken during the AM, Early PM, PM and Saturday peak periods
- Site visit
- Update the LinSig model to reflect the latest traffic flows, junction layouts and controller specifications
- Compare the 2015 network with the performance of the network in 2012
- Show the impact of a committed development, containing 700 houses, in the year 2029
- Show the impact of the LSTF project, used to promote public and sustainable transport along the corridor
- Show the impact of a proposed development, containing 1000 houses, in the year 2029

2.0.2 SCC provided JCT with the following information:

- Junction layouts
- Controller Specifications
- Growth Factors
- Committed development trips and distribution
- Proposed development trips and distribution
- ATC data
- LSTF Trip Reductions

2.0.3 Signal Surveys conducted the Traffic Surveys, and provided JCT with the following information:

- Junction turning counts
- Queue surveys
- Videos recorded during the surveys

3.0 Traffic Flows

3.1 Traffic Surveys

3.1.1 The traffic surveys were conducted by Signal Surveys Ltd. on Tuesday 21st April 2015 and Saturday 25th April 2015, for the following junctions (signal controlled junctions highlighted in blue):

- Ashby Rd / Ashby Rd
- Comberford Rd / Wigginton Rd
- **Comberford Rd / B5493 Ashby Rd**
- Upper Gungate / College Access
- Upper Gungate / Croft St
- **Upper Gungate / Salter's Ln / Offadrive**
- **Upper Gungate / Albert Rd / Lower Gungate / Aldergate / Hospital St**
- Aldergate / Corporation St
- Aldergate / St John St
- **Aldergate / Lichfield St / Church St / Silver St**

3.1.2 Traffic counts were recorded between the hours of 0700 – 1000 and 1530 – 1830 on Tuesday, and 1100 – 1400 on Saturday. Counts were recorded over 15 minute time intervals.

3.1.3 Vehicles were classed between Lights and Heavies. During the conversion into Passenger Car Units (pcus), JCT assumed a pcu factor of 2.3 for Heavies.

3.1.4 Queue surveys were conducted at the four signal controlled junctions. These were recorded in 15 minute time intervals.

3.1.5 **Figure 1** shows the total network hourly flow over the duration of the traffic surveys. It was shown that these are broadly similar to those from the 2012 study. Therefore, for consistency the same hourly periods were used in this study, which were:

- AM Peak 0800 – 0900
- Pre-PM Peak 1600 – 1700
- PM Peak 1700 – 1800
- Saturday Peak 1145 – 1245

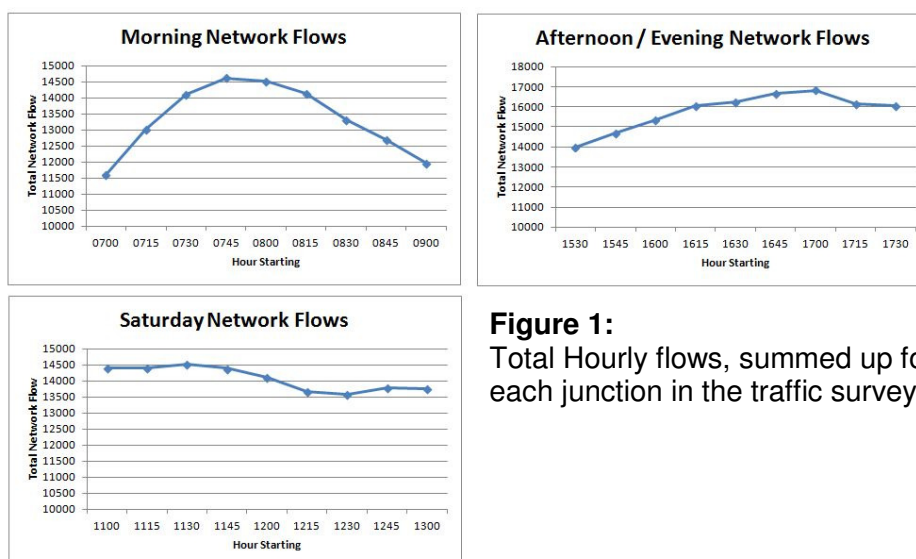


Figure 1:
Total Hourly flows, summed up for each junction in the traffic survey

3.1.6 The junction turning counts are shown in **Appendix A**. The diagrams show the recorded counts, in pcus, at each junction. Small upward adjustments were made to some counts so that flows balanced between junctions. These are also shown in Appendix A, with adjusted counts highlighted in red.

3.2 Comparison with 2012 Traffic Surveys

3.2.1 **Figure 2** provides a comparison between the 2012 and 2015 traffic surveys, highlighting the total flows for each junction over the peak periods. This also shows a comparison between some key movements and the total network flows.

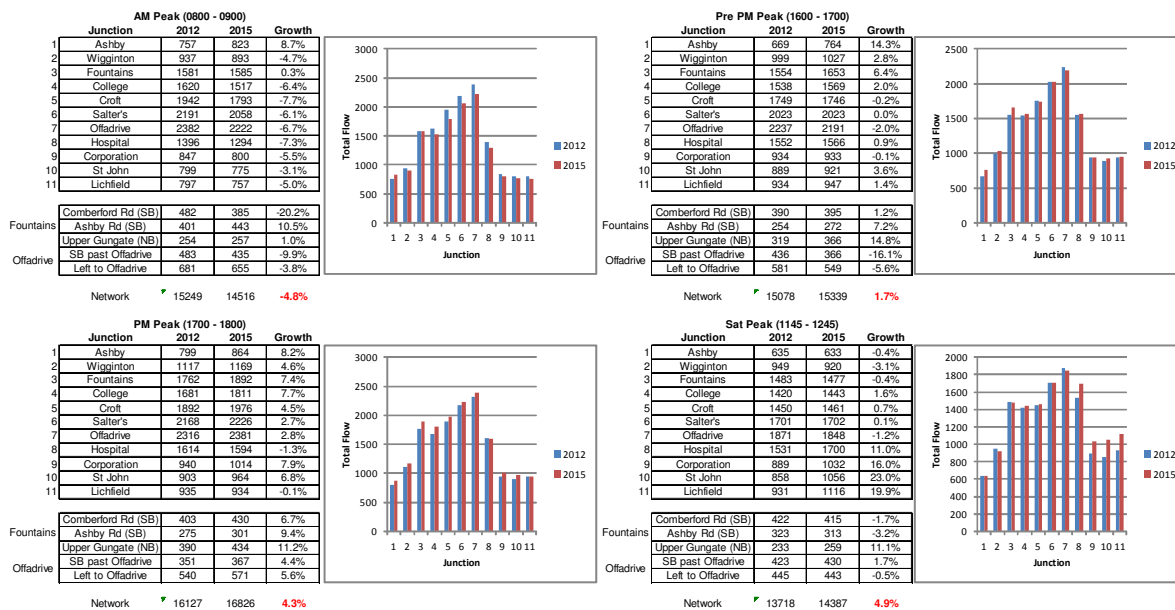


Figure 2: Comparison between 2012 and 2015 Traffic Surveys

3.2.2 The comparison shows that network traffic flows during the AM Peak have fallen by 4.8%. At Fountain's junction, the total flow has not changed significantly, although traffic flows increased on Ashby Road and reduced on Comberford Road. Traffic flows at the signal junctions of Offadrive and Hospital Street fell by 6.1 - 7.3%, while the traffic flows at the junction with Lichfield Road fell by 5%.

3.2.3 During the remaining three peak periods, network traffic flows increased in 2015, by 1.7%, 4.3% and 4.9% in the Pre PM, PM and Saturday peak periods respectively. Although some junctions experienced a reduction in traffic flows in 2015, none of these were considered significant, with the highest fall being 2% at the junction with Offadrive during the Pre PM peak period.

3.3 Comparison with ATC Data

3.3.1 ATC data was recorded for a 2 week period immediately following the date of the first traffic survey (22nd April – 7th May).

3.3.2 The ATC data provided northbound and southbound vehicle counts along Upper Gungate, in the vicinity of Croft Street.

3.3.3 The average count from the ATC data was compared to the values recorded from the traffic survey, in order to determine how closely the traffic survey may reflect conditions of a typical day. The comparisons are shown in **Table 1**. The ATC data from the bank holiday (Monday 4th May), Saturday and Sunday data were excluded when considering the AM, Pre PM and PM Peaks. The ATC data were also examined statistically to establish if any of the

counted values could be considered outliers and it was found that one data point was outside this range (ATC AM Weds 29th April) so it was removed from the sample for the calculations and comparisons.

The methodology adopted to determine outliers was to calculate the Mean and Standard Deviation for the ten available data for both the northbound and southbound ATCs in the AM, PrePM and PM Peaks and then consider if any of the data fell within two standard deviations of the mean. The two standard deviations (two either side of the mean) approximate the range in which we would expect 95% of data points to occur if the sample is normally distributed. The number of data points being considered (the sample) is however small, so this is only an approximation. Note: there are insufficient data points for Saturday to adopt any meaningful outlier strategy.

Table 1: Comparison of ATC data (mean) with Traffic Count Survey

Vehicles	Northbound		Southbound	
	ATC	Survey	ATC	Survey
AM	650	633	771*	832
Pre PM	848	872	613	647
PM	990	1079	619	727
Sat	682	683	652	690

* One outlier removed from ATC Data

3.3.4 Table 1 shows that the count survey recorded the northbound count in the AM Peak marginally less (17 vehicles) than the ATC daily mean for the same period. In all other cases, the count surveyed traffic flows were higher than the ATC means.

3.3.5 The extent to which the count survey data and the ATC means differ was statistically examined and it was found that in all periods with the exception of one, the count survey data, although higher, was within two standard deviations of the mean ATC data. The exception was the PM Peak where the count surveyed data fell outside the two standard deviations. The count values were however close to the thresholds, **Table 2** illustrates this:

Table 2: Comparison of ATC data (mean) with Traffic Count Survey for PM Peak

Vehicles	ATC Mean	Std Dev	ATC Mean	ATC Mean	Count
			- 2 x Std Dev	+ 2 x Std Dev	
Northbound	990	30.112	929.776	1050.224	1079
Southbound	619	33.046	552.908	685.092	727

Given the relative closeness of count survey data with ATC data in all but the PM peak and the close proximity of the count survey data to the ATC mean plus two standard deviation threshold in the PM Peak it was considered appropriate to use the surveyed traffic flows without any adjustments (except those required for balancing between junctions). The reasoning being:

- (i) That the count survey was professionally undertaken and whilst errors can occur we must assume that the data collected is reasonably valid.
- (ii) That there were discrepancies between the ATC data and count survey data on Saturday 25th April (the only concurrent survey and ATC day) so discrepancies are clearly to be expected and could be due to errors in either the count survey or ATC data or both. TAG Unit M1.2 para 3.2.13 acknowledges that *“Little definitive work has been published concerning the accuracy of traffic counts by automatic traffic counters. Experience suggests that the errors are machine and (particularly) installation dependent”*.
- (iii) That modelling using the count survey data is a robust approach.

The flows used in the base in the modelling are shown in **Appendix A**.

3.4 Growth to Year 2029

3.4.1 SCC provided suitable background traffic growth factors from year 2015 to 2029, taken from the NTM via TEMPRO. The factors were as follows:

- AM Peak 1.1065
- Pre PM Peak 1.1119
- PM Peak 1.1119
- Saturday Peak 1.1172

Growth to 2029 is consistent with the Adopted Lichfield Local Plan which provides the planning context for this development proposal. This was agreed to be appropriate at a meeting between SCC and PBA / Barwoods on 2nd March 2015.

3.5 Development Traffic

3.5.1 SCC provided the additional trips resulting from the Committed (700 houses) and Proposed (1000 houses) developments. These development traffic flows were agreed with Peter Brett Associates (PBA). These are shown in **Table 3**.

Table 3: Development Trips

	Committed		Proposed	
	IN	OUT	IN	OUT
AM	93	311	133	444
Pre PM	202	127	288	181
PM	294	149	420	213
Sat	76	151	108	216

3.5.2 SCC also supplied the distribution of development trips through the Upper Gungate network which had been agreed with PBA. **Appendix B** shows the assumed distribution that was assumed, along with the impact this has to increases in traffic flows through the network at each junction.

4.0 Base Modelling

4.1 Assumptions

- 4.1.1 The majority of results presented in this technical note were extracted from two LinSig network models, one representing the network in 2012 and one representing the network in 2015 (any other models used are stated as appropriate). These were:
- Gungahpe Network 2012.lsg3x
 - Gungahpe Network 2015.lsg3x
- 4.1.2 The model representing the network from 2012 was originally produced as part of TN12028, and includes the original year 2012 scenarios. However, the latest 2015 traffic flows were also added to the 2012 model, and optimised based on similar cycle times.
- 4.1.3 At the Hospital Street junction, bonus greens were added to the 2012 model to reflect the same demand for the pedestrian stage as that assumed in the 2015 model. This was to promote a better comparison between the 2012 and 2015 networks.
- 4.1.4 The cycle times in the 2015 network model, for the 2015 traffic flows, reflect the average cycle times measured from the videos of the traffic surveys. These measurements are shown in **Appendix C**. Therefore, although all junctions are modelled within one LinSig model, they operate independently and are not constrained to a cycle time better suited for another junction (i.e. no linking of platoons was modelled). The advantages of modelling all junctions in one file are that priority junctions can be included, overall network results can be extracted if required and addition of growth and development traffic is simplified.
- 4.1.5 At Fountains junction, the newly installed pedestrian crossing was modelled as running for each scenario. However, bonus greens were added to the traffic lanes to account for the fact that, in reality, the crossing is not called every cycle. The frequency of the pedestrian stage, along with the variable intergreen following the green man, was measured from the video surveys. These data are also shown in **Appendix C**. The bonus greens were calculated from these data, and are summarised in **Table 4**.

Table 4: Demand Dependency Bonus Greens at Fountains Junction

	AM	Pre PM	PM	Sat
Average Cycle Time	56	44	44	51
Pedestrian Frequency	61.5%	26.5%	22.0%	5.7%
Average Intergreen after Ped	6.7	7.7	6.7	9.8
Lost Time when ped called	18	19	18	21
Average Lost Time / cycle	12	6	4	2
Bonus Green	10	16	18	20

Note: Maximum lost time to traffic is 22 seconds (i.e. when intergreen extends to 11 seconds, as entered in the model). So, "Lost Time when ped called" assumes the average intergreen, not the maximum. Average lost time is calculated as the Lost Time x Ped Frequency. This was always rounded up. Bonus Green is the Lost Time in Model (22 seconds) – Average Lost Time.

- 4.1.6 When the pedestrian crossing is called, traffic turning right from Comberford Road is stopped by a red signal at the crossing. The resulting queue was shown to occasionally extend back to the stopline at Comberford Road, thus causing underutilised green at Comberford Road. Over the course of the AM peak period, the video surveys suggested a total underutilised green time of about 66 seconds, which equates to an average of about 1.4 seconds per cycle. Therefore, during the AM peak period, a negative bonus green of 2 second was applied to Comberford Road. No bonus greens were applied to the other time periods in the model for this situation.

- 4.1.7 At the junction with Offadrive, the start of phases in Stage 1 are determined by the variable intergreen following pedestrian Phase J. The stage sequence is shown in **Figure 3**.

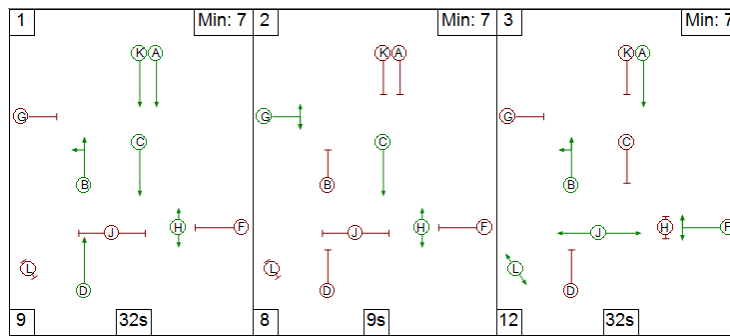


Figure 3: Offadrive Stage Sequence

- 4.1.8 As shown in **Appendix C**, the average intergreen was measured as 8.2", 6.2", 6.0" and 6.0" in the AM, Pre PM, PM and Saturday peak periods respectively. Therefore, intergreens of 9 seconds were entered in the model following Phases J (and L). However, positive bonus greens of 2 seconds were entered for phases starting in Stage 1 in the Early PM peak, and 3 seconds in the PM and Saturday peaks to account for a shorter average intergreen.
- 4.1.9 Despite the length of the northbound offside flare on Upper Gungah (past Offadrive) having the physical capacity to accommodate up to approximately 7 pcus, site observations showed that on average, only 2 pcus utilised this lane as the signals turned green (during the busier PM peak period). Therefore, to ensure an average usage of 2 pcus was modelled correctly, the custom occupancy was set for each scenario until the storage was approximately equal to 2 pcus (checked using the LinSig storage graphs). For future year scenarios, this custom occupancy remained unchanged.
- 4.1.10 An all red pedestrian stage exists at the junction with Hospital Street. However, site observations showed that the pedestrian stage was never called, despite the significant presence of pedestrians. This was later reported to be due to a red lamp monitoring fault, and corrected before the date of the Saturday traffic survey. As a result, the frequency of the pedestrian stage could not be measured for the weekday scenarios. It was not considered appropriate to conduct an additional site visit to measure this, as many students at the local schools had by then finished term for study leave, and the results would not likely be indicative.
- 4.1.11 In order to provide a robust modelling assessment, it was assumed that the pedestrian stage was called every cycle during the AM and Early PM peak periods, to account for the significant number of school children in the area at these times. The video surveys showed that during the PM peak period, the volume of pedestrians is significantly reduced. Therefore, it was assumed the pedestrian stage is called once every other cycle. As the fault was corrected before the Saturday survey, it was measured that the pedestrian stage was called for 81% of cycles on Saturday.
- 4.1.12 To account for demand dependency at Hospital Street, the stage sequence 1-2-3 (i.e. including the pedestrian stage) was modelled. The additional lost time to traffic when the pedestrian stage is called is 16 seconds (assuming an average intergreen of 7 seconds following the pedestrian phases). Bonus greens were calculated as shown in **Table 5**.

Table 5: Demand Dependency Bonus Greens at Hospital Street

	AM	Pre PM	PM	Sat
Pedestrian Frequency	100.0%	100.0%	50.0%	81.5%
Lost Time when ped called	16	16	16	16
Average Lost Time / cycle	16	16	8	13
Bonus Green	0	0	8	3

4.1.13 Bonus greens were also used to reflect demand dependency of the pedestrian stage at the junction with Lichfield Street. When the pedestrian phase is called, an additional 14 seconds of lost time occurs (assuming an average intergreen of 7 seconds after Phase F). The stage sequence modelled was 1-2-3-4 (including the pedestrian stage) and the bonus greens calculated as shown in **Table 6**.

Table 6: Demand Dependency Bonus Greens at Lichfield Street

	AM	Pre PM	PM	Sat
Pedestrian Frequency	57%	72%	57%	93%
Lost Time when ped called	14	14	14	14
Average Lost Time / cycle	8	10	8	13
Bonus Green	6	4	6	1

4.2 Queue Survey Comparison

4.2.1 The queue surveys provided queue lengths for each of the signal controlled junctions, for 15 minute time segments throughout the traffic survey periods. The queues were measured at the end of the red phase.

4.2.2 A comparison between the average queue recorded during the survey periods with that predicted by the LinSig model is shown in **Table 7**. The LinSig queues shown are the End of Red Queue, not the Mean Maximum Queue (MMQ), to reflect the methodology of the queue survey. Note, at the junction with Hospital Street, this comparison assumes the pedestrian stage is not called during the weekday peak scenarios, as this was not operational on the date of the survey. Survey queues are shown in vehicles, model queues in pcus. Although these are different units, for the purpose of comparing relatively small numbers, they were considered comparable.

Table 7: Queue comparisons between survey and model

Queues		AM		Early PM		PM		Sat	
		Survey	Model	Survey	Model	Survey	Model	Survey	Model
FOUNTAINS	Ashby Rd	3.5	3.9	1.8	2.0	2.5	2.1	3.0	2.8
	Upper Gungate	2.3	1.6	3.3	2.6	3.0	3.1	2.0	2.2
	Comberford Rd	3.8	3.6	3.5	2.9	3.0	3.2	4.3	3.1
OFFADRIVE	Upper Gungate (N)	9.3	5.8	4.5	5.0	3.5	5.3	9.3	5.1
	Offadrive	9.8	6.8	5.0	6.4	11.0	7.3	6.0	5.0
	Upper Gungate (S)	4.5	3.3	4.3	4.7	5.8	6.2	8.5	2.9
	Salter's Ln	5.3	4.5	2.8	3.1	5.0	3.4	1.8	2.6
HOSPITAL ST	Upper Gungate	3.3	1.9	2.5	2.4	3.3	1.9	5.8	3.3
	Upper Gungate LT	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.0
	Lower Gungate LT	0.5	1.2	0.8	1.7	1.5	1.8	0.8	2.5
	Lower Gungate A	0.3	0.4	1.8	0.8	1.8	1.0	1.0	1.1
	Lower Gungate RT	0.5	0.4	2.3	2.1	2.8	1.6	4.3	2.9
	Aldergate	3.5	1.6	3.5	2.7	2.0	3.0	6.5	3.5
	Hospital St	1.0	1.9	2.3	3.2	2.5	3.3	1.8	2.2
LICHFIELD ST	Aldergate	2.3	2.3	3.0	3.6	2.5	2.7	5.5	4.2
	Church St	2.3	2.0	2.8	2.5	2.0	2.6	1.8	2.6
	Silver St	1.0	0.6	2.5	1.4	1.0	1.3	2.3	2.5
	Lichfield St	4.8	4.5	6.3	5.0	10.8	5.5	5.0	5.9

4.2.3 The results in Table 7 show a good comparison between the survey and model queues, with the majority giving similar readings. In general, the survey queues would be expected

to produce slightly higher readings, as they should pick up the larger queues over each 15 minute period, while the model provides an average over all cycles.

- 4.2.4 At the junction with Offadrive, the queue survey measured an average queue of 8.5 vehicles on Upper Gungate (S) on Saturday, the model output was 2.9 pcus. The difference can be attributed to the fact that, not only could the queue survey have picked up the higher queues within each time segment (one recording was 12 vehicles), the video survey shows that the majority of vehicles used the nearside lane on the approach. This is most likely due to the fact that the junction runs well within capacity on Saturday, and so drivers are less inclined to use the offside lane to go ahead. However, the model assumed about 2 pcus on average use the offside lane, based on the potential usage observed in other periods. The reason for doing this is so that in future year and development Saturday scenarios, when drivers are more likely to use the offside lane, the model will allow this.
- 4.2.5 Another large difference was at the junction with Lichfield Street during the PM peak, where the survey measured an average queue of 10.8 vehicles and the model output gave a queue of 5.5 pcus. However, it is worth noting that the first two recorded queues during the PM peak were 17 and 18 vehicles (17:00 and 17:15 time intervals). These were significantly higher than other recorded queues within the full three hour survey period, with recorded queues of 3 and 5 vehicles for the time intervals 17:30 and 17:45. Therefore, the relatively high queues at the start of the period contributed to the higher average over the peak period.

4.3 Comparison between 2012 and 2015 networks

- 4.3.1 Results tables for all junctions are shown in **Appendix D**. These show the LinSig model results (Degrees of Saturation, Mean Maximum Queues and Practical Reserve Capacity) for the LinSig models representing the 2012 and 2015 networks. Results for the 2012 network are given from both the 2012 traffic flows and the 2015 traffic flows.
- 4.3.2 This section summarises the results for the signal control junctions, which are key to the network performance. Cycle times were those observed on site in 2012 and 2015.
- 4.3.3 Fountains Junction

Tables 8: Comparison of 2012 and 2015 networks – Fountains Junction

Ashby Rd (North) - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	91.3%	12.0	86.2%	11.7	64.9%	6.6
Upper Gungate	53.0%	4.0	49.5%	3.6	48.9%	3.0
Comberford Rd	87.2%	12.0	85.7%	10.0	64.0%	5.7
Upper Gungate SB	n/a	n/a	n/a	n/a	52.5%	4.5
Upper Gungate NB	n/a	n/a	n/a	n/a	41.4%	3.3
PRC	-1.5%		4.4%		38.7%	
Cycle Time	68		68		56	
File	Gungate Network 2012.tsg3x				Gungate Network 2015.tsg3x	

Ashby Rd (North) - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	45.4%	3.4	54.9%	4.0	44.3%	2.8
Upper Gungate	58.4%	3.9	63.7%	4.5	63.1%	3.7
Comberford Rd	57.1%	4.6	62.1%	5.0	63.4%	4.7
Upper Gungate SB	n/a	n/a	n/a	n/a	38.2%	1.0
Upper Gungate NB	n/a	n/a	n/a	n/a	50.0%	2.4
PRC	54.0%		41.2%		42.0%	
Cycle Time	48		48		44	
File	Gungate Network 2012.tsg3x				Gungate Network 2015.tsg3x	

Ashby Rd (North) - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	69.0%	3.7	67.5%	3.8	46.1%	3.1
Upper Gungate	61.2%	3.8	67.8%	4.5	73.7%	5.2
Comberford Rd	71.6%	4.6	76.6%	5.3	72.2%	5.7
Upper Gungate SB	n/a	n/a	n/a	n/a	39.9%	0.7
Upper Gungate NB	n/a	n/a	n/a	n/a	58.1%	2.5
PRC	25.6%		17.5%		22.2%	
Cycle Time	35		35		44	
File	Gungate Network 2012.tsg3x				Gungate Network 2015.tsg3x	

Ashby Rd (North) - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	59.5%	4.2	57.1%	4.0	52.5%	4.0
Upper Gungate	43.7%	2.6	48.3%	2.9	52.1%	3.3
Comberford Rd	57.8%	4.4	56.7%	4.4	55.4%	4.9
Upper Gungate SB	n/a	n/a	n/a	n/a	39.4%	0.7
Upper Gungate NB	n/a	n/a	n/a	n/a	37.8%	1.1
PRC	51.2%		57.5%		62.6%	
Cycle Time	43		43		51	
File	Gungate Network 2012.tsg3x				Gungate Network 2015.tsg3x	

- 4.3.4 The provision of a right-turn bay from Ashby Road improves capacity on this arm, although the right-turn volume is relatively small. This results in small improvements to PRC during

the PM and Saturday peak periods, where one of the critical movements is from Ashby Road.

4.3.5 There is a large improvement to PRC during the AM peak period. In 2012 blocking back significantly reduced the capacity at Fountains junction. This was largely a result of the school crossing patrol operating downstream. The introduction of a formal crossing in 2015 enables the timings to be linked with Fountains junction, so that traffic from Ashby Road is never stopped. Although traffic from Comberford Road is stopped when the crossing is called, the effect of blocking back is significantly reduced.

4.3.6 Salter’s Lane / Offdrive

Tables 9: Comparison of 2012 and 2015 networks – Salter’s Ln / Offdrive

Offdrive - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	86.1%	12.1	78.1%	9.0	81.2%	9.5
Offdrive	83.5%	12.2	77.8%	10.3	79.1%	10.3
Upper Gungate (S)	39.8%	3.7	47.2%	5.9	46.8%	4.2
Salter’s Ln	85.4%	7.9	74.2%	6.6	78.1%	6.9
PRC	4.6%		15.3%		10.8%	
Cycle Time	87		87		85	
File	Gungate Network 20 12.log3x				Gungate Network 20 15.log3x	

Offdrive - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	75.3%	8.9	70.0%	7.6	69.9%	7.0
Offdrive	74.1%	10.6	69.4%	10.4	71.2%	9.4
Upper Gungate (S)	49.5%	6.1	60.8%	8.8	60.8%	6.5
Salter’s Ln	72.8%	5.4	64.5%	4.8	68.1%	4.5
PRC	19.5%		28.7%		26.4%	
Cycle Time	92		92		81	
File	Gungate Network 20 12.log3x				Gungate Network 20 15.log3x	

Offdrive - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	70.4%	7.8	72.3%	8.1	71.5%	7.4
Offdrive	70.0%	11.8	73.7%	12.4	73.9%	11.0
Upper Gungate (S)	68.6%	10.5	71.3%	11.4	72.6%	9.3
Salter’s Ln	68.9%	5.0	71.6%	5.6	75.2%	5.3
PRC	18.2%		22.1%		19.7%	
Cycle Time	96		96		84	
File	Gungate Network 20 12.log3x				Gungate Network 20 15.log3x	

Offdrive - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	67.5%	7.1	68.6%	7.2	67.1%	7.2
Offdrive	69.1%	7.2	66.1%	6.7	67.8%	6.9
Upper Gungate (S)	39.3%	2.9	44.4%	4.5	39.4%	3.4
Salter’s Ln	62.1%	3.3	61.8%	3.6	63.5%	3.8
PRC	19.6%		31.2%		32.7%	
Cycle Time	75		75		77	
File	Gungate Network 20 12.log3x				Gungate Network 20 15.log3x	

4.3.7 The performance of this junction remains broadly similar in 2015. Although the PRC is a lower in Pre PM and PM peak periods, this is largely explained by the average cycle times being 11-12 seconds lower in 2015, hence the reported queues in 2015 being lower than those in 2012.

4.3.8 The performance during the AM peak period is worse in 2015. This is due to the changes to the pedestrian facilities. In 2012, there was a fixed intergreen of 11 seconds following pedestrian Phase J. However, to reduce the lost time to traffic from Stage 3 to Stage 1, a phase delay of 5 seconds was included for Phase F. Therefore, the lost time between traffic Phase F and Phases C and D was only 6 seconds (ignoring effective green), not the full 11 seconds. This is illustrated in **Figure 4**, where the green struts represent the intergreens.

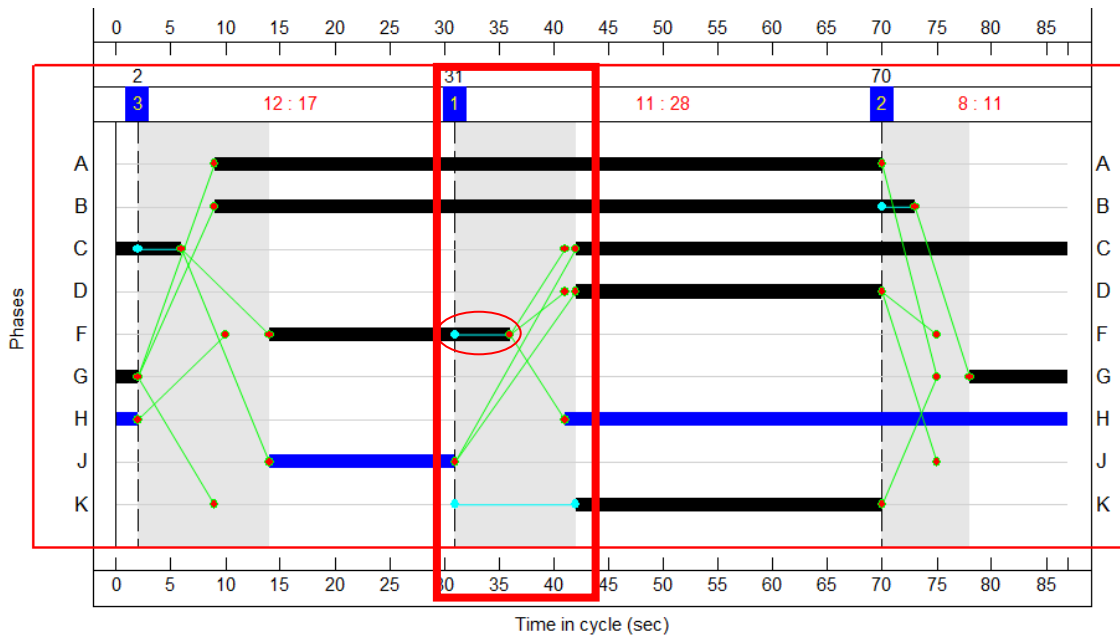


Figure 4: Offdrive Timings in 2012 network

4.3.9 In the 2015 network, the pedestrian facilities were updated, and now include pedestrian detection. This allows the use of variable intergreens following the pedestrian phases. The purpose of this is often to improve overall capacity to traffic, as the average intergreen following the pedestrian is expected to be much lower than the fixed 11 second intergreen that was used previously. However, the effect of this at this junction can be illustrated in **Figure 5**, which shows the timings from the AM peak period, in which the average intergreen following Phase J was measured as 9 seconds.

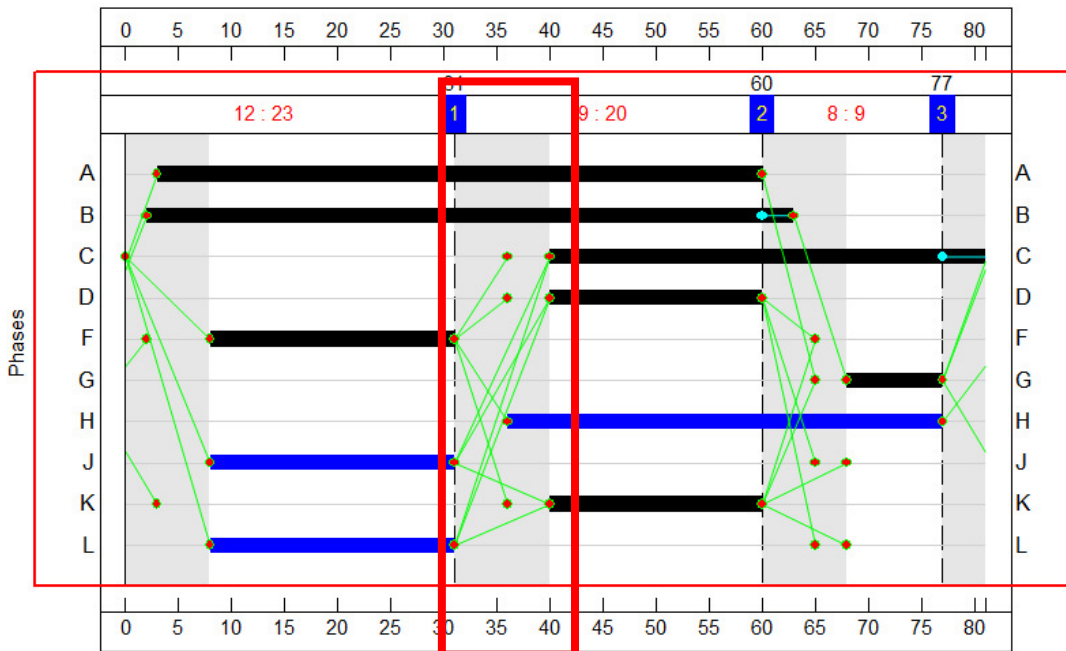


Figure 5: Offdrive Timings in 2015 network, AM Peak

4.3.10 The junction in 2015 no longer has a phase delay following Phase F from Stage 3-1. The reason for the removal of this was that when the minimum 5 second intergreen followed Phase J, Phases C, D and K could all start 5 seconds after both Phases F and J. However, as can be seen from Figure 5 which assumes an average intergreen of 9 seconds after Phase J, the lost time between traffic Phase F and traffic Phases C, D and K is now 9 seconds. This is 3 seconds more than the lost time that existed at the junction in 2012.

4.3.11 The reason that there was little change in the overall performance in the other peak periods was that the average intergreen following the pedestrian was less (Paragraph 4.1.8). However, if pedestrian demand increases, an increase to these average intergreens would reduce the performance of the junction for traffic.

4.3.12 Upper Gungate / Hospital St

Tables 10: Comparison of 2012 and 2015 networks – Hospital St / Aldergate

Hospital St - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	59.0%	6.8	56.8%	5.9	61.7%	4.6
Lower Gungate	56.1%	3.0	38.5%	2.4	38.0%	1.8
Aldergate	46.2%	4.4	47.6%	4.2	50.2%	3.5
Hospital St	60.4%	3.4	56.4%	3.9	55.6%	3.0
PRC	48.9%		58.5%		45.8%	
Cycle Time	73		73		54	
File	Gungate Network 2012.log3x				Gungate Network 2015.log3x	

Hospital St - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	46.4%	6.7	43.9%	6.2	44.7%	4.7
Lower Gungate	30.9%	2.8	41.7%	3.8	42.1%	3.0
Aldergate	55.7%	8.4	54.6%	7.6	54.2%	5.4
Hospital St	53.6%	5.6	54.0%	5.9	54.6%	4.6
PRC	61.5%		64.9%		64.9%	
Cycle Time	96		96		74	
File	Gungate Network 2012.log3x				Gungate Network 2015.log3x	

Hospital St - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	40.4%	4.4	33.4%	3.5	32.4%	3.1
Lower Gungate	29.8%	1.9	37.3%	1.5	39.4%	2.4
Aldergate	58.4%	7.5	56.2%	7.0	54.3%	5.9
Hospital St	55.9%	6.0	55.8%	4.9	55.1%	4.5
PRC	54.2%		60.2%		63.4%	
Cycle Time	80		80		74	
File	Gungate Network 2012.log3x				Gungate Network 2015.log3x	

Hospital St - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	49.9%	3.8	48.2%	3.4	45.3%	4.5
Lower Gungate	51.0%	3.6	59.4%	4.6	53.9%	4.0
Aldergate	49.2%	3.9	61.0%	6.2	57.0%	4.9
Hospital St	39.4%	3.0	39.3%	3.2	35.6%	2.8
PRC	76.5%		47.6%		58.0%	
Cycle Time	75		75		68	
File	Gungate Network 2012.log3x				Gungate Network 2015.log3x	

4.3.13 The performance of the junction with Hospital Street is improved in 2015 due to the installation of variable intergreens after the pedestrian phases (which run in a pedestrian only stage). In 2012, the lost time to traffic following the pedestrian phase was 12 seconds due to fixed intergreens. In 2015, the lost time in any cycle could be much less than 12 seconds, with the model assuming an average of 7 seconds.

4.3.14 The results show a lower PRC during the AM peak period in 2015, although it should be noted that it runs a much lower cycle time. Although the model assumes the pedestrian stage is called every cycle in this scenario, the cycle time in the model is that which was measured on site, which did not run the pedestrian stage (Paragraph 4.1.10). Had the pedestrian stage been in operation during the site survey, the average cycle time is likely to have been higher than 54 seconds. However, given the model predicted significant spare capacity at 54 seconds even when the pedestrian stage is called, the cycle time was unchanged in the 2015 scenario.

4.3.15 Lichfield St / Church St

Tables 11: Comparison of 2012 and 2015 networks – Lichfield St / Aldergate

Lichfield St - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	65.4%	8.2	62.4%	6.4	25.4%	2.9
Church St	58.6%	4.4	61.9%	5.6	50.0%	2.6
Silver St	40.7%	1.9	36.8%	1.7	16.7%	0.7
Lichfield St	64.6%	10.9	61.5%	11.3	49.6%	6.6
PRC	37.7%		44.3%		80.0%	
Cycle Time	87		87		79	
File	Gungahpe Network 2012.lsg3x				Gungahpe Network 2015.lsg3x	

Lichfield St - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	74.3%	10.0	76.8%	11.0	39.3%	4.8
Church St	72.5%	5.0	75.2%	5.5	57.5%	3.4
Silver St	57.7%	2.9	55.8%	2.8	40.6%	1.8
Lichfield St	74.1%	13.2	76.8%	13.5	57.1%	7.7
PRC	21.2%		17.1%		56.6%	
Cycle Time	110		110		80	
File	Gungahpe Network 2012.lsg3x				Gungahpe Network 2015.lsg3x	

Lichfield St - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	76.0%	9.3	75.6%	9.5	29.5%	3.4
Church St	76.0%	6.1	76.9%	6.2	61.0%	3.6
Silver St	73.5%	4.7	73.3%	5.5	36.4%	1.6
Lichfield St	76.1%	16.5	77.1%	16.1	59.8%	8.6
PRC	18.2%		16.7%		47.6%	
Cycle Time	121		121		80	
File	Gungahpe Network 2012.lsg3x				Gungahpe Network 2015.lsg3x	

Lichfield St - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	75.2%	10.4	89.8%	13.7	45.7%	5.8
Church St	73.9%	4.4	85.1%	6.3	65.1%	3.7
Silver St	68.1%	3.6	85.5%	6.4	65.4%	3.7
Lichfield St	75.2%	10.9	90.1%	19.3	69.7%	9.8
PRC	19.6%		-0.1%		29.1%	
Cycle Time	100		100		81	
File	Gungahpe Network 2012.lsg3x				Gungahpe Network 2015.lsg3x	

4.3.16 The results show that the junction in 2015 not only operates with significantly better PRCs in all scenarios than 2012, but it also can do so at significantly lower cycle times. This is possible because the heaviest movements from both Aldergate and Lichfield St now run together in the same stage, rather than competing for green within the cycle.

4.3.17 Network Delays

Table 12: Network Delays (seconds per pcu)

Delay	AM	Pre PM	PM	Saturday
2012	69.7	62.9	66.6	66.9
2015	54.9	50.9	52.7	50.3

4.3.18 Although significant fluctuation will exist in traffic delays over time, LinSig will calculate the delay to traffic resulting from red phases at traffic signals as well as delay resulting from being opposed by other traffic movements. Table 10 shows a comparison for the average delay per pcu between the 2012 and 2015 network models. Both assume the 2015 traffic flows. The network in 2015 reduces the average delay per pcu from 12 to 16.6 seconds across all scenarios.

5.0 Impact Testing

5.1 Assumptions

5.1.1 The impact of the developments on the network were evaluated for the year 2029. The Committed development consisted of 700 houses. The Proposed development consisted of 1000 houses, located north of the network.

5.1.2 To provide a fair comparison between scenarios, consistent cycle times were used for each junction. Higher cycle times generally provide higher capacity. Therefore, the maximum cycle times recorded on site for each junction were used in the analysis. To ensure that lower cycle times did not produce significantly better capacity, Cycle Time Optimisation runs were conducted on individual LinSig models of each junction.

5.1.3 A results summary for all junctions is contained in **Appendix E**.

5.2 Fountains Junction

Tables 13: Impact Testing – Fountains Junction

Ashby Rd (North) - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	64.9%	6.6	60.7%	8.5	59.7%	8.7	80.9%	15.7	102.2%	48.7
Upper Gungate	48.9%	3.0	52.9%	4.2	53.8%	6.6	60.1%	7.3	59.4%	7.3
Comberford Rd	64.0%	5.7	58.9%	7.3	74.0%	9.7	79.6%	10.6	98.2%	18.7
Upper Gungate SB	52.5%	4.5	49.1%	6.2	54.1%	7.8	67.7%	8.2	85.6%	10.6
Upper Gungate NB	41.4%	3.3	38.7%	3.2	42.7%	3.8	46.7%	4.4	48.2%	4.5
PRC	38.7%		48.4%		21.7%		11.2%		-13.5%	
Cycle Time	56		78		78		78		78	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - PrePM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	44.3%	2.8	34.5%	3.7	39.2%	4.5	44.9%	5.7	53.2%	7.8
Upper Gungate	63.1%	3.7	65.6%	5.9	73.8%	7.2	85.1%	15.7	99.2%	40.0
Comberford Rd	63.4%	4.7	66.6%	8.3	71.4%	9.6	82.2%	11.4	96.9%	17.9
Upper Gungate SB	38.2%	1.0	36.2%	2.9	40.1%	3.9	45.2%	1.0	52.5%	5.0
Upper Gungate NB	50.0%	2.4	47.3%	2.4	52.3%	2.9	60.4%	4.2	71.9%	6.8
PRC	42.0%		35.1%		22.0%		5.8%		-10.2%	
Cycle Time	44		78		78		78		78	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	46.1%	3.1	36.0%	4.0	39.9%	4.7	46.7%	6.2	56.3%	8.5
Upper Gungate	73.7%	5.2	76.6%	8.3	85.0%	13.5	101.5%	52.3	121.5%	235.2
Comberford Rd	72.2%	5.7	75.7%	10.1	83.9%	12.3	98.6%	20.4	119.4%	59.2
Upper Gungate SB	39.9%	0.7	38.6%	2.9	42.9%	4.3	48.7%	4.9	52.9%	2.8
Upper Gungate NB	58.1%	2.5	56.3%	2.4	62.6%	3.1	73.9%	5.3	90.0%	14.2
PRC	22.2%		17.5%		5.9%		-12.8%		-35.3%	
Cycle Time	44		78		78		78		78	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	52.5%	4.0	42.9%	5.2	48.1%	6.1	57.1%	8.2	71.7%	12.2
Upper Gungate	52.1%	3.3	55.8%	4.4	62.2%	5.1	66.4%	6.0	73.9%	8.7
Comberford Rd	55.4%	4.9	55.3%	7.3	61.8%	8.6	67.7%	9.4	72.2%	10.1
Upper Gungate SB	39.4%	0.7	38.5%	1.4	43.1%	2.6	49.0%	3.1	57.4%	3.6
Upper Gungate NB	37.8%	1.1	37.0%	1.1	41.2%	1.2	44.1%	1.6	48.4%	1.7
PRC	62.6%		61.2%		44.6%		33.0%		21.8%	
Cycle Time	51		78		78		78		78	
File	Gungate Network 2015.lsg3x									

- 5.2.1 The results show that the committed development will result in the junction becoming overloaded during the PM peak period, with a PRC of -12.8%.
- 5.2.2 The junction is overloaded in all scenarios except for Saturday once the proposed development traffic is added in 2029, with the worst congestion shown in the PM peak, predicting a PRC of -35.3%.
- 5.2.3 During the PM peak period with the proposed development, the northbound volume of traffic crossing the stopline at the pedestrian crossing, in a single lane, is 1700 pcus (303 pcus higher than the PM 2029 + Committed scenario). This volume of traffic could result in delays, even during free flow conditions. Increased demand of the pedestrian crossing would also reduce capacity further.

5.3 Offdrive / Salter's Lane

Tables 14: Impact Testing – Offdrive / Salter's Ln

Offdrive - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	81.2%	9.5	80.1%	10.7	87.8%	15.7	101.1%	44.8	118.6%	167.0
Offdrive	79.1%	10.3	80.6%	12.2	88.3%	14.8	99.9%	22.9	116.4%	53.1
Upper Gungate (S)	46.8%	4.2	42.4%	5.1	45.5%	5.4	44.6%	5.7	43.3%	4.6
Salter's Ln	78.1%	6.9	76.1%	7.7	83.7%	9.2	95.7%	12.7	111.6%	24.8
PRC	10.8%		11.7%		1.9%		-12.3%		-31.7%	
Cycle Time	85		102		102		102		102	
File	Gungate Network 2015.lag3x									

Offdrive - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	69.9%	7.0	70.5%	8.1	77.9%	9.6	84.8%	13.3	95.2%	25.1
Offdrive	71.2%	9.4	70.2%	11.4	76.6%	13.7	83.9%	16.2	94.5%	22.1
Upper Gungate (S)	60.8%	6.5	54.5%	7.8	59.6%	8.6	63.5%	9.2	71.8%	12.1
Salter's Ln	68.1%	4.5	66.0%	5.3	73.3%	6.2	79.4%	6.7	86.7%	7.7
PRC	26.4%		27.6%		15.5%		6.1%		-5.8%	
Cycle Time	81		102		102		102		102	
File	Gungate Network 2015.lag3x									

Offdrive - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	71.5%	7.4	72.6%	8.4	80.5%	10.0	89.1%	16.6	97.0%	26.6
Offdrive	73.9%	11.0	73.9%	13.0	81.6%	15.5	90.7%	20.5	99.4%	31.0
Upper Gungate (S)	72.6%	9.3	66.5%	10.5	72.9%	12.4	81.0%	15.4	98.0%	28.3
Salter's Ln	75.2%	5.3	70.2%	5.8	78.0%	6.9	84.5%	7.6	92.1%	9.3
PRC	19.7%		21.8%		10.3%		-0.8%		-10.4%	
Cycle Time	84		102		102		102		102	
File	Gungate Network 2015.lag3x									

Offdrive - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	67.1%	7.2	65.5%	8.3	73.3%	10.7	79.5%	14.0	88.9%	21.0
Offdrive	67.8%	6.9	66.1%	8.7	72.6%	10.4	78.7%	11.6	87.2%	13.3
Upper Gungate (S)	39.4%	3.4	35.3%	4.0	40.3%	5.8	40.9%	5.9	41.9%	5.9
Salter's Ln	63.5%	3.8	63.1%	4.7	69.2%	5.3	75.5%	5.8	83.1%	6.5
PRC	32.7%		36.2%		22.8%		13.2%		1.3%	
Cycle Time	77		102		102		102		102	
File	Gungate Network 2015.lag3x									

- 5.3.1 The results show that the committed development will result in the junction becoming overloaded during the AM peak period, with a PRC of -12.3% and marginally over-capacity during the PM peak period with a PRC of -0.8%.
- 5.3.2 The junction is overloaded in all scenarios except for Saturday once the proposed development traffic is added in 2029, with the worst congestion shown in the AM peak, predicting a PRC of -31.7%.

5.3 Upper Gungate / Hospital St

Tables 15: Impact Testing – Upper Gungate / Hospital St

Hospital St - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	61.7%	4.6	43.7%	5.6	47.9%	6.4	54.5%	8.3	57.4%	9.1
Lower Gungate	38.0%	1.8	30.0%	2.6	32.9%	2.9	36.8%	3.0	36.8%	3.0
Aldergate	50.2%	3.5	37.6%	4.1	41.2%	4.7	42.1%	5.0	45.7%	5.9
Hospital St	55.6%	3.0	43.9%	4.2	48.4%	4.7	54.4%	5.0	54.7%	5.0
PRC	45.8%		105.1%		86.1%		65.1%		56.8%	
Cycle Time	54		90		90		90		90	
File	Gungate Network 2015.lsg3x									

Hospital St - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	44.7%	4.7	40.2%	5.3	44.3%	6.1	47.2%	6.8	51.6%	7.9
Lower Gungate	42.1%	3.0	39.1%	3.5	43.5%	3.9	45.6%	4.0	48.0%	4.1
Aldergate	54.2%	5.4	50.1%	6.3	55.1%	7.4	60.0%	9.1	66.9%	11.5
Hospital St	54.6%	4.6	50.6%	5.4	56.2%	6.1	59.5%	6.3	63.5%	6.6
PRC	64.9%		77.9%		60.1%		50.1%		34.5%	
Cycle Time	74		90		90		90		90	
File	Gungate Network 2015.lsg3x									

Hospital St - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	32.4%	3.1	31.0%	3.6	34.3%	4.2	36.7%	4.7	39.5%	5.4
Lower Gungate	39.4%	2.4	30.6%	2.7	36.6%	3.0	57.0%	3.1	64.8%	3.2
Aldergate	54.3%	5.9	52.8%	7.2	58.2%	8.6	63.0%	10.4	71.6%	14.0
Hospital St	55.1%	4.5	50.2%	5.1	55.6%	5.8	62.6%	6.3	67.5%	6.6
PRC	63.4%		70.6%		54.7%		42.8%		25.7%	
Cycle Time	74		90		90		90		90	
File	Gungate Network 2015.lsg3x									

Hospital St - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	45.3%	4.5	39.3%	5.2	44.5%	6.1	47.4%	6.9	52.7%	8.3
Lower Gungate	53.9%	4.0	49.6%	4.9	55.5%	5.7	58.0%	5.8	60.8%	6.0
Aldergate	57.0%	4.9	51.7%	6.2	57.3%	7.5	58.4%	8.1	60.3%	8.8
Hospital St	35.6%	2.8	32.8%	3.5	36.5%	3.9	38.4%	4.0	40.4%	4.1
PRC	58.0%		74.0%		57.1%		54.2%		48.1%	
Cycle Time	68		90		90		90		90	
File	Gungate Network 2015.lsg3x									

5.3.1 The results show the junction should operate within capacity for all scenarios.

5.4 Lichfield St / Church St

Tables 16: Impact Testing – Lichfield St / Church St

Lichfield St - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	25.4%	2.9	21.9%	3.3	23.7%	3.6	31.7%	5.1	36.8%	6.2
Church St	50.0%	2.6	39.2%	3.2	45.3%	3.6	45.3%	3.6	48.6%	3.7
Silver St	16.7%	0.7	23.2%	1.0	24.1%	1.1	24.1%	1.1	24.1%	1.1
Lichfield St	49.6%	6.6	41.6%	7.5	45.4%	8.5	47.8%	9.1	50.5%	9.8
PRC	80.0%		116.2%		98.2%		88.3%		78.4%	
Cycle Time	79		110		110		110		110	
File	Gungate Network 2015.tlg3x									

Lichfield St - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	39.3%	4.8	34.4%	5.7	37.4%	6.3	39.7%	6.8	43.3%	7.7
Church St	57.5%	3.4	46.5%	4.1	51.4%	4.6	58.2%	4.9	62.4%	5.0
Silver St	40.6%	1.8	44.7%	2.5	54.5%	2.9	54.5%	2.9	61.3%	3.1
Lichfield St	57.1%	7.7	49.0%	9.0	53.6%	10.3	57.3%	11.5	63.0%	13.6
PRC	56.6%		83.7%		65.2%		54.6%		42.8%	
Cycle Time	80		110		110		110		110	
File	Gungate Network 2015.tlg3x									

Lichfield St - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	29.5%	3.4	25.5%	4.0	28.1%	4.5	31.2%	5.0	34.8%	5.7
Church St	61.0%	3.6	49.3%	4.3	54.0%	4.8	61.1%	5.1	70.6%	5.5
Silver St	36.4%	1.6	50.0%	2.4	55.4%	2.7	55.4%	2.7	55.4%	2.7
Lichfield St	59.8%	8.6	50.4%	9.7	56.0%	11.4	61.8%	13.4	70.3%	16.9
PRC	47.6%		78.5%		60.6%		45.7%		27.6%	
Cycle Time	80		110		110		110		110	
File	Gungate Network 2015.tlg3x									

Lichfield St - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	45.7%	5.8	40.2%	6.9	44.7%	7.9	47.6%	8.7	54.1%	10.3
Church St	65.1%	3.7	56.8%	4.4	63.3%	5.1	68.1%	5.3	68.1%	5.3
Silver St	65.4%	3.7	57.1%	4.4	63.3%	5.0	68.2%	5.3	68.2%	5.3
Lichfield St	69.7%	9.8	60.7%	11.5	67.6%	13.7	67.4%	14.1	70.6%	15.3
PRC	29.1%		48.4%		33.2%		32.0%		27.4%	
Cycle Time	81		110		110		110		110	
File	Gungate Network 2015.tlg3x									

5.4.1 The results show the junction should operate within capacity for all scenarios.

5.5 Other Issues

5.5.1 Once the proposed development traffic is included in the network, the model predicts that Croft Street will become over-capacity, with a degree of saturation of 122.7%, as shown in Table 17.

Table 17: Impact at Croft Street – PM Peak Period

Croft St - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	27.8%	0.2	27.7%	0.2	36.0%	0.3	53.9%	2.8	122.7%	19.4
Upper Gungate (S)	53.9%	15.6	53.9%	19.0	59.9%	22.0	70.6%	42.4	86.1%	53.7
PRC	66.9%		66.9%		50.3%		27.4%		-36.3%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.tlg3x									

5.5.2 Although the volume of traffic leaving Croft Street during the PM peak is relatively low, (79 pcus and 30 pcus turning left and right respectively), this is opposed by large movements on Upper Gungate. The southbound flow is 1059 pcus (plus an additional 21 pcus turning left into Croft Street), while the northbound flow is 1712 pcus (plus an additional 84 pcus turning right into Croft Street). This will make it difficult for traffic leaving Croft Street, particularly for right-turning traffic.

- 5.5.3 The model predicts relatively large queues on the northbound lanes at J4:2 across most scenarios. These represent the section of road which includes the right-turn bay into Croft Street. It should be noted that these are not a result of the right-turn blocking northbound traffic, but are in effect sliver queues, in which two lanes feed traffic into one lane at a combined saturation flow higher than the single lane can discharge. In reality, these queues are unlikely to materialise, particularly when Offdrive runs with lower cycle times. However, if the free flowing capacity is exceeded by the northbound traffic, then queuing will still occur.

6.0 Salter’s Lane / Offdrive Signal Improvements

6.1 Improvements

6.1.1 A number of phase delays could be adjusted to improve capacity at the junction of Salter’s Lane / Offdrive. **Figure 6** shows the differences between the current phase delays and the proposed improvements.

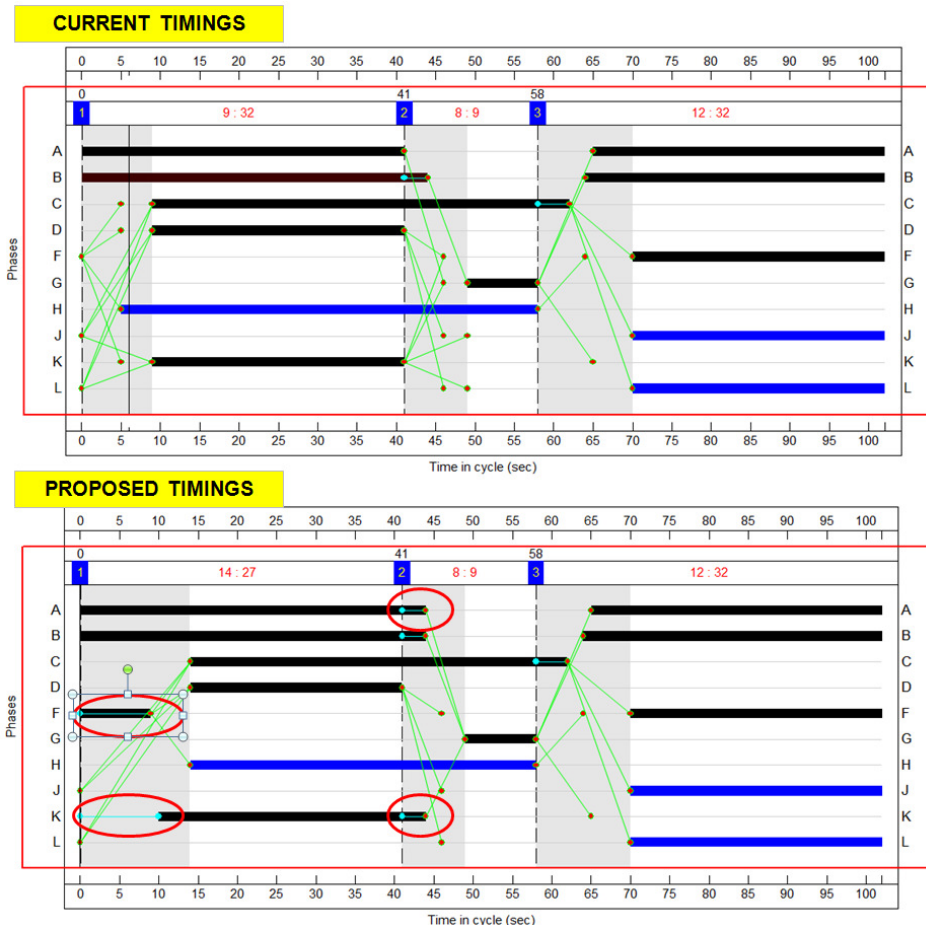


Figure 6: Proposed Signal Changes at Salter’s Lane / Offdrive

6.1.2 From Stage 3-1, a phase delay of 9 seconds was added to Phase F. This was so that when the intergreen following Phase J extended up to 14 seconds, no additional lost time would be incurred by traffic. In this case, there would be no benefit in utilising variable intergreens after Phase J. If a fixed intergreen less than 14 seconds was used after Phase J, the phase delay to Phase F should be adjusted accordingly.

6.1.3 If there was a desire to keep the variable intergreen after Phase J, a copy of Stage 3 could be added that does not include the Phase F phase delay when switching to Stage 1. This could be called outside the busy periods, where an intergreen extension is unlikely to have a significant impact on traffic capacity.

6.1.4 The intergreens from Phases J and L (crossing on Upper Gungate, south of Offdrive) to Phase K (southbound phase from Upper Gungate, north of Salter’s Lane) were removed, as these phases are not in conflict. A gaining phase delay to Phase K was added, so that it starts 4 seconds before Phase C, which controls southbound traffic at the stopline downstream (north of Offdrive). The Phase F (Offdrive) to Phase K intergreens were also removed.

6.1.5 Phase delays of 3 seconds were added to Phases A and K from Stages 1 to 2.

6.2 Results

6.2.1 The updated results at the junction are shown in **Table 18**. These were taken from the LinSig model *Gungate Network Improved.lsg3x*.

Table 18: Improved results at Offadrive

Offadrive - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	71.9%	7.9	72.3%	8.7	78.0%	10.5	90.6%	21.3	105.5%	87.2
Offadrive	69.8%	9.3	69.9%	10.9	79.3%	13.0	88.7%	15.8	106.4%	35.6
Upper Gungate (S)	48.5%	4.3	43.5%	5.2	45.5%	5.4	46.3%	7.0	42.4%	4.5
Salter's Ln	67.7%	6.1	71.7%	7.4	78.8%	8.6	89.3%	10.4	103.0%	17.4
PRC	25.2%		24.5%		13.5%		-0.6%		-18.2%	
Cycle Time	85		102		102		102		102	
File	<small>Gungate Network 2015 Improved.lsg3x</small>									

Offadrive - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	61.6%	6.1	63.6%	7.2	69.2%	8.1	76.7%	9.6	86.2%	17.1
Offadrive	61.4%	8.4	62.4%	10.6	70.1%	12.7	74.6%	14.3	84.0%	17.6
Upper Gungate (S)	63.1%	6.7	55.9%	8.0	59.6%	8.6	65.1%	9.6	73.6%	12.4
Salter's Ln	61.9%	4.2	61.3%	5.1	68.1%	5.9	73.3%	6.2	79.4%	6.7
PRC	42.6%		35.1%		22.0%		17.3%		4.4%	
Cycle Time	81		102		102		102		102	
File	<small>Gungate Network 2015 Improved.lsg3x</small>									

Offadrive - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	60.9%	6.1	64.4%	7.2	71.4%	8.5	80.5%	11.6	83.2%	14.0
Offadrive	69.0%	10.4	67.9%	12.2	75.0%	14.3	81.1%	17.3	93.9%	25.0
Upper Gungate (S)	70.0%	8.9	66.5%	10.5	72.9%	12.4	83.2%	15.9	93.6%	23.4
Salter's Ln	68.3%	4.9	65.2%	5.5	72.4%	6.4	78.0%	6.9	92.1%	9.3
PRC	28.5%		32.6%		20.0%		8.2%		-4.4%	
Cycle Time	84		102		102		102		102	
File	<small>Gungate Network 2015 Improved.lsg3x</small>									

Offadrive - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	58.7%	6.1	59.3%	7.4	65.3%	8.4	71.2%	10.0	79.9%	14.7
Offadrive	56.3%	6.1	57.3%	8.1	65.2%	9.7	70.4%	10.6	77.6%	12.1
Upper Gungate (S)	40.7%	3.5	36.1%	4.1	40.3%	5.8	40.9%	5.9	41.9%	5.9
Salter's Ln	57.1%	3.5	58.2%	4.5	63.9%	5.1	69.2%	5.3	75.5%	5.8
PRC	53.3%		51.9%		37.9%		26.5%		12.6%	
Cycle Time	77		102		102		102		102	
File	<small>Gungate Network 2015 Improved.lsg3x</small>									

6.2.2 The results show that the updated phase delays can improve an increase in the PRC from about 6 – 15% across all scenarios, as can be seen when comparing Table 15 with Table 12.

6.2.3 Despite the improvement to capacity, the junction is predicted to be marginally over-capacity during the AM peak period with committed development (PRC from -12.3% before updated timings to -0.6%), and over-capacity during the AM (PRC from -31.7% to -18.2%) and PM (PRC from -10.4% to -4.4%) peak periods with both committed and proposed developments.

7.0 LSTF Trip Reductions

7.1 Reductions

7.1.1 This section describes the impact of the Local Sustainable Transport Fund (LSTF). SCC provided the predicted trip reductions resulting from the LSTF. These are shown in **Table 19**, and were provided for the AM Peak.

Table 19: LSTF Trip Reductions – AM Peak

LSTF Trips	Origin Road	Exit Road
3.41	50% Comberford Road/ 50% Wigginton Road	Albert Road
1.36	50% Comberford Road/ 50% Wigginton Road	Croft Street
1.70	50% Comberford Road/ 50% Wigginton Road	Hospital Street
1.36	50% Comberford Road/ 50% Wigginton Road	Offadrive
0.34	50% Comberford Road/ 50% Wigginton Road	Silver Street
5.45	50% Comberford Road/ 50% Wigginton Road	Lichfield Street
4.09	Ashby Road	50% Hospital Street, 50% Lichfield Street
3.07	Ashby Road	Albert Road
2.73	Ashby Road	Croft Street
1.70	Ashby Road	Hospital Street
1.02	Ashby Road	Offadrive
0.68	Ashby Road	Silver Street
5.11	Ashby Road	Lichfield Street
2.38	Comberford Road	Albert Road
9.20	Comberford Road	Croft Street
3.07	Comberford Road	Hospital Street
3.07	Comberford Road	Offadrive
0.68	Wigginton Road	50% Hospital Street, 50% Lichfield Street
1.36	Wigginton Road	Albert Road
1.70	Wigginton Road	Croft Street
3.07	Wigginton Road	Hospital Street
1.02	Wigginton Road	Offadrive
0.34	Wigginton Road	Silver Street
7.84	Wigginton Road	Lichfield Street

65.75

7.1.2 JCT were informed that the trip reductions in Table 16 should be reversed during the PM peak period. No LSTF schemes are expected to have an impact during the Pre PM peak and Saturday peak periods.

7.1.3 The impact of LSTF schemes was tested in both the 2029+Committed and 2029+Committed+Proposed scenarios. This section shows the impact on the most critical junctions in the network.

7.2 Fountains Junction

Tables 20: Fountains Junction – LSTF Impact

Ashby Rd (North) - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	80.9%	15.7	76.9%	14.3	102.2%	48.7	96.0%	30.4
Upper Gungate	60.1%	7.3	59.0%	7.3	59.4%	7.3	58.8%	7.8
Comberford Rd	79.6%	10.6	74.2%	9.0	98.2%	18.7	96.9%	16.2
Upper Gungate SB	67.7%	8.2	63.7%	7.0	85.6%	10.6	83.0%	9.1
Upper Gungate NB	46.7%	4.4	46.7%	4.4	48.2%	4.5	49.4%	4.9
PRC	11.2%		17.0%		-13.5%		-7.7%	
Cycle Time	78		78		78		78	
File	Gungate Network 2015.lsg3x							

Ashby Rd (North) - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	46.7%	6.2	46.7%	6.2	56.3%	8.5	56.3%	8.5
Upper Gungate	101.5%	52.3	97.5%	33.7	121.5%	235.2	118.1%	209.7
Comberford Rd	98.6%	20.4	98.6%	20.4	119.4%	59.2	119.4%	59.2
Upper Gungate SB	48.7%	4.9	48.7%	4.9	52.9%	2.8	52.9%	3.3
Upper Gungate NB	73.9%	5.3	70.4%	4.5	90.0%	14.2	86.8%	10.9
PRC	-12.8%		-9.5%		-35.3%		-32.6%	
Cycle Time	78		78		78		78	
File	Gungate Network 2015.lsg3x							

7.2.1 The LSTF schemes improved the PRC during the AM peak period by 5.8%. The junction remains over-capacity with the proposed development, with a PRC of -7.7%.

7.2.2 The PRC improved by 2.7% to 3.3% during the PM peak period, although is still over-capacity for both scenarios in 2029.

7.3 Offdrive / Salter's Lane

Tables 21: Offdrive / Salter's Lane – LSTF Impact

Offdrive - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	101.1%	44.8	95.5%	26.1	118.6%	167.0	115.5%	147.1
Offdrive	99.9%	22.9	95.9%	19.2	116.4%	53.1	111.4%	44.0
Upper Gungate (S)	44.6%	5.7	46.0%	6.0	43.3%	4.6	45.3%	5.7
Salter's Ln	95.7%	12.7	95.7%	12.7	111.6%	24.8	111.6%	24.8
PRC	-12.3%		-6.6%		-31.7%		-28.3%	
Cycle Time	102		102		102		102	
File	Gungate Network 2015.lsg3x							

Offdrive - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	89.1%	16.6	89.1%	16.5	97.0%	26.6	98.3%	29.7
Offdrive	90.7%	20.5	90.2%	20.3	99.4%	31.0	98.7%	30.7
Upper Gungate (S)	81.0%	15.4	75.9%	13.6	98.0%	28.3	92.7%	21.6
Salter's Ln	84.5%	7.6	84.5%	7.6	92.1%	9.3	92.1%	9.3
PRC	-0.8%		-0.2%		-10.4%		-9.7%	
Cycle Time	102		102		102		102	
File	Gungate Network 2015.lsg3x							

7.3.1 The results in **Table 21** assume the junction operates according to the current controller specification. Despite the improvements from the LSTF schemes, PRC values are negative across all AM and PM scenarios in 2029.

7.3.2 The impact of the LSTF schemes were also tested on the junction with the proposed improvements, as discussed in Section 6. These are shown in **Tables 22**.

Tables 22: Offdrive / Salter's Lane (with improvements) – LSTF Impact

Offdrive - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	90.6%	21.3	86.9%	16.6	105.5%	87.2	102.8%	71.3
Offdrive	88.7%	15.8	85.7%	14.9	106.4%	35.6	102.1%	27.6
Upper Gungate (S)	46.3%	7.0	47.6%	6.6	42.4%	4.5	43.6%	4.9
Salter's Ln	89.3%	10.4	83.7%	9.2	103.0%	17.4	103.0%	17.4
PRC	-0.6%		3.5%		-18.2%		-14.5%	
Cycle Time	102		102		102		102	
File	Gungate Network 2015 Improved.lsg3x							

Offdrive - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	80.5%	11.6	80.5%	11.4	83.2%	14.0	85.8%	16.0
Offdrive	81.1%	17.3	80.8%	17.3	93.9%	25.0	90.9%	23.1
Upper Gungate (S)	83.2%	15.9	78.0%	14.0	93.6%	23.4	91.2%	20.9
Salter's Ln	78.0%	6.9	78.0%	6.9	92.1%	9.3	92.1%	9.3
PRC	8.2%		11.4%		-4.4%		-2.4%	
Cycle Time	102		102		102		102	
File	Gungate Network 2015 Improved.lsg3x							

7.3.3 The results show that the junction could operate within capacity with the committed development, once the improvements are made to the signals.

7.3.4 The junction continues to be over-capacity with the proposed development, with PRC values of -14.5% and -2.4% in the AM and PM peak periods respectively.

7.4 Upper Gungate / Hospital St

Tables 23: Upper Gungate / Hospital St – LSTF Impact

Hospital St - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	54.5%	8.3	52.4%	7.8	57.4%	9.1	56.0%	8.9
Lower Gungate	36.8%	3.0	34.7%	2.9	36.8%	3.0	36.8%	3.0
Aldergate	42.1%	5.0	43.0%	5.1	45.7%	5.9	45.7%	5.9
Hospital St	54.4%	5.0	51.3%	4.8	54.7%	5.0	54.7%	5.0
PRC	65.1%		71.8%		56.8%		60.3%	
Cycle Time	90		90		90		90	
File	Gungate Network 2015.tlg3x							

Hospital St - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	36.7%	4.7	36.7%	4.7	39.5%	5.4	39.1%	5.2
Lower Gungate	57.0%	3.1	44.4%	3.1	64.8%	3.2	58.4%	3.3
Aldergate	63.0%	10.4	60.9%	9.7	71.6%	14.0	68.3%	12.7
Hospital St	62.6%	6.3	59.3%	5.9	67.5%	6.6	68.0%	6.5
PRC	42.8%		47.7%		25.7%		31.7%	
Cycle Time	90		90		90		90	
File	Gungate Network 2015.tlg3x							

7.4.1 The junction continues to operate within capacity following the LSTF schemes.

7.5 Lichfield St / Church St

Tables 24: Lichfield St / Church St – LSTF Impact

Lichfield St - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	31.7%	5.1	29.6%	4.7	36.8%	6.2	36.2%	6.1
Church St	45.3%	3.6	45.3%	3.6	48.6%	3.7	48.6%	3.7
Silver St	24.1%	1.1	24.1%	1.1	24.1%	1.1	24.1%	1.1
Lichfield St	47.8%	9.1	47.8%	9.1	50.5%	9.8	50.5%	9.8
PRC	88.3%		88.3%		78.4%		78.4%	
Cycle Time	110		110		110		110	
File	Gungate Network 2015.tlg3x							

Lichfield St - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	31.2%	5.0	31.7%	5.1	34.8%	5.7	35.5%	5.8
Church St	61.1%	5.1	57.3%	4.9	70.6%	5.5	65.5%	5.3
Silver St	55.4%	2.7	54.0%	2.6	55.4%	2.7	54.0%	2.6
Lichfield St	61.8%	13.4	60.7%	13.0	70.3%	16.9	69.4%	16.4
PRC	45.7%		48.3%		27.6%		29.7%	
Cycle Time	110		110		110		110	
File	Gungate Network 2015.tlg3x							

7.5.1 The junction continues to operate within capacity following the LSTF schemes.

7.6 Upper Gungate / Croft St

Tables 25: Upper Gungate / Croft St – LSTF Impact

Croft St - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	53.9%	2.8	36.7%	0.3	122.7%	19.4	81.1%	4.3
Upper Gungate (S)	70.6%	42.4	68.1%	40.5	86.1%	53.7	83.6%	52.4
PRC	27.4%		32.1%		-36.3%		7.7%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.tlg3x							

7.6.1 The performance of this junction with the proposed development is significantly improved with the LSTF schemes. This is due to the reduction in traffic on Upper Gungate, along with reduced traffic exiting Croft Street.

8.0 Conclusions

- 8.1** The implementation of improvements to the network has increased its overall capacity. This has been shown by updating the 2015 LinSig network model to incorporate the improvements, testing with new surveyed traffic flows and testing the original 2012 LinSig network model with the new 2015 surveyed flows. The most significant increase in capacity is at the Lichfield St / Church St junction. At other junctions on the network the capacity is similar but is delivered with a combination of improved pedestrian facilities and or reduced cycle times. The reduced cycle times will be beneficial in terms of reducing delay.
- 8.2** Impact testing of the likely effect of committed development (700 houses) in the year 2029 predicts that the Hospital Street and Lichfield Street junctions will perform with a positive Practical Reserve Capacity (PRC) (i.e. will have spare capacity) in all scenarios.
- 8.3** Impact testing of the likely effect of committed development (700 houses) in the year 2029 predicts that the Fountains junctions will be over capacity in the PM Peak with a PRC of -12.8% (Cyc = 78) and that the Offadrive junction will be over capacity in the AM peak with a PRC of -12.3% (Cyc= 102). Offadrive is also predicted to have a marginally negative PRC (-0.8%) in the PM Peak.
- 8.4** Impact testing of the likely effect of committed development (700 houses) plus the proposed development (1000 houses) in the year 2029 predicts that the Hospital Street and Lichfield Street junctions will perform with a positive Practical Reserve Capacity (PRC) (i.e. will have spare capacity) in all scenarios.
- 8.5** Impact testing of the likely effect of committed development (700 houses) plus the proposed development (1000) houses in the year 2029 predicts that the Fountains Junction will be over capacity in the AM Peak with a negative PRC of -13.5% (Cyc = 78), will be over capacity in the PrePM Peak with a PRC of -10.2% (Cyc = 78) and will be over capacity in the PM Peak with a PRC of -35.3% (Cyc = 78).
The Offadrive / Salters Lane Junction is predicted to be over capacity in the AM Peak with a PRC of -31.7% (Cyc = 102), will be over capacity in the PrePM Peak with a PRC of -5.8% (Cyc = 102) and will be over capacity in the PM Peak with a PRC of -10.4% (Cyc = 102).
- 8.6** It may be possible to make further improvements to the signal timings at the Offadrive junction (these are subject to Staffordshire County Council review). If the improvements can be wholly integrated the modelling predicts that the junction can operate within capacity with the committed development in all but the AM Peak which predicts a very marginal negative PRC of - 0.6% (Cyc = 102). The improvements will also mitigate some of the effect of the committed plus proposed development but the junction will remain over capacity in the AM Peak with a PRC of -18.0% (Cyc = 102) and over capacity in the PM Peak with a PRC of - 4.4% (Cyc = 102).
- 8.7** Testing of the reduced flows predicted by the implementation of measures funded via the Local Sustainable Transport Fund (LSTF) predict that in 2029 with the committed development flows the Fountains junction will still be over capacity in the PM Peak with a PRC of - 9.5% (Cyc = 78).
- 8.8** Testing of the reduced flows predicted by the implementation of measures funded via the Local Sustainable Transport Fund (LSTF) predict that in 2029 with committed plus proposed development flows the Fountains junction will still be over capacity in the AM Peak with a PRC of -7.7% (Cyc = 78) and in the PM Peak with a PRC of -32.6% (Cyc = 78)
- 8.9** Testing of the reduced flows predicted by the implementation of measures funded via the Local Sustainable Transport Fund (LSTF) in combination with proposed improvements to the Offadrive junction (see 8.6) predict that in 2029 with the committed development flows the Offadrive junction will operate within capacity in 2029.

- 8.10** Testing of the reduced flows predicted by the implementation of measures funded via the Local Sustainable Transport Fund (LSTF) in combination with proposed improvements to the Offdrive junction (see 8.6) predict that in 2029 with the committed plus proposed development flows the Offdrive junction will not operate within capacity in 2029.
- 8.11** The extent to which the over capacity issues at the Fountains and Offdrive junctions in the 2029 scenarios are considered acceptable is a subject for consideration by other parties but it is clear that significant additional development beyond the already committed development will have an unacceptable impact on the performance of the local highway network. Because the modelling for capacity in 2029 with the committed development and taking mitigating action such as reduction of flows via LSTF and Offdrive junction improvements predict that key junctions will be at or over capacity, there was no scope for incremental sensitivity testing of any additional proposed flows.

APPENDIX A

Junction Turning Counts

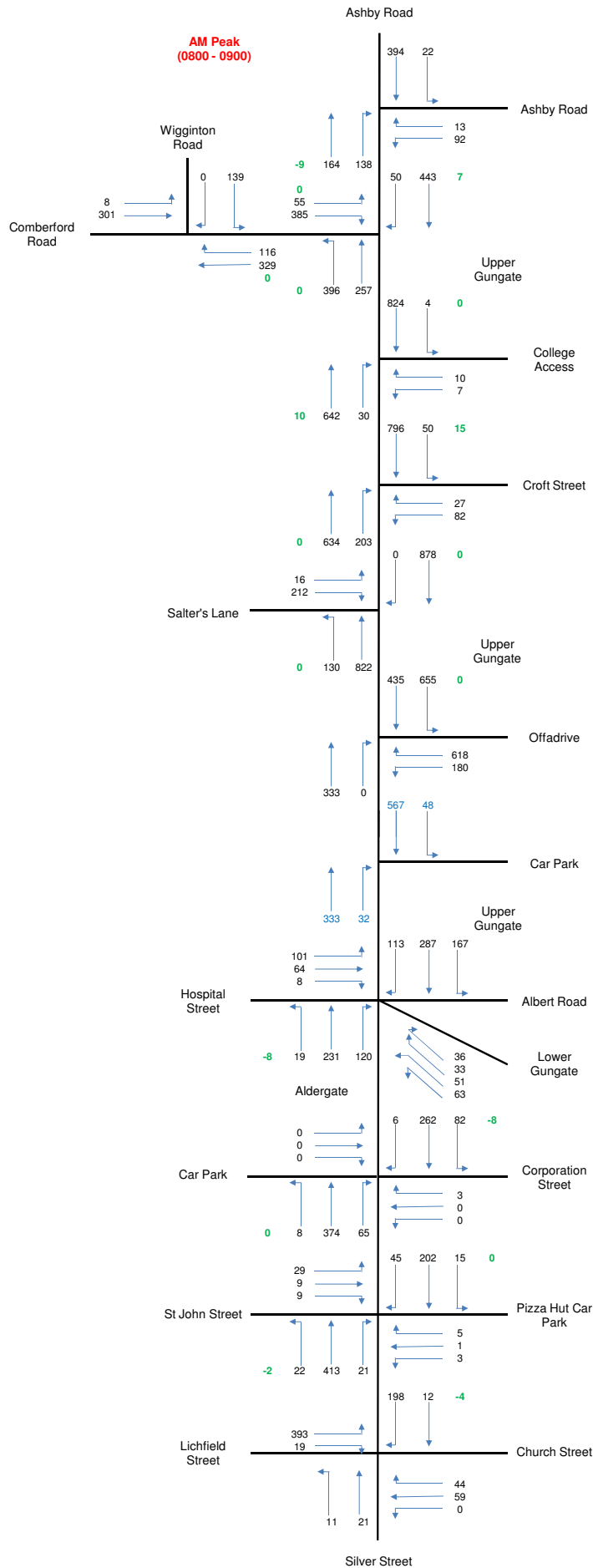


Figure A1
Traffic Counts (pcus)
AM Peak

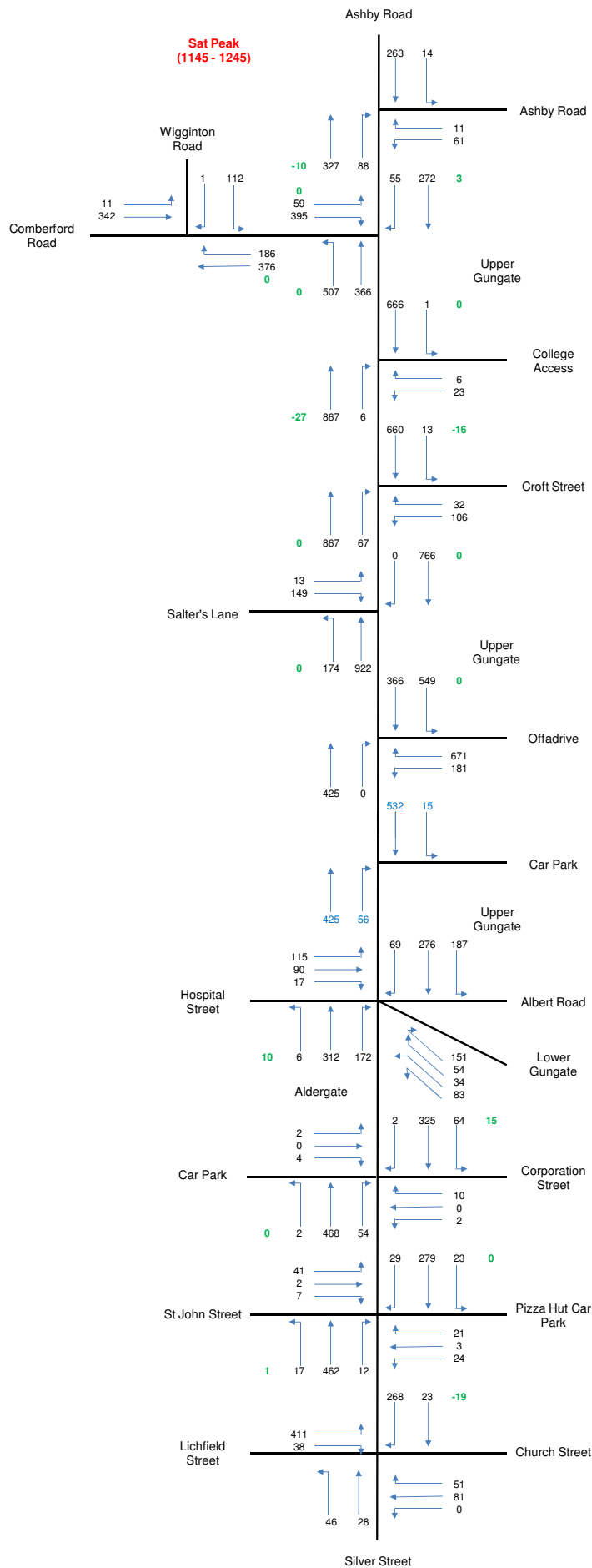


Figure A2
Traffic Counts (pcus)
Pre PM Peak

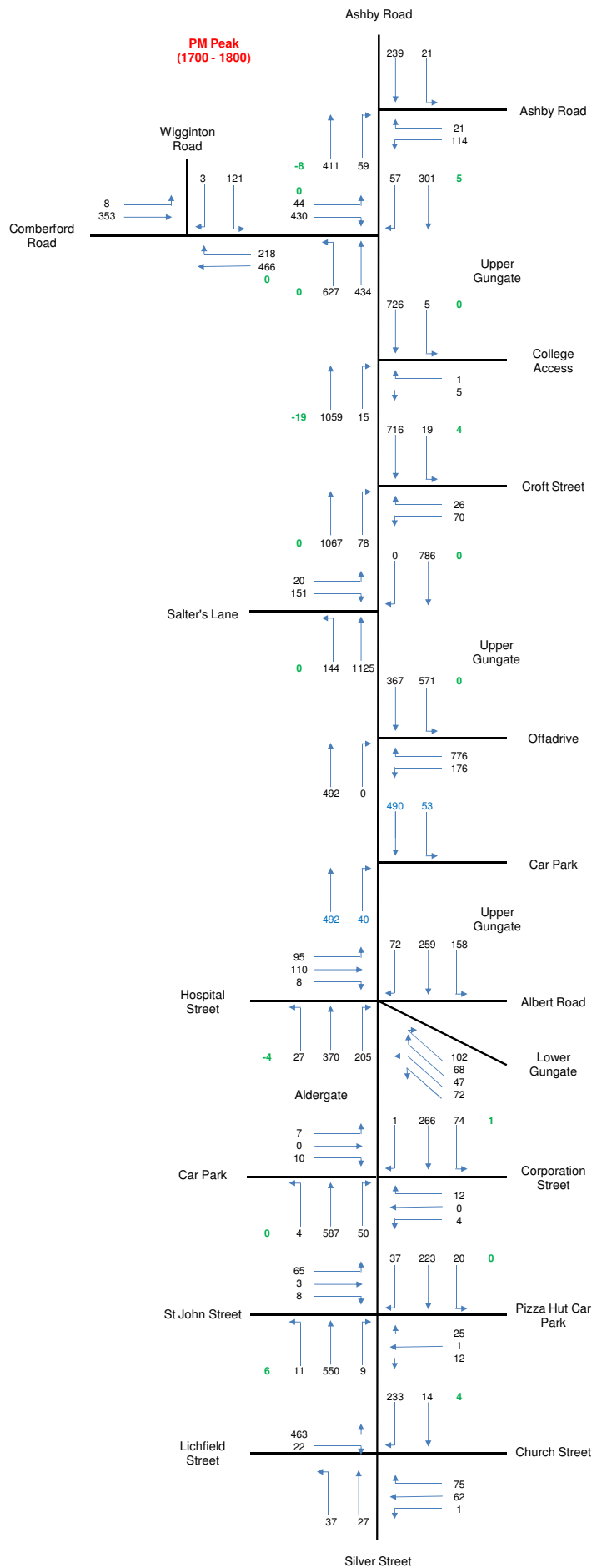


Figure A3
Traffic Counts (pcus)
PM Peak

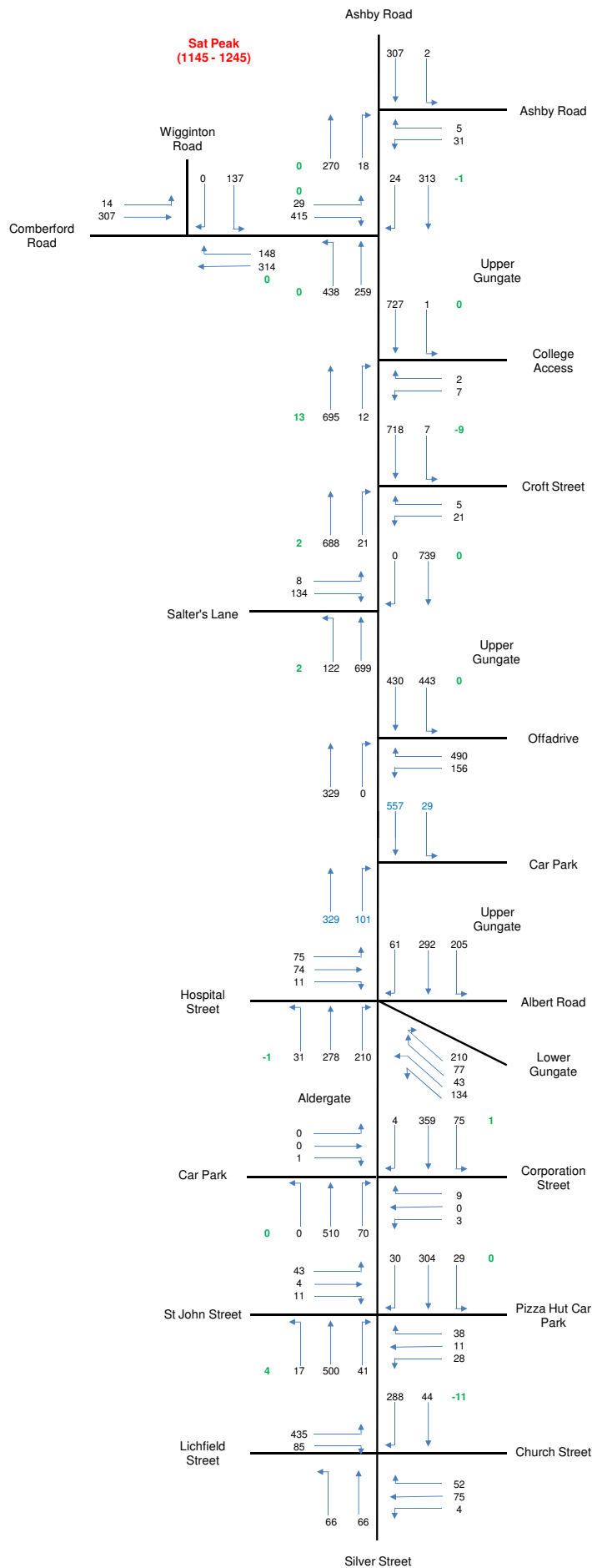


Figure A4
Traffic Counts (pcus)
Saturday Peak

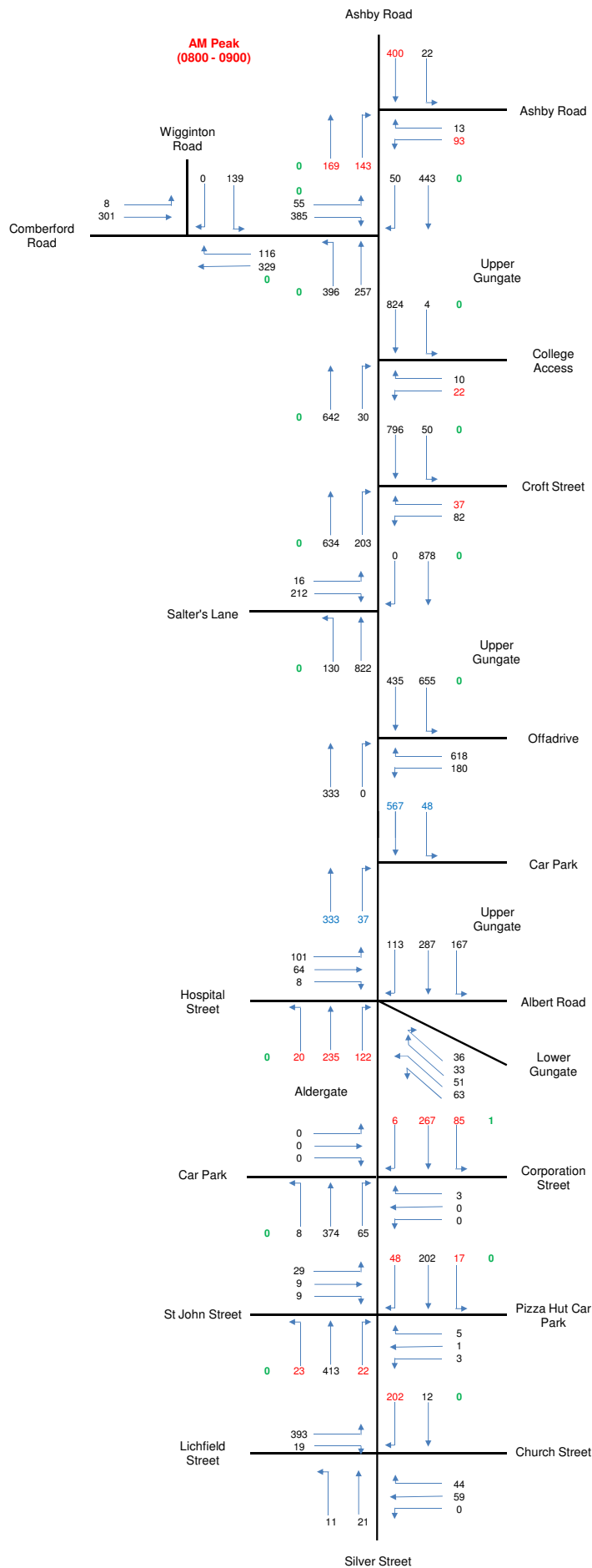


Figure A5
 Traffic Counts (pcus)
 AM Peak
 Balanced

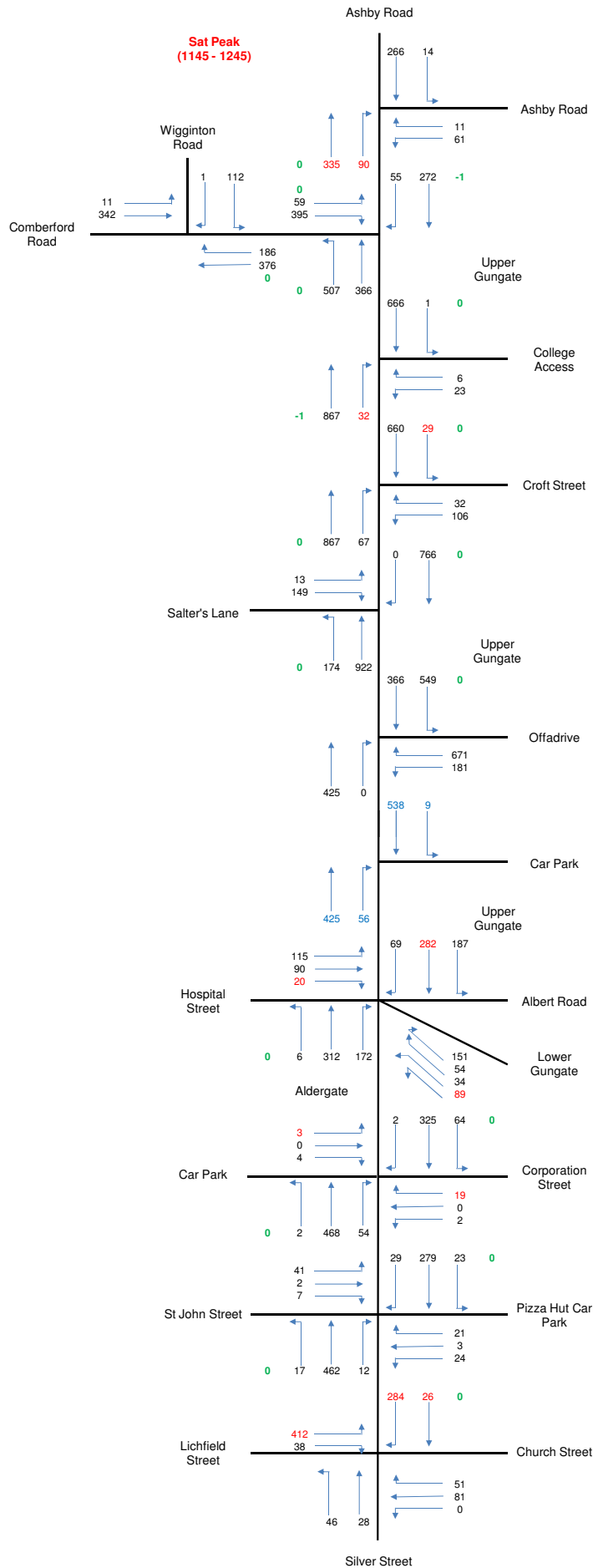


Figure A6
Traffic Counts (pcus)
Pre PM Peak
Balanced

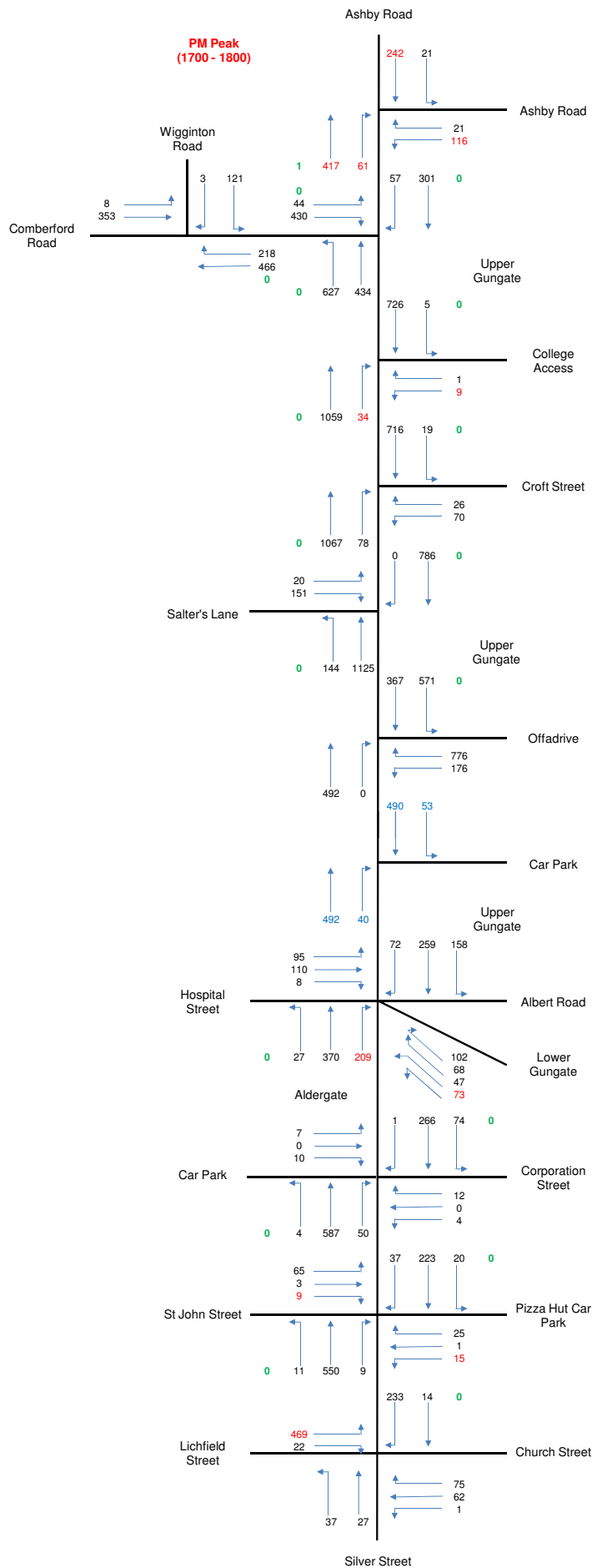


Figure A7
Traffic Counts (pcus)
PM Peak
Balanced

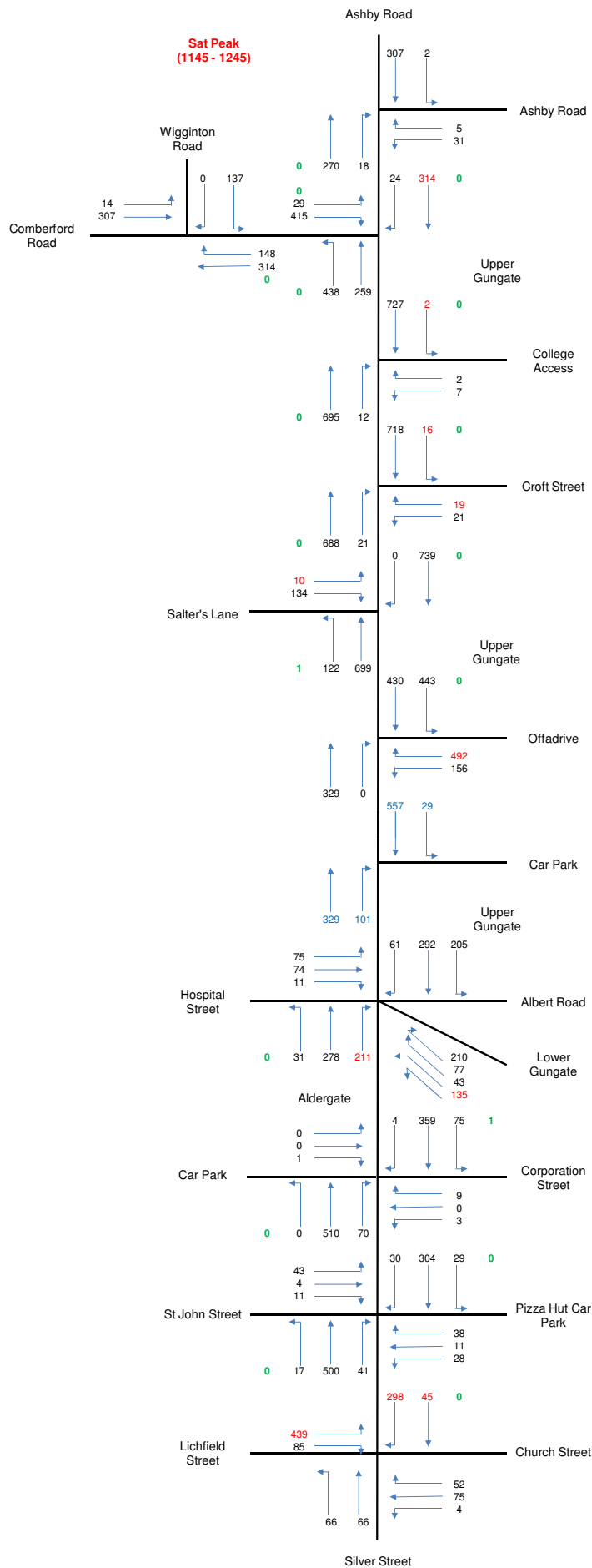


Figure A8
Traffic Counts (pcus)
Saturday Peak
Balanced

APPENDIX B

Development Distribution

2011 JTW Distribution - Arkall Farm, Tamworth

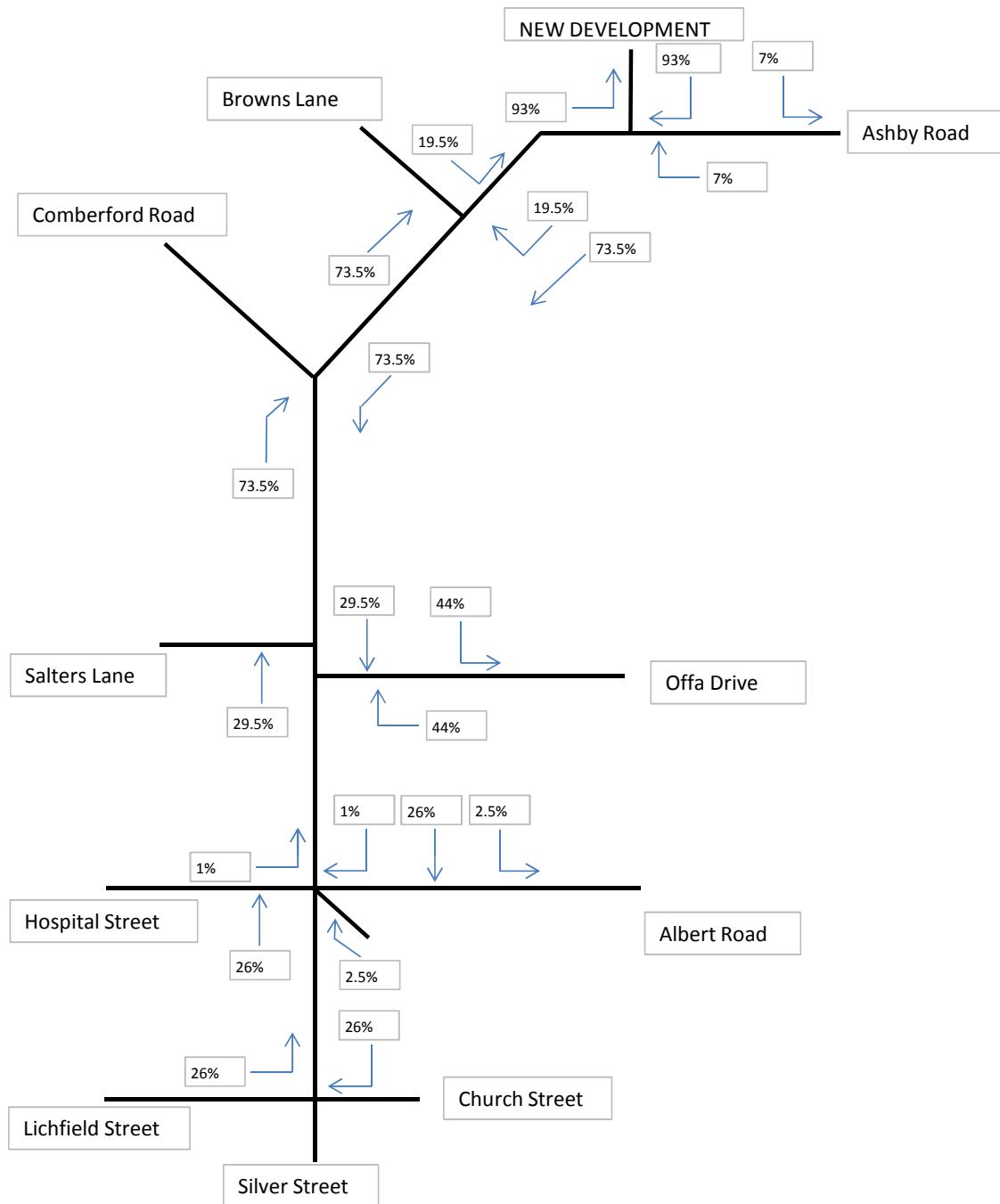


Figure B1
Development Distribution

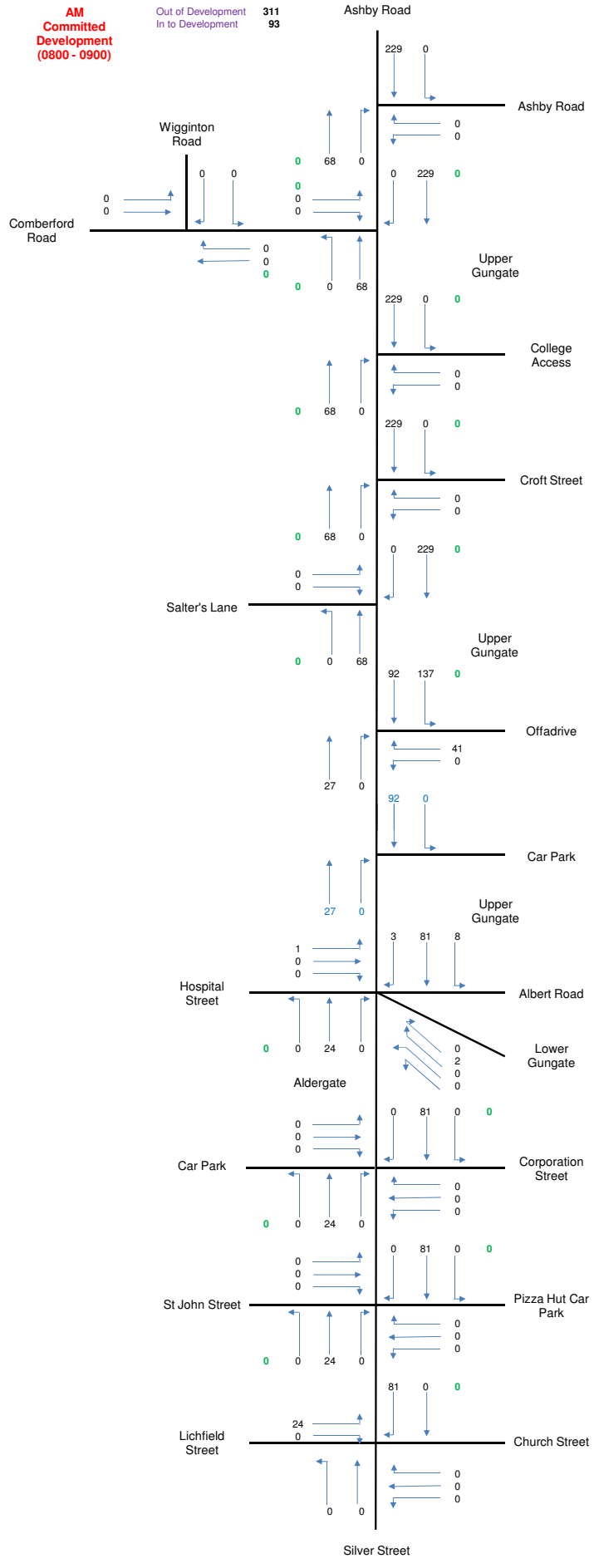


Figure B2
Committed Development
AM Peak

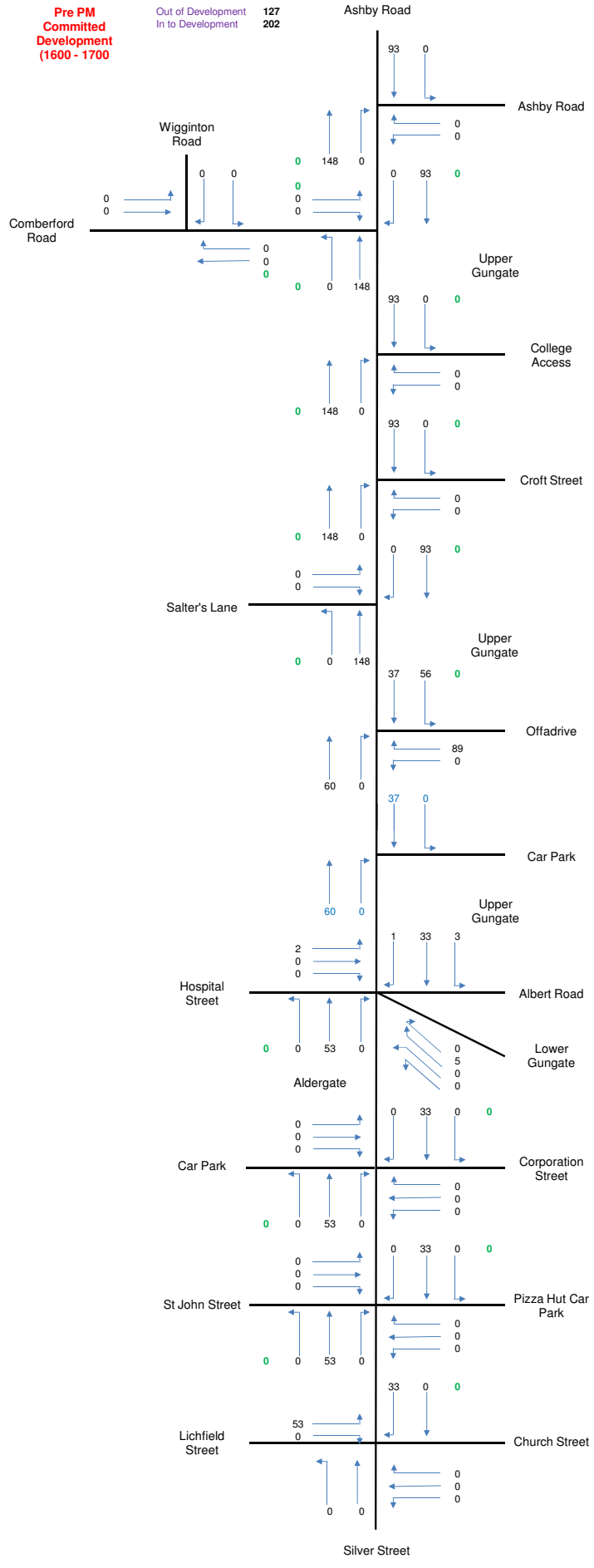


Figure B3
Committed Development
Pre PM Peak

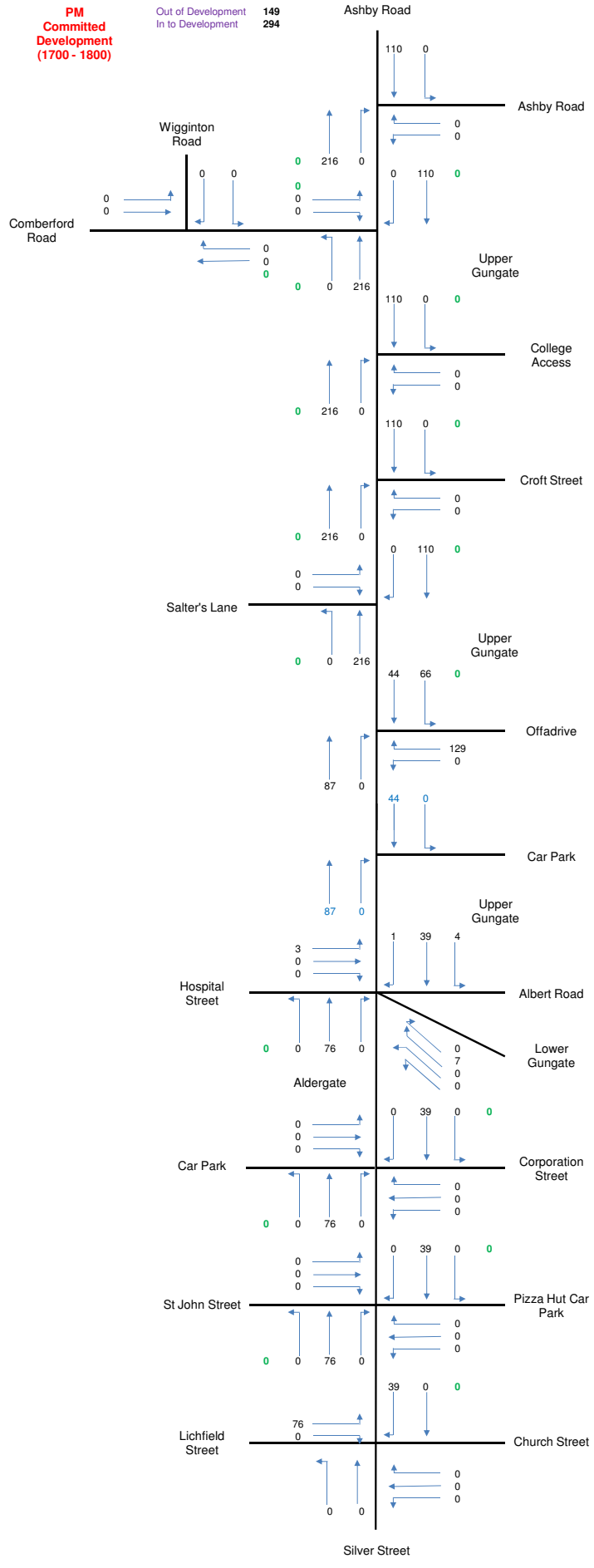


Figure B4
Committed Development
PM Peak

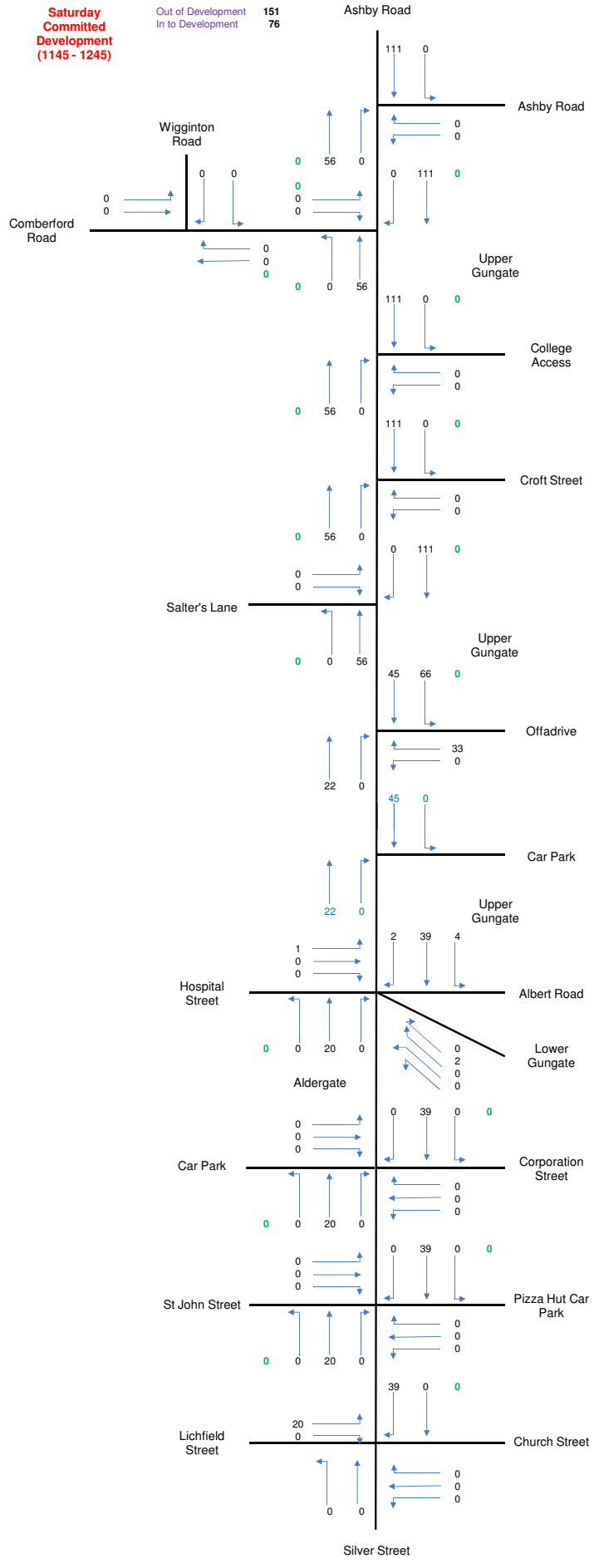


Figure B5
Committed Development
Saturday Peak

AM
Proposed Development
(0800 - 0900)

Out of Development 444
In to Development 133

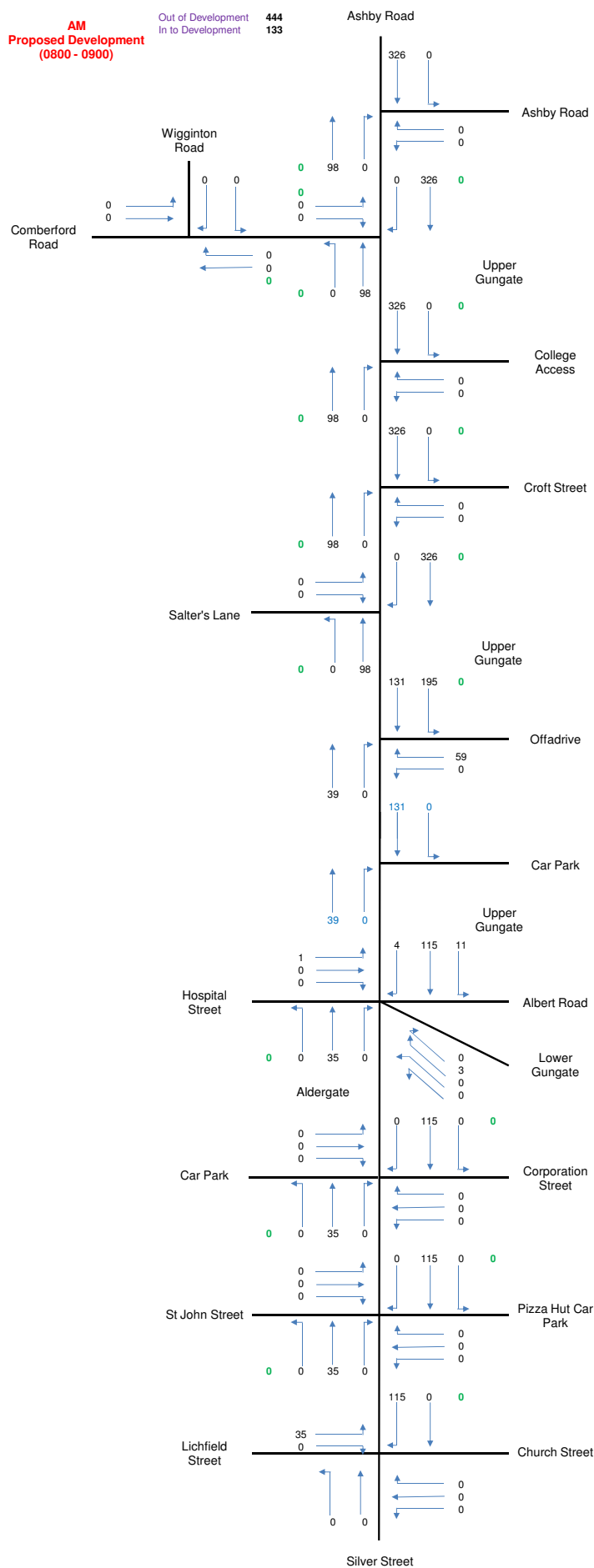


Figure B6
Proposed
Development
AM Peak

Pre PM
Proposed Development
(1600 - 1700)

Out of Development 181
In to Development 288

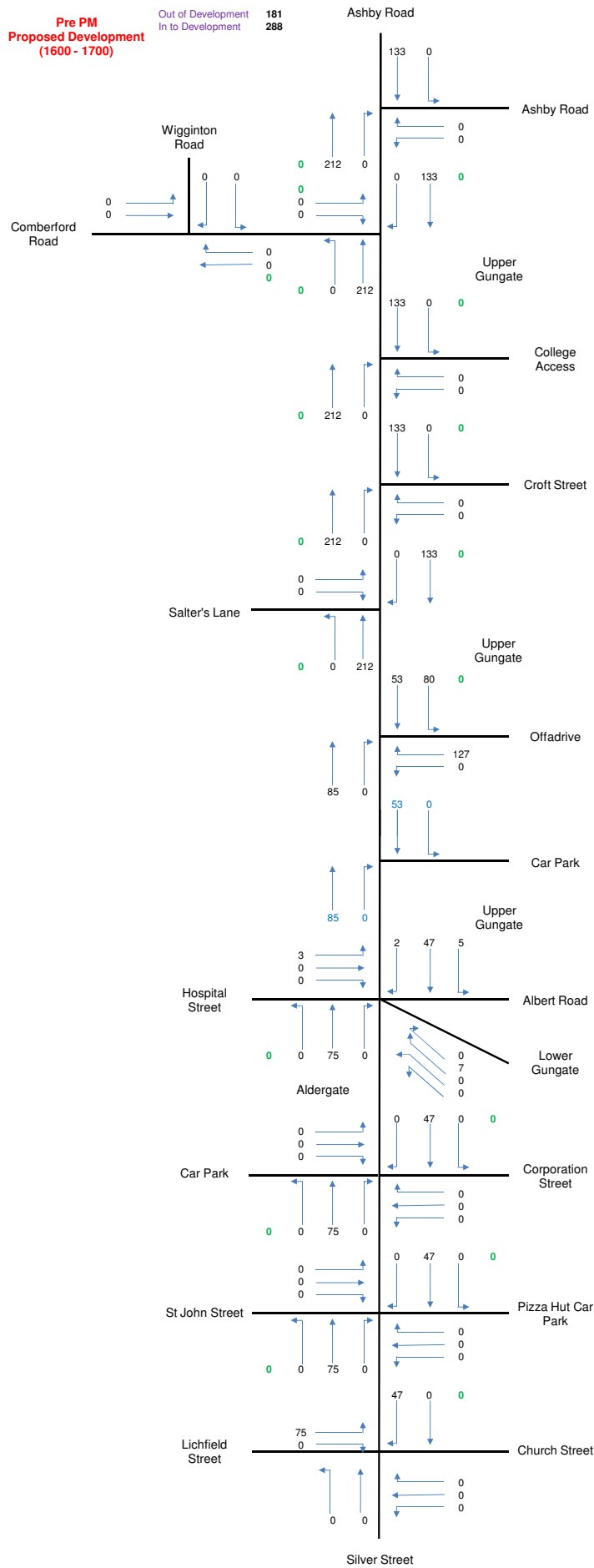


Figure B7
Proposed
Development
Pre PM Peak

PM
Proposed Development
(1700 - 1800)

Out of Development 213
In to Development 420

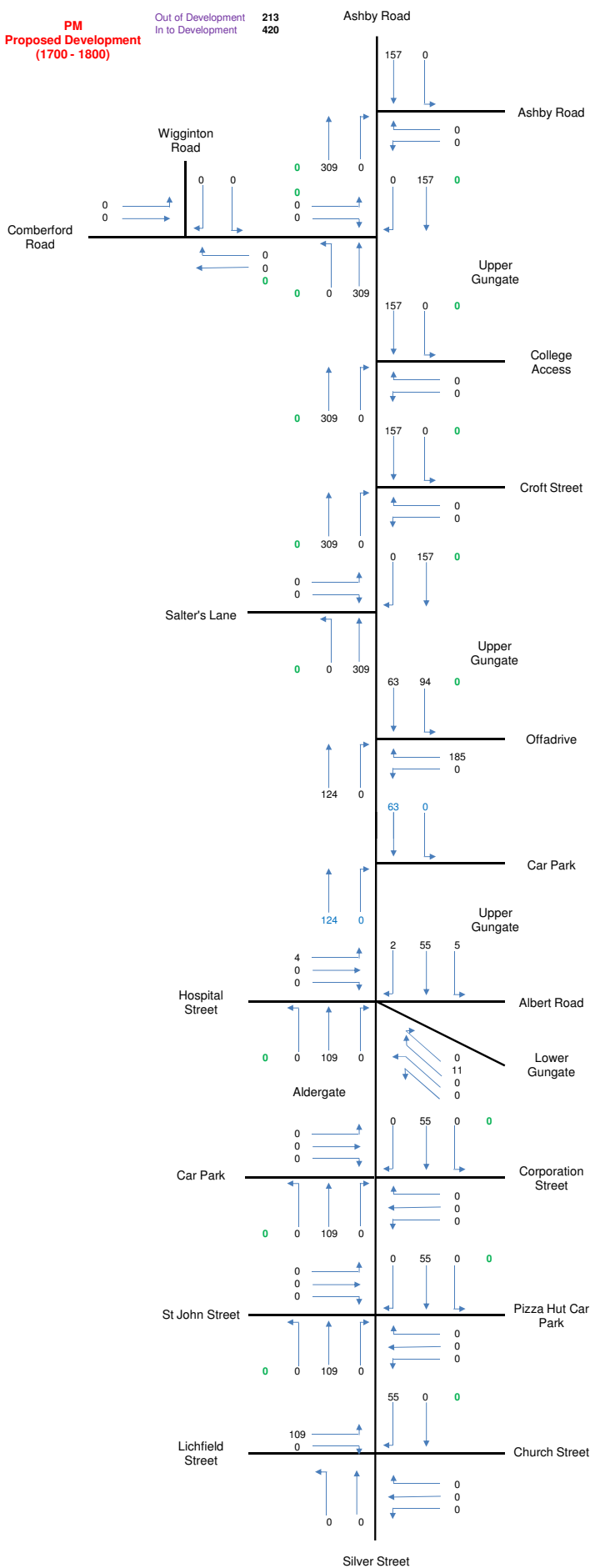


Figure B8
Proposed
Development
PM Peak

Saturday
Proposed Development
(1145 - 1245)

Out of Development 216
 In to Development 108

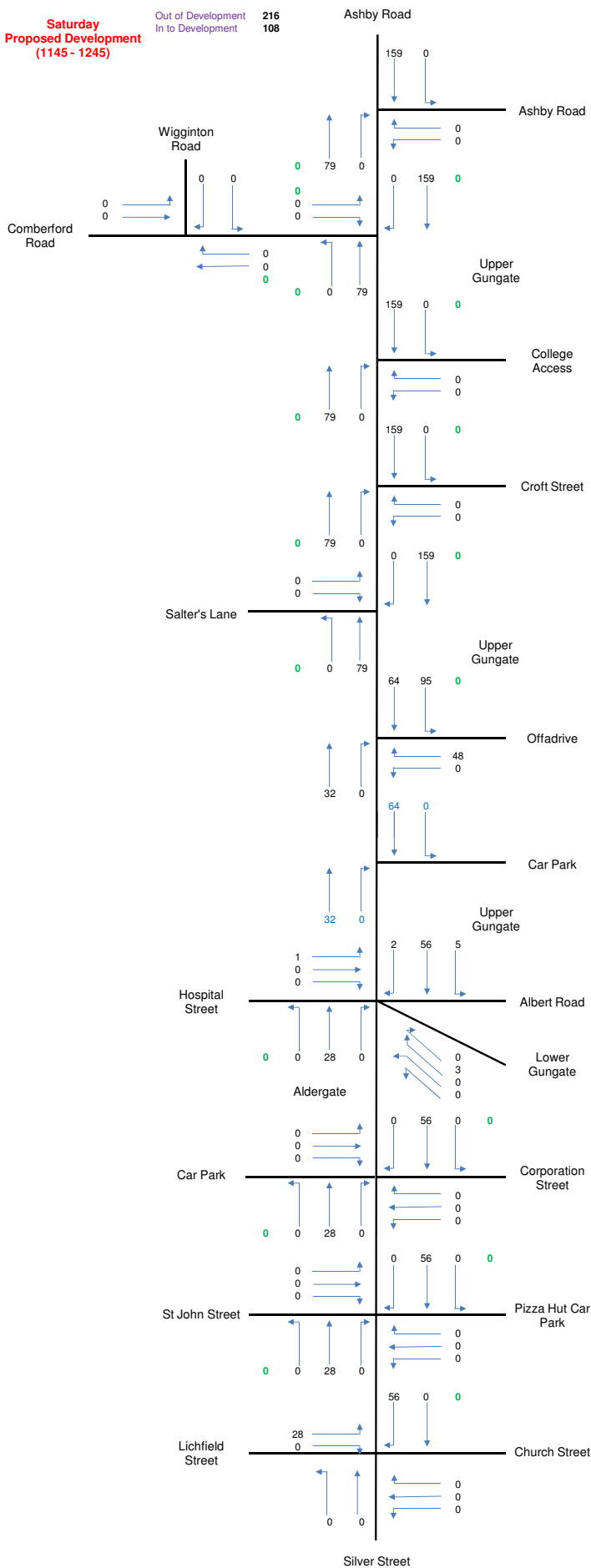


Figure B9
Proposed
Development
Saturday Peak

APPENDIX C

Site Measurements

Junction 3 Comberford Rd / Ashby Rd
 Cycle Time - Junction
 Measured from the start of northbound red

	21/04/2015 AM Peak				21/04/2015 Pre PM Peak				21/04/2015 PM Peak				25/04/2015 Sat Peak			
	Time	Duration	Ped	l'green	Time	Duration	Ped	l'green	Time	Duration	Ped	l'green	Time	Duration	Ped	l'green
1	08:00:19		0		16:00:18		0		17:00:35		0		11:45:29		0	
2	08:01:01	00:00:42	1	5	16:00:55	00:00:37	0		17:01:12	00:00:37	0		11:46:15	00:00:46	0	
3	08:02:00	00:00:59	0		16:01:59	00:01:04	1	9	17:01:53	00:00:41	0		11:46:59	00:00:44	0	
4	08:02:49	00:00:49	1	5	16:03:12	00:01:13	1	11	17:02:28	00:00:35	0		11:47:56	00:00:57	0	
5	08:04:03	00:01:14	1	5	16:03:51	00:00:39	1	11	17:03:03	00:00:35	0		11:48:51	00:00:55	0	
6	08:04:44	00:00:41	0		16:04:20	00:00:29	1	11	17:03:51	00:00:48	0		11:49:42	00:00:51	0	
7	08:05:31	00:00:47	1	5	16:04:48	00:00:28	0		17:04:29	00:00:38	0		11:50:33	00:00:51	0	
8	08:06:49	00:01:18	0		16:05:22	00:00:34	1	7	17:05:27	00:00:58	1	5	11:51:26	00:00:53	0	
9	08:07:47	00:00:58	1	11	16:06:07	00:00:45	1	9	17:06:15	00:00:48	0		11:52:20	00:00:54	0	
10	08:08:47	00:01:00	1	6	16:07:12	00:01:05	1	5	17:07:16	00:01:01	0		11:53:08	00:00:48	0	
11	08:09:32	00:00:45	1	10	16:07:39	00:00:27	0		17:08:04	00:00:48	1	5	11:54:03	00:00:55	0	
12	08:10:14	00:00:42	1	5	16:08:39	00:01:00	0		17:08:46	00:00:42	0		11:55:11	00:01:08	0	
13	08:10:56	00:00:42	0		16:09:13	00:00:34	0		17:09:29	00:00:43	0		11:55:59	00:00:48	0	
14	08:11:40	00:00:44	1	5	16:09:59	00:00:46	1	8	17:10:05	00:00:36	0		11:56:55	00:00:56	0	
15	08:12:56	00:01:16	1	11	16:10:31	00:00:32	0		17:10:35	00:00:30	0		11:57:56	00:01:01	0	
16	08:13:38	00:00:42	1	8	16:11:05	00:00:34	0		17:11:17	00:00:42	1	6	11:58:43	00:00:47	1	10
17	08:14:54	00:01:16	1	8	16:11:36	00:00:31	0		17:11:51	00:00:34	1	5	11:59:37	00:00:54	0	
18	08:15:50	00:00:56	1	11	16:12:14	00:00:38	0		17:12:36	00:00:45	0		12:00:38	00:01:01	0	
19	08:16:39	00:00:49	1	5	16:12:44	00:00:30	1	6	17:13:25	00:00:49	0		12:01:38	00:01:00	0	
20	08:17:36	00:00:57	1	5	16:13:46	00:01:02	0		17:14:27	00:01:02	1	11	12:02:28	00:00:50	0	
21	08:18:39	00:01:03	1	11	16:14:38	00:00:52	0		17:15:07	00:00:40	0		12:03:13	00:00:45	0	
22	08:19:53	00:01:14	1	9	16:15:35	00:00:57	1	8	17:15:40	00:00:33	0		12:04:07	00:00:54	0	
23	08:20:49	00:00:56	1	5	16:16:17	00:00:42	1	10	17:16:12	00:00:32	0		12:04:51	00:00:44	0	
24	08:21:41	00:00:52	1	7	16:16:59	00:00:42	0		17:17:06	00:00:54	0		12:05:47	00:00:56	0	
25	08:22:33	00:00:52	1	5	16:17:54	00:00:55	0		17:17:48	00:00:42	0		12:06:31	00:00:44	0	
26	08:23:24	00:00:51	1	8	16:18:49	00:00:55	0		17:18:35	00:00:47	1	5	12:07:17	00:00:46	0	
27	08:24:16	00:00:52	1	5	16:19:39	00:00:50	0		17:19:25	00:00:50	0		12:08:00	00:00:43	0	
28	08:24:56	00:00:40	1	11	16:20:23	00:00:44	1	5	17:19:59	00:00:34	1	5	12:08:51	00:00:51	0	
29	08:25:49	00:00:53	1	6	16:20:57	00:00:34	0		17:20:51	00:00:52	0		12:09:50	00:00:59	0	
30	08:27:03	00:01:14	1	7	16:21:27	00:00:30	1	10	17:21:34	00:00:43	0		12:10:41	00:00:51	0	
31	08:27:39	00:00:36	0		16:22:10	00:00:43	0		17:22:45	00:01:11	0		12:11:37	00:00:56	0	
32	08:28:26	00:00:47	1	5	16:22:51	00:00:41	0		17:23:26	00:00:41	1	5	12:12:23	00:00:46	0	
33	08:29:25	00:00:59	1	7	16:23:54	00:01:03	0		17:24:20	00:00:54	1	8	12:13:07	00:00:44	0	
34	08:30:25	00:01:00	1	5	16:24:41	00:00:47	0		17:24:48	00:00:28	0		12:13:57	00:00:50	0	
35	08:31:05	00:00:40	1	5	16:25:14	00:00:33	0		17:25:52	00:01:04	0		12:14:56	00:00:59	0	
36	08:31:55	00:00:50	1	5	16:25:50	00:00:36	1	11	17:26:38	00:00:46	1	5	12:15:46	00:00:50	0	
37	08:32:47	00:00:52	1	8	16:26:27	00:00:37	0		17:27:09	00:00:31	0		12:16:30	00:00:44	0	
38	08:33:37	00:00:50	1	7	16:27:11	00:00:44	0		17:27:50	00:00:41	0		12:17:11	00:00:41	0	
39	08:34:26	00:00:49	0		16:27:56	00:00:45	0		17:28:19	00:00:29	0		12:17:55	00:00:44	0	
40	08:35:17	00:00:51	1	5	16:28:29	00:00:33	0		17:28:57	00:00:38	0		12:18:42	00:00:47	0	
41	08:35:45	00:00:28	0		16:29:13	00:00:44	1	5	17:29:31	00:00:34	0		12:19:26	00:00:44	0	
42	08:36:34	00:00:49	1	5	16:30:12	00:00:59	1	11	17:30:16	00:00:45	0		12:20:14	00:00:48	1	10
43	08:37:28	00:00:54	0		16:30:50	00:00:38	0		17:30:59	00:00:43	1	5	12:21:14	00:01:00	0	
44	08:38:36	00:01:08	0		16:31:25	00:00:35	0		17:31:40	00:00:41	0		12:21:59	00:00:45	0	
45	08:39:32	00:00:56	0		16:32:36	00:01:11	0		17:32:10	00:00:30	0		12:22:59	00:01:00	0	
46	08:40:27	00:00:55	1	5	16:33:43	00:01:07	1	6	17:32:56	00:00:46	0		12:23:55	00:00:56	1	10
47	08:41:41	00:01:14	0		16:34:22	00:00:39	0		17:33:47	00:00:51	0		12:24:44	00:00:49	0	
48	08:42:54	00:01:13	0		16:35:06	00:00:44	0		17:34:42	00:00:55	0		12:25:37	00:00:53	0	
49	08:44:07	00:01:13	0		16:35:47	00:00:41	0		17:35:33	00:00:51	0		12:26:33	00:00:56	0	
50	08:45:10	00:01:03	0		16:36:36	00:00:49	1	5	17:36:12	00:00:39	0		12:27:33	00:01:00	0	
51	08:46:16	00:01:06	0		16:37:18	00:00:42	0		17:36:54	00:00:42	0		12:28:34	00:01:01	0	
52	08:47:18	00:01:02	1	5	16:38:06	00:00:48	0		17:37:36	00:00:42	0		12:29:34	00:01:00	0	
53	08:48:15	00:00:57	1	10	16:38:53	00:00:47	0		17:38:18	00:00:42	1	8	12:30:34	00:01:00	0	
54	08:49:10	00:00:55	0		16:39:48	00:00:55	0		17:39:12	00:00:54	0		12:31:22	00:00:48	0	
55	08:50:20	00:01:10	1	5	16:40:33	00:00:45	0		17:39:50	00:00:38	1	11	12:32:18	00:00:56	0	
56	08:51:28	00:01:08	0		16:41:09	00:00:36	0		17:40:23	00:00:33	0		12:33:18	00:01:00	0	
57	08:52:09	00:00:41	0		16:41:46	00:00:37	0		17:40:59	00:00:36	0		12:34:02	00:00:44	0	
58	08:53:03	00:00:54	1	8	16:42:23	00:00:37	0		17:41:40	00:00:41	0		12:34:46	00:00:44	1	9
59	08:54:17	00:01:14	1	5	16:42:54	00:00:31	1	5	17:42:41	00:01:01	0		12:35:45	00:00:59	0	
60	08:55:11	00:00:54	0		16:43:44	00:00:50	0		17:43:35	00:00:54	0		12:36:49	00:01:04	0	
61	08:56:25	00:01:14	0		16:44:24	00:00:40	0		17:44:22	00:00:47	0		12:37:55	00:01:06	0	
62	08:57:14	00:00:49	0		16:45:03	00:00:39	0		17:44:57	00:00:35	0		12:38:32	00:00:37	0	
63	08:58:13	00:00:59	0		16:46:02	00:00:59	0		17:45:40	00:00:43	0		12:39:17	00:00:45	0	
64	08:59:12	00:00:59	0		16:46:51	00:00:49	0		17:46:09	00:00:29	1	5	12:39:53	00:00:36	0	
65	09:00:19	00:01:07	0		16:47:37	00:00:46	0		17:46:55	00:00:46	0		12:40:50	00:00:57	0	
66					16:48:06	00:00:29	0		17:47:45	00:00:50	1	11	12:41:37	00:00:47	0	
67					16:48:46	00:00:40	0		17:48:20	00:00:35	0		12:42:29	00:00:52	0	
68					16:49:19	00:00:33	0		17:48:55	00:00:35	0		12:43:09	00:00:40	0	
69					16:49:56	00:00:37	0		17:49:51	00:00:56	1	6	12:43:52	00:00:43	0	
70					16:50:33	00:00:37	1	5	17:50:32	00:00:41	0		12:44:48	00:00:56	0	
71					16:51:03	00:00:30	0		17:51:25	00:00:53	0		12:45:24	00:00:36	0	
72					16:51:52	00:00:49	0		17:52:22	00:00:57	1	6				
73					16:52:21	00:00:29	0		17:53:26	00:01:04	0					
74					16:52:59	00:00:38	0		17:53:59	00:00:33	0					
75					16:53:39	00:00:40	0		17:54:35	00:00:36	0					
76					16:54:12	00:00:33	0		17:55:12	00:00:37	1	8				
77					16:55:07	00:00:55	0		17:55:44	00:00:32	0					
78					16:56:04	00:00:57	0		17:56:39	00:00:55	0					
79					16:57:23	00:01:19	1	5	17:57:26	00:00:47	0					
80																

Junction 6/7 Upper Gungate / Salters Ln / Offdrive
 Cycle Time - Junction
 Measured from the start of southbound red A513
 Intergreen unneeded

	21/04/2015 AM Peak				21/04/2015 Pre PM Peak				21/04/2015 PM Peak				25/04/2015 Sat Peak			
	Time	Duration	Ped	l'green	Time	Duration	Ped	l'green	Time	Duration	Ped	l'green	Time	Duration	Ped	l'green
1	08:00:14		1	6	16:01:17		1	6	17:00:31		1	6	11:45:11		1	5
2	08:01:34	00:01:20	1	9	16:02:31	00:01:14	1	5	17:02:05	00:01:34	1	6	11:46:18	00:01:07	1	5
3	08:03:05	00:01:31	1	5	16:03:44	00:01:13	1	5	17:03:48	00:01:43	1	5	11:47:45	00:01:27	1	5
4	08:04:18	00:01:13	1	5	16:05:09	00:01:25	1	5	17:05:03	00:01:15	1	5	11:49:11	00:01:26	1	5
5	08:05:30	00:01:12	1	8	16:06:40	00:01:31	1	5	17:06:35	00:01:32	1	5	11:50:20	00:01:09	1	6
6	08:07:04	00:01:34	1	5	16:08:02	00:01:22	1	5	17:08:07	00:01:32	1	5	11:51:29	00:01:09	1	9
7	08:08:26	00:01:22	1	14	16:09:32	00:01:30	1	5	17:09:30	00:01:23	1	5	11:52:52	00:01:23	1	5
8	08:09:59	00:01:33	1	14	16:10:46	00:01:14	1	10	17:10:53	00:01:23	1	5	11:54:19	00:01:27	1	14
9	08:11:16	00:01:17	1	9	16:12:09	00:01:23	1	5	17:12:31	00:01:38	1	10	11:55:43	00:01:24	1	5
10	08:12:55	00:01:39	1	5	16:13:25	00:01:16	1	5	17:14:05	00:01:34	1	6	11:57:17	00:01:34	1	5
11	08:14:17	00:01:22	1	5	16:14:48	00:01:23	1	5	17:15:23	00:01:18	1	5	11:58:42	00:01:25	1	5
12	08:15:50	00:01:33	1	7	16:16:17	00:01:29	1	7	17:16:37	00:01:14	1	5	12:00:16	00:01:34	1	5
13	08:17:05	00:01:15	1	6	16:17:10	00:00:53	1	5	17:17:58	00:01:21	1	9	12:01:39	00:01:23	1	5
14	08:18:22	00:01:17	1	7	16:18:45	00:01:35	1	6	17:19:27	00:01:29	1	5	12:02:33	00:00:54	1	5
15	08:19:50	00:01:28	1	5	16:20:09	00:01:24	1	5	17:20:43	00:01:16	1	5	12:04:03	00:01:30	1	5
16	08:20:58	00:01:08	1	5	16:21:44	00:01:35	1	7	17:22:05	00:01:22	1	5	12:05:15	00:01:12	1	5
17	08:22:32	00:01:34	1	7	16:23:17	00:01:33	1	7	17:23:36	00:01:31	1	7	12:06:28	00:01:13	1	5
18	08:23:57	00:01:25	1	5	16:24:59	00:01:42	1	13	17:25:04	00:01:28	1	5	12:07:47	00:01:19	1	5
19	08:25:14	00:01:17	1	9	16:26:30	00:01:31	1	13	17:26:18	00:01:14	1	6	12:08:36	00:00:49	1	5
20	08:26:21	00:01:07	1	14	16:28:02	00:01:32	1	5	17:27:25	00:01:07	1	5	12:09:47	00:01:11	1	14
21	08:27:42	00:01:21	1	9	16:29:30	00:01:28	1	5	17:28:48	00:01:23	1	5	12:11:00	00:01:13	1	7
22	08:29:13	00:01:31	1	9	16:30:53	00:01:23	1	5	17:30:04	00:01:16	1	5	12:12:30	00:01:30	1	5
23	08:30:28	00:01:15	1	11	16:32:17	00:01:24	1	5	17:31:27	00:01:23	1	5	12:14:05	00:01:35	1	5
24	08:31:51	00:01:23	1	8	16:33:47	00:01:30	1	5	17:33:04	00:01:37	1	10	12:15:31	00:01:26	1	5
25	08:33:20	00:01:29	1	12	16:35:12	00:01:25	1	5	17:34:22	00:01:18	1	5	12:16:54	00:01:23	1	5
26	08:34:38	00:01:18	1	14	16:36:16	00:01:04	1	5	17:35:55	00:01:33	1	5	12:18:06	00:01:12	1	5
27	08:36:17	00:01:39	1	5	16:37:21	00:01:05	1	5	17:37:28	00:01:33	1	5	12:19:18	00:01:12	1	12
28	08:37:44	00:01:27	1	6	16:38:45	00:01:24	1	5	17:38:49	00:01:21	1	5	12:20:08	00:00:50	1	5
29	08:39:05	00:01:21	1	14	16:39:59	00:01:14	1	5	17:40:22	00:01:33	1	5	12:21:26	00:01:18	1	12
30	08:40:26	00:01:21	1	7	16:40:48	00:00:49	1	5	17:41:55	00:01:33	1	5	12:22:38	00:01:12	1	5
31	08:41:58	00:01:32	1	6	16:42:06	00:01:18	1	5	17:43:18	00:01:23	1	5	12:24:01	00:01:23	1	5
32	08:43:11	00:01:13	1	14	16:43:07	00:01:01	1	10	17:44:53	00:01:35	1	7	12:25:25	00:01:24	1	7
33	08:44:28	00:01:17	1	8	16:44:25	00:01:18	1	14	17:46:36	00:01:43	1	14	12:26:46	00:01:21	1	5
34	08:45:53	00:01:25	1	14	16:45:44	00:01:19	1	14	17:47:56	00:01:20	1	5	12:27:58	00:01:12	1	5
35	08:47:24	00:01:31	1	13	16:47:13	00:01:29	1	5	17:49:09	00:01:13	1	5	12:28:59	00:01:01	1	5
36	08:49:06	00:01:42	1	5	16:48:32	00:01:19	1	5	17:50:38	00:01:29	1	5	12:30:22	00:01:23	1	5
37	08:50:47	00:01:41	1	7	16:49:58	00:01:26	1	5	17:51:57	00:01:19	1	7	12:31:39	00:01:17	1	6
38	08:52:20	00:01:33	1	8	16:51:31	00:01:33	1	5	17:53:11	00:01:14	1	5	12:32:53	00:01:14	1	5
39	08:53:52	00:01:32	1	7	16:52:52	00:01:21	1	5	17:54:36	00:01:25	1	5	12:33:47	00:00:54	1	5
40	08:55:17	00:01:25	1	6	16:54:24	00:01:32	1	5	17:55:46	00:01:10	1	13	12:35:06	00:01:19	1	12
41	08:56:45	00:01:28	1	10	16:55:50	00:01:26	1	5	17:57:00	00:01:14	1	5	12:36:19	00:01:13	1	5
42	08:58:09	00:01:24	1	5	16:56:55	00:01:05	1	5	17:58:15	00:01:15	1	5	12:37:35	00:01:16	1	5
43	08:59:47	00:01:38	1		16:58:02	00:01:07	1	5	17:59:30	00:01:15	1	5	12:39:02	00:01:27	1	5
44	09:01:21	00:01:34	1		16:59:17	00:01:15	1	5	18:00:53	00:01:23	1		12:40:20	00:01:18	1	5
45					17:00:31	00:01:14	1						12:41:25	00:01:05	1	5
46													12:42:32	00:01:07	1	5
47													12:44:06	00:01:34	1	5
48													12:45:22	00:01:16	1	
49																
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81																
82																
83																
84																
Average	00:01:25		8.3		Average	00:01:21		6.2	Average	00:01:24		6.0	Average	00:01:17		6.0
Max	00:01:42				Max	00:01:42			Max	00:01:43			Max	00:01:35		
No. Cycles	44				No. Cycles	45			No. Cycles	44			No. Cycles	47		
Peds called	44				Peds called	45			Peds called	44			Peds called	48		

AM Peak

Pre PM Peak

PM Peak

Sat Peak

Junction 8 Upper Gungah / Hospital St / Lower Gungah
 Cycle Time - Junction
 Measured from the start of Eastbound red
 Unable to get Intergreen time - Video too poor

	21/04/2015 AM Peak				21/04/2015 Pre PM Peak				21/04/2015 PM Peak				25/04/2015 Sat Peak			
	Time	Duration	Ped	I'green	Time	Duration	Ped	I'green	Time	Duration	Ped	I'green	Time	Duration	Ped	I'green
1	08:00:34		0		16:00:54		0		17:00:04		0		11:45:06		1	
2	08:01:27	00:00:53	0		16:02:08	00:01:14	0		17:01:20	00:01:16	0		11:46:33	00:01:27	1	
3	08:02:21	00:00:54	0		16:03:22	00:01:14	0		17:02:34	00:01:14	0		11:47:54	00:01:21	1	
4	08:03:15	00:00:54	0		16:04:35	00:01:13	0		17:03:48	00:01:14	0		11:49:05	00:01:11	0	
5	08:04:10	00:00:55	0		16:05:50	00:01:15	0		17:05:02	00:01:14	0		11:49:56	00:00:51	1	
6	08:05:04	00:00:54	0		16:07:03	00:01:13	0		17:06:16	00:01:14	0		11:50:55	00:00:59	1	
7	08:05:57	00:00:53	0		16:08:18	00:01:15	0		17:07:30	00:01:14	0		11:52:04	00:01:09	1	
8	08:06:52	00:00:55	0		16:09:31	00:01:13	0		17:08:44	00:01:14	0		11:53:29	00:01:25	1	
9	08:07:46	00:00:54	0		16:10:45	00:01:14	0		17:09:58	00:01:14	0		11:54:49	00:01:20	1	
10	08:08:39	00:00:53	0		16:11:59	00:01:14	0		17:11:12	00:01:14	0		11:56:09	00:01:20	0	
11	08:09:33	00:00:54	0		16:13:13	00:01:14	0		17:12:26	00:01:14	0		11:57:01	00:00:52	0	
12	08:10:28	00:00:55	0		16:14:27	00:01:14	0		17:13:40	00:01:14	0		11:57:43	00:00:42	1	
13	08:11:22	00:00:54	0		16:15:42	00:01:15	0		17:14:54	00:01:14	0		11:58:45	00:01:02	1	
14	08:12:15	00:00:53	0		16:16:55	00:01:13	0		17:16:08	00:01:14	0		12:00:06	00:01:21	0	
15	08:13:09	00:00:54	0		16:18:10	00:01:15	0		17:17:22	00:01:14	0		12:00:42	00:00:36	1	
16	08:14:03	00:00:54	0		16:19:23	00:01:13	0		17:18:36	00:01:14	0		12:01:57	00:01:15	0	
17	08:14:58	00:00:55	0		16:20:37	00:01:14	0		17:19:50	00:01:14	0		12:02:42	00:00:45	0	
18	08:15:51	00:00:53	0		16:21:51	00:01:14	0		17:21:04	00:01:14	0		12:03:33	00:00:51	0	
19	08:16:46	00:00:55	0		16:23:05	00:01:14	0		17:22:18	00:01:14	0		12:04:19	00:00:46	1	
20	08:17:39	00:00:53	0		16:24:19	00:01:14	0		17:23:32	00:01:14	0		12:05:33	00:01:14	1	
21	08:18:33	00:00:54	0		16:25:33	00:01:14	0		17:24:47	00:01:15	0		12:06:35	00:01:02	0	
22	08:19:27	00:00:54	0		16:26:47	00:01:14	0		17:26:00	00:01:13	0		12:07:13	00:00:38	1	
23	08:20:21	00:00:54	0		16:28:01	00:01:14	0		17:27:14	00:01:14	0		12:08:07	00:00:54	1	
24	08:21:14	00:00:53	0		16:29:15	00:01:14	0		17:28:28	00:01:14	0		12:09:06	00:00:59	1	
25	08:22:09	00:00:55	0		16:30:29	00:01:14	0		17:29:42	00:01:14	0		12:10:22	00:01:16	1	
26	08:23:02	00:00:53	0		16:31:44	00:01:15	0		17:30:56	00:01:14	0		12:11:45	00:01:23	1	
27	08:23:57	00:00:55	0		16:32:57	00:01:13	0		17:32:10	00:01:14	0		12:12:48	00:01:03	1	
28	08:24:50	00:00:53	0		16:34:12	00:01:15	0		17:33:24	00:01:14	0		12:14:05	00:01:17	1	
29	08:25:45	00:00:55	0		16:35:25	00:01:13	0		17:34:38	00:01:14	0		12:15:25	00:01:20	1	
30	08:26:38	00:00:53	0		16:36:39	00:01:14	0		17:35:52	00:01:14	0		12:16:37	00:01:12	1	
31	08:27:33	00:00:55	0		16:37:53	00:01:14	0		17:37:06	00:01:14	0		12:17:54	00:01:17	1	
32	08:28:26	00:00:53	0		16:39:07	00:01:14	0		17:38:20	00:01:14	0		12:18:59	00:01:05	1	
33	08:29:21	00:00:55	0		16:40:21	00:01:14	0		17:39:34	00:01:14	0		12:20:04	00:01:05	1	
34	08:30:14	00:00:53	0		16:41:35	00:01:14	0		17:40:48	00:01:14	0		12:21:23	00:01:19	0	
35	08:31:09	00:00:55	0		16:42:50	00:01:15	0		17:42:02	00:01:14	0		12:22:25	00:01:02	1	
36	08:32:02	00:00:53	0		16:44:03	00:01:13	0		17:43:15	00:01:13	0		12:23:32	00:01:07	1	
37	08:32:57	00:00:55	0		16:45:18	00:01:15	0		17:44:29	00:01:14	0		12:24:43	00:01:11	1	
38	08:33:50	00:00:53	0		16:46:31	00:01:13	0		17:45:43	00:01:14	0		12:26:09	00:01:26	1	
39	08:34:44	00:00:54	0		16:47:46	00:01:15	0		17:46:57	00:01:14	0		12:27:18	00:01:09	1	
40	08:35:38	00:00:54	0		16:48:59	00:01:13	0		17:48:11	00:01:14	0		12:28:08	00:00:50	1	
41	08:36:31	00:00:53	0		16:50:14	00:01:15	0		17:49:25	00:01:14	0		12:29:23	00:01:15	1	
42	08:37:26	00:00:55	0		16:51:27	00:01:13	0		17:50:39	00:01:14	0		12:30:46	00:01:23	1	
43	08:38:19	00:00:53	0		16:52:42	00:01:15	0		17:51:53	00:01:14	0		12:32:07	00:01:21	1	
44	08:39:14	00:00:55	0		16:53:55	00:01:13	0		17:53:07	00:01:14	0		12:33:20	00:01:13	1	
45	08:40:07	00:00:53	0		16:55:10	00:01:15	0		17:54:20	00:01:13	0		12:34:50	00:01:30	1	
46	08:41:02	00:00:55	0		16:56:24	00:01:14	0		17:55:35	00:01:15	0		12:36:06	00:01:16	1	
47	08:41:55	00:00:53	0		16:57:38	00:01:14	0		17:56:48	00:01:13	0		12:37:20	00:01:14	1	
48	08:42:49	00:00:54	0		16:58:52	00:01:14	0		17:58:03	00:01:15	0		12:38:24	00:01:04	1	
49	08:43:43	00:00:54	0		17:00:04	00:01:12	0		17:59:17	00:01:14	0		12:39:38	00:01:14	1	
50	08:44:37	00:00:54	0						18:00:30	00:01:13	0		12:40:32	00:00:54	1	
51	08:45:31	00:00:54	0										12:41:47	00:01:15	0	
52	08:46:24	00:00:53	0										12:42:40	00:00:53	1	
53	08:47:19	00:00:55	0										12:43:59	00:01:19	1	
54	08:48:12	00:00:53	0										12:44:56	00:00:57	1	
55	08:49:07	00:00:55	0										12:46:00	00:01:04		
56	08:50:01	00:00:54	0													
57	08:50:54	00:00:53	0													
58	08:51:49	00:00:55	0													
59	08:52:42	00:00:53	0													
60	08:53:37	00:00:55	0													
61	08:54:30	00:00:53	0													
62	08:55:24	00:00:54	0													
63	08:56:18	00:00:54	0													
64	08:57:12	00:00:54	0													
65	08:58:06	00:00:54	0													
66	08:59:00	00:00:54	0													
67	08:59:54	00:00:54	0													
68	09:00:48	00:00:54	0													
69																
70																
71																
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82																
83																
84																
Average	00:00:54		#####		Average	00:01:14		#####	Average	00:01:14		#####	Average	00:01:08		###
Max	00:00:55				Max	00:01:15			Max	00:01:16			Max	00:01:30		
No. Cycles	68				No. Cycles	49			No. Cycles	50			No. Cycles	54		
Peds called	0				Peds called	0			Peds called	0			Peds called	44		

AM Peak

Pre PM Peak

PM Peak

Sat Peak

Junction 10 Aldergate / Lichfield St / Church St
 Cycle Time - Junction
 Measured from the start of Southbound red

Unable to see Ped,
 Date/Time in the way

	21/04/2015 AM Peak				21/04/2015 Pre PM Peak				21/04/2015 PM Peak				25/04/2015 Sat Peak					
	Time	Duration	Ped	l'green	Time	Duration	Ped	l'green	Time	Duration	Ped	l'green	Time	Duration	Ped	l'green		
1	08:00:09		0		16:00:14		1		17:00:21		1		11:45:33		1			
2	08:01:30	00:01:21	0		16:01:06	00:00:52	1		17:02:02	00:01:41	0		11:47:00	00:01:27	1			
3	08:02:23	00:00:53	1		16:02:28	00:01:22	0		17:02:53	00:00:51	1		11:48:22	00:01:22	1			
4	08:03:53	00:01:30	1		16:03:38	00:01:10	1		17:04:19	00:01:26	1		11:49:46	00:01:24	1			
5	08:04:54	00:01:01	1		16:05:06	00:01:28	1		17:06:09	00:01:50	0		11:51:12	00:01:26	1			
6	08:05:54	00:01:00	0		16:06:35	00:01:29	0		17:07:41	00:01:32	1		11:52:39	00:01:27	1			
7	08:06:44	00:00:50	1		16:08:00	00:01:25	1		17:09:08	00:01:27	1		11:54:06	00:01:27	1			
8	08:08:14	00:01:30	1		16:09:21	00:01:21	1		17:10:43	00:01:35	0		11:55:28	00:01:22	1			
9	08:08:47	00:00:33	1		16:10:10	00:00:49	1		17:12:11	00:01:28	1		11:57:00	00:01:32	1			
10	08:09:59	00:01:12	0		16:11:31	00:01:21	1		17:13:51	00:01:40	1		11:58:27	00:01:27	1			
11	08:11:10	00:01:11	1		16:12:55	00:01:24	1		17:15:32	00:01:41	1		11:59:49	00:01:22	1			
12	08:12:14	00:01:04	0		16:14:37	00:01:42	1		17:17:03	00:01:31	1		12:01:19	00:01:30	1			
13	08:13:07	00:00:53	0		16:16:11	00:01:34	0		17:18:40	00:01:37	1		12:02:35	00:01:16	1			
14	08:13:58	00:00:51	0		16:17:27	00:01:16	1		17:20:22	00:01:42	1		12:03:56	00:01:21	1			
15	08:15:17	00:01:19	1		16:18:51	00:01:24	0		17:21:53	00:01:31	0		12:05:21	00:01:25	1			
16	08:16:57	00:01:40	1		16:20:06	00:01:15	1		17:23:08	00:01:15	0		12:06:43	00:01:22	1			
17	08:18:03	00:01:06	0		16:21:31	00:01:25	0		17:24:21	00:01:13	0		12:08:09	00:01:26	1			
18	08:18:57	00:00:54	1		16:22:39	00:01:08	1		17:25:30	00:01:09	1		12:09:43	00:01:34	1			
19	08:20:19	00:01:22	0		16:24:24	00:01:45	1		17:26:49	00:01:19	1		12:11:10	00:01:27	1			
20	08:21:52	00:01:33	1		16:25:55	00:01:31	0		17:28:14	00:01:25	1		12:12:42	00:01:32	1			
21	08:23:27	00:01:35	0		16:26:56	00:01:01	1		17:29:26	00:01:12	0		12:14:08	00:01:26	1			
22	08:24:37	00:01:10	0		16:28:10	00:01:14	1		17:30:18	00:00:52	0		12:15:17	00:01:09	1			
23	08:26:05	00:01:28	1		16:28:42	00:00:32	0		17:31:06	00:00:48	1		12:16:47	00:01:30	1			
24	08:27:39	00:01:34	0		16:29:42	00:01:00	1		17:32:39	00:01:33	1		12:18:13	00:01:26	1			
25	08:28:25	00:00:46	1		16:30:41	00:00:59	0		17:34:18	00:01:39	1		12:19:44	00:01:31	1			
26	08:30:02	00:01:37	0		16:31:26	00:00:45	1		17:35:25	00:01:07	1		12:21:03	00:01:19	1			
27	08:31:13	00:01:11	0		16:32:55	00:01:29	1		17:37:02	00:01:37	1		12:22:27	00:01:24	1			
28	08:32:35	00:01:22	1		16:34:26	00:01:31	1		17:38:39	00:01:37	0		12:23:59	00:01:32	1			
29	08:34:04	00:01:29	1		16:36:08	00:01:42	1		17:40:07	00:01:28	1		12:25:29	00:01:30	1			
30	08:35:41	00:01:37	1		16:37:42	00:01:34	1		17:41:46	00:01:39	1		12:26:56	00:01:27	1			
31	08:37:07	00:01:26	0		16:39:08	00:01:26	1		17:43:33	00:01:47	0		12:28:29	00:01:33	1			
32	08:38:36	00:01:29	1		16:40:11	00:01:03	1		17:44:53	00:01:20	0		12:29:50	00:01:21	1			
33	08:40:08	00:01:32	1		16:41:36	00:01:25	1		17:45:43	00:00:50	1		12:30:57	00:01:07	0			
34	08:41:49	00:01:41	1		16:42:48	00:01:12	1		17:47:14	00:01:31	1		12:32:01	00:01:04	1			
35	08:43:30	00:01:41	1		16:44:23	00:01:35	1		17:48:24	00:01:10	0		12:33:25	00:01:24	1			
36	08:44:47	00:01:17	1		16:45:53	00:01:30	1		17:49:29	00:01:05	1		12:34:57	00:01:32	1			
37	08:46:02	00:01:15	1		16:47:35	00:01:42	0		17:50:38	00:01:09	0		12:36:19	00:01:22	1			
38	08:47:46	00:01:44	0		16:48:50	00:01:15	1		17:51:24	00:00:46	1		12:37:21	00:01:02	0			
39	08:49:18	00:01:32	1		16:50:22	00:01:32	0		17:52:29	00:01:05	0		12:37:53	00:00:32	0			
40	08:50:48	00:01:30	1		16:51:50	00:01:28	1		17:53:06	00:00:37	0		12:38:25	00:00:32	1			
41	08:52:28	00:01:40	1		16:53:31	00:01:41	1		17:54:21	00:01:15	0		12:39:57	00:01:32	1			
42	08:54:06	00:01:38	0		16:55:14	00:01:43	0		17:55:35	00:01:14	1		12:41:23	00:01:26	1			
43	08:55:07	00:01:01	0		16:56:10	00:00:56	1		17:56:57	00:01:22	0		12:42:49	00:01:26	1			
44	08:55:49	00:00:42	0		16:57:47	00:01:37	0		17:58:00	00:01:03	0		12:44:17	00:01:28	1			
45	08:57:09	00:01:20	1		16:59:06	00:01:19	1		17:59:26	00:01:26	0		12:45:03	00:00:46				
46	08:58:46	00:01:37	1		17:00:21	00:01:15			18:00:03	00:00:37								
47	09:00:23	00:01:37																
48																		
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Average	00:01:19		#####		Average	00:01:20		#####		Average	00:01:20		#####		Average	00:01:21		####
Max	00:01:44				Max	00:01:45				Max	00:01:50				Max	00:01:34		
No. Cycles	47				No. Cycles	46				No. Cycles	46				No. Cycles	44		
Peds called	27				Peds called	33				Peds called	26				Peds called	41		

AM Peak

Pre PM Peak

PM Peak

Sat Peak

APPENDIX D

2012 – 2015 Results Comparison

Wiggington Rd - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Wiggington Rd	28.7%	0.2	21.6%	0.1	21.6%	0.1
Comberford Rd (S)	31.6%	0.2	32.1%	0.2	32.1%	0.2
PRC	185.2%		180.0%		180.0%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Wiggington Rd - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Wiggington Rd	16.9%	0.1	17.7%	0.1	17.8%	0.1
Comberford Rd (S)	44.3%	0.4	44.5%	0.4	44.5%	1.1
PRC	103.1%		102.1%		102.1%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Wiggington Rd - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Wiggington Rd	18.0%	0.1	19.7%	0.1	19.8%	0.1
Comberford Rd (S)	51.9%	0.5	53.7%	0.6	53.7%	1.0
PRC	73.4%		67.8%		67.8%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Wiggington Rd - Saturday Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Wiggington Rd	21.0%	0.1	21.3%	0.1	21.3%	0.1
Comberford Rd (S)	35.6%	0.3	36.0%	0.3	36.0%	0.3
PRC	153.0%		150.3%		150.3%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Ashby Rd (North) - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd (E)	17.0%	0.1	17.8%	0.1	17.8%	0.1
Ashby Rd (S)	26.1%	1.5	28.9%	1.8	28.9%	0.2
PRC	244.3%		211.8%		211.8%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Ashby Rd (North) - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd (E)	8.9%	0.0	11.6%	0.1	11.6%	0.1
Ashby Rd (S)	20.8%	0.1	28.4%	0.2	28.4%	0.2
PRC	332.0%		217.4%		217.4%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Ashby Rd (North) - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd (E)	18.5%	0.1	22.1%	0.1	22.1%	0.1
Ashby Rd (S)	25.8%	0.2	28.7%	0.2	28.7%	0.2
PRC	249.4%		213.8%		213.8%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Ashby Rd (North) - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd (E)	9.9%	0.1	5.8%	0.0	5.8%	0.0
Ashby Rd (S)	15.4%	0.1	15.8%	0.1	15.8%	0.1
PRC	485.5%		468.2%		468.2%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Ashby Rd (North) - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	91.3%	12.0	86.2%	11.7	64.9%	6.6
Upper Gungate	53.0%	4.0	49.5%	3.6	48.9%	3.0
Comberford Rd	87.2%	12.0	85.7%	10.0	64.0%	5.7
Upper Gungate SB	n/a	n/a	n/a	n/a	52.5%	4.5
Upper Gungate NB	n/a	n/a	n/a	n/a	41.4%	3.3
PRC	-1.5%		4.4%		38.7%	
Cycle Time	68		68		56	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Ashby Rd (North) - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	45.4%	3.4	54.9%	4.0	44.3%	2.8
Upper Gungate	58.4%	3.9	63.7%	4.5	63.1%	3.7
Comberford Rd	57.1%	4.6	62.1%	5.0	63.4%	4.7
Upper Gungate SB	n/a	n/a	n/a	n/a	38.2%	1.0
Upper Gungate NB	n/a	n/a	n/a	n/a	50.0%	2.4
PRC	54.0%		41.2%		42.0%	
Cycle Time	48		48		44	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Ashby Rd (North) - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	69.0%	3.7	67.5%	3.8	46.1%	3.1
Upper Gungate	61.2%	3.8	67.8%	4.5	73.7%	5.2
Comberford Rd	71.6%	4.6	76.6%	5.3	72.2%	5.7
Upper Gungate SB	n/a	n/a	n/a	n/a	39.9%	0.7
Upper Gungate NB	n/a	n/a	n/a	n/a	58.1%	2.5
PRC	25.6%		17.5%		22.2%	
Cycle Time	35		35		44	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Ashby Rd (North) - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	59.5%	4.2	57.1%	4.0	52.5%	4.0
Upper Gungate	43.7%	2.6	48.3%	2.9	52.1%	3.3
Comberford Rd	57.8%	4.4	56.7%	4.4	55.4%	4.9
Upper Gungate SB	n/a	n/a	n/a	n/a	39.4%	0.7
Upper Gungate NB	n/a	n/a	n/a	n/a	37.8%	1.1
PRC	51.2%		57.5%		62.6%	
Cycle Time	43		43		51	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

College Access - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
College Access	15.6%	0.1	8.1%	0.0	8.2%	0.0
Upper Gungate (S)	42.8%	0.4	38.9%	0.3	39.8%	0.3
PRC	110.5%		131.5%		126.1%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

College Access - Early PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
College Access	15.5%	0.1	6.3%	0.0	6.6%	0.0
Upper Gungate (S)	43.8%	0.4	48.9%	0.5	50.0%	0.5
PRC	105.7%		84.1%		79.8%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

College Access - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
College Access	4.5%	0.0	2.6%	0.0	2.8%	0.0
Upper Gungate (S)	50.7%	0.5	59.8%	0.7	61.2%	0.8
PRC	77.6%		50.4%		47.1%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

College Access - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
College Access	0.2%	0.0	1.8%	0.0	1.8%	0.0
Upper Gungate (S)	33.8%	0.3	37.6%	0.3	38.1%	0.3
PRC	166.7%		139.3%		136.2%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Croft St - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	33.9%	0.3	31.1%	0.2	30.4%	0.2
Upper Gungate (S)	75.5%	19.9	68.7%	18.1	37.0%	5.5
PRC	19.2%		30.9%		143.0%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Croft St - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	46.7%	0.4	32.3%	0.2	32.9%	0.2
Upper Gungate (S)	52.6%	9.5	54.3%	9.7	43.5%	9.5
PRC	71.3%		65.7%		106.7%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Croft St - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	33.3%	0.2	27.2%	0.2	27.8%	0.2
Upper Gungate (S)	68.4%	24.6	66.5%	25.5	53.9%	15.6
PRC	31.6%		35.4%		66.9%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Croft St - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	5.1%	0.0	10.0%	0.1	10.1%	0.1
Upper Gungate (S)	35.9%	0.5	37.8%	0.7	34.7%	6.0
PRC	150.6%		138.1%		159.3%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Offadrive - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	86.1%	12.1	78.1%	9.0	81.2%	9.5
Offadrive	83.5%	12.2	77.8%	10.3	79.1%	10.3
Upper Gungate (S)	39.8%	3.7	47.2%	5.9	46.8%	4.2
Salter's Ln	85.4%	7.9	74.2%	6.6	78.1%	6.9
PRC	4.6%		15.3%		10.8%	
Cycle Time	87		87		85	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Offadrive - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	75.3%	8.9	70.0%	7.6	69.9%	7.0
Offadrive	74.1%	10.6	69.4%	10.4	71.2%	9.4
Upper Gungate (S)	49.5%	6.1	60.8%	8.8	60.8%	6.5
Salter's Ln	72.8%	5.4	64.5%	4.8	68.1%	4.5
PRC	19.5%		28.7%		26.4%	
Cycle Time	92		92		81	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Offadrive - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	70.4%	7.8	72.3%	8.1	71.5%	7.4
Offadrive	70.0%	11.8	73.7%	12.4	73.9%	11.0
Upper Gungate (S)	68.6%	10.5	71.3%	11.4	72.6%	9.3
Salter's Ln	68.9%	5.0	71.6%	5.6	75.2%	5.3
PRC	18.2%		22.1%		19.7%	
Cycle Time	96		96		84	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Offadrive - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	67.5%	7.1	68.6%	7.2	67.1%	7.2
Offadrive	69.1%	7.2	66.1%	6.7	67.8%	6.9
Upper Gungate (S)	39.3%	2.9	44.4%	4.5	39.4%	3.4
Salter's Ln	62.1%	3.3	61.8%	3.6	63.5%	3.8
PRC	19.6%		31.2%		32.7%	
Cycle Time	75		75		77	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Hospital St - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	59.0%	6.8	56.8%	5.9	61.7%	4.6
Lower Gungate	56.1%	3.0	38.5%	2.4	38.0%	1.8
Aldergate	46.2%	4.4	47.6%	4.2	50.2%	3.5
Hospital St	60.4%	3.4	56.4%	3.9	55.6%	3.0
PRC	48.9%		58.5%		45.8%	
Cycle Time	73		73		54	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Hospital St - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	46.4%	6.7	43.9%	6.2	44.7%	4.7
Lower Gungate	30.9%	2.8	41.7%	3.8	42.1%	3.0
Aldergate	55.7%	8.4	54.6%	7.6	54.2%	5.4
Hospital St	53.6%	5.6	54.0%	5.9	54.6%	4.6
PRC	61.5%		64.9%		64.9%	
Cycle Time	96		96		74	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Hospital St - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	40.4%	4.4	33.4%	3.5	32.4%	3.1
Lower Gungate	29.8%	1.9	37.3%	1.5	39.4%	2.4
Aldergate	58.4%	7.5	56.2%	7.0	54.3%	5.9
Hospital St	55.9%	6.0	55.8%	4.9	55.1%	4.5
PRC	54.2%		60.2%		63.4%	
Cycle Time	80		80		74	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Hospital St - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	49.9%	3.8	48.2%	3.4	45.3%	4.5
Lower Gungate	51.0%	3.6	59.4%	4.6	53.9%	4.0
Aldergate	49.2%	3.9	61.0%	6.2	57.0%	4.9
Hospital St	39.4%	3.0	39.3%	3.2	35.6%	2.8
PRC	76.5%		47.6%		58.0%	
Cycle Time	75		75		68	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Corporation St - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	21.2%	0.1	19.0%	0.1	19.0%	0.1
Corporation St	0.0%	0.0	0.0%	0.0	0.0%	0.0
Aldergate (S)	25.0%	0.2	28.1%	0.2	28.1%	0.2
Car Park	0.0%	0.0	0.0%	0.0	0.0%	0.0
PRC	260.5%		219.9%		219.9%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Corporation St - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	19.9%	0.1	19.5%	0.1	19.5%	0.1
Corporation St	3.3%	0.0	4.3%	0.0	4.3%	0.0
Aldergate (S)	29.5%	0.2	30.9%	0.2	30.9%	0.2
Car Park	0.0%	0.0	1.3%	0.0	1.3%	0.0
PRC	205.6%		191.6%		191.6%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Corporation St - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	17.1%	0.1	17.0%	0.1	17.0%	0.1
Corporation St	3.0%	0.0	3.7%	0.0	3.7%	0.0
Aldergate (S)	32.6%	0.2	36.5%	0.3	36.5%	0.3
Car Park	0.0%	0.0	3.9%	0.0	3.9%	0.0
PRC	176.5%		146.7%		146.7%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Corporation St - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	21.2%	0.1	21.7%	0.1	21.7%	0.1
Corporation St	3.5%	0.0	3.2%	0.0	3.2%	0.0
Aldergate (S)	25.9%	0.2	35.5%	0.3	35.5%	0.3
Car Park	0.0%	0.0	0.0%	0.0	0.0%	0.0
PRC	246.9%		153.8%		153.8%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

St John St - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	22.2%	0.1	18.2%	0.2	18.1%	0.1
Car Park	2.3%	0.0	1.8%	0.0	1.8%	0.0
Aldergate (S)	22.6%	0.1	24.9%	0.2	24.8%	0.2
St John St	4.4%	0.0	8.5%	0.0	8.4%	0.0
PRC	297.6%		262.1%		262.8%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

St John St - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	21.7%	0.1	19.9%	0.1	19.8%	0.1
Car Park	9.4%	0.1	9.1%	0.0	9.1%	0.0
Aldergate (S)	25.7%	0.2	25.5%	0.2	25.5%	0.2
St John St	8.3%	0.0	8.6%	0.0	8.6%	0.0
PRC	249.9%		253.1%		253.1%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

St John St - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	18.3%	0.1	18.4%	0.1	18.2%	0.1
Car Park	6.4%	0.0	8.4%	0.0	8.3%	0.0
Aldergate (S)	29.6%	0.2	29.4%	0.2	29.4%	0.2
St John St	6.9%	0.0	13.9%	0.1	13.9%	0.1
PRC	204.0%		206.2%		206.2%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

St John St - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	20.2%	0.1	21.6%	3.3	21.5%	0.1
Car Park	9.3%	0.1	15.7%	0.1	15.7%	0.1
Aldergate (S)	23.7%	0.2	31.9%	0.2	31.6%	0.2
St John St	6.1%	0.0	10.7%	0.1	10.6%	0.1
PRC	280.1%		182.0%		185.1%	
Cycle Time	n/a		n/a		n/a	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Lichfield St - AM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	65.4%	8.2	62.4%	6.4	25.4%	2.9
Church St	58.6%	4.4	61.9%	5.6	50.0%	2.6
Silver St	40.7%	1.9	36.8%	1.7	16.7%	0.7
Lichfield St	64.6%	10.9	61.5%	11.3	49.6%	6.6
PRC	37.7%		44.3%		80.0%	
Cycle Time	87		87		79	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Lichfield St - PrePM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	74.3%	10.0	76.8%	11.0	39.3%	4.8
Church St	72.5%	5.0	75.2%	5.5	57.5%	3.4
Silver St	57.7%	2.9	55.8%	2.8	40.6%	1.8
Lichfield St	74.1%	13.2	76.8%	13.5	57.1%	7.7
PRC	21.2%		17.1%		56.6%	
Cycle Time	110		110		80	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Lichfield St - PM Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	76.0%	9.3	75.6%	9.5	29.5%	3.4
Church St	76.0%	6.1	76.9%	6.2	61.0%	3.6
Silver St	73.5%	4.7	73.3%	5.5	36.4%	1.6
Lichfield St	76.1%	16.5	77.1%	16.1	59.8%	8.6
PRC	18.2%		16.7%		47.6%	
Cycle Time	121		121		80	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

Lichfield St - Sat Peak	Network 2012				Network 2015	
	2012		2015		2015	
	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	75.2%	10.4	89.8%	13.7	45.7%	5.8
Church St	73.9%	4.4	85.1%	6.3	65.1%	3.7
Silver St	68.1%	3.6	85.5%	6.4	65.4%	3.7
Lichfield St	75.2%	10.9	90.1%	19.3	69.7%	9.8
PRC	19.6%		-0.1%		29.1%	
Cycle Time	100		100		81	
File	Gungate Network 2012.lsg3x				Gungate Network 2015.lsg3x	

APPENDIX E

Development Impact Results

Wiggington Rd - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Wiggington Rd	21.6%	0.1	21.6%	0.1	24.0%	0.2	24.0%	0.2	24.0%	0.2
Comberford Rd (S)	32.1%	0.2	32.1%	0.2	35.6%	0.3	35.6%	0.3	32.9%	0.2
PRC	180.0%		180.0%		152.6%		152.6%		173.2%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Wiggington Rd - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Wiggington Rd	24.0%	0.2	20.5%	0.1	24.0%	0.2	20.5%	0.1
Comberford Rd (S)	35.6%	0.3	35.4%	0.3	32.9%	0.2	33.6%	0.3
PRC	152.6%		154.1%		173.2%		168.1%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

Wiggington Rd - PrePM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Wiggington Rd	17.8%	0.1	17.7%	0.1	19.7%	0.1	19.7%	0.1	19.7%	0.1
Comberford Rd (S)	44.5%	1.1	44.5%	0.4	49.9%	1.2	49.9%	3.7	49.9%	0.5
PRC	102.1%		102.1%		80.4%		80.4%		80.4%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Wiggington Rd - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Wiggington Rd	22.1%	0.1	22.1%	0.1	22.1%	0.1	22.1%	0.1
Comberford Rd (S)	60.4%	4.3	56.1%	3.1	50.3%	0.5	48.3%	0.5
PRC	49.1%		60.4%		79.1%		86.5%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

Wiggington Rd - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Wiggington Rd	19.8%	0.1	19.8%	0.1	22.1%	0.1	22.1%	0.1	22.1%	0.1
Comberford Rd (S)	53.7%	1.0	53.7%	1.3	60.4%	5.0	60.4%	4.3	50.3%	0.5
PRC	67.8%		67.8%		49.1%		49.1%		79.1%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Wiggington Rd - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Wiggington Rd	21.3%	0.1	21.3%	0.1	23.9%	0.2	23.9%	0.2	23.9%	0.2
Comberford Rd (S)	36.0%	0.3	36.0%	0.3	40.2%	0.3	40.2%	0.3	40.2%	0.3
PRC	150.3%		150.3%		124.1%		124.1%		124.1%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd (E)	17.8%	0.1	17.8%	0.1	19.8%	0.1	21.8%	0.1	25.6%	0.2
Ashby Rd (S)	28.9%	0.2	28.9%	0.4	32.2%	0.5	38.6%	0.8	45.9%	3.4
PRC	211.8%		211.8%		179.5%		133.1%		96.2%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd (E)	21.8%	0.1	21.7%	0.1	25.6%	0.2	25.4%	0.2
Ashby Rd (S)	38.6%	0.8	38.3%	0.8	45.9%	3.4	46.5%	2.9
PRC	133.1%		134.8%		96.2%		93.5%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

Ashby Rd (North) - PrePM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd (E)	11.6%	0.1	11.6%	0.1	12.9%	0.1	13.6%	0.1	14.9%	0.1
Ashby Rd (S)	28.4%	0.2	28.4%	0.2	31.4%	0.3	39.4%	0.4	51.0%	0.6
PRC	217.4%		217.4%		187.0%		128.4%		76.6%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd (E)	26.7%	0.2	26.7%	0.2	29.2%	0.2	29.2%	0.2
Ashby Rd (S)	42.4%	0.4	42.0%	0.4	48.6%	0.5	49.3%	0.5
PRC	112.5%		114.2%		85.3%		82.6%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

Ashby Rd (North) - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd (E)	22.1%	0.1	22.1%	0.1	24.9%	0.2	26.7%	0.2	29.2%	0.2
Ashby Rd (S)	28.7%	0.2	28.7%	0.7	31.8%	0.2	42.4%	0.4	48.6%	0.5
PRC	213.8%		213.8%		183.4%		112.5%		85.3%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd (E)	5.8%	0.0	5.9%	0.0	6.6%	0.0	7.0%	0.0	7.5%	0.0
Ashby Rd (S)	15.8%	0.1	15.8%	0.1	17.6%	0.1	20.6%	0.1	24.8%	0.2
PRC	468.2%		468.2%		410.8%		337.8%		263.1%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	64.9%	6.6	60.7%	8.5	59.7%	8.7	80.9%	15.7	102.2%	48.7
Upper Gungate	48.9%	3.0	52.9%	4.2	53.8%	6.6	60.1%	7.3	59.4%	7.3
Comberford Rd	64.0%	5.7	58.9%	7.3	74.0%	9.7	79.6%	10.6	98.2%	18.7
Upper Gungate SB	52.5%	4.5	49.1%	6.2	54.1%	7.8	67.7%	8.2	85.6%	10.6
Upper Gungate NB	41.4%	3.3	38.7%	3.2	42.7%	3.8	46.7%	4.4	48.2%	4.5
PRC	38.7%		48.4%		21.7%		11.2%		-13.5%	
Cycle Time	56		78		78		78		78	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	80.9%	15.7	76.9%	14.3	102.2%	48.7	96.0%	30.4
Upper Gungate	60.1%	7.3	59.0%	7.3	59.4%	7.3	58.8%	7.8
Comberford Rd	79.6%	10.6	74.2%	9.0	98.2%	18.7	96.9%	16.2
Upper Gungate SB	67.7%	8.2	63.7%	7.0	85.6%	10.6	83.0%	9.1
Upper Gungate NB	46.7%	4.4	46.7%	4.4	48.2%	4.5	49.4%	4.9
PRC	11.2%		17.0%		-13.5%		-7.7%	
Cycle Time	78		78		78		78	
File	Gungate Network 2015.lsg3x							

Ashby Rd (North) - PrePM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	44.3%	2.8	34.5%	3.7	39.2%	4.5	44.9%	5.7	53.2%	7.8
Upper Gungate	63.1%	3.7	65.6%	5.9	73.8%	7.2	85.1%	15.7	99.2%	40.0
Comberford Rd	63.4%	4.7	66.6%	8.3	71.4%	9.6	82.2%	11.4	96.9%	17.9
Upper Gungate SB	38.2%	1.0	36.2%	2.9	40.1%	3.9	45.2%	1.0	52.5%	5.0
Upper Gungate NB	50.0%	2.4	47.3%	2.4	52.3%	2.9	60.4%	4.2	71.9%	6.8
PRC	42.0%		35.1%		22.0%		5.8%		-10.2%	
Cycle Time	44		78		78		78		78	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	46.7%	6.2	46.7%	6.2	56.3%	8.5	56.3%	8.5
Upper Gungate	101.5%	52.3	97.5%	33.7	121.5%	235.2	118.1%	209.7
Comberford Rd	98.6%	20.4	98.6%	20.4	119.4%	59.2	119.4%	59.2
Upper Gungate SB	48.7%	4.9	48.7%	4.9	52.9%	2.8	52.9%	3.3
Upper Gungate NB	73.9%	5.3	70.4%	4.5	90.0%	14.2	86.8%	10.9
PRC	-12.8%		-9.5%		-35.3%		-32.6%	
Cycle Time	78		78		78		78	
File	Gungate Network 2015.lsg3x							

Ashby Rd (North) - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	46.1%	3.1	36.0%	4.0	39.9%	4.7	46.7%	6.2	56.3%	8.5
Upper Gungate	73.7%	5.2	76.6%	8.3	85.0%	13.5	101.5%	52.3	121.5%	235.2
Comberford Rd	72.2%	5.7	75.7%	10.1	83.9%	12.3	98.6%	20.4	119.4%	59.2
Upper Gungate SB	39.9%	0.7	38.6%	2.9	42.9%	4.3	48.7%	4.9	52.9%	2.8
Upper Gungate NB	58.1%	2.5	56.3%	2.4	62.6%	3.1	73.9%	5.3	90.0%	14.2
PRC	22.2%		17.5%		5.9%		-12.8%		-35.3%	
Cycle Time	44		78		78		78		78	
File	Gungate Network 2015.lsg3x									

Ashby Rd (North) - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Ashby Rd	52.5%	4.0	42.9%	5.2	48.1%	6.1	57.1%	8.2	71.7%	12.2
Upper Gungate	52.1%	3.3	55.8%	4.4	62.2%	5.1	66.4%	6.0	73.9%	8.7
Comberford Rd	55.4%	4.9	55.3%	7.3	61.8%	8.6	67.7%	9.4	72.2%	10.1
Upper Gungate SB	39.4%	0.7	38.5%	1.4	43.1%	2.6	49.0%	3.1	57.4%	3.6
Upper Gungate NB	37.8%	1.1	37.0%	1.1	41.2%	1.2	44.1%	1.6	48.4%	1.7
PRC	62.6%		61.2%		44.6%		33.0%		21.8%	
Cycle Time	51		78		78		78		78	
File	Gungate Network 2015.lsg3x									

College Access - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
College Access	8.2%	0.0	8.2%	0.0	9.6%	0.1	12.2%	0.1	18.1%	0.3
Upper Gungate (S)	39.8%	0.3	39.6%	0.3	44.2%	0.4	49.2%	0.5	52.2%	0.5
PRC	126.1%		127.2%		103.6%		82.9%		72.3%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

College Access - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
College Access	12.2%	0.1	11.4%	0.1	18.1%	0.3	17.4%	0.3
Upper Gungate (S)	49.2%	0.5	48.6%	0.5	52.2%	0.5	53.0%	0.6
PRC	82.9%		85.1%		72.3%		69.7%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

College Access - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
College Access	6.6%	0.0	6.6%	0.1	7.7%	0.1	8.6%	0.1	10.5%	0.1
Upper Gungate (S)	50.0%	0.5	50.0%	0.5	55.7%	0.6	63.3%	0.9	75.1%	1.5
PRC	79.8%		80.2%		61.6%		42.3%		19.8%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

College Access - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
College Access	3.6%	0.1	3.5%	0.1	4.5%	0.1	4.3%	0.1
Upper Gungate (S)	79.8%	2.0	76.5%	1.6	95.1%	16.9	92.2%	10.6
PRC	12.8%		17.7%		-5.7%		-2.4%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

College Access - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
College Access	2.8%	0.0	2.8%	0.0	3.0%	0.0	3.6%	0.1	4.5%	0.1
Upper Gungate (S)	61.2%	0.8	61.1%	0.8	68.3%	1.1	79.8%	2.0	95.1%	16.9
PRC	47.1%		47.2%		31.7%		12.8%		-5.7%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

College Access - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
College Access	1.8%	0.0	1.8%	0.0	2.0%	0.0	2.2%	0.0	2.7%	0.0
Upper Gungate (S)	38.1%	0.3	38.0%	0.3	42.3%	0.4	45.4%	0.4	49.9%	0.5
PRC	136.2%		137.0%		113.0%		98.4%		80.5%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Croft St - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	30.4%	0.2	30.4%	0.2	37.1%	1.0	48.3%	2.2	61.0%	3.0
Upper Gungate (S)	37.0%	5.5	37.0%	5.7	43.3%	5.9	51.2%	8.3	61.3%	11.6
PRC	143.0%		143.0%		107.7%		75.9%		46.8%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Croft St - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	48.3%	2.2	46.2%	2.1	61.0%	3.0	60.6%	3.0
Upper Gungate (S)	51.2%	8.3	48.6%	6.4	61.3%	11.6	60.3%	12.4
PRC	75.9%		85.0%		46.8%		48.4%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

Croft St - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	32.9%	0.2	32.9%	0.2	39.9%	0.3	48.0%	1.8	75.7%	5.0
Upper Gungate (S)	43.5%	9.5	43.5%	12.6	48.2%	15.0	55.6%	19.9	66.2%	38.4
PRC	106.7%		106.7%		86.8%		61.8%		18.9%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Croft St - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	53.9%	2.8	36.7%	0.3	122.7%	19.4	81.1%	4.3
Upper Gungate (S)	70.6%	42.4	68.1%	40.5	86.1%	53.7	83.6%	52.4
PRC	27.4%		32.1%		-36.3%		7.7%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

Croft St - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	27.8%	0.2	27.7%	0.2	36.0%	0.3	53.9%	2.8	122.7%	19.4
Upper Gungate (S)	53.9%	15.6	53.9%	19.0	59.9%	22.0	70.6%	42.4	86.1%	53.7
PRC	66.9%		66.9%		50.3%		27.4%		-36.3%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Croft St - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Croft St	10.1%	0.1	10.2%	0.1	12.2%	0.1	14.0%	0.3	17.3%	0.6
Upper Gungate (S)	34.7%	6.0	34.7%	9.4	38.6%	11.4	41.4%	12.7	45.4%	15.1
PRC	159.3%		159.3%		133.4%		117.6%		98.4%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Offadrive - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	81.2%	9.5	80.1%	10.7	87.8%	15.7	101.1%	44.8	118.6%	167.0
Offadrive	79.1%	10.3	80.6%	12.2	88.3%	14.8	99.9%	22.9	116.4%	53.1
Upper Gungate (S)	46.8%	4.2	42.4%	5.1	45.5%	5.4	44.6%	5.7	43.3%	4.6
Salter's Ln	78.1%	6.9	76.1%	7.7	83.7%	9.2	95.7%	12.7	111.6%	24.8
PRC	10.8%		11.7%		1.9%		-12.3%		-31.7%	
Cycle Time	85		102		102		102		102	
File	Gungate Network 2015.leg3x									

Offadrive - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	101.1%	44.8	95.5%	26.1	118.6%	167.0	115.5%	147.1
Offadrive	99.9%	22.9	95.9%	19.2	116.4%	53.1	111.4%	44.0
Upper Gungate (S)	44.6%	5.7	46.0%	6.0	43.3%	4.6	45.3%	5.7
Salter's Ln	95.7%	12.7	95.7%	12.7	111.6%	24.8	111.6%	24.8
PRC	-12.3%		-6.6%		-31.7%		-28.3%	
Cycle Time	102		102		102		102	
File	Gungate Network 2015.leg3x							

Offadrive - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	69.9%	7.0	70.5%	8.1	77.9%	9.6	84.8%	13.3	95.2%	25.1
Offadrive	71.2%	9.4	70.2%	11.4	76.6%	13.7	83.9%	16.2	94.5%	22.1
Upper Gungate (S)	60.8%	6.5	54.5%	7.8	59.6%	8.6	63.5%	9.2	71.8%	12.1
Salter's Ln	68.1%	4.5	66.0%	5.3	73.3%	6.2	79.4%	6.7	86.7%	7.7
PRC	26.4%		27.6%		15.5%		6.1%		-5.8%	
Cycle Time	81		102		102		102		102	
File	Gungate Network 2015.leg3x									

Offadrive - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	89.1%	16.6	89.1%	16.5	97.0%	26.6	98.3%	29.7
Offadrive	90.7%	20.5	90.2%	20.3	99.4%	31.0	98.7%	30.7
Upper Gungate (S)	81.0%	15.4	75.9%	13.6	98.0%	28.3	92.7%	21.6
Salter's Ln	84.5%	7.6	84.5%	7.6	92.1%	9.3	92.1%	9.3
PRC	-0.8%		-0.2%		-10.4%		-9.7%	
Cycle Time	102		102		102		102	
File	Gungate Network 2015.leg3x							

Offadrive - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	71.5%	7.4	72.6%	8.4	80.5%	10.0	89.1%	16.6	97.0%	26.6
Offadrive	73.9%	11.0	73.9%	13.0	81.6%	15.5	90.7%	20.5	99.4%	31.0
Upper Gungate (S)	72.6%	9.3	66.5%	10.5	72.9%	12.4	81.0%	15.4	98.0%	28.3
Salter's Ln	75.2%	5.3	70.2%	5.8	78.0%	6.9	84.5%	7.6	92.1%	9.3
PRC	19.7%		21.8%		10.3%		-0.8%		-10.4%	
Cycle Time	84		102		102		102		102	
File	Gungate Network 2015.leg3x									

Offadrive - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	67.1%	7.2	65.5%	8.3	73.3%	10.7	79.5%	14.0	88.9%	21.0
Offadrive	67.8%	6.9	66.1%	8.7	72.6%	10.4	78.7%	11.6	87.2%	13.3
Upper Gungate (S)	39.4%	3.4	35.3%	4.0	40.3%	5.8	40.9%	5.9	41.9%	5.9
Salter's Ln	63.5%	3.8	63.1%	4.7	69.2%	5.3	75.5%	5.8	83.1%	6.5
PRC	32.7%		36.2%		22.8%		13.2%		1.3%	
Cycle Time	77		102		102		102		102	
File	Gungate Network 2015.leg3x									

After Improvements

Offdrive - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	71.9%	7.9	72.3%	8.7	78.0%	10.5	90.6%	21.3	105.5%	87.2
Offdrive	69.8%	9.3	69.9%	10.9	79.3%	13.0	88.7%	15.8	106.4%	35.6
Upper Gungate (S)	48.5%	4.3	43.5%	5.2	45.5%	5.4	46.3%	7.0	42.4%	4.5
Salter's Ln	67.7%	6.1	71.7%	7.4	78.8%	8.6	89.3%	10.4	103.0%	17.4
PRC	25.2%		24.5%		13.5%		-0.6%		-18.2%	
Cycle Time	85		102		102		102		102	
File	Gungate Network 2015 Improved.lsg3x									

After Improvements

Offdrive - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	90.6%	21.3	86.9%	16.6	105.5%	87.2	102.8%	71.3
Offdrive	88.7%	15.8	85.7%	14.9	106.4%	35.6	102.1%	27.6
Upper Gungate (S)	46.3%	7.0	47.6%	6.6	42.4%	4.5	43.6%	4.9
Salter's Ln	89.3%	10.4	83.7%	9.2	103.0%	17.4	103.0%	17.4
PRC	-0.6%		3.5%		-18.2%		-14.5%	
Cycle Time	102		102		102		102	
File	Gungate Network 2015 Improved.lsg3x							

Offdrive - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	61.6%	6.1	63.6%	7.2	69.2%	8.1	76.7%	9.6	86.2%	17.1
Offdrive	61.4%	8.4	62.4%	10.6	70.1%	12.7	74.6%	14.3	84.0%	17.6
Upper Gungate (S)	63.1%	6.7	55.9%	8.0	59.6%	8.6	65.1%	9.6	73.6%	12.4
Salter's Ln	61.9%	4.2	61.3%	5.1	68.1%	5.9	73.3%	6.2	79.4%	6.7
PRC	42.6%		35.1%		22.0%		17.3%		4.4%	
Cycle Time	81		102		102		102		102	
File	Gungate Network 2015 Improved.lsg3x									

Offdrive - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	80.5%	11.6	80.5%	11.4	83.2%	14.0	85.8%	16.0
Offdrive	81.1%	17.3	80.8%	17.3	93.9%	25.0	90.9%	23.1
Upper Gungate (S)	83.2%	15.9	78.0%	14.0	93.6%	23.4	91.2%	20.9
Salter's Ln	78.0%	6.9	78.0%	6.9	92.1%	9.3	92.1%	9.3
PRC	8.2%		11.4%		-4.4%		-2.4%	
Cycle Time	102		102		102		102	
File	Gungate Network 2015 Improved.lsg3x							

Offdrive - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	60.9%	6.1	64.4%	7.2	71.4%	8.5	80.5%	11.6	83.2%	14.0
Offdrive	69.0%	10.4	67.9%	12.2	75.0%	14.3	81.1%	17.3	93.9%	25.0
Upper Gungate (S)	70.0%	8.9	66.5%	10.5	72.9%	12.4	83.2%	15.9	93.6%	23.4
Salter's Ln	68.3%	4.9	65.2%	5.5	72.4%	6.4	78.0%	6.9	92.1%	9.3
PRC	28.5%		32.6%		20.0%		8.2%		-4.4%	
Cycle Time	84		102		102		102		102	
File	Gungate Network 2015 Improved.lsg3x									

Offdrive - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate (N)	58.7%	6.1	59.3%	7.4	65.3%	8.4	71.2%	10.0	79.9%	14.7
Offdrive	56.3%	6.1	57.3%	8.1	65.2%	9.7	70.4%	10.6	77.6%	12.1
Upper Gungate (S)	40.7%	3.5	36.1%	4.1	40.3%	5.8	40.9%	5.9	41.9%	5.9
Salter's Ln	57.1%	3.5	58.2%	4.5	63.9%	5.1	69.2%	5.3	75.5%	5.8
PRC	53.3%		51.9%		37.9%		26.5%		12.6%	
Cycle Time	77		102		102		102		102	
File	Gungate Network 2015 Improved.lsg3x									

Hospital St - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	61.7%	4.6	43.7%	5.6	47.9%	6.4	54.5%	8.3	57.4%	9.1
Lower Gungate	38.0%	1.8	30.0%	2.6	32.9%	2.9	36.8%	3.0	36.8%	3.0
Aldergate	50.2%	3.5	37.6%	4.1	41.2%	4.7	42.1%	5.0	45.7%	5.9
Hospital St	55.6%	3.0	43.9%	4.2	48.4%	4.7	54.4%	5.0	54.7%	5.0
PRC	45.8%		105.1%		86.1%		65.1%		56.8%	
Cycle Time	54		90		90		90		90	
File	Gungate Network 2015.lsg3x									

Hospital St - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	54.5%	8.3	52.4%	7.8	57.4%	9.1	56.0%	8.9
Lower Gungate	36.8%	3.0	34.7%	2.9	36.8%	3.0	36.8%	3.0
Aldergate	42.1%	5.0	43.0%	5.1	45.7%	5.9	45.7%	5.9
Hospital St	54.4%	5.0	51.3%	4.8	54.7%	5.0	54.7%	5.0
PRC	65.1%		71.8%		56.8%		60.3%	
Cycle Time	90		90		90		90	
File	Gungate Network 2015.lsg3x							

Hospital St - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	44.7%	4.7	40.2%	5.3	44.3%	6.1	47.2%	6.8	51.6%	7.9
Lower Gungate	42.1%	3.0	39.1%	3.5	43.5%	3.9	45.6%	4.0	48.0%	4.1
Aldergate	54.2%	5.4	50.1%	6.3	55.1%	7.4	60.0%	9.1	66.9%	11.5
Hospital St	54.6%	4.6	50.6%	5.4	56.2%	6.1	59.5%	6.3	63.5%	6.6
PRC	64.9%		77.9%		60.1%		50.1%		34.5%	
Cycle Time	74		90		90		90		90	
File	Gungate Network 2015.lsg3x									

Hospital St - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	36.7%	4.7	36.7%	4.7	39.5%	5.4	39.1%	5.2
Lower Gungate	57.0%	3.1	44.4%	3.1	64.8%	3.2	58.4%	3.3
Aldergate	63.0%	10.4	60.9%	9.7	71.6%	14.0	68.3%	12.7
Hospital St	62.6%	6.3	59.3%	5.9	67.5%	6.6	68.0%	6.5
PRC	42.8%		47.7%		25.7%		31.7%	
Cycle Time	90		90		90		90	
File	Gungate Network 2015.lsg3x							

Hospital St - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	32.4%	3.1	31.0%	3.6	34.3%	4.2	36.7%	4.7	39.5%	5.4
Lower Gungate	39.4%	2.4	30.6%	2.7	36.6%	3.0	57.0%	3.1	64.8%	3.2
Aldergate	54.3%	5.9	52.8%	7.2	58.2%	8.6	63.0%	10.4	71.6%	14.0
Hospital St	55.1%	4.5	50.2%	5.1	55.6%	5.8	62.6%	6.3	67.5%	6.6
PRC	63.4%		70.6%		54.7%		42.8%		25.7%	
Cycle Time	74		90		90		90		90	
File	Gungate Network 2015.lsg3x									

Hospital St - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Upper Gungate	45.3%	4.5	39.3%	5.2	44.5%	6.1	47.4%	6.9	52.7%	8.3
Lower Gungate	53.9%	4.0	49.6%	4.9	55.5%	5.7	58.0%	5.8	60.8%	6.0
Aldergate	57.0%	4.9	51.7%	6.2	57.3%	7.5	58.4%	8.1	60.3%	8.8
Hospital St	35.6%	2.8	32.8%	3.5	36.5%	3.9	38.4%	4.0	40.4%	4.1
PRC	58.0%		74.0%		57.1%		54.2%		48.1%	
Cycle Time	68		90		90		90		90	
File	Gungate Network 2015.lsg3x									

Corporation St - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	19.0%	0.1	19.0%	0.1	20.7%	0.1	24.7%	0.2	26.3%	0.2
Corporation St	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
Aldergate (S)	28.1%	0.2	28.1%	0.2	31.0%	1.1	32.6%	0.3	34.5%	0.3
Car Park	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
PRC	219.9%		219.9%		190.5%		176.2%		160.7%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Corporation St - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	24.7%	0.2	23.6%	0.2	26.3%	0.2	26.3%	0.2
Corporation St	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
Aldergate (S)	32.6%	0.3	32.5%	0.3	34.5%	0.3	34.5%	0.3
Car Park	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
PRC	176.2%		177.2%		160.7%		160.8%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

Corporation St - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	19.5%	0.1	19.5%	0.1	21.5%	0.1	23.2%	0.2	25.5%	0.2
Corporation St	4.3%	0.0	4.3%	0.0	4.7%	0.0	4.9%	0.0	5.2%	0.0
Aldergate (S)	30.9%	0.2	30.9%	0.2	34.3%	0.3	37.1%	0.3	41.1%	0.3
Car Park	1.3%	0.0	1.3%	0.0	1.4%	0.0	1.4%	0.0	1.5%	0.0
PRC	191.6%		191.6%		162.2%		142.4%		119.1%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Corporation St - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	20.7%	0.1	20.7%	0.1	22.6%	0.1	22.8%	0.1
Corporation St	4.1%	0.0	4.1%	0.0	4.4%	0.0	4.4%	0.0
Aldergate (S)	44.3%	0.4	43.1%	0.4	49.9%	0.5	48.7%	0.5
Car Park	4.3%	0.0	4.2%	0.0	4.6%	0.0	4.6%	0.0
PRC	103.4%		108.8%		80.5%		84.7%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

Corporation St - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	17.0%	0.1	17.0%	0.1	18.7%	0.1	20.7%	0.1	22.6%	0.1
Corporation St	3.7%	0.0	3.7%	0.0	3.9%	0.0	4.1%	0.0	4.4%	0.0
Aldergate (S)	36.5%	0.3	36.5%	0.3	40.3%	0.4	44.3%	0.4	49.9%	0.5
Car Park	3.9%	0.0	3.9%	0.0	4.1%	0.0	4.3%	0.0	4.6%	0.0
PRC	146.7%		146.7%		123.3%		103.4%		80.5%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Corporation St - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	21.7%	0.1	21.7%	0.1	24.3%	0.2	26.3%	0.2	29.1%	0.2
Corporation St	3.2%	0.0	3.2%	0.0	3.3%	0.0	3.4%	0.0	3.6%	0.0
Aldergate (S)	35.5%	0.3	35.5%	0.3	39.8%	0.3	41.0%	0.3	42.7%	0.4
Car Park	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
PRC	153.8%		153.8%		126.4%		119.5%		110.5%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

St John St - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	18.1%	0.1	18.1%	0.1	20.2%	0.1	24.3%	0.2	26.1%	0.2
Car Park	1.8%	0.0	1.8%	0.0	1.8%	0.0	1.9%	0.0	2.0%	0.0
Aldergate (S)	24.8%	0.2	24.8%	0.2	27.3%	0.2	28.6%	0.2	30.5%	0.2
St John St	8.4%	0.0	8.4%	0.0	9.3%	0.1	9.5%	0.1	9.8%	0.1
PRC	262.8%		262.8%		229.6%		214.3%		195.3%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

St John St - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	24.3%	0.2	23.2%	0.2	26.1%	0.2	26.1%	0.2
Car Park	1.9%	0.0	1.9%	0.0	2.0%	0.0	2.0%	0.0
Aldergate (S)	28.6%	0.2	28.6%	0.2	30.5%	0.2	30.5%	0.2
St John St	9.5%	0.1	9.5%	0.1	9.8%	0.1	9.8%	0.1
PRC	214.3%		214.7%		195.3%		195.5%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

St John St - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	19.8%	0.1	19.8%	0.1	22.0%	0.1	23.9%	0.2	26.6%	0.2
Car Park	9.1%	0.0	9.0%	0.0	9.9%	0.1	10.2%	0.1	10.7%	0.1
Aldergate (S)	25.5%	0.2	25.5%	0.2	28.3%	0.2	31.0%	0.2	34.8%	0.3
St John St	8.6%	0.0	8.6%	0.0	9.5%	0.1	9.8%	0.1	10.2%	0.1
PRC	253.1%		253.1%		218.0%		190.5%		158.8%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

St John St - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	22.5%	0.1	22.4%	0.1	25.2%	0.2	25.2%	0.2
Car Park	9.9%	0.1	9.8%	0.1	10.6%	0.1	10.5%	0.1
Aldergate (S)	36.4%	0.3	35.3%	0.3	41.9%	0.4	40.8%	0.3
St John St	16.0%	0.1	15.8%	0.1	16.8%	0.1	16.6%	0.1
PRC	147.1%		155.2%		114.8%		120.9%	
Cycle Time	n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x							

St John St - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	18.2%	0.1	18.2%	0.1	20.1%	0.1	22.5%	0.1	25.2%	0.2
Car Park	8.3%	0.0	8.3%	0.0	9.4%	0.1	9.9%	0.1	10.6%	0.1
Aldergate (S)	29.4%	0.2	29.4%	0.2	32.6%	0.2	36.4%	0.3	41.9%	0.4
St John St	13.9%	0.1	13.9%	0.1	15.4%	0.1	16.0%	0.1	16.8%	0.1
PRC	206.2%		206.2%		176.1%		147.1%		114.8%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

St John St - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate (N)	21.5%	0.1	21.5%	0.1	24.3%	0.2	26.3%	0.2	29.3%	0.2
Car Park	15.7%	0.1	15.7%	0.1	18.3%	0.1	18.8%	0.1	19.6%	0.1
Aldergate (S)	31.6%	0.2	31.6%	0.2	35.1%	0.3	36.3%	0.3	37.9%	0.3
St John St	10.6%	0.1	10.6%	0.1	11.9%	0.1	12.1%	0.1	12.4%	0.1
PRC	185.1%		185.1%		156.1%		148.1%		137.7%	
Cycle Time	n/a		n/a		n/a		n/a		n/a	
File	Gungate Network 2015.lsg3x									

Lichfield St - AM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	25.4%	2.9	21.9%	3.3	23.7%	3.6	31.7%	5.1	36.8%	6.2
Church St	50.0%	2.6	39.2%	3.2	45.3%	3.6	45.3%	3.6	48.6%	3.7
Silver St	16.7%	0.7	23.2%	1.0	24.1%	1.1	24.1%	1.1	24.1%	1.1
Lichfield St	49.6%	6.6	41.6%	7.5	45.4%	8.5	47.8%	9.1	50.5%	9.8
PRC	80.0%		116.2%		98.2%		88.3%		78.4%	
Cycle Time	79		110		110		110		110	
File	Gungate Network 2015.lsg3x									

Lichfield St - AM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	31.7%	5.1	29.6%	4.7	36.8%	6.2	36.2%	6.1
Church St	45.3%	3.6	45.3%	3.6	48.6%	3.7	48.6%	3.7
Silver St	24.1%	1.1	24.1%	1.1	24.1%	1.1	24.1%	1.1
Lichfield St	47.8%	9.1	47.8%	9.1	50.5%	9.8	50.5%	9.8
PRC	88.3%		88.3%		78.4%		78.4%	
Cycle Time	110		110		110		110	
File	Gungate Network 2015.lsg3x							

Lichfield St - Pre PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	39.3%	4.8	34.4%	5.7	37.4%	6.3	39.7%	6.8	43.3%	7.7
Church St	57.5%	3.4	46.5%	4.1	51.4%	4.6	58.2%	4.9	62.4%	5.0
Silver St	40.6%	1.8	44.7%	2.5	54.5%	2.9	54.5%	2.9	61.3%	3.1
Lichfield St	57.1%	7.7	49.0%	9.0	53.6%	10.3	57.3%	11.5	63.0%	13.6
PRC	56.6%		83.7%		65.2%		54.6%		42.8%	
Cycle Time	80		110		110		110		110	
File	Gungate Network 2015.lsg3x									

Lichfield St - PM Peak LSTF	2029+C		2029+C LSTF		2029+C+P		2029+C+P LSTF	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	31.2%	5.0	31.7%	5.1	34.8%	5.7	35.5%	5.8
Church St	61.1%	5.1	57.3%	4.9	70.6%	5.5	65.5%	5.3
Silver St	55.4%	2.7	54.0%	2.6	55.4%	2.7	54.0%	2.6
Lichfield St	61.8%	13.4	60.7%	13.0	70.3%	16.9	69.4%	16.4
PRC	45.7%		48.3%		27.6%		29.7%	
Cycle Time	110		110		110		110	
File	Gungate Network 2015.lsg3x							

Lichfield St - PM Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	29.5%	3.4	25.5%	4.0	28.1%	4.5	31.2%	5.0	34.8%	5.7
Church St	61.0%	3.6	49.3%	4.3	54.0%	4.8	61.1%	5.1	70.6%	5.5
Silver St	36.4%	1.6	50.0%	2.4	55.4%	2.7	55.4%	2.7	55.4%	2.7
Lichfield St	59.8%	8.6	50.4%	9.7	56.0%	11.4	61.8%	13.4	70.3%	16.9
PRC	47.6%		78.5%		60.6%		45.7%		27.6%	
Cycle Time	80		110		110		110		110	
File	Gungate Network 2015.lsg3x									

Lichfield St - Saturday Peak	2015 (Site)		2015		2029		2029+C		2029+C+P	
	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ	DoS	MMQ
Aldergate	45.7%	5.8	40.2%	6.9	44.7%	7.9	47.6%	8.7	54.1%	10.3
Church St	65.1%	3.7	56.8%	4.4	63.3%	5.1	68.1%	5.3	68.1%	5.3
Silver St	65.4%	3.7	57.1%	4.4	63.3%	5.0	68.2%	5.3	68.2%	5.3
Lichfield St	69.7%	9.8	60.7%	11.5	67.6%	13.7	67.4%	14.1	70.6%	15.3
PRC	29.1%		48.4%		33.2%		32.0%		27.4%	
Cycle Time	81		110		110		110		110	
File	Gungate Network 2015.lsg3x									

