Memo

To	Project name	Project number	Subject
National Highways	Humber Zero - Phillips 66 and VPI Developments	60712174	National Highways Response 4
Date	**Document ref**	**Issued by**	**Prepared by**
June 17 2024	DevHU0163 005 TM	Mark Romanowski	Amelia Simmons
Checked by	**Revision No.**		
Mark Romanowski	0		

1. Background

This document represents the fourth step in responding to comments received from National Highways (Document Ref. DevHU0163 005 TM, dated 30th May 2024) in relation to the construction traffic associated with the Proposed Humber Zero Developments ('the Proposed Phillips 66 Development' and 'the Proposed VPI Development').

Following information provided by AECOM within Response 1 (dated 16th February 2024) National Highways provided a further response dated 7th March 2024 (Ref DevHU0163 Phillips 66 and VPI). AECOM Response 2 (dated 27th March 2024) addressed these comments and National Highways responded with further comments. AECOM Response 3 (dated 13th May 2024) addressed these comments and National Highways have issued their latest comments (Document Ref. DevHU0163 005 TM, dated 30th May 2024).

This response deals with outstanding comments provided within the DevHU0163 005 TM document.

A list of appendices supplied as part of this response is provided below:

- Appendix A – Traffic Flow Diagrams;
- Appendix B – Modelling Outputs;
- Appendix C – Traffic Signal Information;
- Appendix D – Raw Queue Data; and
- Appendix E – Barnetby Lorry Park LinSig Model Outputs.

Direct quotes from National Highways responses are shown in italics. Modeling input files for all junctions and video clips from the AM and PM peak at Junction A - A160 / Eastfield Road are also included.

2. National Highways Outstanding Comments

2.1 National Highways Comment 1 (Raw Queue Data)

"The TN contains queue data associated with the three new surveys, this is shown in Table 1 of the TN; however, for clarity, we require the source of the queue data to be provided, such as the outputs provided by the survey company. The TN notes that there is no available queue data associated with the IERRT TA traffic data." (this refers to Junctions B, C and E).

2.2 AECOM Response Comment 1 (Raw Queue Data)

AECOM have attached the queue data received from the survey company for Junctions A, D, and F in Appendix D.

2.3 National Highways Comment 2 (Traffic Signal Information)

When referring to the LinSig modelling for Junction A, JSJV note:

"*The video files should be provided for review. In addition, the traffic signal phasing, staging, intergreens and cycle time should be confirmed with North East Lincolnshire Council*.

There is a need to provide additional information with regard to the feasibility of modifying the traffic signal timings. There is a need to liaise with North East Lincolnshire Council who are understood to be responsible for traffic signal operation on behalf of National Highways. In particular, the existing operation should be clarified, including traffic signal timings and the feasibility of undertaking modification.

Please advise what arrangements have been made to ensure that the traffic signal change information can and will be made."

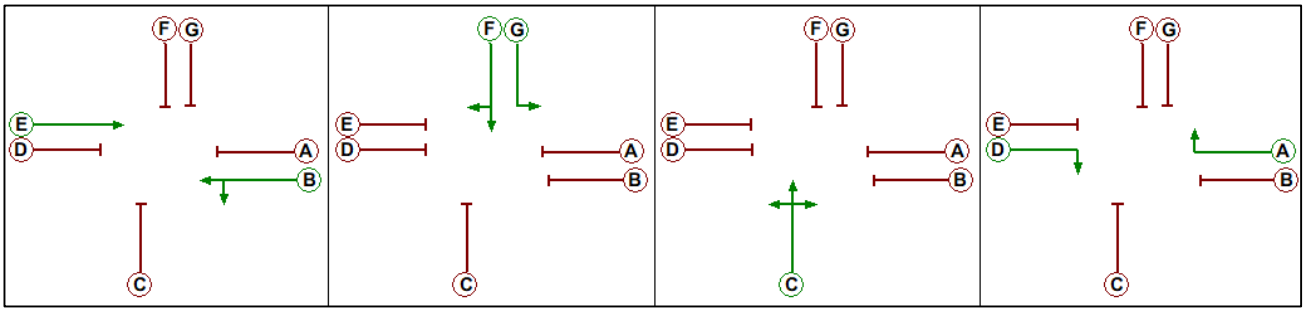
2.4 AECOM Response Comment 2 (Traffic Signal Information)

AECOM have attached AM and PM peak hour video clips.

AECOM contacted North East Lincolnshire Council however they advised that the junction is not within their area, recommending that North Lincolnshire Council may hold the information. AECOM contacted North Lincolnshire Council however they stated that National Highways control the junction.

National Highways have subsequently provided the relevant signal information, which shows that the signal timings vary in length dependent on the number of vehicles arriving at each lane. National Highways also confirmed that the junction runs on MOVA control and over the past years have been in contact with Philips 66 to make changes to the operation where required (e.g. during busier turnaround / shutdown periods).

The following stages occur at the Eastfield Road / A160 junction:



Stage 1 ***Stage 2*** ***Stage 3*** ***Stage 4***

The AM peak hour video footage and traffic signal information shows the following average signal green timings:

- Stage 1 – 40 seconds;
- Stage 2 – 44 seconds;
- Stage 3 – 18 seconds; and
- Stage 4 – 24 seconds.

The PM peak hour video footage and traffic signal information show the following average signal green timings:

- Stage 1 – 41 seconds;
- Stage 2 – 50 seconds;

- Stage 3 – 18 seconds; and
- Stage 4 – 20 seconds.

Given the angles of the video information supplied, the intergreens could not be calculated from this source alone, and therefore AECOM have used the DfT Advisory Leaflet TAL 1/06 guidance to assist with calculating the intergreens. The traffic signal information sent by National Highways did not contain intergreen values. This information has been applied to the junction modelling in section 3 of this response.

2.5 National Highways Comment 3 (Arm Naming)

When referring to the Junctions 10 modelling, JSJV noted:

"As previously requested, the arm names should be included within the model."

2.6 AECOM Response Comment 3 (Arm Naming)

Each arm name was previously stated in each Junctions 10 model, under the 'Name' heading. For clarity, the 'Show arm and junction name' box now has been ticked on each model so that these are displayed in the output diagram and results tables.

2.7 National Highways Comment 4 (Calibration)

When referring to the slope and intercept values for the Junctions 10 models (for Junctions B, C and E), JSJV notes:

"The TN has further noted that 'the slope and intercept have been entered directly to replicate the values used within IERRT Junctions 10 modelling'. We have investigated the latest IERRT modelling which we have access to [Update to Technical Note 2, 23 November 2023] and the slope and intercept values do not align, AECOM should advise on the exact source of the figures."

2.8 AECOM Response Comment 4 (Calibration)

AECOM have amended the slope and intercept values to coincide with the IERRT Technical Note 2, 23 November 2023. This information has been applied to the junction modelling for Junctions B, C and E.

3. Junction A - A160 / Eastfield Road Junction (Signalised Junction)

3.1 AECOM Response – Modelling Results

The junction has been modelled using LinSig, using the information on signal timings / staging provided by National Highways, and the amended modelling results for this junction are provided in **Table 1** below. Full details of the modelling inputs and outputs, including staging diagrams and cycle timings are provided in **Appendix B**.

Table 1. Junction A - A160 / Eastfield Road Junction

Scenario	Junction Arm	AM			PM		
		DoS (%)	Average Delay (s)	Mean Max Queue	DoS (%)	Average Delay (s)	Mean Max Queue
Base 2025	A160 WB Ahead Left	70.0%	62.2	16.5	77.5%	68.8	18.3
	A160 WB Ahead Right	74.5%	63.7	17.1	80.7%	70.2	19.0
	Eastfield Road NB	80.0%	104.0	10.0	87.7%	121.0	12.0
	A160 EB Left Ahead	80.2%	27.3	16.4	63.3%	38.9	12.5
	A160 EB Ahead Right	63.4%	59.9	14.1	54.3%	58.7	11.2
	Eastfield Road SB Left	10.7%	46.4	1.9	19.9%	43.4	4.0
	Eastfield Road SB Right Ahead	31.5%	50.2	6.2	81.8%	65.7	22.7
	Overall PRC		**12.2%**			**2.6%**	
	Cycle time		**160 seconds**			**160 seconds**	
Base 2025 + Committed Development	A160 WB Ahead Left	71.4%	62.9	16.8	101.9%	160.1	38.7
	A160 WB Ahead Right	76.0%	64.6	17.6	102.9%	168.3	42.9
	Eastfield Road NB	82.5%	108.3	10.6	88.6%	123.6	12.3
	A160 EB Left Ahead	86.2%	26.4	18.4	67.9%	40.8	13.8
	A160 EB Ahead Right	68.6%	61.9	15.6	59.4%	60.3	12.5
	Eastfield Road SB Left	10.9%	46.5	2.0	20.2%	43.4	4.1
	Eastfield Road SB Right Ahead	32.3%	50.4	6.4	81.8%	65.7	22.7
	Overall PRC		**4.4%**			**-14.14%**	
	Cycle time		**160 seconds**			**160 seconds**	
Base 2025 + Committed + Proposed Developments	A160 WB Ahead Left	71.4%	62.9	16.8	104.7%	198.0	44.9
	A160 WB Ahead Right	76.3%	64.7	17.6	106.0%	211.1	52.3
	Eastfield Road NB	82.5%	108.3	10.6	88.6%	123.6	12.3
	A160 EB Left Ahead	88.9%	25.3	19.5	68.0%	40.7	13.8
	A160 EB Ahead Right	70.9%	63.0	16.4	59.8%	60.4	12.6
	Eastfield Road SB Left	10.9%	46.5	2.0	22.4%	43.8	4.5
	Eastfield Road SB Right Ahead	32.3%	50.4	6.4	112.3%	298.6	75.9
	Overall PRC		**1.2%**			**-24.8%**	
	Cycle time		**160 seconds**			**160 seconds**	

The results indicate that during the AM period, all lanes continue to operate stably with the addition of the Proposed Developments' construction traffic.

In the PM period, the following lanes experience oversaturated capacities with the addition of the Proposed Developments' construction traffic:

- A160 WB Ahead Left

- A160 WB Ahead Right
- Eastfield Road SB Right Ahead

Both A160 arms are predicted to operate with oversaturated capacities before the Proposed Developments' construction traffic is added. The saturation increases slightly (2.8% and 3.1% respectively). However, queues and delays remain manageable.

The 'Eastfield Road SB Right Ahead' movement has a degree of saturation of 112.3%, alongside queues of 75.9 PCUs. To mitigate against the overloaded operation of this lane, signal timings were optimised to show how the junction could operate if the timings changed based on demand. Given that the junction already has different signal timings to manage different levels of demand from Phillips 66's Humber Refinery during the year, this optimisation is deemed feasible.

The results are provided in **Table 2** below for the affected PM period.

Table 2. Junction A - A160 / Eastfield Road Junction Model Results – With Signal Timing Changes

Scenario	Junction Arm	PM		
		DoS (%)	Average Delay (s)	Mean Max Queue
Base 2025 + Committed + Proposed Developments (with Optimised Signal Timings)	A160 WB Ahead Left	93.8%	91.9	29.4
	A160 WB Ahead Right	96.2%	96.6	31.2
	Eastfield Road NB	93.5%	147.2	13.6
	A160 EB Left Ahead	62.9%	36.5	13.0
	A160 EB Ahead Right	53.4%	55.8	11.9
	Eastfield Road SB Left	19.0%	36.8	4.1
	Eastfield Road SB Right Ahead	95.4%	86.5	37.0
	Overall PRC	6.9%		
	Cycle time	160 seconds		

With the mitigation measure (signal timing optimisation) in place, no lanes are oversaturated. In addition, it should be reiterated that the assessment is a worst-case scenario, based on the temporary peak of construction, coupled with the other committed developments at their peak of construction. Any temporary impacts would be managed through the Construction Worker Travel Plan and Construction Traffic Management Plan.

4. Junction B - A160 / Habrough Rd (Habrough Roundabout)

4.1 Modelling Results

The junction has been modelled using Junctions 10 and the amended modelling results (following the changed slope and intercept values) for this junction are provided in **Table 3** below.

Table 3. Junction B - A160 / Habrough Rd (Habrough Roundabout) Model Results

Scenario	Junction Arm	AM			PM		
		Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
Base 2025	A160 East	0.5	3.26	0.23	1.2	3.61	0.48
	Habrough Rd	0.4	4.37	0.29	0.2	4.21	0.13
	A160 West	1.6	3.94	0.57	0.6	2.98	0.28
	Ulceby Rd	0.3	6.34	0.21	0.1	4.28	0.09
	East Halton Rd	0.5	5.90	0.26	0.5	4.16	0.31
Base 2025 + Committed Development	A160 East	0.6	3.31	0.24	1.8	4.59	0.59
	Habrough Rd	0.4	4.46	0.30	0.2	4.83	0.15
	A160 West	2.5	5.33	0.68	0.7	3.13	0.31
	Ulceby Rd	0.4	7.75	0.25	0.1	4.40	0.10
	East Halton Rd	0.6	7.10	0.30	0.5	4.29	0.32
Base 2025 + Committed + Proposed Developments	A160 East	0.6	3.32	0.24	2.8	6.11	0.69
	Habrough Rd	0.4	4.47	0.30	0.2	5.58	0.17
	A160 West	4.1	7.58	0.78	0.7	3.15	0.31
	Ulceby Rd	0.5	9.42	0.29	0.1	4.41	0.10
	East Halton Rd	0.7	8.47	0.34	0.5	4.31	0.32

With the changes made, the results indicate that the junction is predicted to operate satisfactorily in all scenarios, even with the addition of committed traffic and Proposed Developments' construction traffic.

5. Junction C - A160 / A180 Junction

5.1 Modelling Results

The junction has been modelled using Junctions 10 and the amended modelling results for this junction (following the changed slope and intercept values) are provided in **Table 4** below.

Table 4. Junction C - A160 / A180 Junction Model Results

Scenario	Junction Arm	AM			PM		
		Queue (PCI)	Delay (s)	RFC	Queue (PCI)	Delay (s)	RFC
Base 2025	A160	0.3	1.60	0.24	0.7	2.22	0.38
	A180 East	0.8	5.60	0.44	0.2	4.41	0.15
	A180 West	0.0	0.00	0.00	0.0	0.00	0.00
Base 2025 +	A160	0.4	1.62	0.25	1.1	2.66	0.47

Scenario	Junction Arm	AM			PM		
		Queue (PCI)	Delay (s)	RFC	Queue (PCI)	Delay (s)	RFC
Committed Development	A180 East	0.9	6.11	0.48	0.3	5.64	0.19
	A180 West	0.0	0.00	0.00	0.0	0.00	0.00
Base 2025 + Committed + Proposed Developments	A160	0.4	1.62	0.25	1.4	3.04	0.54
	A180 East	1.0	6.17	0.49	0.4	7.15	0.27
	A180 West	0.0	0.00	0.00	0.0	0.00	0.00

With the changes made, the results indicate that the junction is predicted to operate satisfactorily in all scenarios, even with the addition of committed traffic and the Proposed Developments' construction traffic.

6. Junction D - M180 Junction 5

6.1 AECOM Response – Traffic Flows

Following comments from JSJV regarding an error in the PM traffic flows for the Base + Committed + Proposed Developments scenario, the matrices inputted into Junctions 10 have been modified to rectify the issue.

6.2 Modelling Results

Updated modelling results for the existing junction layout are provided in **Table 5** below.

Table 5. Junction D – M180 Junction 5 Model Results

Scenario	Junction Arm			AM			PM
		Queue (PCI)	Delay (s)	RFC	Queue (PCI)	Delay (s)	RFC
Base 2025	M180 East	1.3	7.82	0.54	27.2	113.85	1.04
	A18	6.9	28.19	0.88	2.6	13.57	0.72
	M180 West	11.5	46.71	0.94	14.4	52.27	0.96
	Barnetby Top	4.1	72.78	0.84	1.6	38.46	0.61
	A15	7.3	17.32	0.88	4.8	11.48	0.82
Base 2025 + Committed Development	M180 East	1.5	9.07	0.57	49.2	184.47	1.12
	A18	20.0	74.55	1.00	2.7	13.96	0.73
	M180 West	38.6	134.11	1.07	16.0	57.90	0.97
	Barnetby Top	15.3	215.30	1.10	1.5	36.68	0.59
	A15	14.3	31.95	0.94	5.0	12.00	0.83
Base 2025 + Committed + Proposed Developments	M180 East	1.4	8.76	0.57	4.1	16.30	0.80
	A18	17.6	66.77	0.98	8.2	43.52	0.91
	M180 West	39.3	136.09	1.07	3.3	18.30	0.76
	Barnetby Top	15.4	216.11	1.10	0.6	14.04	0.35
	A15	28.7	57.72	1.00	2.3	5.29	0.68

The results indicate that during the AM period, with the addition of the Proposed Developments' construction traffic, one arm is predicted to operate close to capacity (A180), one at capacity (A15), and two over capacity (M180 West and Barnetby Top).

However, when comparing to the baseline, two of these arms are already operating close to capacity (A18 and M180 West). Further, with the addition of the committed developments, the modelling results show that the same number of arms will operate close to, or over capacity, as when the Proposed Developments' construction traffic is added.

In the AM, when adding the Proposed Developments' construction traffic, only one arm (A15) will have significantly higher queues when comparing to the baseline plus committed modelling results. All other arms have a deviation of between 0.1 and 2.4 PCUs.

The results indicate that during the PM period, with the addition of the Proposed Developments' construction traffic, one arm (A18) is predicted to operate close to capacity. All other arms operate below capacity.

It should be reiterated that the assessment is a worst-case scenario, based on the temporary peak of construction, coupled with the other committed developments at their peak of construction. Any temporary impacts would be managed through the Construction Worker Travel Plan and Construction Traffic Management Plan.

Further, given that this junction is located approximately 13km (linear) from the site, it is likely that some vehicles leaving towards the end of the peak hour will not reach the junction in the same hour, therefore have no impacts in that period.

JSJV also noted that:

"*Notwithstanding the presentation of the results of the Junctions 10, AECOM should be aware that the planning application for Barnetby Lorry Park has now progressed significantly to the point where mitigation is agreed subject to the Road Safety Audit. As this development is allocated within the Local Plan, there should be a reasonable assumption that it will come forward, with the mitigation scheme. Hence, the implications of this mitigation scheme and the additional turning movements forecasted to take place at the junction should be considered by AECOM. To assist, it is likely that there is an existing, approved, LinSig model of the junction, with mitigation, in the public domain."*

AECOM have explored the results of the approved LinSig model submitted to support Barnetby Lorry Park development (PA/2021/2273), available on the North Lincs planning portal. This did not include any reference to committed development traffic. Subsequently, AECOM have created a LinSig model for the junction replicating the agreed model and mitigation scenario, and also added the Proposed Developments' construction traffic to the base model.

Based on the construction phase trip generation for the Proposed Developments, 83 vehicles travelling to/from the Proposed Developments will travel through the junction in the AM and PM peaks respectively. 83 vehicles will be using the A15 arm only in the AM and the M180 West arm only in the PM. No other arms will be used by the Proposed Developments' construction traffic.

According to the development flows for the Barnetby Lorry Park, a further 34 vehicles will be using the A15 arm in their AM peak, and a further 132 vehicles will be using the A180 West in their PM peak, as a result of the Lorry Park development.

The following peak periods have been used:

- AM peak for Barnetby Lorry Park = 07:45-08:45
- AM peak for VPI / P66 = 07:00-08:00
- PM peak for Barnetby Lorry Park = 16:45-17:45
- PM peal for VPI / P66 = 16:00-17:00

In the AM and PM modelling peaks, there is a 15-minute overlap. For robustness, all 83 trips for the Proposed Developments have been added to the Barnetby Lorry Park peaks, despite, only 25% predicted to travel in those peaks.

AECOM have used the output geometries, stages, signal timings and intergreens from the '065182 M180 Jcn 5 Improved Layout 4a (ARCADY).lsg3x' (AM and PM) models have been used to recreate the Barnetby Top Lorry Park M180 Junction 5 Improvement scheme. This is included in **Appendix E** for reference.

It should be noted that despite applying the same geometries and all other information available within the output file to the AECOM model, there were some slight differences in results. For the arms being analysed (A15 and M180 West), the M180 West baseline results matched the previous model for the AM and PM, however the A15 had a difference in the DoS of +1.4% for the AM and +0.5% for the PM within the AECOM model.

The results are presented below in Table 6.

Table 6. Junction D, M180 J5 – LinSig Mitigation Model Results

Scenario	Junction Arm	AM			PM		
		DoS (%)	Average Delay (s)	Mean Max Queue	DoS (%)	Average Delay (s)	Mean Max Queue
Barnetby Interchange with Mitigation and Barnetby Lorry Park Traffic	A18 Left Ahead	104.4%	113.3	62.0	115.1%	171.9	61.3
	M180 East Off Slip U-Turn Ahead	106.5%	166.6	41.6	114.3%	266.8	53.9
	M180 East Off Slip Ahead	106.7%	169.4	42.1	114.1%	264.0	53.4
	Barnetby Lane Left Ahead	50.8%	25.9	2.7	33.2%	18.4	1.3
	A15 Left Ahead	105.9%	142.5	64.4	107.4%	161.6	54.2
	A15 Ahead	106.2%	146.4	65.6	107.4%	161.6	54.2
	M180 West Off Slip Left Ahead	119.0%	360.0	37.0	114.2%	281.3	38.9
	M180 West Off Slip Ahead	119.0%	359.6	36.8	114.1%	280.4	38.7
	Overall PRC			**-32.2%**		**-27.9%**	
	Cycle time			**60 seconds**		**48 seconds**	
Barnetby Interchange with Mitigation and Barnetby Lorry Park Traffic + Proposed Developments' Traffic	A18 Left Ahead	100.9%	66.7	47.5	118.8%	190.9	65.8
	M180 East Off Slip U-Turn Ahead	110.4%	219.6	49.3	116.2%	291.6	57.3
	M180 East Off Slip Ahead	110.2%	216.6	48.8	116.0%	288.8	56.8
	Barnetby Lane Left Ahead	52.0%	26.7	2.7	31.9%	17.6	1.2

Scenario	Junction Arm		AM			PM	
	A15 Left Ahead	111.5%	221.2	84.4	106.5%	149.4	51.6
	A15 Ahead	111.6%	223.2	84.9	106.8%	153.4	52.7
	M180 West Off Slip Left Ahead	119.0%	30.3	37.0	124.6%	408.4	59.8
	M180 West Off Slip Ahead	119.0%	30.2	36.8	124.4%	405.6	59.2
	Overall PRC			**-32.2%**		**-38.5%**	
	Cycle time			**60 seconds**		**48 seconds**	

The results show that in the AM peak, with the addition of 83 vehicles on the A15, the DoS increases by 5.6%, with queues rising by 20 PCUs. The PRC remains the same.

In the PM peak, along the M180 West, the DoS rises by 10.4% along the M180 West, with queues rising by 21.1 PCUs. The PRC decreases by 10.6%.

However, it is clear that the mitigation model appears to show movements are over capacity before the inclusion of the Proposed Developments' construction traffic.

7. Junction E – A160 / Humber Road / Manby Road (Manby Roundabout)

7.1 Modelling Results

The junction has been modelled using Junctions 10 and the amended modelling results for this junction (following the changed slope and intercept values) are provided in **Table 7** below.

Table 7. Junction E - A160 / Humber Road / Manby Road (Manby Roundabout) Model Results

Scenario	Junction Arm	AM			PM		
		Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
Base 2025	Humber Road	0.5	4.10	0.22	1.1	4.60	0.44
	Manby Road	0.5	2.76	0.29	0.3	2.55	0.18
	Phillips 66	0.0	0.00	0.00	0.0	6.69	0.01
	A160 West	0.6	3.60	0.32	0.5	3.35	0.25
	Conoco Access	0.0	1.93	0.00	0.0	0.00	0.00
Base 2025 + Committed Development	Humber Road	0.5	4.05	0.23	1.6	5.57	0.54
	Manby Road	0.6	3.03	0.35	0.3	2.69	0.19
	Phillips 66	0.0	0.00	0.00	0.0	7.18	0.01
	A160 West	0.8	4.02	0.36	0.6	3.68	0.30
	Conoco Access	0.0	2.04	0.00	0.0	0.00	0.00
Base 2025 + Committed +	Humber Road	0.5	4.18	0.23	1.7	5.76	0.55
	Manby Road	0.6	3.02	0.35	0.3	2.71	0.19

Proposed Developments	Phillips 66	0.0	0.00	0.00	0.0	7.24	0.01
	A160 West	0.9	4.16	0.38	0.6	3.69	0.30
	Conoco Access	0.0	2.07	0.00	0.0	0.00	0.00

With the changes made, the results indicate that the junction is predicted to operate satisfactorily in all scenarios, even with the addition of committed traffic and Proposed Developments' construction traffic.

8. Junction F - M180 Junction 4

8.1 Modelling Results

Modelling results for this junction are provided in **Table 8** below. Note, the results are unchanged from the previous response. However, in line with comments arm names have been included and queue data is included in **Appendix D**.

Table 8. Junction F - M180 Junction 4 Model Results

Scenario	Junction Arm	AM			PM		
		Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
Base 2025	M180 East	7.2	23.29	0.87	14.4	42.72	0.95
	A15 South	8.0	32.43	0.89	12.0	50.34	0.94
	M180 West	1.8	12.56	0.61	14.2	77.11	0.98
	A15 North	4.1	10.33	0.79	2.1	6.33	0.67
Base 2025 + Committed Development	M180 East	6.8	22.06	0.87	118.6	242.49	1.16
	A15 South	37.4	112.73	1.04	24.0	92.69	1.01
	M180 West	3.1	22.66	0.74	25.0	130.62	1.05
	A15 North	20.9	47.42	0.98	2.3	6.76	0.69
Base 2025 + Committed + Proposed Developments	M180 East	6.6	21.37	0.86	142.7	300.61	1.20
	A15 South	45.2	130.61	1.06	22.9	89.34	1.00
	M180 West	3.4	24.40	0.76	24.4	127.96	1.04
	A15 North	29.6	63.45	1.00	2.3	6.80	0.69

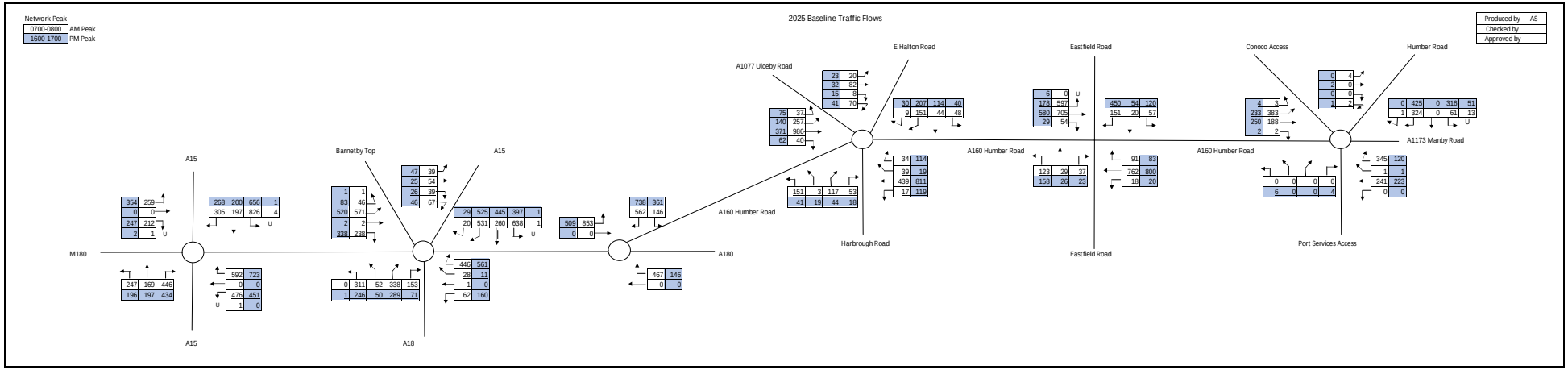
9. Summary

AECOM have responded to comments received by JSJV on behalf of National Highways, in relation to the Proposed Humber Zero Developments. The review highlighted that the junction capacity assessments should be revised in accordance with the comments set out in Technical Memorandum 005. These key items can be summarised as:

- The provision of raw queue data;
- The provision of signal AM and PM peak hour video clips for Junction A;
- Use of signal data provided by National Highways to re-model Junction A.

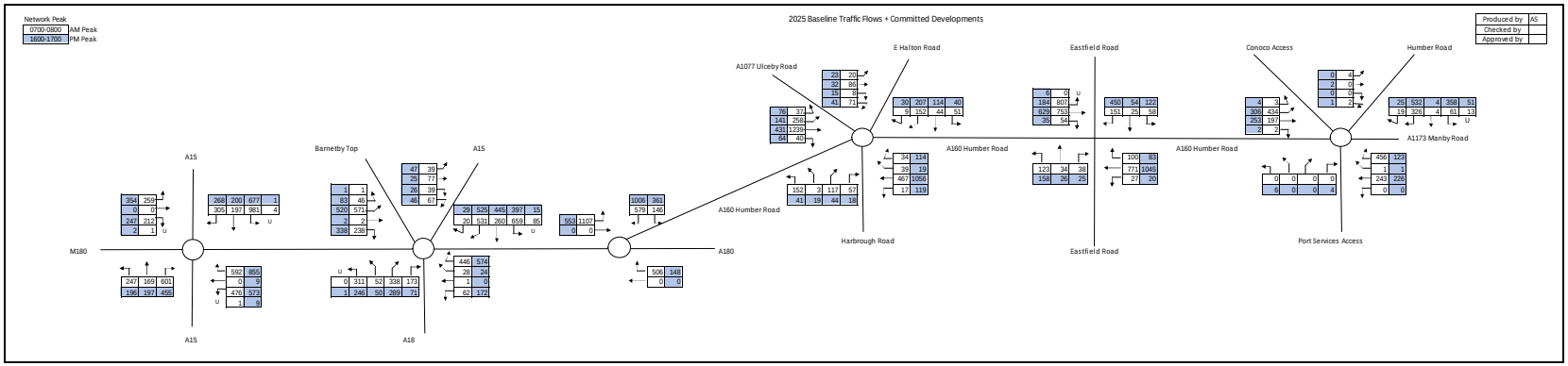
- Ensuring that inputted arm names are displayed;
- Ensuring that calibration intercepts and slopes are coherent with the IERRT TA; and
- Taking into account the mitigation model for Junction D, Barnetby Interchange and production of a comparable LinSig model.

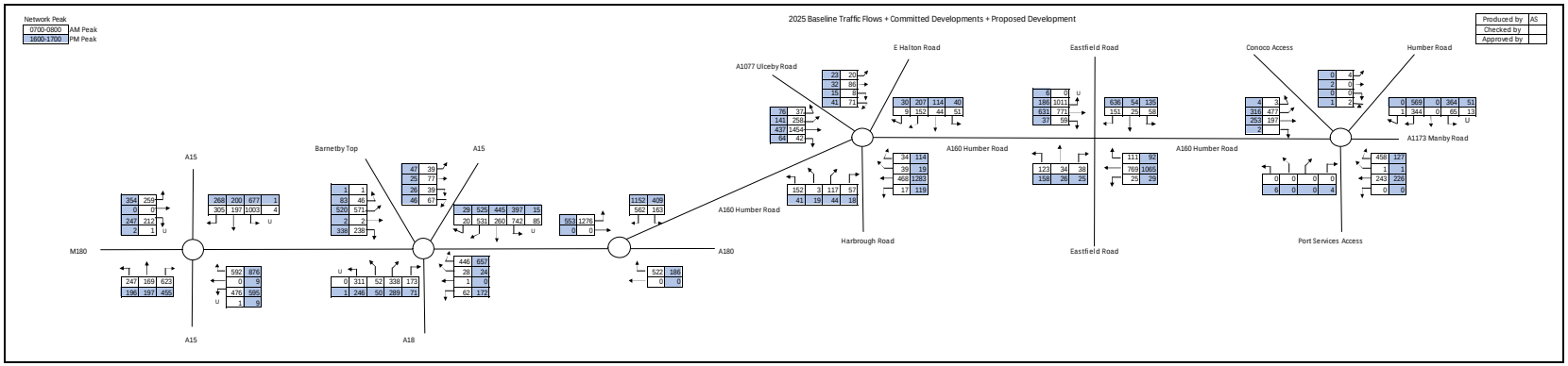
Appendix A Traffic Flow Diagrams



AM
1.0443

PM
1.0434


Network Peak
0700-0800 AM Peak
1600-1700 PM Peak
2025 Baseline Traffic Flows + Committed Developments
Produced by AS
Checked by
Approved by
A1077 Ulceby Road
E Halton Road
Eastfield Road
Conoco Access
Humber Road
A1173 Manby Road
A160 Humber Road
A160 Humber Road
A160 Humber Road
Harbrough Road
Eastfield Road
Port Services Access
A15
A15
A15
Barnetby Top
A18
M180
A180


Network Peak
0700-0800 AM Peak
1600-1700 PM Peak
2025 Baseline Traffic Flows + Committed Developments + Proposed Development
Produced by AS
Checked by
Approved by
A1077 Ulceby Road
E Halton Road
Eastfield Road
Conoco Access
Humber Road
A1173 Manby Road
A160 Humber Road
A160 Humber Road
A160 Humber Road
Harbrough Road
Eastfield Road
Port Services Access
Barnetby Top
A15
A15
A15
A18
M180
A180

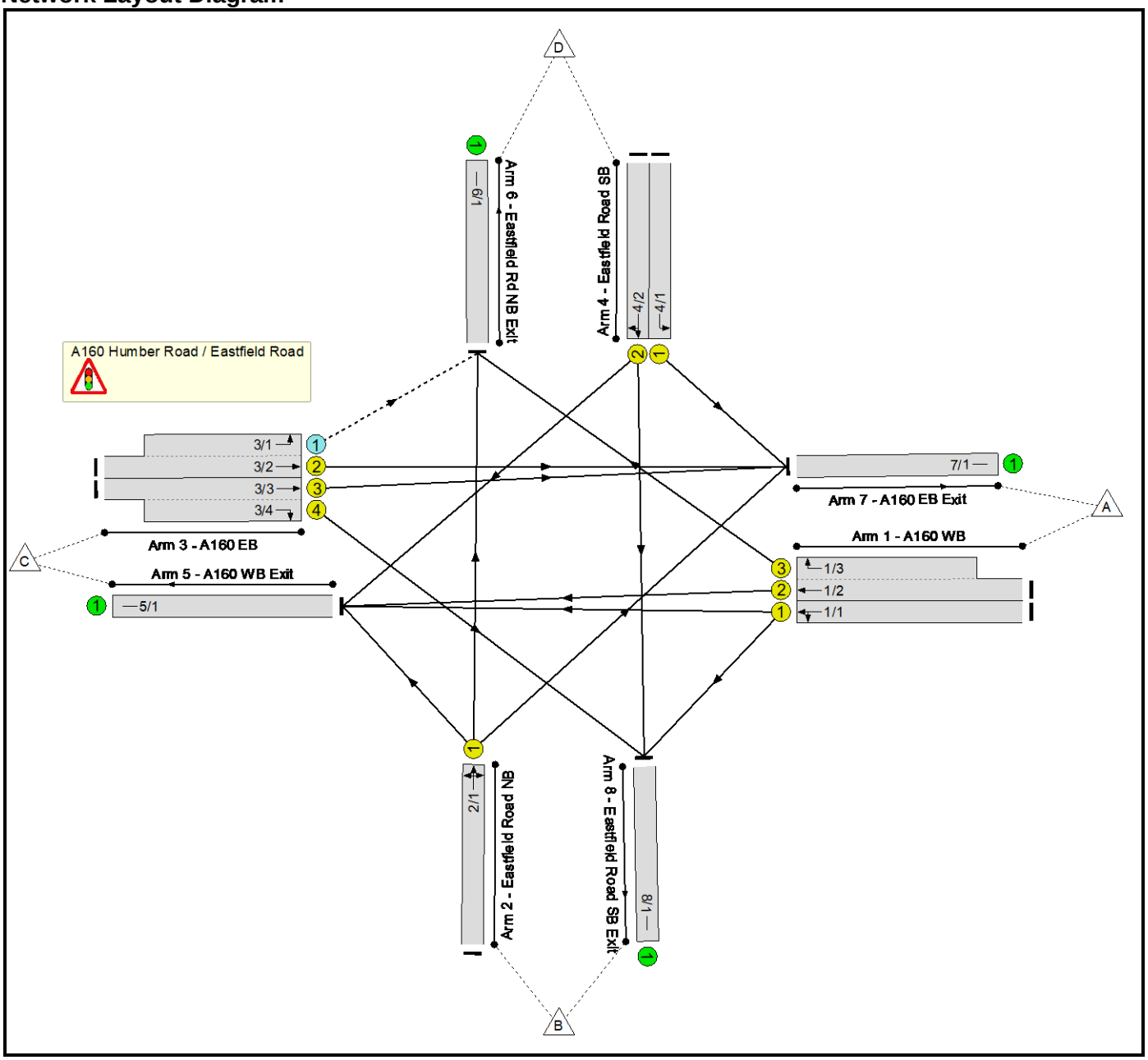
Appendix B Modelling Outputs

Full Input Data And Results

User and Project Details

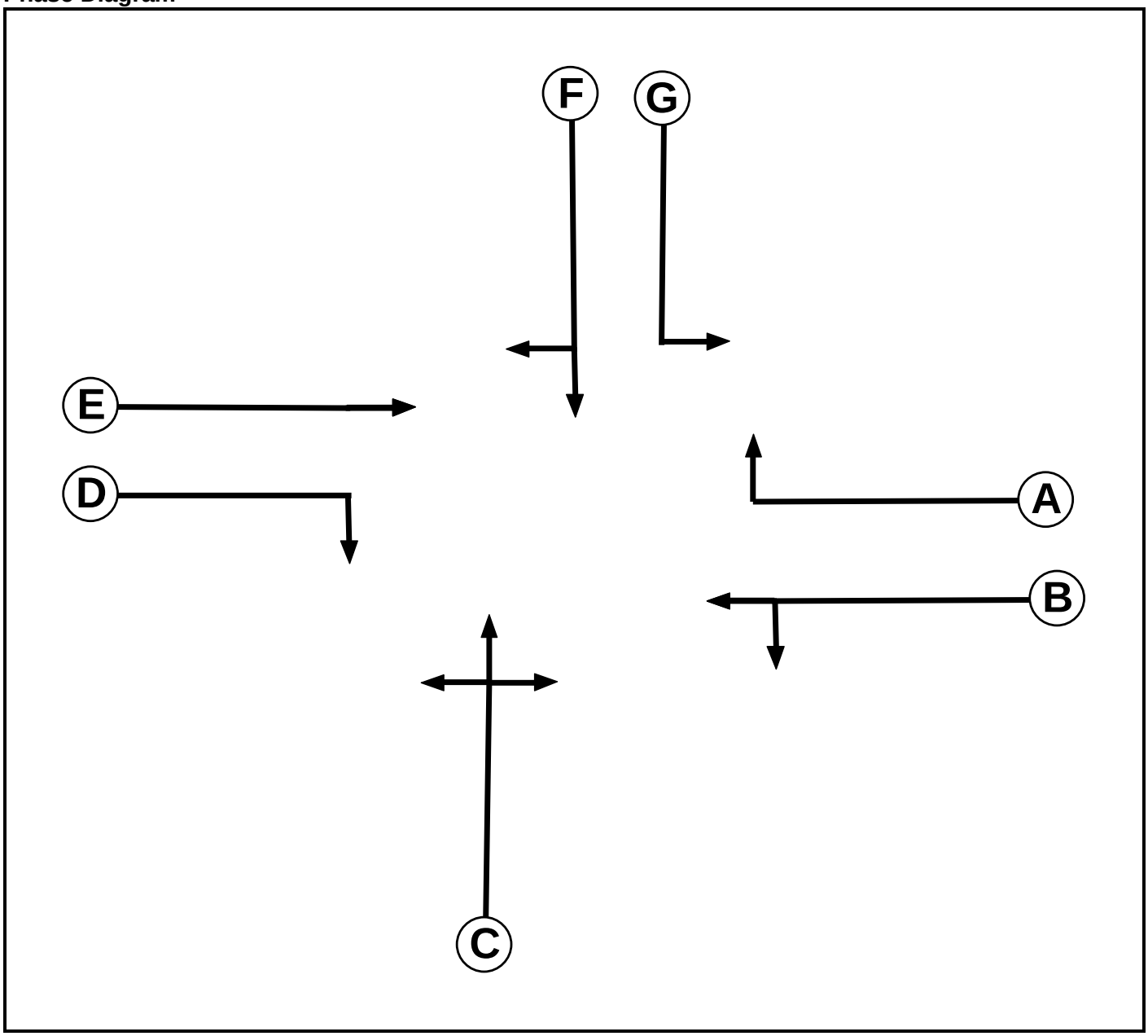
Project:	**Phillips 66 VPI**
Title:	**A160 / Eastfield Road Optimised Signals**
File name:	J1 A160_EastfieldRd Rev3.lsg3x

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7
G	Traffic		7	7

Full Input Data And Results

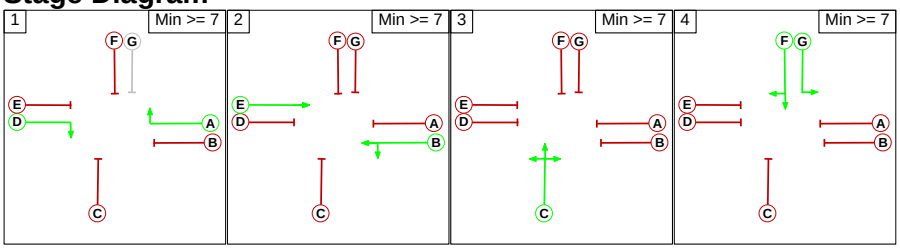
Phase Intergreens Matrix

Terminating Phase	Starting Phase							
		A	B	C	D	E	F	G
	A		-	5	-	8	6	-
	B	-		8	5	-	8	-
	C	5	6		6	7	7	9
	D	-	7	5		-	6	-
	E	5	-	5	-		5	8
	F	5	5	7	5	5		-
	G	-	-	9	-	5	-	

Phases in Stage

Stage No.	Phases in Stage
1	A D
2	B E
3	C
4	F G

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

From Stage	To Stage				
		1	2	3	4
	1		8	5	6
	2	5		8	8
	3	6	7		9
	4	5	5	9	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A160 Humber Road / Eastfield Road											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
3/1 (A160 EB)	6/1 (Left)	1439	0	2/1	1.09	To 6/1 (Ahead)	-	-	-	-	-
				1/3	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: A160 Humber Road / Eastfield Road												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A160 WB)	U	B	2	3	129.0	Geom	-	3.51	0.00	Y	Arm 5 Ahead	Inf
											Arm 8 Left	23.56
1/2 (A160 WB)	U	B	2	3	129.0	Geom	-	3.51	0.00	Y	Arm 5 Ahead	Inf
1/3 (A160 WB)	U	A	2	3	20.0	Geom	-	3.40	0.00	Y	Arm 6 Right	20.90
2/1 (Eastfield Road NB)	U	C	2	3	60.0	Geom	-	4.50	0.00	Y	Arm 5 Left	33.50
											Arm 6 Ahead	Inf
											Arm 7 Right	32.95
3/1 (A160 EB)	O		2	3	17.6	Geom	-	3.30	0.00	N	Arm 6 Left	27.80
3/2 (A160 EB)	U	E	2	3	77.2	Geom	-	3.41	0.00	Y	Arm 7 Ahead	Inf
3/3 (A160 EB)	U	E	2	3	77.2	Geom	-	3.35	0.00	Y	Arm 7 Ahead	Inf
3/4 (A160 EB)	U	D	2	3	25.7	Geom	-	3.42	0.00	Y	Arm 8 Right	23.00
4/1 (Eastfield Road SB)	U	G	2	3	11.7	Geom	-	4.20	0.00	Y	Arm 7 Left	20.00
4/2 (Eastfield Road SB)	U	F	2	3	60.0	Geom	-	4.20	0.00	Y	Arm 5 Right	25.00
											Arm 8 Ahead	Inf
5/1 (A160 WB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Eastfield Rd NB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (A160 EB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Eastfield Road SB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM 2025 Base'	07:00	08:00	01:00	
2: 'PM 2025 Base'	16:00	17:00	01:00	
3: 'AM 2025 Base + Committed'	07:00	08:00	01:00	
4: 'PM 2025 Base + Committed'	16:00	17:00	01:00	
5: 'AM 2025 Base + Committed + Proposed'	07:00	08:00	01:00	
6: 'PM 2025 Base + Committed + Proposed'	16:00	17:00	01:00	

Scenario 1: 'AM 2025 Base' (FG1: 'AM 2025 Base', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	18	762	91	871
	B	37	0	123	29	189
	C	705	54	0	597	1356
	D	57	20	151	0	228
	Tot.	799	92	1036	717	2644

Traffic Lane Flows

Lane	Scenario 1: AM 2025 Base
Junction: A160 Humber Road / Eastfield Road	
1/1	386
1/2 (with short)	485(In) 394(Out)
1/3 (short)	91
2/1	189
3/1 (short)	597
3/2 (with short)	962(In) 365(Out)
3/3 (with short)	394(In) 340(Out)
3/4 (short)	54
4/1	57
4/2	171
5/1	1036
6/1	717
7/1	799
8/1	92

Full Input Data And Results

Lane Saturation Flows

Junction: A160 Humber Road / Eastfield Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	95.3 %	1960	1960
				Arm 8 Left	23.56	4.7 %		
1/2 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1966	1966
1/3 (A160 WB)	3.40	0.00	Y	Arm 6 Right	20.90	100.0 %	1824	1824
2/1 (Eastfield Road NB)	4.50	0.00	Y	Arm 5 Left	33.50	65.1 %	1989	1989
				Arm 6 Ahead	Inf	15.3 %		
				Arm 7 Right	32.95	19.6 %		
3/1 (A160 EB)	3.30	0.00	N	Arm 6 Left	27.80	100.0 %	1978	1978
3/2 (A160 EB)	3.41	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1956	1956
3/3 (A160 EB)	3.35	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1950	1950
3/4 (A160 EB)	3.42	0.00	Y	Arm 8 Right	23.00	100.0 %	1837	1837
4/1 (Eastfield Road SB)	4.20	0.00	Y	Arm 7 Left	20.00	100.0 %	1893	1893
4/2 (Eastfield Road SB)	4.20	0.00	Y	Arm 5 Right	25.00	88.3 %	1933	1933
				Arm 8 Ahead	Inf	11.7 %		
5/1 (A160 WB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Eastfield Rd NB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A160 EB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Eastfield Road SB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 2: 'PM 2025 Base' (FG2: 'PM 2025 Base', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	20	800	83	903
	B	23	0	158	26	207
	C	580	29	0	178	787
	D	120	54	450	0	624
	Tot.	723	103	1408	287	2521

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: PM 2025 Base
Junction: A160 Humber Road / Eastfield Road	
1/1	408
1/2 (with short)	495(In) 412(Out)
1/3 (short)	83
2/1	207
3/1 (short)	178
3/2 (with short)	480(In) 302(Out)
3/3 (with short)	307(In) 278(Out)
3/4 (short)	29
4/1	120
4/2	504
5/1	1408
6/1	287
7/1	723
8/1	103

Full Input Data And Results

Lane Saturation Flows

Junction: A160 Humber Road / Eastfield Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	95.1 %	1960	1960
				Arm 8 Left	23.56	4.9 %		
1/2 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1966	1966
1/3 (A160 WB)	3.40	0.00	Y	Arm 6 Right	20.90	100.0 %	1824	1824
2/1 (Eastfield Road NB)	4.50	0.00	Y	Arm 5 Left	33.50	76.3 %	1987	1987
				Arm 6 Ahead	Inf	12.6 %		
				Arm 7 Right	32.95	11.1 %		
3/1 (A160 EB)	3.30	0.00	N	Arm 6 Left	27.80	100.0 %	1978	1978
3/2 (A160 EB)	3.41	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1956	1956
3/3 (A160 EB)	3.35	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1950	1950
3/4 (A160 EB)	3.42	0.00	Y	Arm 8 Right	23.00	100.0 %	1837	1837
4/1 (Eastfield Road SB)	4.20	0.00	Y	Arm 7 Left	20.00	100.0 %	1893	1893
4/2 (Eastfield Road SB)	4.20	0.00	Y	Arm 5 Right	25.00	89.3 %	1932	1932
				Arm 8 Ahead	Inf	10.7 %		
5/1 (A160 WB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Eastfield Rd NB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A160 EB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Eastfield Road SB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 3: 'AM 2025 Base + Committed' (FG3: 'AM 2025 Base + Committed', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	25	769	100	894
	B	38	0	123	34	195
	C	753	54	0	807	1614
	D	58	25	151	0	234
	Tot.	849	104	1043	941	2937

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: AM 2025 Base + Committed
Junction: A160 Humber Road / Eastfield Road	
1/1	393
1/2 (with short)	501(In) 401(Out)
1/3 (short)	100
2/1	195
3/1 (short)	807
3/2 (with short)	1192(In) 385(Out)
3/3 (with short)	422(In) 368(Out)
3/4 (short)	54
4/1	58
4/2	176
5/1	1043
6/1	941
7/1	849
8/1	104

Full Input Data And Results

Lane Saturation Flows

Junction: A160 Humber Road / Eastfield Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	93.6 %	1958	1958
				Arm 8 Left	23.56	6.4 %		
1/2 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1966	1966
1/3 (A160 WB)	3.40	0.00	Y	Arm 6 Right	20.90	100.0 %	1824	1824
2/1 (Eastfield Road NB)	4.50	0.00	Y	Arm 5 Left	33.50	63.1 %	1991	1991
				Arm 6 Ahead	Inf	17.4 %		
				Arm 7 Right	32.95	19.5 %		
3/1 (A160 EB)	3.30	0.00	N	Arm 6 Left	27.80	100.0 %	1978	1978
3/2 (A160 EB)	3.41	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1956	1956
3/3 (A160 EB)	3.35	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1950	1950
3/4 (A160 EB)	3.42	0.00	Y	Arm 8 Right	23.00	100.0 %	1837	1837
4/1 (Eastfield Road SB)	4.20	0.00	Y	Arm 7 Left	20.00	100.0 %	1893	1893
4/2 (Eastfield Road SB)	4.20	0.00	Y	Arm 5 Right	25.00	85.8 %	1935	1935
				Arm 8 Ahead	Inf	14.2 %		
5/1 (A160 WB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Eastfield Rd NB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A160 EB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Eastfield Road SB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 4: 'PM 2025 Base + Committed' (FG4: 'PM 2025 Base + Committed', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	20	1045	83	1148
	B	25	0	158	26	209
	C	629	35	0	184	848
	D	122	54	450	0	626
	Tot.	776	109	1653	293	2831

Traffic Lane Flows

Lane	Scenario 4: PM 2025 Base + Committed
Junction: A160 Humber Road / Eastfield Road	
1/1	537
1/2 (with short)	611(In) 528(Out)
1/3 (short)	83
2/1	209
3/1 (short)	184
3/2 (with short)	509(In) 325(Out)
3/3 (with short)	339(In) 304(Out)
3/4 (short)	35
4/1	122
4/2	504
5/1	1653
6/1	293
7/1	776
8/1	109

Full Input Data And Results

Lane Saturation Flows

Junction: A160 Humber Road / Eastfield Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	96.3 %	1961	1961
				Arm 8 Left	23.56	3.7 %		
1/2 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1966	1966
1/3 (A160 WB)	3.40	0.00	Y	Arm 6 Right	20.90	100.0 %	1824	1824
2/1 (Eastfield Road NB)	4.50	0.00	Y	Arm 5 Left	33.50	75.6 %	1987	1987
				Arm 6 Ahead	Inf	12.4 %		
				Arm 7 Right	32.95	12.0 %		
3/1 (A160 EB)	3.30	0.00	N	Arm 6 Left	27.80	100.0 %	1978	1978
3/2 (A160 EB)	3.41	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1956	1956
3/3 (A160 EB)	3.35	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1950	1950
3/4 (A160 EB)	3.42	0.00	Y	Arm 8 Right	23.00	100.0 %	1837	1837
4/1 (Eastfield Road SB)	4.20	0.00	Y	Arm 7 Left	20.00	100.0 %	1893	1893
4/2 (Eastfield Road SB)	4.20	0.00	Y	Arm 5 Right	25.00	89.3 %	1932	1932
				Arm 8 Ahead	Inf	10.7 %		
5/1 (A160 WB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Eastfield Rd NB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A160 EB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Eastfield Road SB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 5: 'AM 2025 Base + Committed + Proposed' (FG5: 'AM 2025 Base + Committed + Proposed', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	25	769	111	905
	B	38	0	123	34	195
	C	771	59	0	1011	1841
	D	58	25	151	0	234
	Tot.	867	109	1043	1156	3175

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: AM 2025 Base + Committed + Proposed
Junction: A160 Humber Road / Eastfield Road	
1/1	393
1/2 (with short)	512(In) 401(Out)
1/3 (short)	111
2/1	195
3/1 (short)	1011
3/2 (with short)	1402(In) 391(Out)
3/3 (with short)	439(In) 380(Out)
3/4 (short)	59
4/1	58
4/2	176
5/1	1043
6/1	1156
7/1	867
8/1	109

Full Input Data And Results

Lane Saturation Flows

Junction: A160 Humber Road / Eastfield Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	93.6 %	1958	1958
				Arm 8 Left	23.56	6.4 %		
1/2 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1966	1966
1/3 (A160 WB)	3.40	0.00	Y	Arm 6 Right	20.90	100.0 %	1824	1824
2/1 (Eastfield Road NB)	4.50	0.00	Y	Arm 5 Left	33.50	63.1 %	1991	1991
				Arm 6 Ahead	Inf	17.4 %		
				Arm 7 Right	32.95	19.5 %		
3/1 (A160 EB)	3.30	0.00	N	Arm 6 Left	27.80	100.0 %	1978	1978
3/2 (A160 EB)	3.41	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1956	1956
3/3 (A160 EB)	3.35	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1950	1950
3/4 (A160 EB)	3.42	0.00	Y	Arm 8 Right	23.00	100.0 %	1837	1837
4/1 (Eastfield Road SB)	4.20	0.00	Y	Arm 7 Left	20.00	100.0 %	1893	1893
4/2 (Eastfield Road SB)	4.20	0.00	Y	Arm 5 Right	25.00	85.8 %	1935	1935
				Arm 8 Ahead	Inf	14.2 %		
5/1 (A160 WB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Eastfield Rd NB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A160 EB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Eastfield Road SB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 6: 'PM 2025 Base + Committed + Propsoed' (FG6: 'PM 2025 Base + Committed + Proposed', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	29	1065	92	1186
	B	25	0	158	26	209
	C	631	37	0	186	854
	D	135	54	636	0	825
	Tot.	791	120	1859	304	3074

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: PM 2025 Base + Committed + Propsoed
Junction: A160 Humber Road / Eastfield Road	
1/1	551
1/2 (with short)	635(In) 543(Out)
1/3 (short)	92
2/1	209
3/1 (short)	186
3/2 (with short)	511(In) 325(Out)
3/3 (with short)	343(In) 306(Out)
3/4 (short)	37
4/1	135
4/2	690
5/1	1859
6/1	304
7/1	791
8/1	120

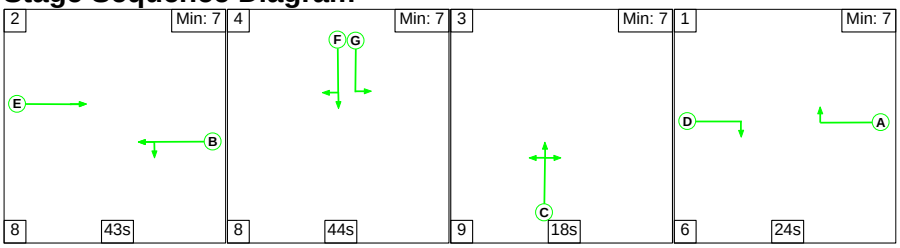
Full Input Data And Results

Lane Saturation Flows

Junction: A160 Humber Road / Eastfield Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	94.7 %	1959	1959
				Arm 8 Left	23.56	5.3 %		
1/2 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1966	1966
1/3 (A160 WB)	3.40	0.00	Y	Arm 6 Right	20.90	100.0 %	1824	1824
2/1 (Eastfield Road NB)	4.50	0.00	Y	Arm 5 Left	33.50	75.6 %	1987	1987
				Arm 6 Ahead	Inf	12.4 %		
				Arm 7 Right	32.95	12.0 %		
3/1 (A160 EB)	3.30	0.00	N	Arm 6 Left	27.80	100.0 %	1978	1978
3/2 (A160 EB)	3.41	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1956	1956
3/3 (A160 EB)	3.35	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1950	1950
3/4 (A160 EB)	3.42	0.00	Y	Arm 8 Right	23.00	100.0 %	1837	1837
4/1 (Eastfield Road SB)	4.20	0.00	Y	Arm 7 Left	20.00	100.0 %	1893	1893
4/2 (Eastfield Road SB)	4.20	0.00	Y	Arm 5 Right	25.00	92.2 %	1928	1928
				Arm 8 Ahead	Inf	7.8 %		
5/1 (A160 WB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Eastfield Rd NB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A160 EB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Eastfield Road SB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 1: 'AM 2025 Base' (FG1: 'AM 2025 Base', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

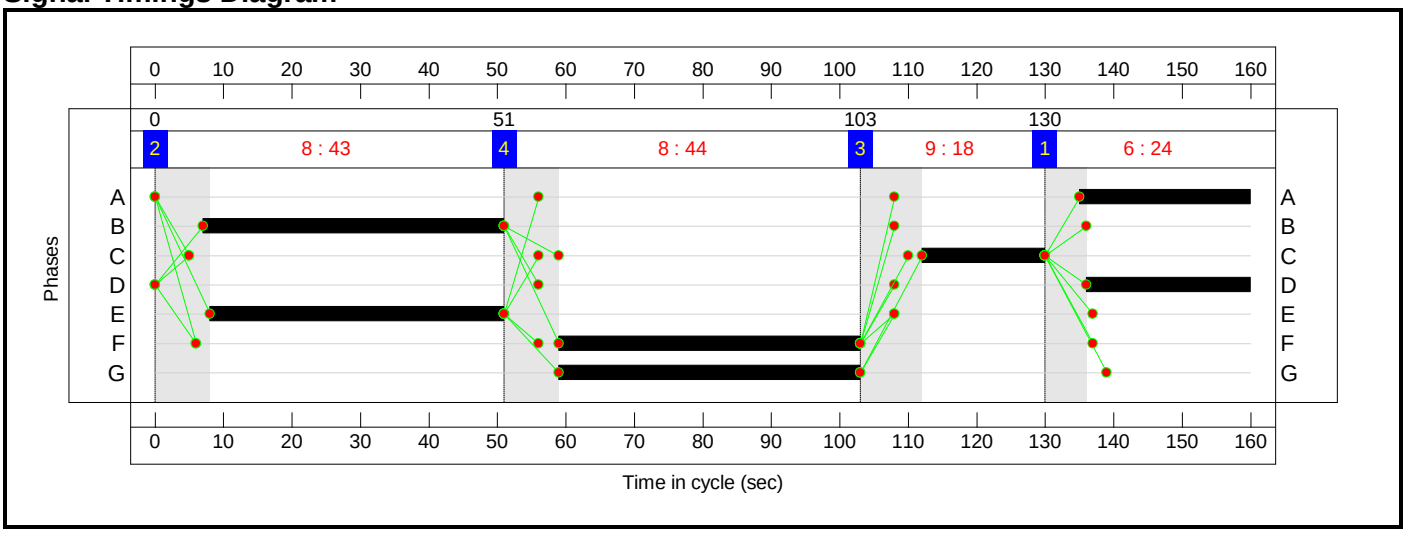


Stage Timings

Stage	2	4	3	1
Duration	43	44	18	24
Change Point	0	51	103	130

Full Input Data And Results

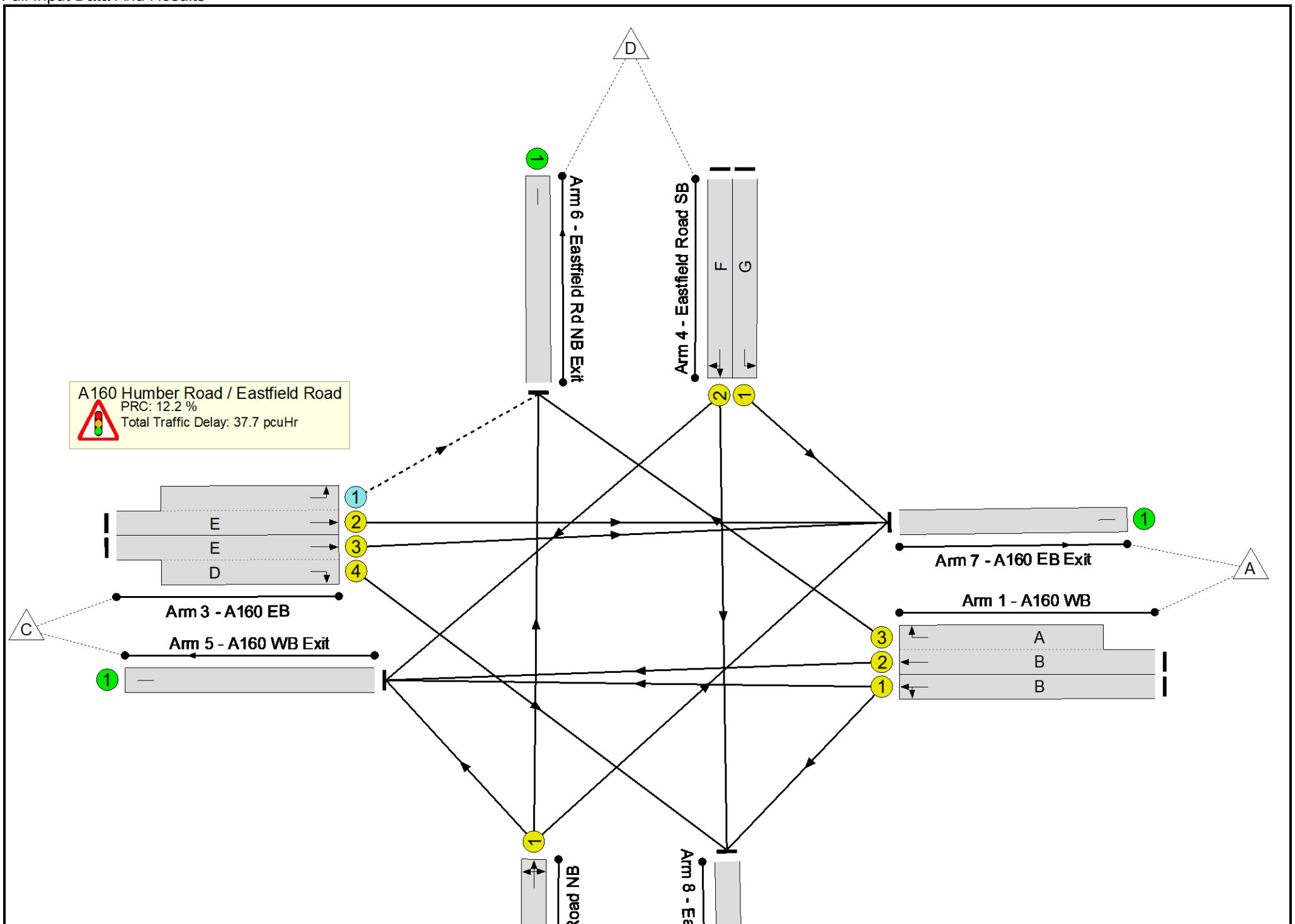
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.2%**
A160 Humber Road / Eastfield Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.2%**
1/1	A160 WB Ahead Left	U	N/A	N/A	B		1	44	-	386	1960	551	70.0%
1/2+1/3	A160 WB Ahead Right	U	N/A	N/A	B A		1	44:25	-	485	1966:1824	529+122	74.5 : 74.5%
2/1	Eastfield Road NB Left Ahead Right	U	N/A	N/A	C		1	18	-	189	1989	236	80.0%
3/2+3/1	A160 EB Left Ahead	U+O	N/A	N/A	E -		1	43	-	962	1956:1978	455+744	80.2 : 80.2%
3/3+3/4	A160 EB Ahead Right	U	N/A	N/A	E D		1	43:24	-	394	1950:1837	536+85	63.4 : 63.4%
4/1	Eastfield Road SB Left	U	N/A	N/A	G		1	44	-	57	1893	532	10.7%
4/2	Eastfield Road SB Right Ahead	U	N/A	N/A	F		1	44	-	171	1933	544	31.5%
5/1	A160 WB Exit	U	N/A	N/A	-		-	-	-	1036	Inf	Inf	0.0%
6/1	Eastfield Rd NB Exit	U	N/A	N/A	-		-	-	-	717	Inf	Inf	0.0%
7/1	A160 EB Exit	U	N/A	N/A	-		-	-	-	799	Inf	Inf	0.0%
8/1	Eastfield Road SB Exit	U	N/A	N/A	-		-	-	-	92	Inf	Inf	0.0%

Full Input Data And Results

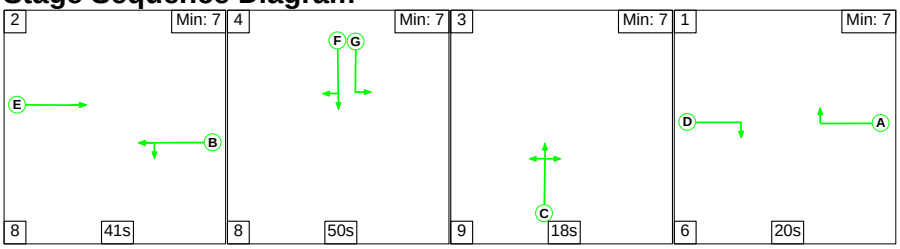
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**168**	**429**	**0**	**30.1**	**7.6**	**0.0**	**37.7**	**-**	**-**	**-**	**-**
A160 Humber Road / Eastfield Road	**-**	**-**	**168**	**429**	**0**	**30.1**	**7.6**	**0.0**	**37.7**	**-**	**-**	**-**	**-**
1/1	386	386	-	-	-	5.5	1.2	-	6.7	62.2	15.3	1.2	16.5
1/2+1/3	485	485	-	-	-	7.1	1.4	-	8.6	63.7	15.7	1.4	17.1
2/1	189	189	-	-	-	3.6	1.9	-	5.5	104.0	8.1	1.9	10.0
3/2+3/1	962	962	168	429	0	5.3	2.0	-	7.3	27.3	14.4	2.0	16.4
3/3+3/4	394	394	-	-	-	5.7	0.9	-	6.6	59.9	13.2	0.9	14.1
4/1	57	57	-	-	-	0.7	0.1	-	0.7	46.4	1.9	0.1	1.9
4/2	171	171	-	-	-	2.2	0.2	-	2.4	50.2	6.0	0.2	6.2
5/1	1036	1036	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	799	799	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	92	92	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 12.2 Total Delay for Signalled Lanes (pcuHr): 37.67 Cycle Time (s): 160
PRC Over All Lanes (%): 12.2 Total Delay Over All Lanes(pcuHr): 37.67

Full Input Data And Results

Scenario 2: 'PM 2025 Base' (FG2: 'PM 2025 Base', Plan 1: 'Network Control Plan 1')

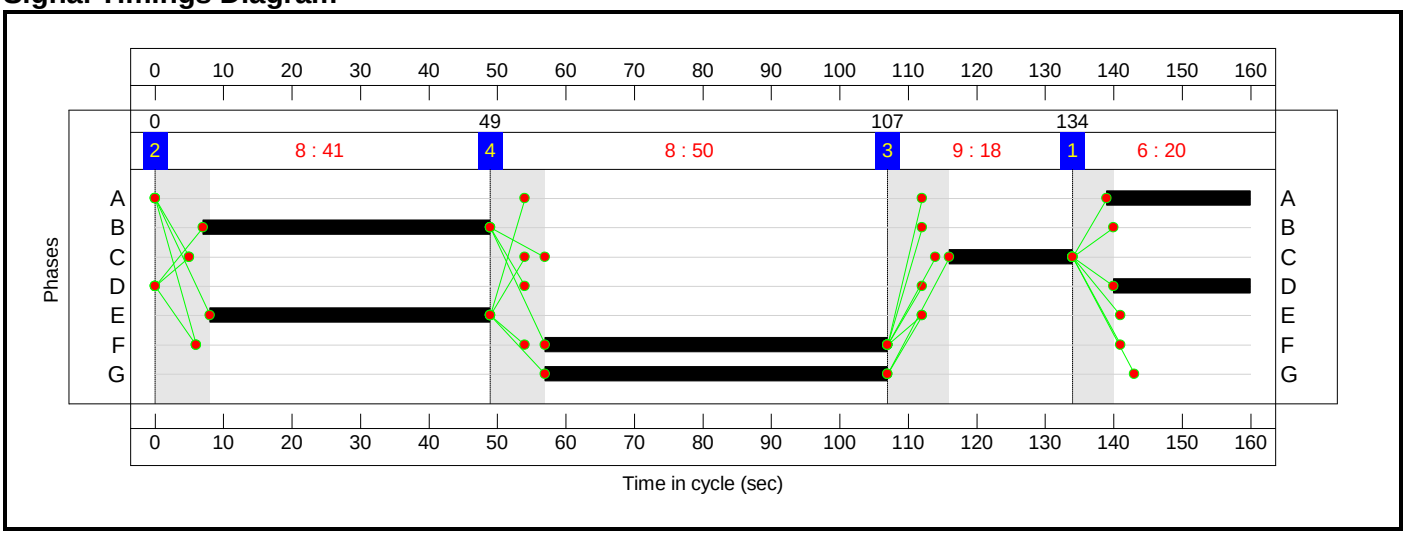
Stage Sequence Diagram



Stage Timings

Stage	2	4	3	1
Duration	41	50	18	20
Change Point	0	49	107	134

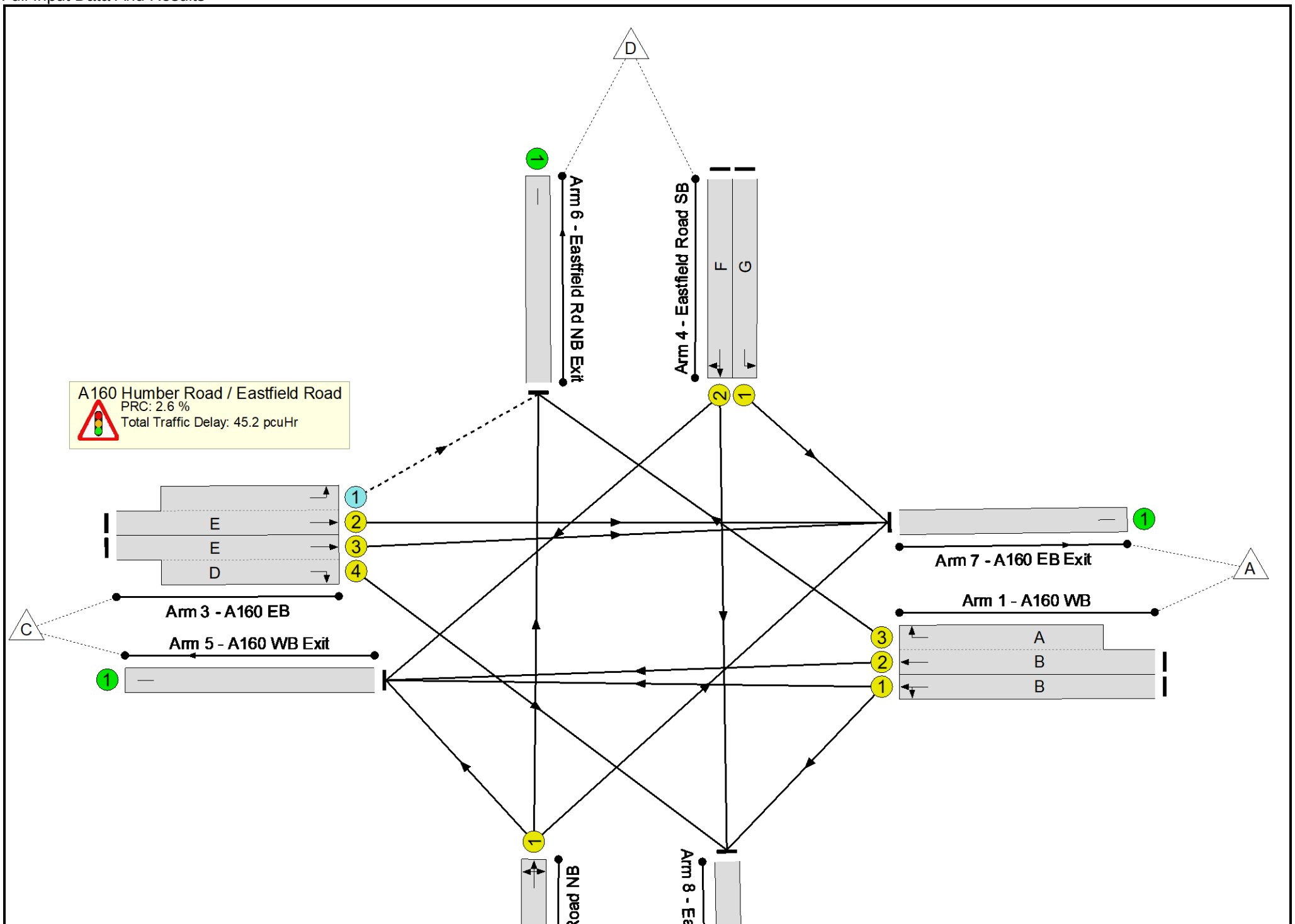
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.7%**
A160 Humber Road / Eastfield Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.7%**
1/1	A160 WB Ahead Left	U	N/A	N/A	B		1	42	-	408	1960	527	77.5%
1/2+1/3	A160 WB Ahead Right	U	N/A	N/A	B A		1	42:21	-	495	1966:1824	511+103	80.7 : 80.7%
2/1	Eastfield Road NB Left Ahead Right	U	N/A	N/A	C		1	18	-	207	1987	236	87.7%
3/2+3/1	A160 EB Left Ahead	U+O	N/A	N/A	E -		1	41	-	480	1956:1978	477+281	63.3 : 63.3%
3/3+3/4	A160 EB Ahead Right	U	N/A	N/A	E D		1	41:20	-	307	1950:1837	512+53	54.3 : 54.3%
4/1	Eastfield Road SB Left	U	N/A	N/A	G		1	50	-	120	1893	603	19.9%
4/2	Eastfield Road SB Right Ahead	U	N/A	N/A	F		1	50	-	504	1932	616	81.8%
5/1	A160 WB Exit	U	N/A	N/A	-		-	-	-	1408	Inf	Inf	0.0%
6/1	Eastfield Rd NB Exit	U	N/A	N/A	-		-	-	-	287	Inf	Inf	0.0%
7/1	A160 EB Exit	U	N/A	N/A	-		-	-	-	723	Inf	Inf	0.0%
8/1	Eastfield Road SB Exit	U	N/A	N/A	-		-	-	-	103	Inf	Inf	0.0%

Full Input Data And Results

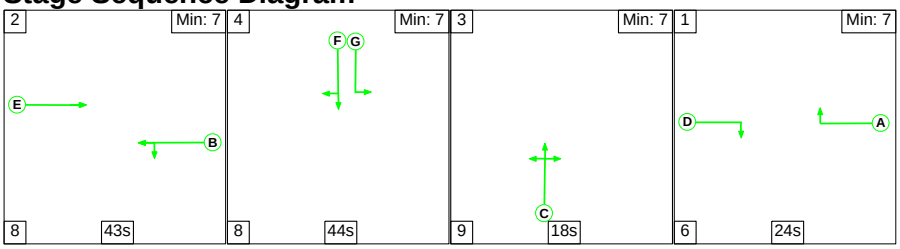
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**46**	**132**	**0**	**34.8**	**10.4**	**0.0**	**45.2**	**-**	**-**	**-**	**-**
A160 Humber Road / Eastfield Road	**-**	**-**	**46**	**132**	**0**	**34.8**	**10.4**	**0.0**	**45.2**	**-**	**-**	**-**	**-**
1/1	408	408	-	-	-	6.1	1.7	-	7.8	68.8	16.7	1.7	18.3
1/2+1/3	495	495	-	-	-	7.6	2.0	-	9.7	70.2	16.9	2.0	19.0
2/1	207	207	-	-	-	4.0	3.0	-	7.0	121.0	9.0	3.0	12.0
3/2+3/1	480	480	46	132	0	4.3	0.9	-	5.2	38.9	11.7	0.9	12.5
3/3+3/4	307	307	-	-	-	4.4	0.6	-	5.0	58.7	10.6	0.6	11.2
4/1	120	120	-	-	-	1.3	0.1	-	1.4	43.4	3.9	0.1	4.0
4/2	504	504	-	-	-	7.0	2.2	-	9.2	65.7	20.6	2.2	22.7
5/1	1408	1408	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	287	287	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	723	723	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	103	103	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 2.6 Total Delay for Signalled Lanes (pcuHr): 45.24 Cycle Time (s): 160
PRC Over All Lanes (%): 2.6 Total Delay Over All Lanes(pcuHr): 45.24

Full Input Data And Results

Scenario 3: 'AM 2025 Base + Committed' (FG3: 'AM 2025 Base + Committed', Plan 1: 'Network Control Plan 1')

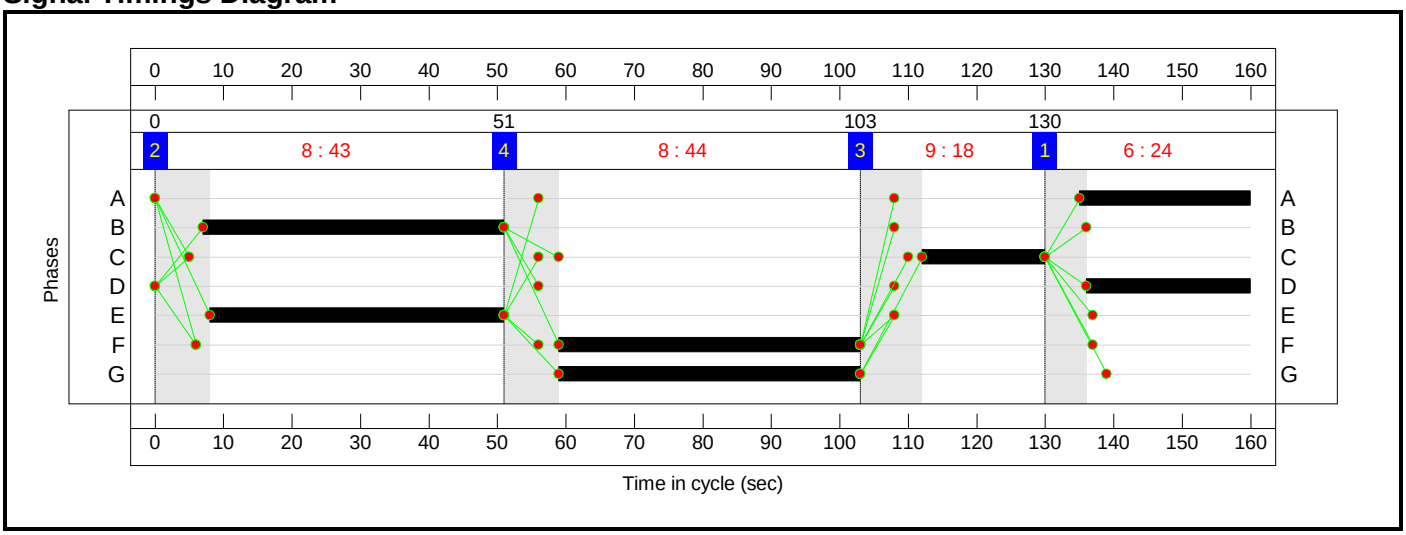
Stage Sequence Diagram



Stage Timings

Stage	2	4	3	1
Duration	43	44	18	24
Change Point	0	51	103	130

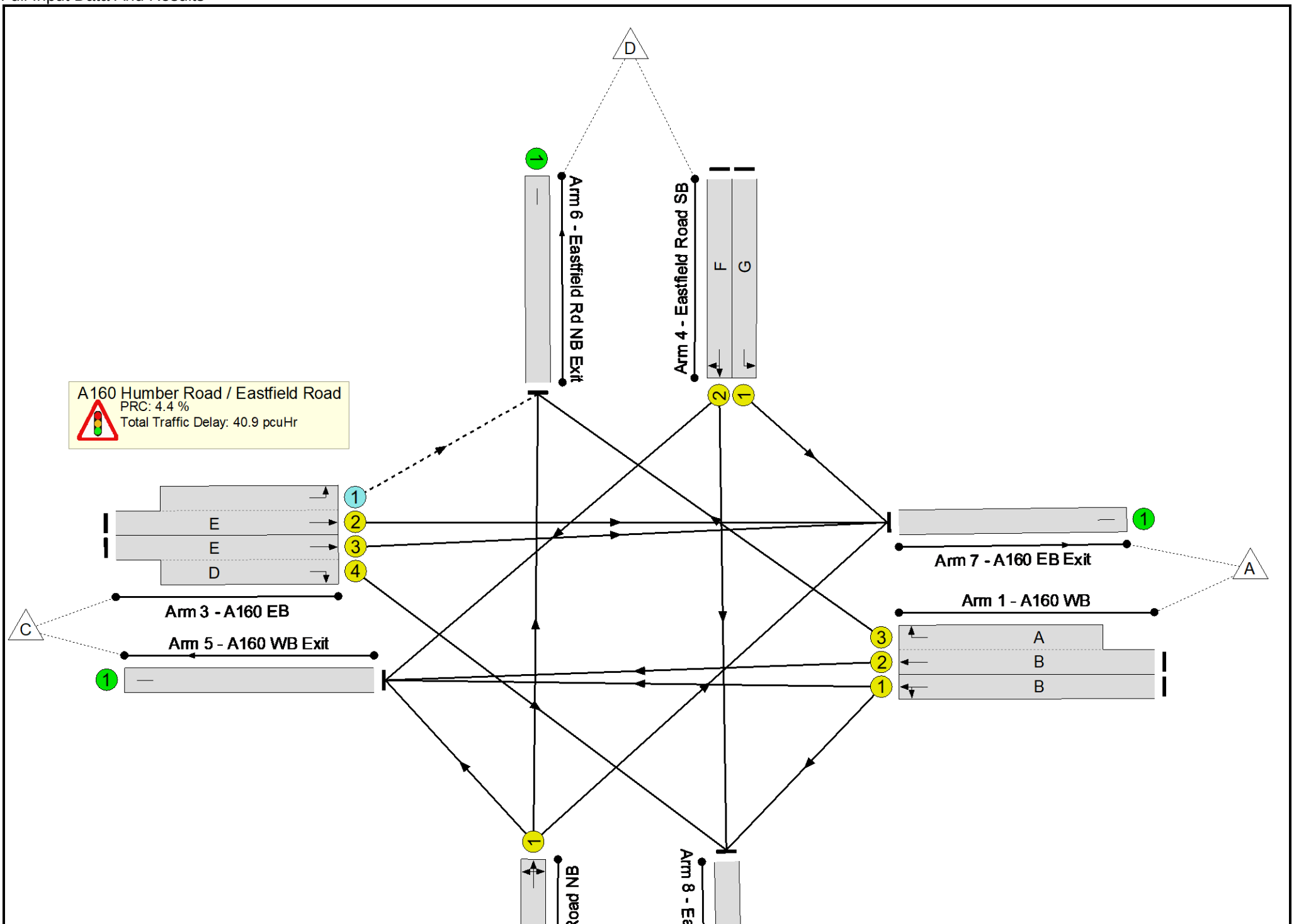
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.2%**
A160 Humber Road / Eastfield Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.2%**
1/1	A160 WB Ahead Left	U	N/A	N/A	B		1	44	-	393	1958	551	71.4%
1/2+1/3	A160 WB Ahead Right	U	N/A	N/A	B A		1	44:25	-	501	1966:1824	527+132	76.0 : 76.0%
2/1	Eastfield Road NB Left Ahead Right	U	N/A	N/A	C		1	18	-	195	1991	236	82.5%
3/2+3/1	A160 EB Left Ahead	U+O	N/A	N/A	E -		1	43	-	1192	1956:1978	446+936	86.2 : 86.2%
3/3+3/4	A160 EB Ahead Right	U	N/A	N/A	E D		1	43:24	-	422	1950:1837	536+79	68.6 : 68.6%
4/1	Eastfield Road SB Left	U	N/A	N/A	G		1	44	-	58	1893	532	10.9%
4/2	Eastfield Road SB Right Ahead	U	N/A	N/A	F		1	44	-	176	1935	544	32.3%
5/1	A160 WB Exit	U	N/A	N/A	-		-	-	-	1043	Inf	Inf	0.0%
6/1	Eastfield Rd NB Exit	U	N/A	N/A	-		-	-	-	941	Inf	Inf	0.0%
7/1	A160 EB Exit	U	N/A	N/A	-		-	-	-	849	Inf	Inf	0.0%
8/1	Eastfield Road SB Exit	U	N/A	N/A	-		-	-	-	104	Inf	Inf	0.0%

Full Input Data And Results

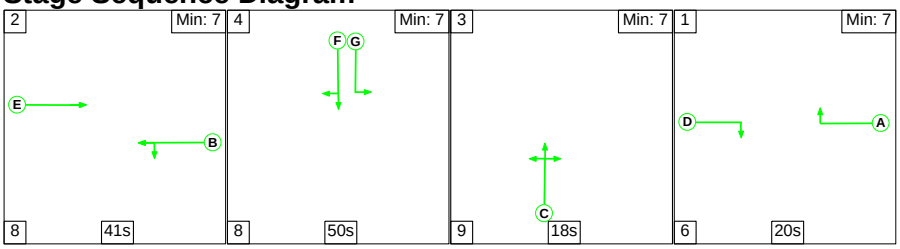
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**227**	**580**	**0**	**31.6**	**9.3**	**0.0**	**40.9**	**-**	**-**	**-**	**-**
A160 Humber Road / Eastfield Road	**-**	**-**	**227**	**580**	**0**	**31.6**	**9.3**	**0.0**	**40.9**	**-**	**-**	**-**	**-**
1/1	393	393	-	-	-	5.6	1.2	-	6.9	62.9	15.6	1.2	16.8
1/2+1/3	501	501	-	-	-	7.4	1.6	-	9.0	64.6	16.0	1.6	17.6
2/1	195	195	-	-	-	3.7	2.1	-	5.9	108.3	8.5	2.1	10.6
3/2+3/1	1192	1192	227	580	0	5.7	3.0	-	8.8	26.4	15.4	3.0	18.4
3/3+3/4	422	422	-	-	-	6.2	1.1	-	7.3	61.9	14.5	1.1	15.6
4/1	58	58	-	-	-	0.7	0.1	-	0.7	46.5	1.9	0.1	2.0
4/2	176	176	-	-	-	2.2	0.2	-	2.5	50.4	6.2	0.2	6.4
5/1	1043	1043	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	941	941	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	849	849	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	104	104	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 4.4 Total Delay for Signalled Lanes (pcuHr): 40.94 Cycle Time (s): 160
PRC Over All Lanes (%): 4.4 Total Delay Over All Lanes(pcuHr): 40.94

Full Input Data And Results

Scenario 4: 'PM 2025 Base + Committed' (FG4: 'PM 2025 Base + Committed', Plan 1: 'Network Control Plan 1')

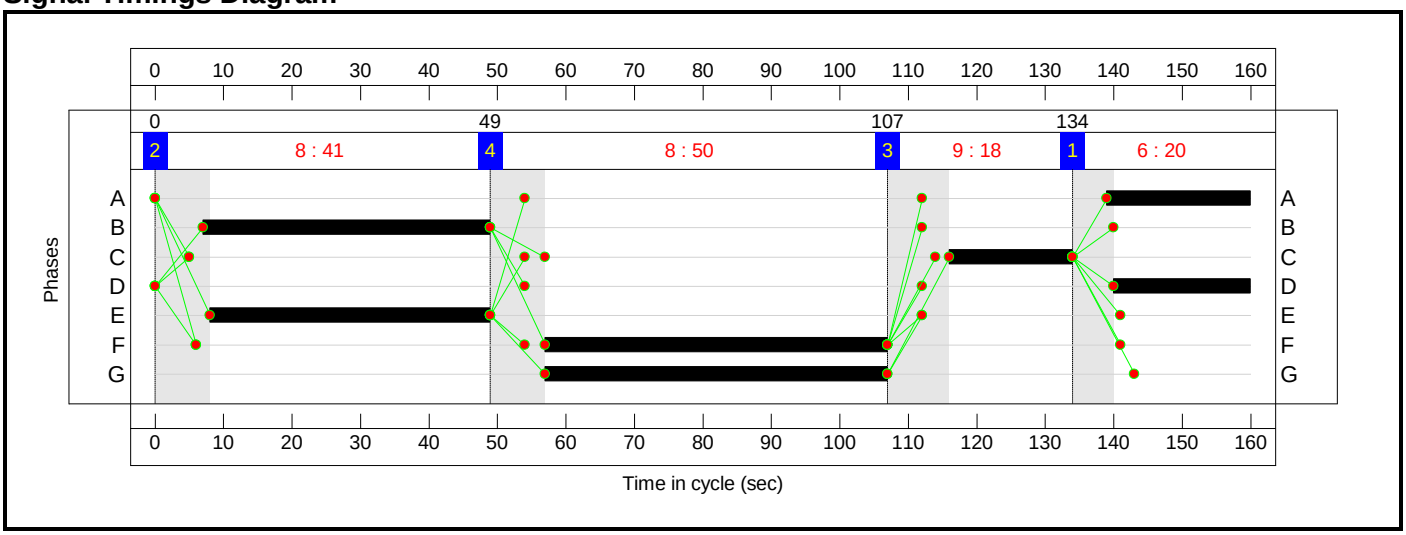
Stage Sequence Diagram



Stage Timings

Stage	2	4	3	1
Duration	41	50	18	20
Change Point	0	49	107	134

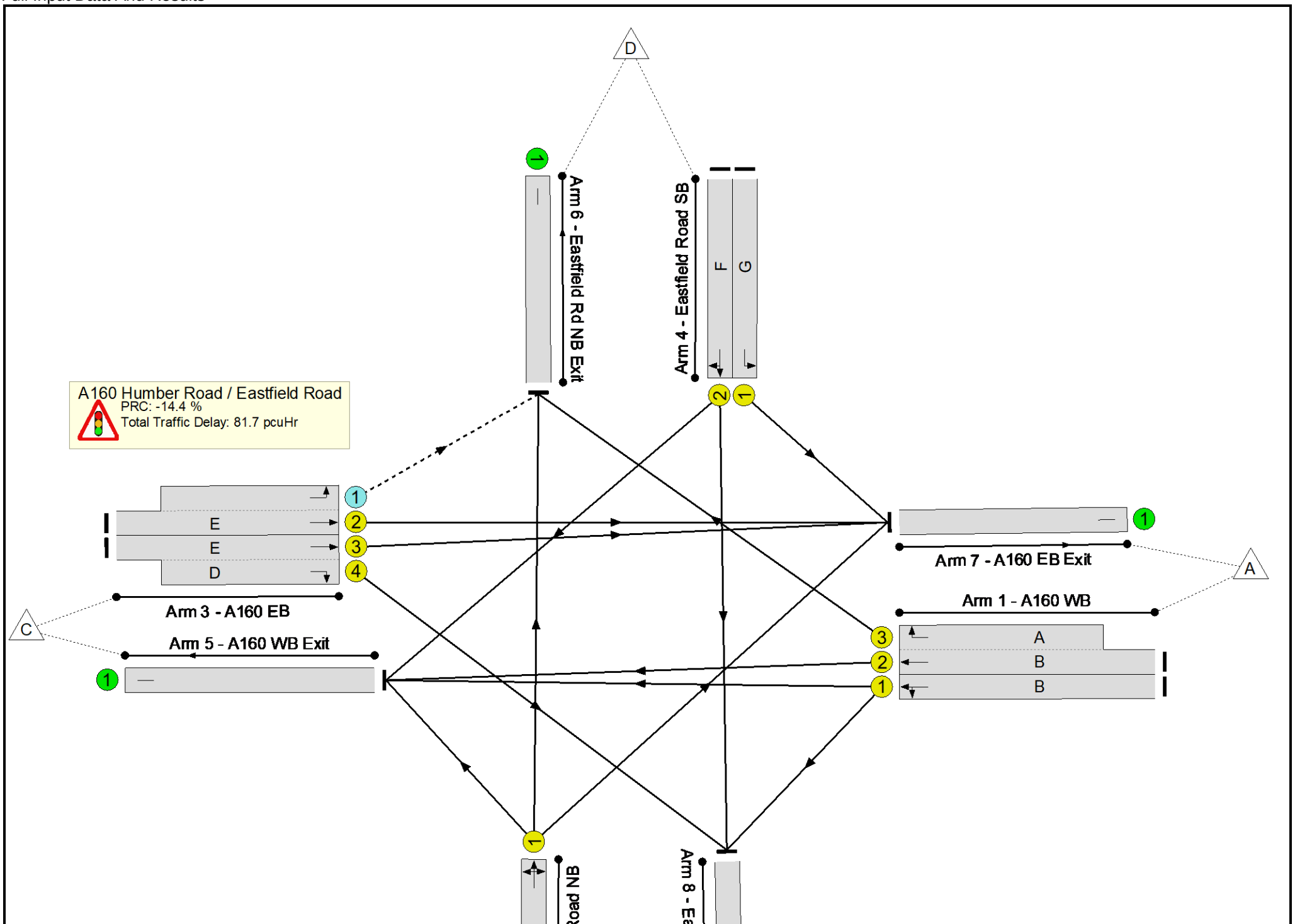
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.9%**
A160 Humber Road / Eastfield Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.9%**
1/1	A160 WB Ahead Left	U	N/A	N/A	B		1	42	-	537	1961	527	101.9%
1/2+1/3	A160 WB Ahead Right	U	N/A	N/A	B A		1	42:21	-	611	1966:1824	513+81	102.9 : 102.9%
2/1	Eastfield Road NB Left Ahead Right	U	N/A	N/A	C		1	18	-	209	1987	236	88.6%
3/2+3/1	A160 EB Left Ahead	U+O	N/A	N/A	E -		1	41	-	509	1956:1978	478+271	67.9 : 67.9%
3/3+3/4	A160 EB Ahead Right	U	N/A	N/A	E D		1	41:20	-	339	1950:1837	512+59	59.4 : 59.4%
4/1	Eastfield Road SB Left	U	N/A	N/A	G		1	50	-	122	1893	603	20.2%
4/2	Eastfield Road SB Right Ahead	U	N/A	N/A	F		1	50	-	504	1932	616	81.8%
5/1	A160 WB Exit	U	N/A	N/A	-		-	-	-	1653	Inf	Inf	0.0%
6/1	Eastfield Rd NB Exit	U	N/A	N/A	-		-	-	-	293	Inf	Inf	0.0%
7/1	A160 EB Exit	U	N/A	N/A	-		-	-	-	776	Inf	Inf	0.0%
8/1	Eastfield Road SB Exit	U	N/A	N/A	-		-	-	-	109	Inf	Inf	0.0%

Full Input Data And Results

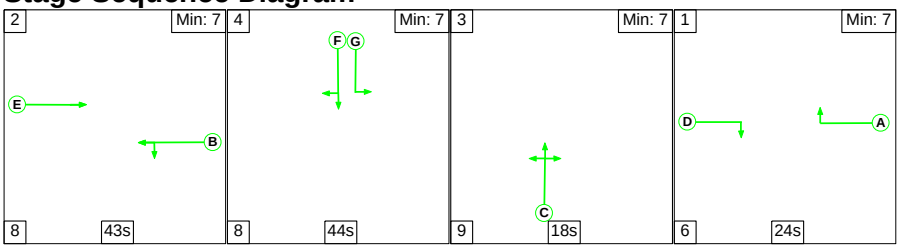
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**47**	**137**	**0**	**42.8**	**39.0**	**0.0**	**81.7**	**-**	**-**	**-**	**-**
A160 Humber Road / Eastfield Road	**-**	**-**	**47**	**137**	**0**	**42.8**	**39.0**	**0.0**	**81.7**	**-**	**-**	**-**	**-**
1/1	537	527	-	-	-	9.5	14.3	-	23.9	160.1	24.3	14.3	38.7
1/2+1/3	611	596	-	-	-	11.1	17.4	-	28.6	168.3	25.5	17.4	42.9
2/1	209	209	-	-	-	4.0	3.1	-	7.2	123.6	9.1	3.1	12.3
3/2+3/1	509	509	47	137	0	4.7	1.1	-	5.8	40.8	12.7	1.1	13.8
3/3+3/4	339	339	-	-	-	5.0	0.7	-	5.7	60.3	11.7	0.7	12.5
4/1	122	122	-	-	-	1.3	0.1	-	1.5	43.4	3.9	0.1	4.1
4/2	504	504	-	-	-	7.0	2.2	-	9.2	65.7	20.6	2.2	22.7
5/1	1628	1628	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	293	293	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	776	776	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	109	109	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -14.4 Total Delay for Signalled Lanes (pcuHr): 81.75 Cycle Time (s): 160
PRC Over All Lanes (%): -14.4 Total Delay Over All Lanes(pcuHr): 81.75

Full Input Data And Results

Scenario 5: 'AM 2025 Base + Committed + Proposed' (FG5: 'AM 2025 Base + Committed + Proposed', Plan 1: 'Network Control Plan 1')

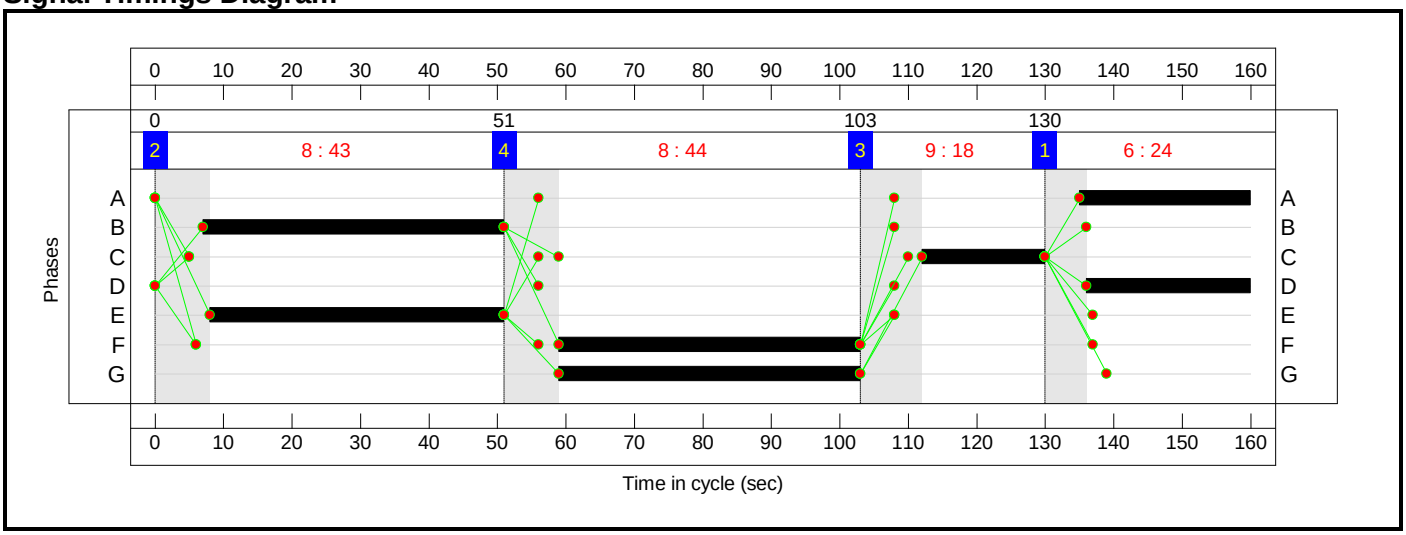
Stage Sequence Diagram



Stage Timings

Stage	2	4	3	1
Duration	43	44	18	24
Change Point	0	51	103	130

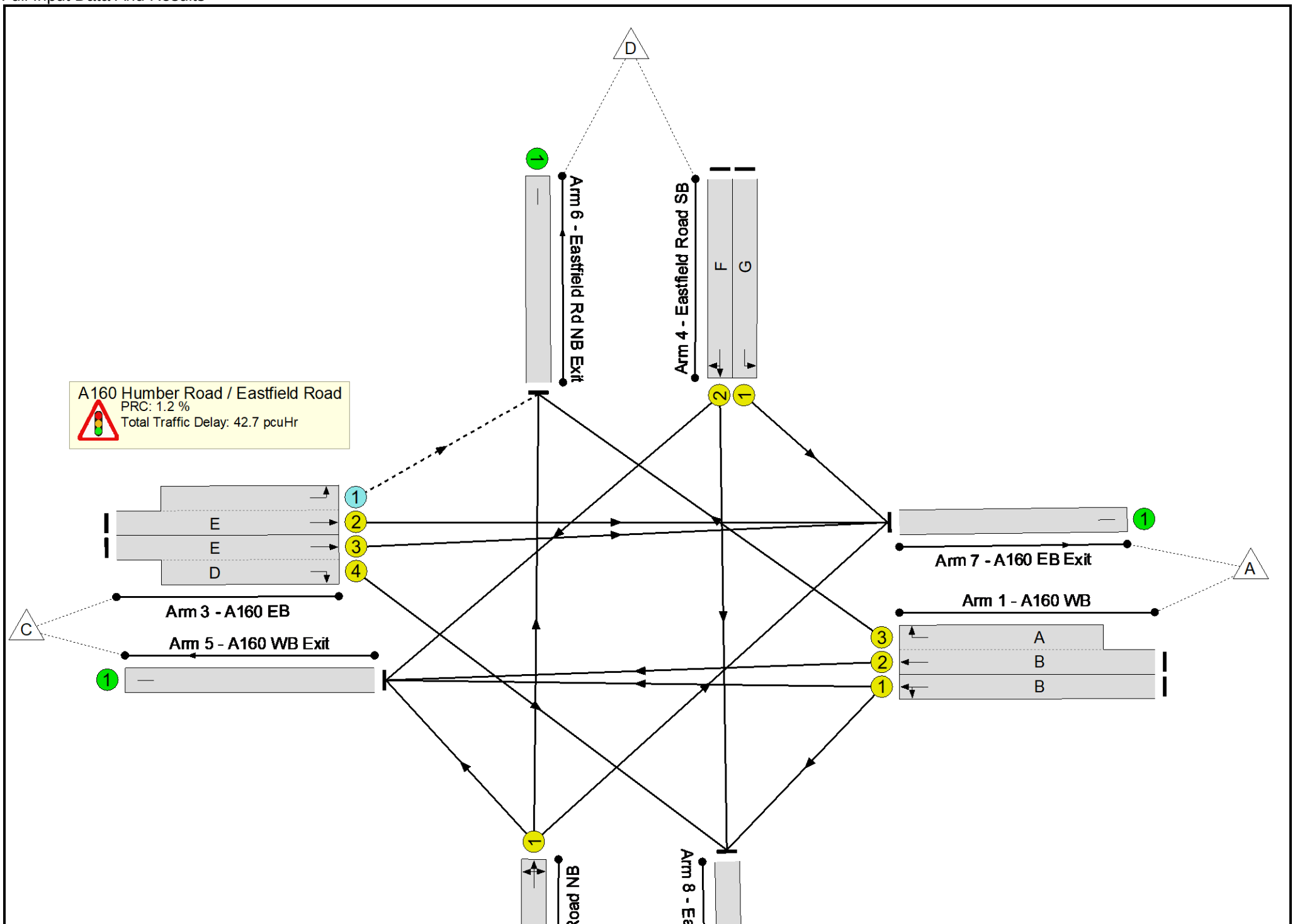
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.9%**
A160 Humber Road / Eastfield Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.9%**
1/1	A160 WB Ahead Left	U	N/A	N/A	B		1	44	-	393	1958	551	71.4%
1/2+1/3	A160 WB Ahead Right	U	N/A	N/A	B A		1	44:25	-	512	1966:1824	526+146	76.3 : 76.3%
2/1	Eastfield Road NB Left Ahead Right	U	N/A	N/A	C		1	18	-	195	1991	236	82.5%
3/2+3/1	A160 EB Left Ahead	U+O	N/A	N/A	E -		1	43	-	1402	1956:1978	440+1137	88.9 : 88.9%
3/3+3/4	A160 EB Ahead Right	U	N/A	N/A	E D		1	43:24	-	439	1950:1837	536+83	70.9 : 70.9%
4/1	Eastfield Road SB Left	U	N/A	N/A	G		1	44	-	58	1893	532	10.9%
4/2	Eastfield Road SB Right Ahead	U	N/A	N/A	F		1	44	-	176	1935	544	32.3%
5/1	A160 WB Exit	U	N/A	N/A	-		-	-	-	1043	Inf	Inf	0.0%
6/1	Eastfield Rd NB Exit	U	N/A	N/A	-		-	-	-	1156	Inf	Inf	0.0%
7/1	A160 EB Exit	U	N/A	N/A	-		-	-	-	867	Inf	Inf	0.0%
8/1	Eastfield Road SB Exit	U	N/A	N/A	-		-	-	-	109	Inf	Inf	0.0%

Full Input Data And Results

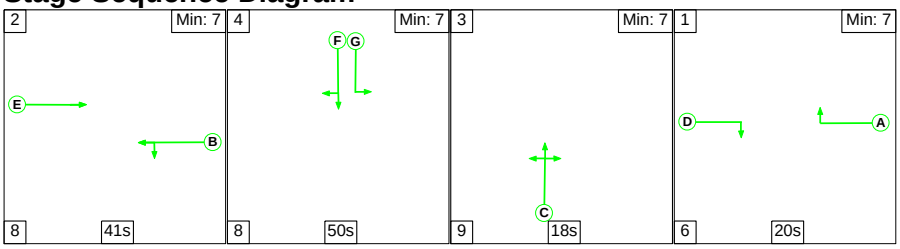
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**260**	**751**	**0**	**32.4**	**10.3**	**0.0**	**42.7**	**-**	**-**	**-**	**-**
A160 Humber Road / Eastfield Road	**-**	**-**	**260**	**751**	**0**	**32.4**	**10.3**	**0.0**	**42.7**	**-**	**-**	**-**	**-**
1/1	393	393	-	-	-	5.6	1.2	-	6.9	62.9	15.6	1.2	16.8
1/2+1/3	512	512	-	-	-	7.6	1.6	-	9.2	64.7	16.0	1.6	17.6
2/1	195	195	-	-	-	3.7	2.1	-	5.9	108.3	8.5	2.1	10.6
3/2+3/1	1402	1402	260	751	0	6.0	3.8	-	9.8	25.3	15.6	3.8	19.5
3/3+3/4	439	439	-	-	-	6.5	1.2	-	7.7	63.0	15.2	1.2	16.4
4/1	58	58	-	-	-	0.7	0.1	-	0.7	46.5	1.9	0.1	2.0
4/2	176	176	-	-	-	2.2	0.2	-	2.5	50.4	6.2	0.2	6.4
5/1	1043	1043	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1156	1156	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	867	867	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	109	109	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 1.2 Total Delay for Signalled Lanes (pcuHr): 42.67 Cycle Time (s): 160
PRC Over All Lanes (%): 1.2 Total Delay Over All Lanes(pcuHr): 42.67

Full Input Data And Results

Scenario 6: 'PM 2025 Base + Committed + Propsoed' (FG6: 'PM 2025 Base + Committed + Proposed', Plan 1: 'Network Control Plan 1')

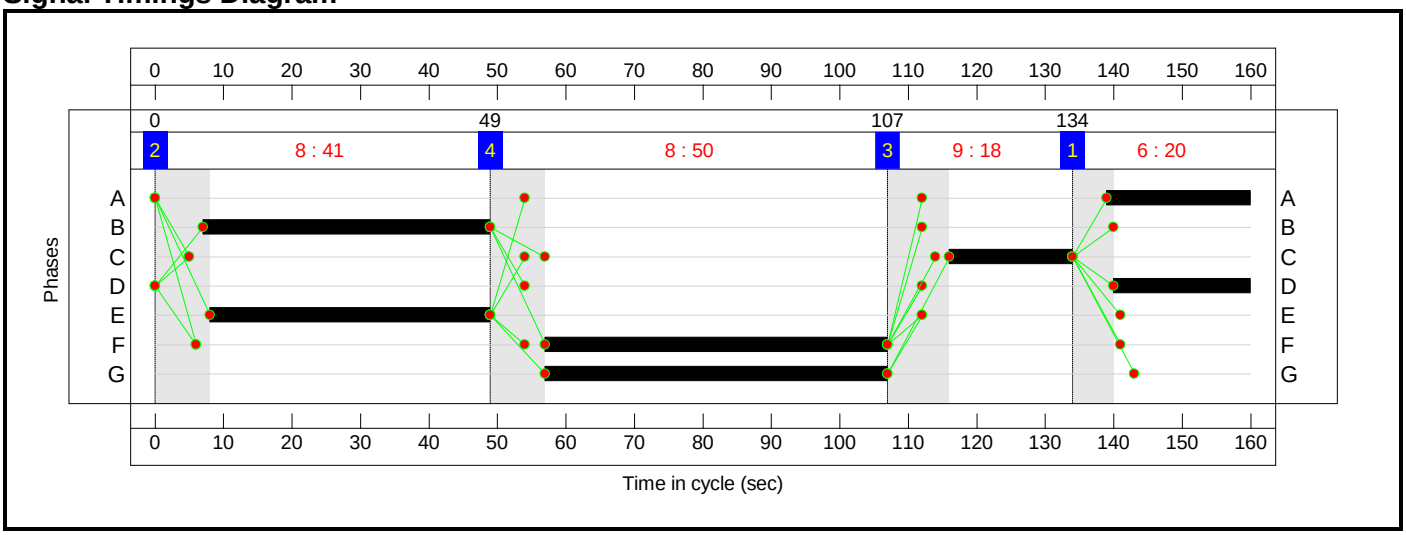
Stage Sequence Diagram



Stage Timings

Stage	2	4	3	1
Duration	41	50	18	20
Change Point	0	49	107	134

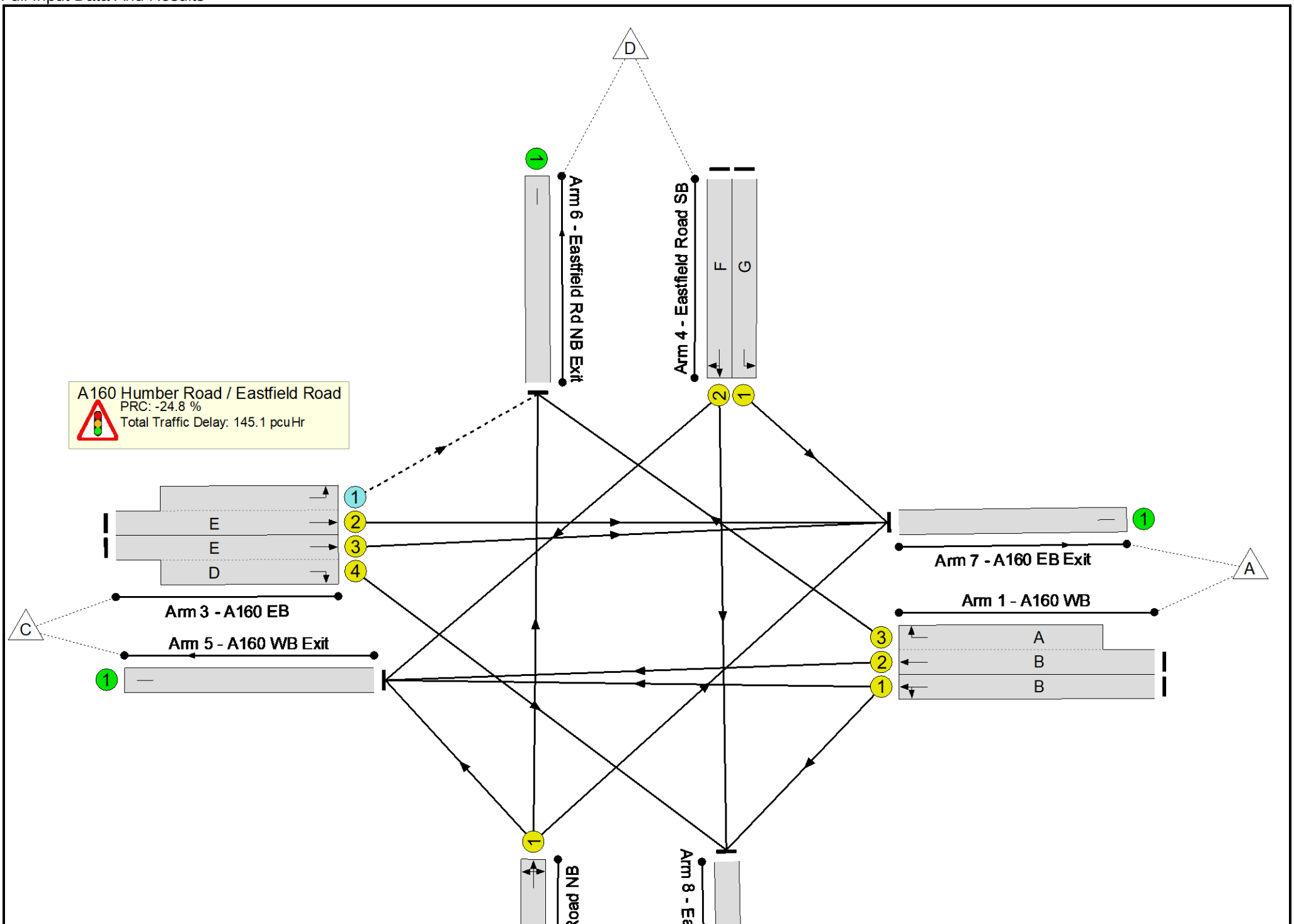
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**112.3%**
A160 Humber Road / Eastfield Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**112.3%**
1/1	A160 WB Ahead Left	U	N/A	N/A	B		1	42	-	551	1959	526	104.7%
1/2+1/3	A160 WB Ahead Right	U	N/A	N/A	B A		1	42:21	-	635	1966:1824	512+87	106.0 : 106.0%
2/1	Eastfield Road NB Left Ahead Right	U	N/A	N/A	C		1	18	-	209	1987	236	88.6%
3/2+3/1	A160 EB Left Ahead	U+O	N/A	N/A	E -		1	41	-	511	1956:1978	478+274	68.0 : 68.0%
3/3+3/4	A160 EB Ahead Right	U	N/A	N/A	E D		1	41:20	-	343	1950:1837	512+62	59.8 : 59.8%
4/1	Eastfield Road SB Left	U	N/A	N/A	G		1	50	-	135	1893	603	22.4%
4/2	Eastfield Road SB Right Ahead	U	N/A	N/A	F		1	50	-	690	1928	615	112.3%
5/1	A160 WB Exit	U	N/A	N/A	-		-	-	-	1859	Inf	Inf	0.0%
6/1	Eastfield Rd NB Exit	U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
7/1	A160 EB Exit	U	N/A	N/A	-		-	-	-	791	Inf	Inf	0.0%
8/1	Eastfield Road SB Exit	U	N/A	N/A	-		-	-	-	120	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**48**	**138**	**0**	**54.4**	**90.7**	**0.0**	**145.1**	**-**	**-**	**-**	**-**
A160 Humber Road / Eastfield Road	**-**	**-**	**48**	**138**	**0**	**54.4**	**90.7**	**0.0**	**145.1**	**-**	**-**	**-**	**-**
1/1	551	526	-	-	-	10.9	19.4	-	30.3	198.0	25.6	19.4	44.9
1/2+1/3	635	604	-	-	-	12.8	24.4	-	37.2	211.1	27.8	24.4	52.3
2/1	209	209	-	-	-	4.0	3.1	-	7.2	123.6	9.1	3.1	12.3
3/2+3/1	511	511	48	138	0	4.7	1.1	-	5.8	40.7	12.7	1.1	13.8
3/3+3/4	343	343	-	-	-	5.0	0.7	-	5.8	60.4	11.8	0.7	12.6
4/1	135	135	-	-	-	1.5	0.1	-	1.6	43.8	4.4	0.1	4.5
4/2	690	615	-	-	-	15.4	41.8	-	57.2	298.6	34.0	41.8	75.9
5/1	1736	1736	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	304	304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	791	791	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	113	113	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

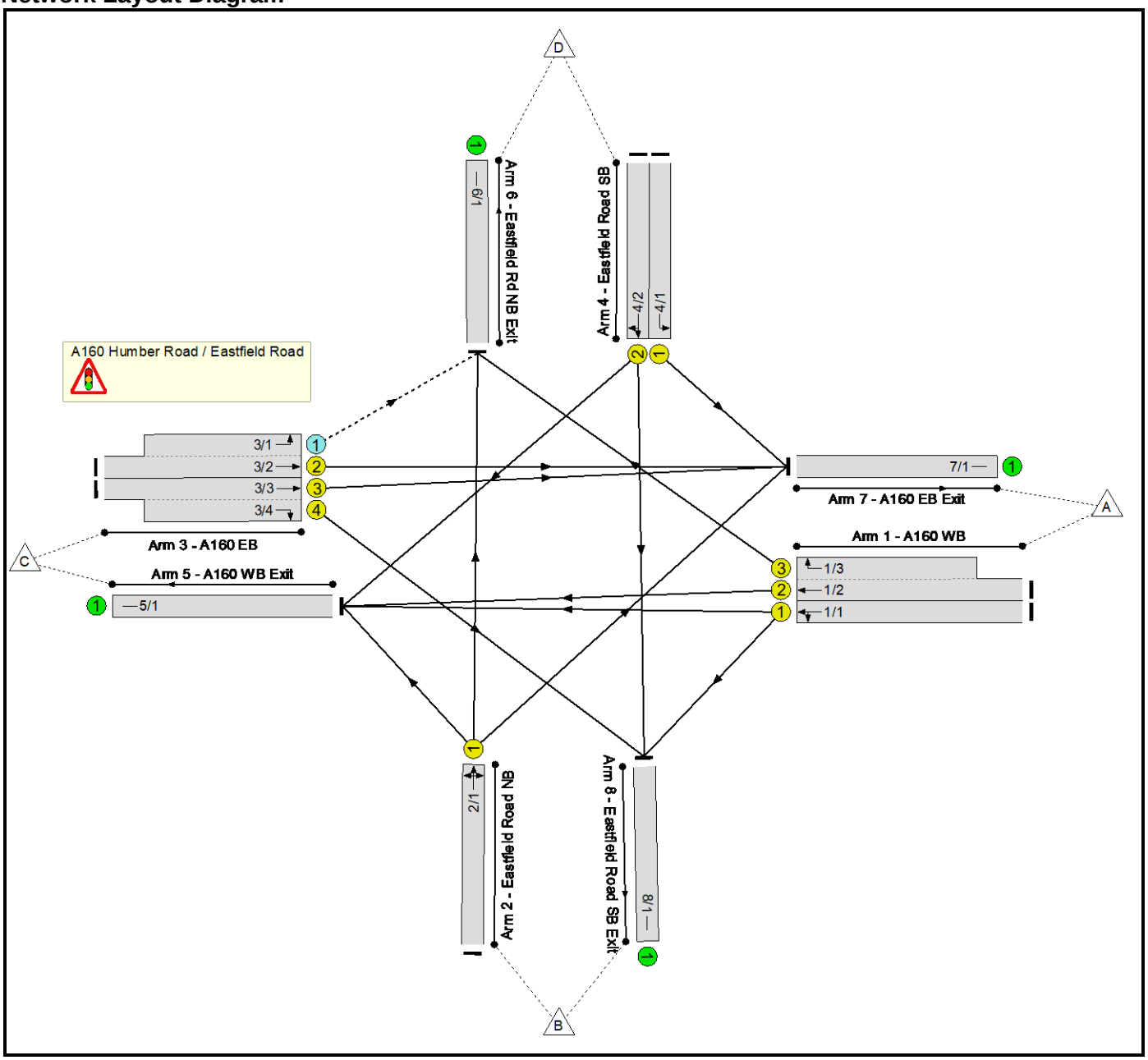
C1 PRC for Signalled Lanes (%): -24.8 Total Delay for Signalled Lanes (pcuHr): 145.13 Cycle Time (s): 160
PRC Over All Lanes (%): -24.8 Total Delay Over All Lanes(pcuHr): 145.13

Full Input Data And Results

User and Project Details

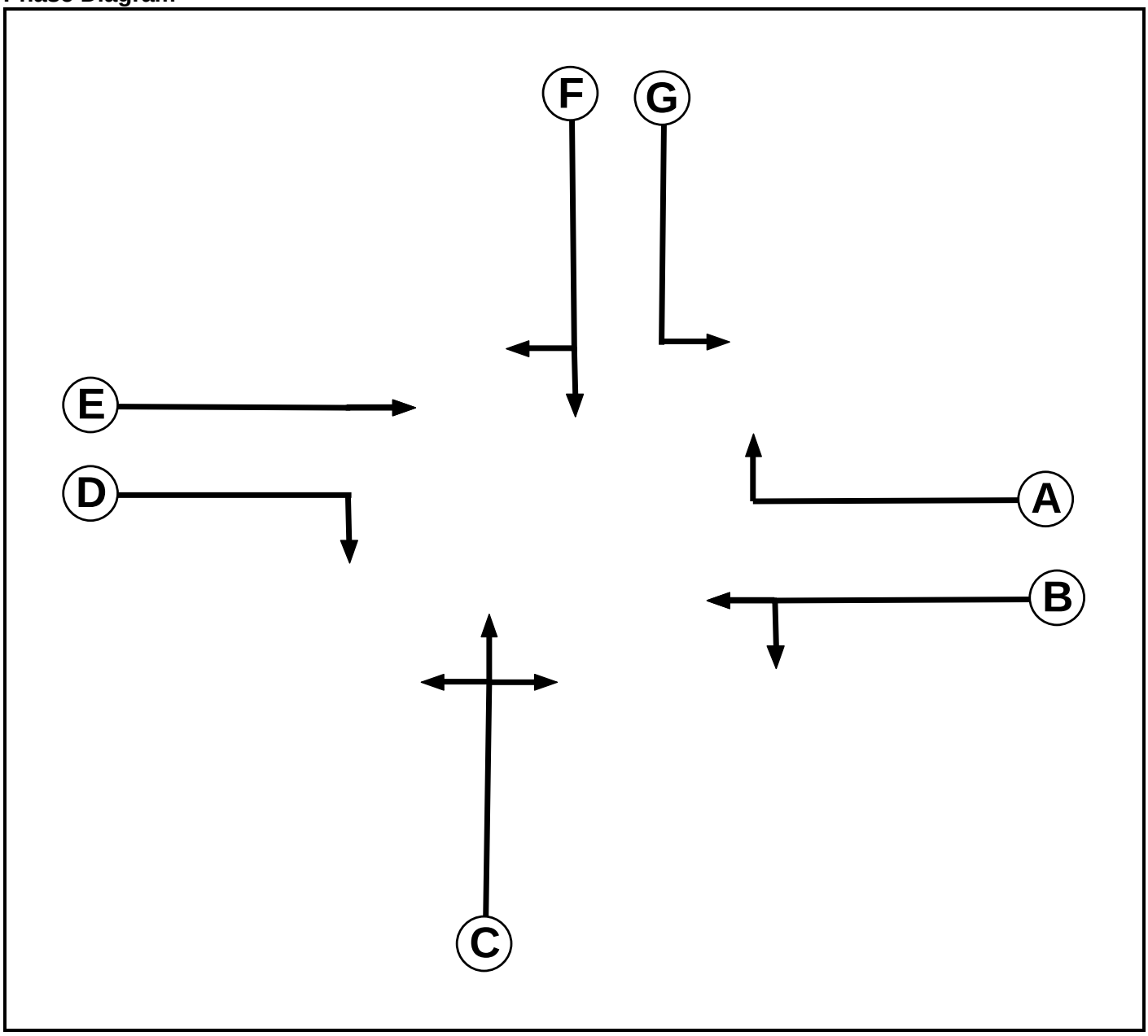
Project:	**Phillips 66 VPI**
Title:	**A160 / Eastfield Road Optimised Signals**
File name:	J1 A160_EastfieldRd Mitigation.lsg3x

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7
G	Traffic		7	7

Full Input Data And Results

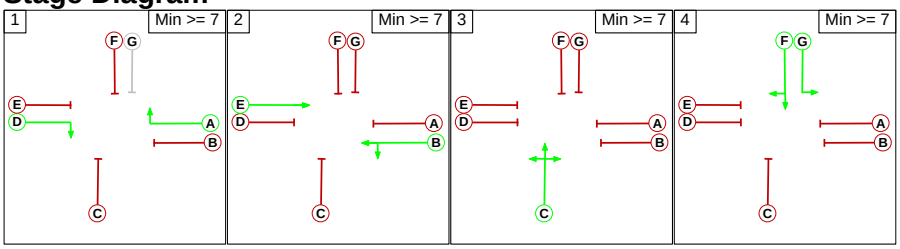
Phase Intergreens Matrix

Terminating Phase	Starting Phase							
		A	B	C	D	E	F	G
	A		-	5	-	8	6	-
	B	-		8	5	-	8	-
	C	5	6		6	7	7	9
	D	-	7	5		-	6	-
	E	5	-	5	-		5	8
	F	5	5	7	5	5		-
	G	-	-	9	-	5	-	

Phases in Stage

Stage No.	Phases in Stage
1	A D
2	B E
3	C
4	F G

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

From Stage	To Stage				
		1	2	3	4
	1		8	5	6
	2	5		8	8
	3	6	7		9
	4	5	5	9	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A160 Humber Road / Eastfield Road											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
3/1 (A160 EB)	6/1 (Left)	1439	0	2/1	1.09	To 6/1 (Ahead)	-	-	-	-	-
				1/3	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: A160 Humber Road / Eastfield Road												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A160 WB)	U	B	2	3	129.0	Geom	-	3.51	0.00	Y	Arm 5 Ahead	Inf
											Arm 8 Left	23.56
1/2 (A160 WB)	U	B	2	3	129.0	Geom	-	3.51	0.00	Y	Arm 5 Ahead	Inf
1/3 (A160 WB)	U	A	2	3	20.0	Geom	-	3.40	0.00	Y	Arm 6 Right	20.90
2/1 (Eastfield Road NB)	U	C	2	3	60.0	Geom	-	4.50	0.00	Y	Arm 5 Left	33.50
											Arm 6 Ahead	Inf
											Arm 7 Right	32.95
3/1 (A160 EB)	O		2	3	17.6	Geom	-	3.30	0.00	N	Arm 6 Left	27.80
3/2 (A160 EB)	U	E	2	3	77.2	Geom	-	3.41	0.00	Y	Arm 7 Ahead	Inf
3/3 (A160 EB)	U	E	2	3	77.2	Geom	-	3.35	0.00	Y	Arm 7 Ahead	Inf
3/4 (A160 EB)	U	D	2	3	25.7	Geom	-	3.42	0.00	Y	Arm 8 Right	23.00
4/1 (Eastfield Road SB)	U	G	2	3	11.7	Geom	-	4.20	0.00	Y	Arm 7 Left	20.00
4/2 (Eastfield Road SB)	U	F	2	3	60.0	Geom	-	4.20	0.00	Y	Arm 5 Right	25.00
											Arm 8 Ahead	Inf
5/1 (A160 WB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Eastfield Rd NB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (A160 EB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Eastfield Road SB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM 2025 Base'	07:00	08:00	01:00	
2: 'PM 2025 Base'	16:00	17:00	01:00	
3: 'AM 2025 Base + Committed'	07:00	08:00	01:00	
4: 'PM 2025 Base + Committed'	16:00	17:00	01:00	
5: 'AM 2025 Base + Committed + Proposed'	07:00	08:00	01:00	
6: 'PM 2025 Base + Committed + Proposed'	16:00	17:00	01:00	

Scenario 1: 'PM 2025 Base' (FG2: 'PM 2025 Base', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
Origin		A	B	C	D	Tot.
	A	0	20	800	83	903
	B	23	0	158	26	207
	C	580	29	0	178	787
	D	120	54	450	0	624
	Tot.	723	103	1408	287	2521

Traffic Lane Flows

Lane	Scenario 1: PM 2025 Base
Junction: A160 Humber Road / Eastfield Road	
1/1	408
1/2 (with short)	495(In) 412(Out)
1/3 (short)	83
2/1	207
3/1 (short)	178
3/2 (with short)	480(In) 302(Out)
3/3 (with short)	307(In) 278(Out)
3/4 (short)	29
4/1	120
4/2	504
5/1	1408
6/1	287
7/1	723
8/1	103

Full Input Data And Results

Lane Saturation Flows

Junction: A160 Humber Road / Eastfield Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	95.1 %	1960	1960
				Arm 8 Left	23.56	4.9 %		
1/2 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1966	1966
1/3 (A160 WB)	3.40	0.00	Y	Arm 6 Right	20.90	100.0 %	1824	1824
2/1 (Eastfield Road NB)	4.50	0.00	Y	Arm 5 Left	33.50	76.3 %	1987	1987
				Arm 6 Ahead	Inf	12.6 %		
				Arm 7 Right	32.95	11.1 %		
3/1 (A160 EB)	3.30	0.00	N	Arm 6 Left	27.80	100.0 %	1978	1978
3/2 (A160 EB)	3.41	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1956	1956
3/3 (A160 EB)	3.35	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1950	1950
3/4 (A160 EB)	3.42	0.00	Y	Arm 8 Right	23.00	100.0 %	1837	1837
4/1 (Eastfield Road SB)	4.20	0.00	Y	Arm 7 Left	20.00	100.0 %	1893	1893
4/2 (Eastfield Road SB)	4.20	0.00	Y	Arm 5 Right	25.00	89.3 %	1932	1932
				Arm 8 Ahead	Inf	10.7 %		
5/1 (A160 WB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Eastfield Rd NB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A160 EB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Eastfield Road SB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 2: 'PM 2025 Base + Committed' (FG4: 'PM 2025 Base + Committed', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	20	1045	83	1148
	B	25	0	158	26	209
	C	629	35	0	184	848
	D	122	54	450	0	626
	Tot.	776	109	1653	293	2831

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: PM 2025 Base + Committed
Junction: A160 Humber Road / Eastfield Road	
1/1	537
1/2 (with short)	611(In) 528(Out)
1/3 (short)	83
2/1	209
3/1 (short)	184
3/2 (with short)	509(In) 325(Out)
3/3 (with short)	339(In) 304(Out)
3/4 (short)	35
4/1	122
4/2	504
5/1	1653
6/1	293
7/1	776
8/1	109

Full Input Data And Results

Lane Saturation Flows

Junction: A160 Humber Road / Eastfield Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	96.3 %	1961	1961
				Arm 8 Left	23.56	3.7 %		
1/2 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1966	1966
1/3 (A160 WB)	3.40	0.00	Y	Arm 6 Right	20.90	100.0 %	1824	1824
2/1 (Eastfield Road NB)	4.50	0.00	Y	Arm 5 Left	33.50	75.6 %	1987	1987
				Arm 6 Ahead	Inf	12.4 %		
				Arm 7 Right	32.95	12.0 %		
3/1 (A160 EB)	3.30	0.00	N	Arm 6 Left	27.80	100.0 %	1978	1978
3/2 (A160 EB)	3.41	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1956	1956
3/3 (A160 EB)	3.35	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1950	1950
3/4 (A160 EB)	3.42	0.00	Y	Arm 8 Right	23.00	100.0 %	1837	1837
4/1 (Eastfield Road SB)	4.20	0.00	Y	Arm 7 Left	20.00	100.0 %	1893	1893
4/2 (Eastfield Road SB)	4.20	0.00	Y	Arm 5 Right	25.00	89.3 %	1932	1932
				Arm 8 Ahead	Inf	10.7 %		
5/1 (A160 WB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Eastfield Rd NB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A160 EB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Eastfield Road SB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 3: 'PM 2025 Base + Committed + Propsoed' (FG6: 'PM 2025 Base + Committed + Proposed', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	29	1065	92	1186
	B	25	0	158	26	209
	C	631	37	0	186	854
	D	135	54	636	0	825
	Tot.	791	120	1859	304	3074

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: PM 2025 Base + Committed + Propsoed
Junction: A160 Humber Road / Eastfield Road	
1/1	551
1/2 (with short)	635(In) 543(Out)
1/3 (short)	92
2/1	209
3/1 (short)	186
3/2 (with short)	511(In) 325(Out)
3/3 (with short)	343(In) 306(Out)
3/4 (short)	37
4/1	135
4/2	690
5/1	1859
6/1	304
7/1	791
8/1	120

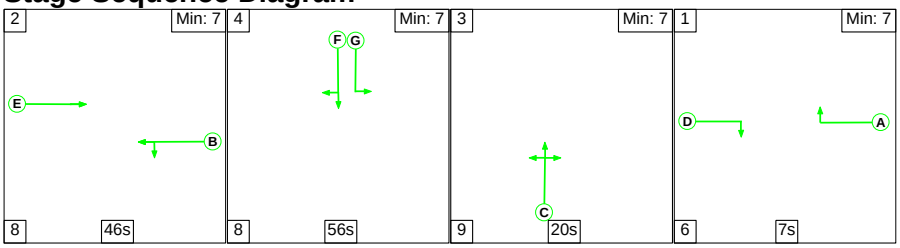
Full Input Data And Results

Lane Saturation Flows

Junction: A160 Humber Road / Eastfield Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	94.7 %	1959	1959
				Arm 8 Left	23.56	5.3 %		
1/2 (A160 WB)	3.51	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1966	1966
1/3 (A160 WB)	3.40	0.00	Y	Arm 6 Right	20.90	100.0 %	1824	1824
2/1 (Eastfield Road NB)	4.50	0.00	Y	Arm 5 Left	33.50	75.6 %	1987	1987
				Arm 6 Ahead	Inf	12.4 %		
				Arm 7 Right	32.95	12.0 %		
3/1 (A160 EB)	3.30	0.00	N	Arm 6 Left	27.80	100.0 %	1978	1978
3/2 (A160 EB)	3.41	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1956	1956
3/3 (A160 EB)	3.35	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1950	1950
3/4 (A160 EB)	3.42	0.00	Y	Arm 8 Right	23.00	100.0 %	1837	1837
4/1 (Eastfield Road SB)	4.20	0.00	Y	Arm 7 Left	20.00	100.0 %	1893	1893
4/2 (Eastfield Road SB)	4.20	0.00	Y	Arm 5 Right	25.00	92.2 %	1928	1928
				Arm 8 Ahead	Inf	7.8 %		
5/1 (A160 WB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Eastfield Rd NB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A160 EB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Eastfield Road SB Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 1: 'PM 2025 Base' (FG2: 'PM 2025 Base', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

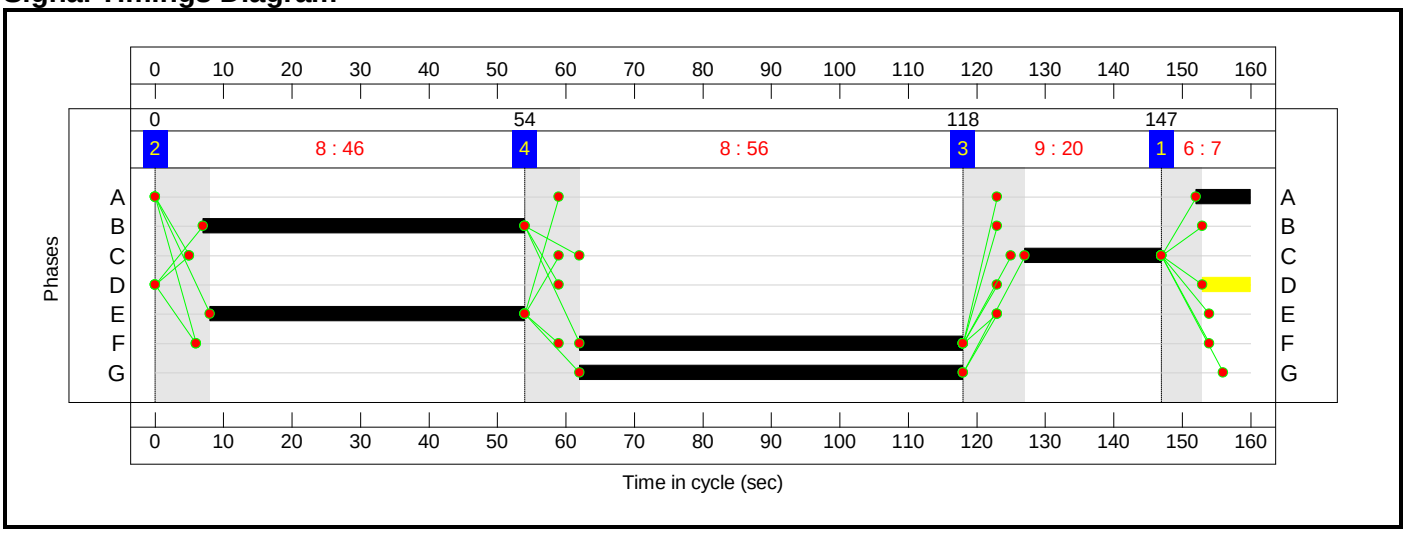


Stage Timings

Stage	2	4	3	1
Duration	46	56	20	7
Change Point	0	54	118	147

Full Input Data And Results

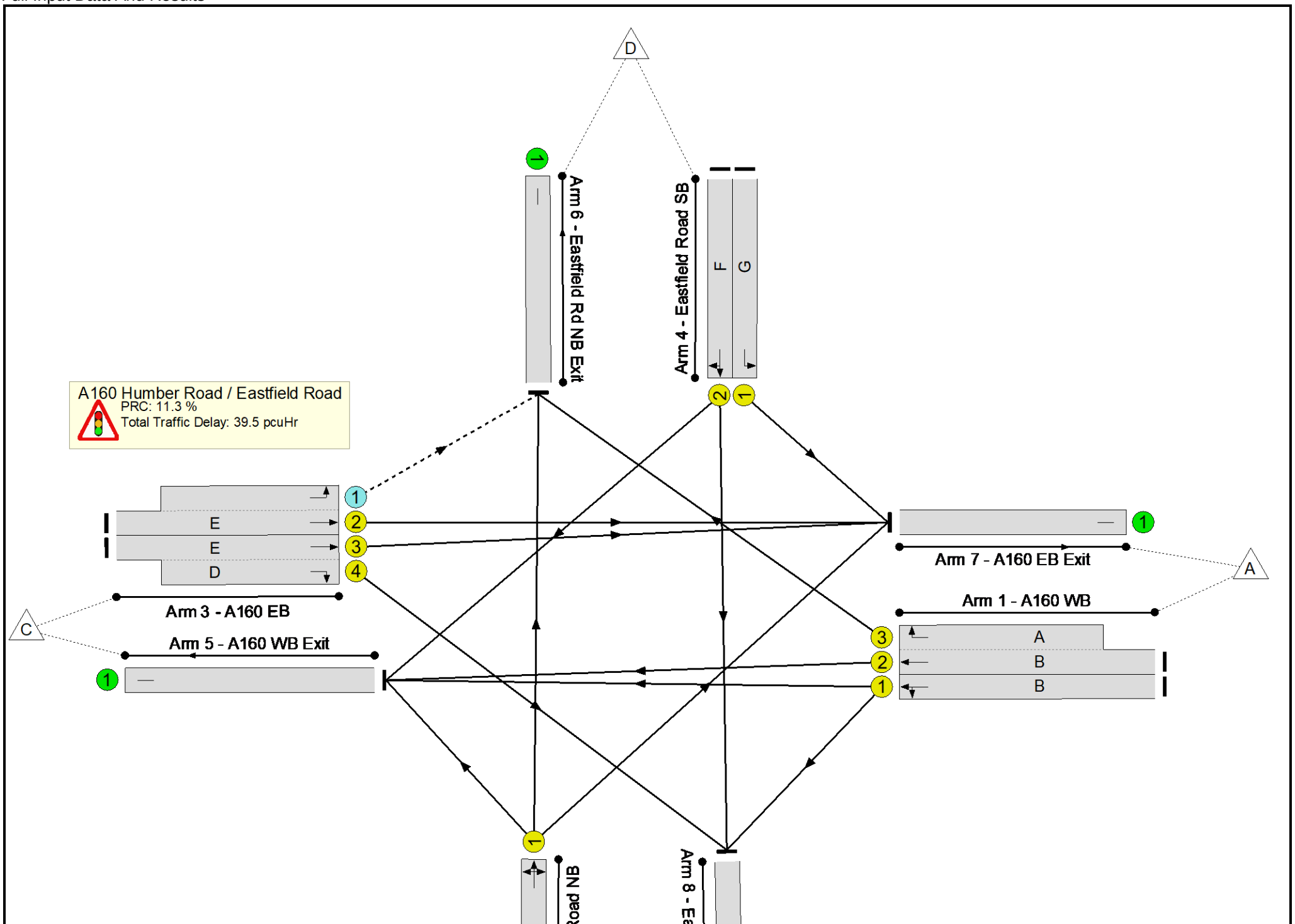
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**
A160 Humber Road / Eastfield Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**
1/1	A160 WB Ahead Left	U	N/A	N/A	B		1	47	-	408	1960	588	69.4%
1/2+1/3	A160 WB Ahead Right	U	N/A	N/A	B A		1	47:8	-	495	1966:1824	561+103	73.4 : 80.9%
2/1	Eastfield Road NB Left Ahead Right	U	N/A	N/A	C		1	20	-	207	1987	261	79.4%
3/2+3/1	A160 EB Left Ahead	U+O	N/A	N/A	E -		1	46	-	480	1956:1978	516+304	58.5 : 58.5%
3/3+3/4	A160 EB Ahead Right	U	N/A	N/A	E D		1	46:7	-	307	1950:1837	573+69	48.5 : 41.8%
4/1	Eastfield Road SB Left	U	N/A	N/A	G		1	56	-	120	1893	674	17.8%
4/2	Eastfield Road SB Right Ahead	U	N/A	N/A	F		1	56	-	504	1932	688	73.2%
5/1	A160 WB Exit	U	N/A	N/A	-		-	-	-	1408	Inf	Inf	0.0%
6/1	Eastfield Rd NB Exit	U	N/A	N/A	-		-	-	-	287	Inf	Inf	0.0%
7/1	A160 EB Exit	U	N/A	N/A	-		-	-	-	723	Inf	Inf	0.0%
8/1	Eastfield Road SB Exit	U	N/A	N/A	-		-	-	-	103	Inf	Inf	0.0%

Full Input Data And Results

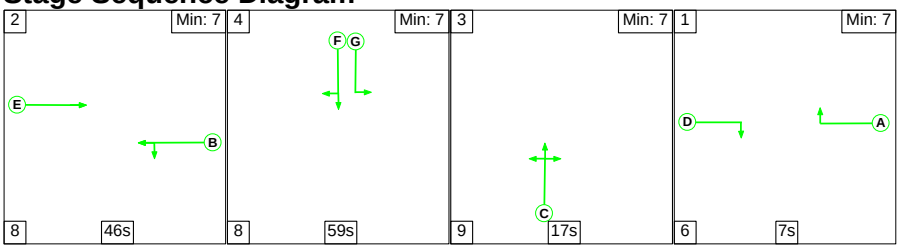
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**33**	**145**	**0**	**32.5**	**7.0**	**0.0**	**39.5**	**-**	**-**	**-**	**-**
A160 Humber Road / Eastfield Road	**-**	**-**	**33**	**145**	**0**	**32.5**	**7.0**	**0.0**	**39.5**	**-**	**-**	**-**	**-**
1/1	408	408	-	-	-	5.6	1.1	-	6.7	59.4	16.0	1.1	17.1
1/2+1/3	495	495	-	-	-	7.4	1.4	-	8.8	64.3	16.1	1.4	17.6
2/1	207	207	-	-	-	3.9	1.8	-	5.7	98.8	8.9	1.8	10.7
3/2+3/1	480	480	33	145	0	4.0	0.7	-	4.7	35.0	11.2	0.7	11.9
3/3+3/4	307	307	-	-	-	4.2	0.5	-	4.6	54.4	10.1	0.5	10.6
4/1	120	120	-	-	-	1.2	0.1	-	1.3	38.6	3.6	0.1	3.7
4/2	504	504	-	-	-	6.3	1.3	-	7.6	54.5	19.5	1.3	20.8
5/1	1408	1408	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	287	287	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	723	723	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	103	103	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 11.3 Total Delay for Signalled Lanes (pcuHr): 39.48 Cycle Time (s): 160
PRC Over All Lanes (%): 11.3 Total Delay Over All Lanes(pcuHr): 39.48

Full Input Data And Results

Scenario 2: 'PM 2025 Base + Committed' (FG4: 'PM 2025 Base + Committed', Plan 1: 'Network Control Plan 1')

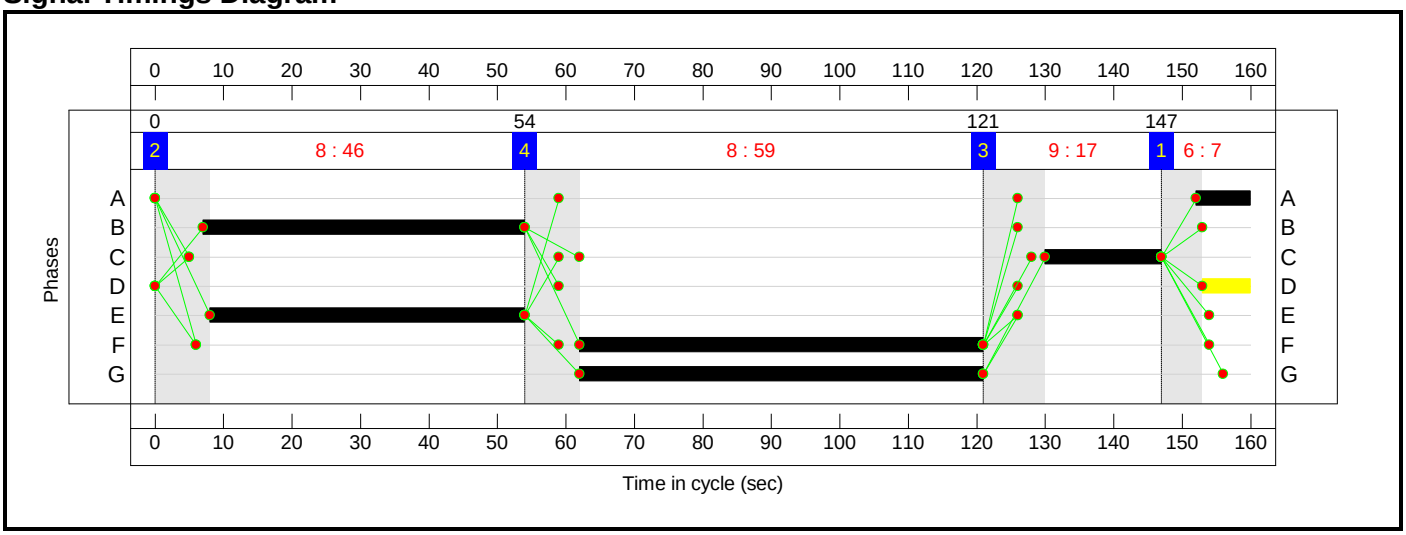
Stage Sequence Diagram



Stage Timings

Stage	2	4	3	1
Duration	46	59	17	7
Change Point	0	54	121	147

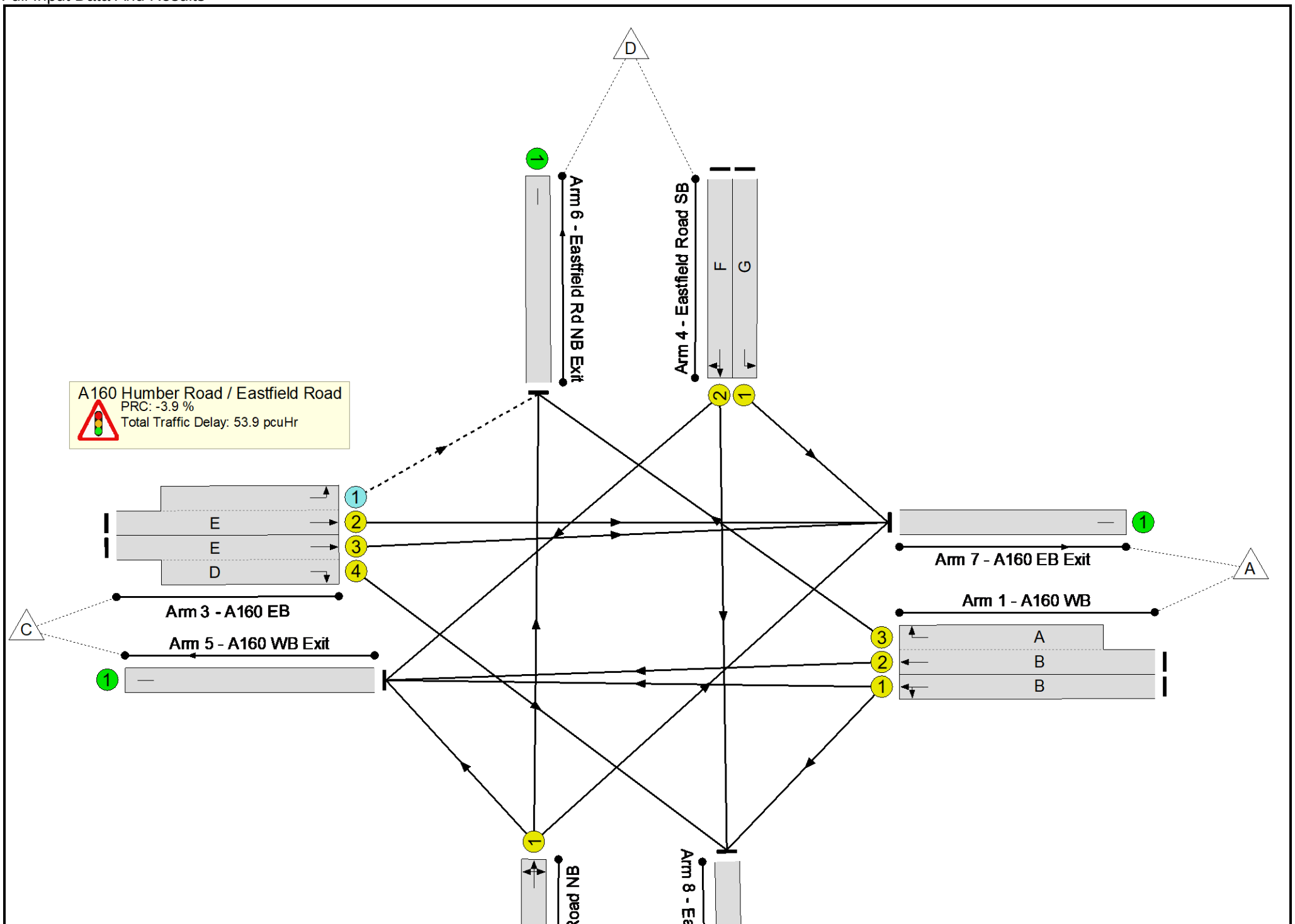
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.5%**
A160 Humber Road / Eastfield Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.5%**
1/1	A160 WB Ahead Left	U	N/A	N/A	B		1	47	-	537	1961	588	91.3%
1/2+1/3	A160 WB Ahead Right	U	N/A	N/A	B A		1	47:8	-	611	1966:1824	566+103	93.4 : 80.9%
2/1	Eastfield Road NB Left Ahead Right	U	N/A	N/A	C		1	17	-	209	1987	224	93.5%
3/2+3/1	A160 EB Left Ahead	U+O	N/A	N/A	E -		1	46	-	509	1956:1978	518+293	62.8 : 62.8%
3/3+3/4	A160 EB Ahead Right	U	N/A	N/A	E D		1	46:7	-	339	1950:1837	573+86	53.1 : 40.8%
4/1	Eastfield Road SB Left	U	N/A	N/A	G		1	59	-	122	1893	710	17.2%
4/2	Eastfield Road SB Right Ahead	U	N/A	N/A	F		1	59	-	504	1932	725	69.6%
5/1	A160 WB Exit	U	N/A	N/A	-		-	-	-	1653	Inf	Inf	0.0%
6/1	Eastfield Rd NB Exit	U	N/A	N/A	-		-	-	-	293	Inf	Inf	0.0%
7/1	A160 EB Exit	U	N/A	N/A	-		-	-	-	776	Inf	Inf	0.0%
8/1	Eastfield Road SB Exit	U	N/A	N/A	-		-	-	-	109	Inf	Inf	0.0%

Full Input Data And Results

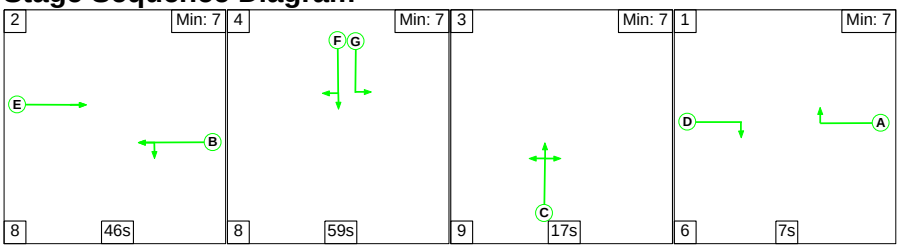
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**31**	**153**	**0**	**37.8**	**16.1**	**0.0**	**53.9**	**-**	**-**	**-**	**-**
A160 Humber Road / Eastfield Road	**-**	**-**	**31**	**153**	**0**	**37.8**	**16.1**	**0.0**	**53.9**	**-**	**-**	**-**	**-**
1/1	537	537	-	-	-	8.1	4.5	-	12.5	83.9	23.0	4.5	27.4
1/2+1/3	611	611	-	-	-	9.6	4.6	-	14.2	83.6	23.1	4.6	27.7
2/1	209	209	-	-	-	4.1	4.5	-	8.5	147.2	9.2	4.5	13.6
3/2+3/1	509	509	31	153	0	4.3	0.8	-	5.2	36.6	12.2	0.8	13.0
3/3+3/4	339	339	-	-	-	4.7	0.5	-	5.2	55.6	11.2	0.5	11.8
4/1	122	122	-	-	-	1.1	0.1	-	1.2	36.5	3.6	0.1	3.7
4/2	504	504	-	-	-	5.9	1.1	-	7.1	50.4	18.9	1.1	20.0
5/1	1653	1653	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	293	293	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	776	776	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	109	109	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -3.9 Total Delay for Signalled Lanes (pcuHr): 53.95 Cycle Time (s): 160
PRC Over All Lanes (%): -3.9 Total Delay Over All Lanes(pcuHr): 53.95

Full Input Data And Results

Scenario 3: 'PM 2025 Base + Committed + Propsoed' (FG6: 'PM 2025 Base + Committed + Proposed', Plan 1: 'Network Control Plan 1')

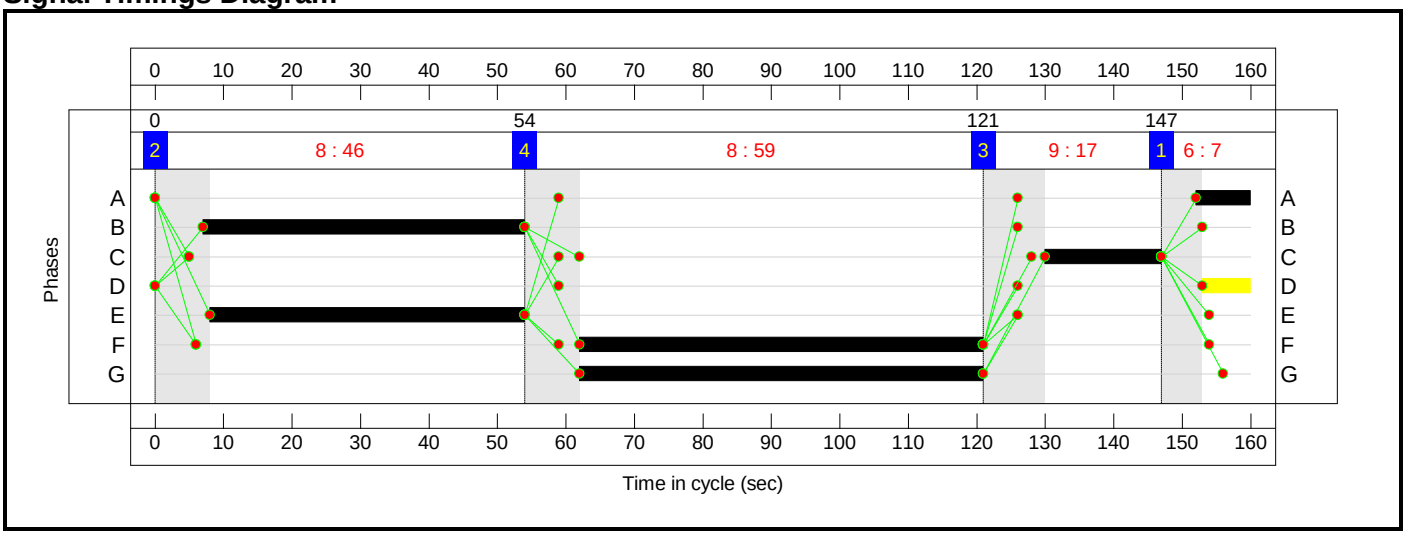
Stage Sequence Diagram



Stage Timings

Stage	2	4	3	1
Duration	46	59	17	7
Change Point	0	54	121	147

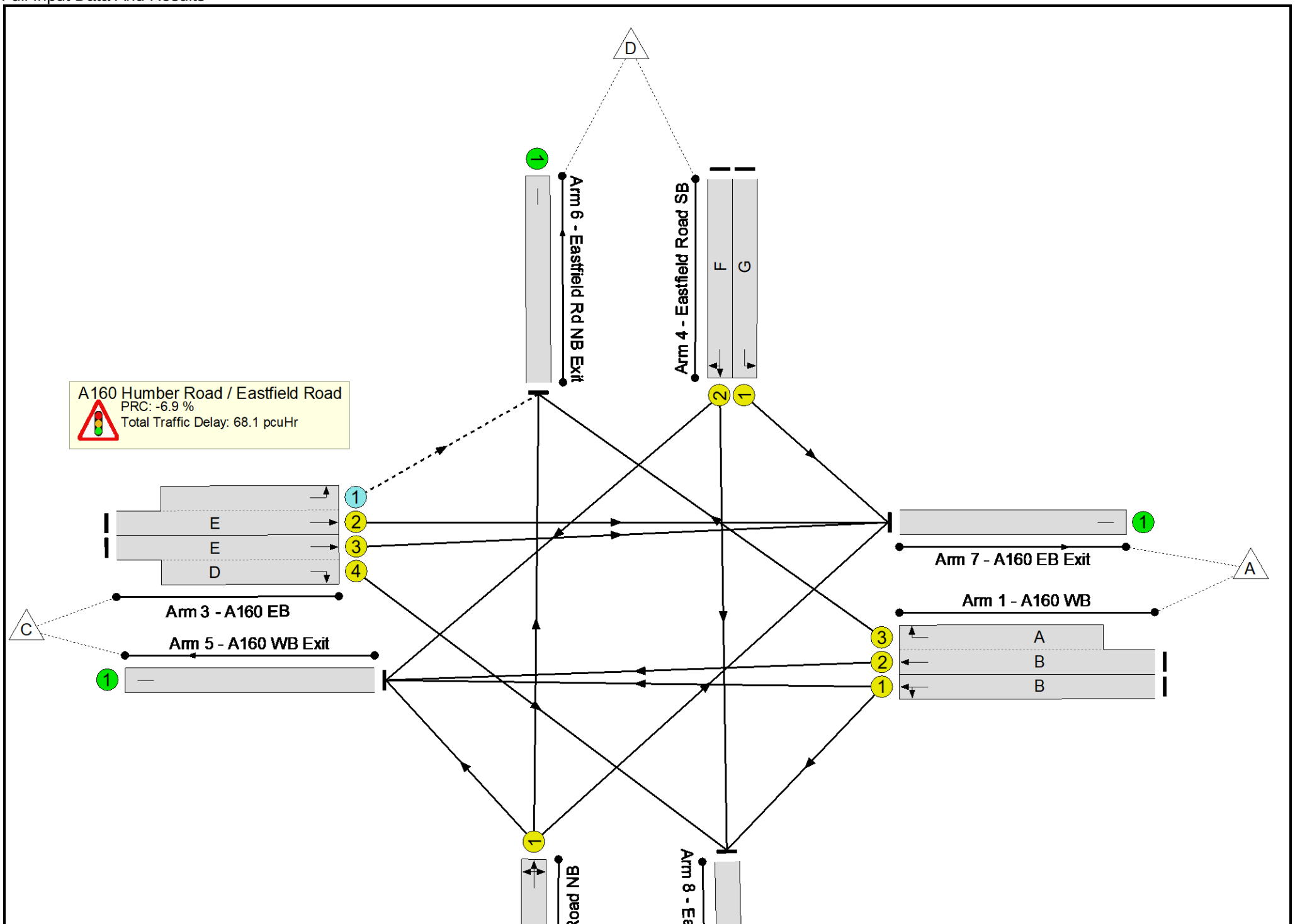
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.2%**
A160 Humber Road / Eastfield Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.2%**
1/1	A160 WB Ahead Left	U	N/A	N/A	B		1	47	-	551	1959	588	93.8%
1/2+1/3	A160 WB Ahead Right	U	N/A	N/A	B A		1	47:8	-	635	1966:1824	564+103	96.2 : 89.7%
2/1	Eastfield Road NB Left Ahead Right	U	N/A	N/A	C		1	17	-	209	1987	224	93.5%
3/2+3/1	A160 EB Left Ahead	U+O	N/A	N/A	E -		1	46	-	511	1956:1978	517+296	62.9 : 62.9%
3/3+3/4	A160 EB Ahead Right	U	N/A	N/A	E D		1	46:7	-	343	1950:1837	573+92	53.4 : 40.3%
4/1	Eastfield Road SB Left	U	N/A	N/A	G		1	59	-	135	1893	710	19.0%
4/2	Eastfield Road SB Right Ahead	U	N/A	N/A	F		1	59	-	690	1928	723	95.4%
5/1	A160 WB Exit	U	N/A	N/A	-		-	-	-	1859	Inf	Inf	0.0%
6/1	Eastfield Rd NB Exit	U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
7/1	A160 EB Exit	U	N/A	N/A	-		-	-	-	791	Inf	Inf	0.0%
8/1	Eastfield Road SB Exit	U	N/A	N/A	-		-	-	-	120	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**29**	**157**	**0**	**42.2**	**25.9**	**0.0**	**68.1**	**-**	**-**	**-**	**-**
A160 Humber Road / Eastfield Road	**-**	**-**	**29**	**157**	**0**	**42.2**	**25.9**	**0.0**	**68.1**	**-**	**-**	**-**	**-**
1/1	551	551	-	-	-	8.3	5.7	-	14.1	91.9	23.7	5.7	29.4
1/2+1/3	635	635	-	-	-	10.1	6.9	-	17.0	96.6	24.2	6.9	31.2
2/1	209	209	-	-	-	4.1	4.5	-	8.5	147.2	9.2	4.5	13.6
3/2+3/1	511	511	29	157	0	4.3	0.8	-	5.2	36.5	12.2	0.8	13.0
3/3+3/4	343	343	-	-	-	4.8	0.5	-	5.3	55.8	11.4	0.5	11.9
4/1	135	135	-	-	-	1.3	0.1	-	1.4	36.8	4.0	0.1	4.1
4/2	690	690	-	-	-	9.3	7.3	-	16.6	86.5	29.7	7.3	37.0
5/1	1859	1859	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	304	304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	791	791	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	120	120	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -6.9 Total Delay for Signalled Lanes (pcuHr): 68.11 Cycle Time (s): 160
PRC Over All Lanes (%): -6.9 Total Delay Over All Lanes(pcuHr): 68.11

Junctions 10

ARCADY 10 - Roundabout Module

Filename: J2 A1061_HabroughRd_UlcebyRd_EHaltonRd.j10
Path: \\na.aecomnet.com\lfs\EMEA\Leeds-UKLDS2\Legacy\UKLDS2PFPSW001\WIP\LE_Projects\Newproje\60668866 - Humber Zero\400_Technical\Traffic & Transport\NH Comments 10.01.24\Junction Modelling\Modelling June 2024
Report generation date: 10/06/2024 10:17:32

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2025									
1 - A160 East	D1	0.5	3.26	0.23	A	D2	1.2	3.61	0.48	A
2 - Harbrough Road		0.4	4.37	0.29	A		0.2	4.21	0.13	A
3 - A160 West		1.6	3.94	0.57	A		0.6	2.98	0.28	A
4 - Ulceby Road		0.3	6.34	0.21	A		0.1	4.28	0.09	A
5 - East Halton Road		0.5	5.90	0.26	A		0.5	4.16	0.31	A
	2025 + Committed									
1 - A160 East	D3	0.6	3.31	0.24	A	D4	1.8	4.59	0.59	A
2 - Harbrough Road		0.4	4.46	0.30	A		0.2	4.83	0.15	A
3 - A160 West		2.5	5.33	0.68	A		0.7	3.13	0.31	A
4 - Ulceby Road		0.4	7.75	0.25	A		0.1	4.40	0.10	A
5 - East Halton Road		0.6	7.10	0.30	A		0.5	4.29	0.32	A
	2025 + Committed + Proposed									
1 - A160 East	D5	0.6	3.32	0.24	A	D6	2.8	6.11	0.69	A
2 - Harbrough Road		0.4	4.47	0.30	A		0.2	5.58	0.17	A
3 - A160 West		4.1	7.58	0.78	A		0.7	3.15	0.31	A
4 - Ulceby Road		0.5	9.42	0.29	A		0.1	4.41	0.10	A
5 - East Halton Road		0.7	8.47	0.34	A		0.5	4.31	0.32	A

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

File summary

File Description

Title	
Location	
Site number	
Date	17/01/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NA\SimmonsA1
Description	

Units

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

Flows show original traffic demand (PCU/hr).

The junction diagram reflects the last run of Junctions.

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2025	AM	ONE HOUR	06:45	08:15	15
D2	2025	PM	ONE HOUR	15:45	17:15	15
D3	2025 + Committed	AM	ONE HOUR	06:45	08:15	15
D4	2025 + Committed	PM	ONE HOUR	15:45	17:15	15
D5	2025 + Committed + Proposed	AM	ONE HOUR	06:45	08:15	15
D6	2025 + Committed + Proposed	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2025, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1061/Harbrough Rd/Ulceby Rd/E Halton Rd	Standard Roundabout		1, 2, 3, 4, 5	4.21	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.21	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A160 East		
2	Harbrough Road		
3	A160 West		
4	Ulceby Road		
5	East Halton Road		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A160 East	7.79	9.26	20.0	50.7	100.0	35.0		
2 - Harbrough Road	3.89	6.91	13.7	15.1	100.0	51.0		
3 - A160 West	7.28	9.43	15.0	36.0	100.0	38.0		
4 - Ulceby Road	3.91	6.92	10.3	32.9	100.0	35.0		
5 - East Halton Road	3.68	7.53	12.6	27.2	100.0	38.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final slope	Final intercept (PCU/hr)
1 - A160 East	✓	0.601	2762	0.601	2762
2 - Harbrough Road	✓	0.410	1554	0.410	1554
3 - A160 West	✓	0.589	2708	0.589	2708
4 - Ulceby Road	✓	0.444	1653	0.444	1653
5 - East Halton Road	✓	0.440	1657	0.440	1657

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2025	AM	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160 East		✓	529	100.000
2 - Harbrough Road		✓	324	100.000
3 - A160 West		✓	1320	100.000
4 - Ulceby Road		✓	180	100.000
5 - East Halton Road		✓	252	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	17	439	39	34
	2 - Harbrough Road	53	0	151	3	117
	3 - A160 West	986	40	0	37	257
	4 - Ulceby Road	82	8	70	0	20
	5 - East Halton Road	48	44	151	9	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	100	69	82	62	55
	2 - Harbrough Road	1	0	6	33	4
	3 - A160 West	21	3	0	49	13
	4 - Ulceby Road	35	13	22	0	32
	5 - East Halton Road	39	7	32	22	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - A160 East	398	398
	2 - Harbrough Road	244	244
	3 - A160 West	994	994
	4 - Ulceby Road	136	136
	5 - East Halton Road	190	190
07:00-07:15	1 - A160 East	476	476
	2 - Harbrough Road	291	291
	3 - A160 West	1187	1187
	4 - Ulceby Road	162	162
	5 - East Halton Road	227	227
07:15-07:30	1 - A160 East	582	582
	2 - Harbrough Road	357	357
	3 - A160 West	1453	1453
	4 - Ulceby Road	198	198
	5 - East Halton Road	277	277
07:30-07:45	1 - A160 East	582	582
	2 - Harbrough Road	357	357
	3 - A160 West	1453	1453
	4 - Ulceby Road	198	198
	5 - East Halton Road	277	277
07:45-08:00	1 - A160 East	476	476
	2 - Harbrough Road	291	291
	3 - A160 West	1187	1187
	4 - Ulceby Road	162	162
	5 - East Halton Road	227	227
08:00-08:15	1 - A160 East	398	398
	2 - Harbrough Road	244	244
	3 - A160 West	994	994
	4 - Ulceby Road	136	136
	5 - East Halton Road	190	190

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A160 East	0.23	3.26	0.5	A
2 - Harbrough Road	0.29	4.37	0.4	A
3 - A160 West	0.57	3.94	1.6	A
4 - Ulceby Road	0.21	6.34	0.3	A
5 - East Halton Road	0.26	5.90	0.5	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	398	241	2617	0.152	397	0.3	2.884	A
2 - Harbrough Road	244	557	1326	0.184	243	0.2	3.475	A
3 - A160 West	994	191	2595	0.383	991	0.7	2.673	A
4 - Ulceby Road	136	1116	1157	0.117	135	0.2	4.512	A
5 - East Halton Road	190	930	1248	0.152	189	0.2	4.335	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	476	289	2588	0.184	475	0.4	3.031	A
2 - Harbrough Road	291	666	1281	0.227	291	0.3	3.805	A
3 - A160 West	1187	229	2573	0.461	1186	1.0	3.093	A
4 - Ulceby Road	162	1336	1060	0.153	162	0.2	5.137	A
5 - East Halton Road	227	1113	1167	0.194	226	0.3	4.881	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	582	354	2549	0.228	582	0.5	3.256	A
2 - Harbrough Road	357	816	1219	0.293	356	0.4	4.361	A
3 - A160 West	1453	280	2543	0.572	1451	1.6	3.928	A
4 - Ulceby Road	198	1635	927	0.214	198	0.3	6.325	A
5 - East Halton Road	277	1362	1058	0.262	277	0.4	5.881	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	582	355	2549	0.229	582	0.5	3.256	A
2 - Harbrough Road	357	817	1219	0.293	357	0.4	4.367	A
3 - A160 West	1453	281	2543	0.572	1453	1.6	3.944	A
4 - Ulceby Road	198	1637	926	0.214	198	0.3	6.342	A
5 - East Halton Road	277	1364	1057	0.263	277	0.5	5.895	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	476	290	2588	0.184	476	0.4	3.036	A
2 - Harbrough Road	291	668	1280	0.228	292	0.3	3.811	A
3 - A160 West	1187	230	2573	0.461	1189	1.0	3.111	A
4 - Ulceby Road	162	1339	1058	0.153	162	0.2	5.156	A
5 - East Halton Road	227	1116	1166	0.194	227	0.3	4.897	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	398	243	2616	0.152	399	0.3	2.890	A
2 - Harbrough Road	244	559	1325	0.184	244	0.2	3.485	A
3 - A160 West	994	192	2595	0.383	995	0.7	2.686	A
4 - Ulceby Road	136	1121	1155	0.117	136	0.2	4.528	A
5 - East Halton Road	190	934	1246	0.152	190	0.2	4.354	A

2025, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1061/Harbrough Rd/Ulceby Rd/E Halton Rd	Standard Roundabout		1, 2, 3, 4, 5	3.59	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.59	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2025	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160 East		✓	1063	100.000
2 - Harbrough Road		✓	122	100.000
3 - A160 West		✓	648	100.000
4 - Ulceby Road		✓	111	100.000
5 - East Halton Road		✓	391	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	119	811	19	114
	2 - Harbrough Road	18	0	41	19	44
	3 - A160 West	371	62	0	75	140
	4 - Ulceby Road	32	15	41	0	23
	5 - East Halton Road	40	114	207	30	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	100	1	30	42	59
	2 - Harbrough Road	6	0	0	0	2
	3 - A160 West	78	5	0	32	37
	4 - Ulceby Road	52	7	38	0	50
	5 - East Halton Road	42	1	13	14	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - A160 East	800	800
	2 - Harbrough Road	92	92
	3 - A160 West	488	488
	4 - Ulceby Road	84	84
	5 - East Halton Road	294	294
16:00-16:15	1 - A160 East	956	956
	2 - Harbrough Road	110	110
	3 - A160 West	583	583
	4 - Ulceby Road	100	100
	5 - East Halton Road	352	352
16:15-16:30	1 - A160 East	1170	1170
	2 - Harbrough Road	134	134
	3 - A160 West	713	713
	4 - Ulceby Road	122	122
	5 - East Halton Road	430	430
16:30-16:45	1 - A160 East	1170	1170
	2 - Harbrough Road	134	134
	3 - A160 West	713	713
	4 - Ulceby Road	122	122
	5 - East Halton Road	430	430
16:45-17:00	1 - A160 East	956	956
	2 - Harbrough Road	110	110
	3 - A160 West	583	583
	4 - Ulceby Road	100	100
	5 - East Halton Road	352	352
17:00-17:15	1 - A160 East	800	800
	2 - Harbrough Road	92	92
	3 - A160 West	488	488
	4 - Ulceby Road	84	84
	5 - East Halton Road	294	294

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A160 East	0.48	3.61	1.2	A
2 - Harbrough Road	0.13	4.21	0.2	A
3 - A160 West	0.28	2.98	0.6	A
4 - Ulceby Road	0.09	4.28	0.1	A
5 - East Halton Road	0.31	4.16	0.5	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	800	352	2551	0.314	798	0.6	2.637	A
2 - Harbrough Road	92	917	1178	0.078	92	0.1	3.365	A
3 - A160 West	488	183	2600	0.188	486	0.3	2.586	A
4 - Ulceby Road	84	562	1403	0.060	83	0.1	3.778	A
5 - East Halton Road	294	405	1479	0.199	293	0.3	3.383	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	956	421	2509	0.381	955	0.8	2.977	A
2 - Harbrough Road	110	1098	1104	0.099	110	0.1	3.676	A
3 - A160 West	583	219	2579	0.226	582	0.4	2.739	A
4 - Ulceby Road	100	673	1354	0.074	100	0.1	3.975	A
5 - East Halton Road	352	484	1444	0.243	351	0.4	3.674	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1170	516	2452	0.477	1169	1.2	3.602	A
2 - Harbrough Road	134	1344	1003	0.134	134	0.2	4.206	A
3 - A160 West	713	268	2550	0.280	713	0.6	2.977	A
4 - Ulceby Road	122	824	1287	0.095	122	0.1	4.281	A
5 - East Halton Road	430	593	1396	0.308	430	0.5	4.154	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1170	516	2452	0.477	1170	1.2	3.611	A
2 - Harbrough Road	134	1345	1002	0.134	134	0.2	4.211	A
3 - A160 West	713	269	2550	0.280	713	0.6	2.978	A
4 - Ulceby Road	122	825	1287	0.095	122	0.1	4.282	A
5 - East Halton Road	430	593	1396	0.308	430	0.5	4.159	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	956	422	2508	0.381	957	0.8	2.986	A
2 - Harbrough Road	110	1100	1103	0.099	110	0.1	3.684	A
3 - A160 West	583	220	2579	0.226	583	0.4	2.741	A
4 - Ulceby Road	100	674	1354	0.074	100	0.1	3.978	A
5 - East Halton Road	352	485	1444	0.243	352	0.4	3.679	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	800	353	2550	0.314	801	0.6	2.650	A
2 - Harbrough Road	92	921	1176	0.078	92	0.1	3.373	A
3 - A160 West	488	184	2600	0.188	488	0.4	2.592	A
4 - Ulceby Road	84	564	1402	0.060	84	0.1	3.784	A
5 - East Halton Road	294	406	1478	0.199	295	0.3	3.395	A

2025 + Committed, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1061/Harbrough Rd/Ulceby Rd/E Halton Rd	Standard Roundabout		1, 2, 3, 4, 5	5.16	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.16	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2025 + Committed	AM	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160 East		✓	557	100.000
2 - Harbrough Road		✓	329	100.000
3 - A160 West		✓	1574	100.000
4 - Ulceby Road		✓	185	100.000
5 - East Halton Road		✓	256	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	17	467	39	34
	2 - Harbrough Road	57	0	152	3	117
	3 - A160 West	1239	40	0	37	258
	4 - Ulceby Road	86	8	71	0	20
	5 - East Halton Road	51	44	152	9	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	100	69	82	62	55
	2 - Harbrough Road	1	0	6	33	4
	3 - A160 West	21	3	0	49	13
	4 - Ulceby Road	35	13	22	0	32
	5 - East Halton Road	39	7	32	22	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - A160 East	419	419
	2 - Harbrough Road	248	248
	3 - A160 West	1185	1185
	4 - Ulceby Road	139	139
	5 - East Halton Road	193	193
07:00-07:15	1 - A160 East	501	501
	2 - Harbrough Road	296	296
	3 - A160 West	1415	1415
	4 - Ulceby Road	166	166
	5 - East Halton Road	230	230
07:15-07:30	1 - A160 East	613	613
	2 - Harbrough Road	362	362
	3 - A160 West	1733	1733
	4 - Ulceby Road	204	204
	5 - East Halton Road	282	282
07:30-07:45	1 - A160 East	613	613
	2 - Harbrough Road	362	362
	3 - A160 West	1733	1733
	4 - Ulceby Road	204	204
	5 - East Halton Road	282	282
07:45-08:00	1 - A160 East	501	501
	2 - Harbrough Road	296	296
	3 - A160 West	1415	1415
	4 - Ulceby Road	166	166
	5 - East Halton Road	230	230
08:00-08:15	1 - A160 East	419	419
	2 - Harbrough Road	248	248
	3 - A160 West	1185	1185
	4 - Ulceby Road	139	139
	5 - East Halton Road	193	193

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A160 East	0.24	3.31	0.6	A
2 - Harbrough Road	0.30	4.46	0.4	A
3 - A160 West	0.68	5.33	2.5	A
4 - Ulceby Road	0.25	7.75	0.4	A
5 - East Halton Road	0.30	7.10	0.6	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	419	243	2616	0.160	418	0.3	2.916	A
2 - Harbrough Road	248	579	1317	0.188	247	0.2	3.515	A
3 - A160 West	1185	194	2594	0.457	1181	1.0	3.039	A
4 - Ulceby Road	139	1309	1072	0.130	139	0.2	4.947	A
5 - East Halton Road	193	1126	1162	0.166	192	0.3	4.738	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	501	291	2587	0.194	500	0.4	3.073	A
2 - Harbrough Road	296	693	1270	0.233	295	0.3	3.863	A
3 - A160 West	1415	233	2571	0.550	1413	1.5	3.712	A
4 - Ulceby Road	166	1567	957	0.174	166	0.3	5.835	A
5 - East Halton Road	230	1348	1064	0.216	230	0.3	5.511	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	613	356	2548	0.241	613	0.6	3.313	A
2 - Harbrough Road	362	849	1206	0.300	362	0.4	4.456	A
3 - A160 West	1733	285	2540	0.682	1729	2.5	5.277	A
4 - Ulceby Road	204	1917	802	0.254	203	0.4	7.706	A
5 - East Halton Road	282	1648	932	0.303	281	0.5	7.061	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	613	357	2548	0.241	613	0.6	3.314	A
2 - Harbrough Road	362	850	1206	0.300	362	0.4	4.464	A
3 - A160 West	1733	285	2540	0.682	1733	2.5	5.332	A
4 - Ulceby Road	204	1921	800	0.255	204	0.4	7.748	A
5 - East Halton Road	282	1653	930	0.303	282	0.6	7.097	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	501	292	2586	0.194	501	0.4	3.075	A
2 - Harbrough Road	296	695	1269	0.233	296	0.3	3.872	A
3 - A160 West	1415	233	2571	0.550	1419	1.5	3.755	A
4 - Ulceby Road	166	1573	955	0.174	167	0.3	5.871	A
5 - East Halton Road	230	1354	1061	0.217	231	0.4	5.543	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	419	244	2615	0.160	420	0.3	2.921	A
2 - Harbrough Road	248	582	1315	0.188	248	0.2	3.530	A
3 - A160 West	1185	195	2593	0.457	1187	1.0	3.065	A
4 - Ulceby Road	139	1316	1069	0.130	140	0.2	4.975	A
5 - East Halton Road	193	1132	1159	0.166	193	0.3	4.764	A

2025 + Committed, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1061/Harbrough Rd/Ulceby Rd/E Halton Rd	Standard Roundabout		1, 2, 3, 4, 5	4.16	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.16	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2025 + Committed	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160 East		✓	1308	100.000
2 - Harbrough Road		✓	122	100.000
3 - A160 West		✓	712	100.000
4 - Ulceby Road		✓	111	100.000
5 - East Halton Road		✓	391	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	119	1056	19	114
	2 - Harbrough Road	18	0	41	19	44
	3 - A160 West	431	64	0	76	141
	4 - Ulceby Road	32	15	41	0	23
	5 - East Halton Road	40	114	207	30	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	100	1	30	42	59
	2 - Harbrough Road	6	0	0	0	2
	3 - A160 West	78	5	0	32	37
	4 - Ulceby Road	52	7	38	0	50
	5 - East Halton Road	42	1	13	14	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - A160 East	985	985
	2 - Harbrough Road	92	92
	3 - A160 West	536	536
	4 - Ulceby Road	84	84
	5 - East Halton Road	294	294
16:00-16:15	1 - A160 East	1176	1176
	2 - Harbrough Road	110	110
	3 - A160 West	640	640
	4 - Ulceby Road	100	100
	5 - East Halton Road	352	352
16:15-16:30	1 - A160 East	1440	1440
	2 - Harbrough Road	134	134
	3 - A160 West	784	784
	4 - Ulceby Road	122	122
	5 - East Halton Road	430	430
16:30-16:45	1 - A160 East	1440	1440
	2 - Harbrough Road	134	134
	3 - A160 West	784	784
	4 - Ulceby Road	122	122
	5 - East Halton Road	430	430
16:45-17:00	1 - A160 East	1176	1176
	2 - Harbrough Road	110	110
	3 - A160 West	640	640
	4 - Ulceby Road	100	100
	5 - East Halton Road	352	352
17:00-17:15	1 - A160 East	985	985
	2 - Harbrough Road	92	92
	3 - A160 West	536	536
	4 - Ulceby Road	84	84
	5 - East Halton Road	294	294

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A160 East	0.59	4.59	1.8	A
2 - Harbrough Road	0.15	4.83	0.2	A
3 - A160 West	0.31	3.13	0.7	A
4 - Ulceby Road	0.10	4.40	0.1	A
5 - East Halton Road	0.32	4.29	0.5	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	985	353	2550	0.386	982	0.8	2.951	A
2 - Harbrough Road	92	1101	1103	0.083	91	0.1	3.616	A
3 - A160 West	536	183	2600	0.206	534	0.4	2.675	A
4 - Ulceby Road	84	609	1382	0.060	83	0.1	3.838	A
5 - East Halton Road	294	451	1459	0.202	293	0.3	3.442	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1176	423	2508	0.469	1175	1.1	3.476	A
2 - Harbrough Road	110	1317	1014	0.108	110	0.1	4.043	A
3 - A160 West	640	219	2579	0.248	640	0.5	2.851	A
4 - Ulceby Road	100	729	1329	0.075	100	0.1	4.056	A
5 - East Halton Road	352	540	1419	0.248	351	0.4	3.759	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1440	518	2451	0.588	1437	1.8	4.565	A
2 - Harbrough Road	134	1612	893	0.150	134	0.2	4.817	A
3 - A160 West	784	268	2550	0.307	783	0.7	3.127	A
4 - Ulceby Road	122	893	1256	0.097	122	0.1	4.397	A
5 - East Halton Road	430	661	1366	0.315	430	0.5	4.286	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1440	519	2450	0.588	1440	1.8	4.591	A
2 - Harbrough Road	134	1615	892	0.151	134	0.2	4.826	A
3 - A160 West	784	269	2550	0.307	784	0.7	3.130	A
4 - Ulceby Road	122	894	1256	0.097	122	0.1	4.398	A
5 - East Halton Road	430	662	1366	0.315	430	0.5	4.292	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1176	424	2507	0.469	1179	1.1	3.500	A
2 - Harbrough Road	110	1322	1012	0.108	110	0.1	4.053	A
3 - A160 West	640	220	2579	0.248	641	0.5	2.853	A
4 - Ulceby Road	100	731	1328	0.075	100	0.1	4.061	A
5 - East Halton Road	352	541	1419	0.248	352	0.4	3.767	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	985	355	2549	0.386	986	0.8	2.970	A
2 - Harbrough Road	92	1106	1101	0.083	92	0.1	3.627	A
3 - A160 West	536	184	2600	0.206	536	0.4	2.679	A
4 - Ulceby Road	84	612	1381	0.061	84	0.1	3.843	A
5 - East Halton Road	294	453	1458	0.202	295	0.3	3.452	A

2025 + Committed + Proposed, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1061/Harbrough Rd/Ulceby Rd/E Halton Rd	Standard Roundabout		1, 2, 3, 4, 5	6.67	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.67	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2025 + Committed + Proposed	AM	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160 East		✓	558	100.000
2 - Harbrough Road		✓	329	100.000
3 - A160 West		✓	1791	100.000
4 - Ulceby Road		✓	185	100.000
5 - East Halton Road		✓	256	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	17	468	39	34
	2 - Harbrough Road	57	0	152	3	117
	3 - A160 West	1454	42	0	37	258
	4 - Ulceby Road	86	8	71	0	20
	5 - East Halton Road	51	44	152	9	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	100	69	82	62	55
	2 - Harbrough Road	1	0	6	33	4
	3 - A160 West	21	3	0	49	13
	4 - Ulceby Road	35	13	22	0	32
	5 - East Halton Road	39	7	32	22	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - A160 East	420	420
	2 - Harbrough Road	248	248
	3 - A160 West	1348	1348
	4 - Ulceby Road	139	139
	5 - East Halton Road	193	193
07:00-07:15	1 - A160 East	502	502
	2 - Harbrough Road	296	296
	3 - A160 West	1610	1610
	4 - Ulceby Road	166	166
	5 - East Halton Road	230	230
07:15-07:30	1 - A160 East	614	614
	2 - Harbrough Road	362	362
	3 - A160 West	1972	1972
	4 - Ulceby Road	204	204
	5 - East Halton Road	282	282
07:30-07:45	1 - A160 East	614	614
	2 - Harbrough Road	362	362
	3 - A160 West	1972	1972
	4 - Ulceby Road	204	204
	5 - East Halton Road	282	282
07:45-08:00	1 - A160 East	502	502
	2 - Harbrough Road	296	296
	3 - A160 West	1610	1610
	4 - Ulceby Road	166	166
	5 - East Halton Road	230	230
08:00-08:15	1 - A160 East	420	420
	2 - Harbrough Road	248	248
	3 - A160 West	1348	1348
	4 - Ulceby Road	139	139
	5 - East Halton Road	193	193

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A160 East	0.24	3.32	0.6	A
2 - Harbrough Road	0.30	4.47	0.4	A
3 - A160 West	0.78	7.58	4.1	A
4 - Ulceby Road	0.29	9.42	0.5	A
5 - East Halton Road	0.34	8.47	0.7	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	420	244	2615	0.161	419	0.3	2.918	A
2 - Harbrough Road	248	580	1316	0.188	247	0.2	3.516	A
3 - A160 West	1348	194	2594	0.520	1343	1.3	3.434	A
4 - Ulceby Road	139	1471	1000	0.139	138	0.2	5.361	A
5 - East Halton Road	193	1288	1090	0.177	192	0.3	5.113	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	502	292	2586	0.194	501	0.4	3.075	A
2 - Harbrough Road	296	694	1269	0.233	295	0.3	3.865	A
3 - A160 West	1610	233	2571	0.626	1607	2.0	4.461	A
4 - Ulceby Road	166	1761	871	0.191	166	0.3	6.549	A
5 - East Halton Road	230	1542	979	0.235	230	0.4	6.137	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	614	358	2547	0.241	614	0.6	3.317	A
2 - Harbrough Road	362	850	1206	0.300	362	0.4	4.458	A
3 - A160 West	1972	285	2540	0.776	1964	4.0	7.377	A
4 - Ulceby Road	204	2152	698	0.292	203	0.5	9.323	A
5 - East Halton Road	282	1884	828	0.340	281	0.7	8.390	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	614	359	2546	0.241	614	0.6	3.318	A
2 - Harbrough Road	362	851	1205	0.301	362	0.4	4.466	A
3 - A160 West	1972	285	2540	0.776	1972	4.1	7.575	A
4 - Ulceby Road	204	2160	694	0.294	204	0.5	9.423	A
5 - East Halton Road	282	1891	825	0.342	282	0.7	8.471	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	502	294	2585	0.194	502	0.4	3.081	A
2 - Harbrough Road	296	696	1268	0.233	296	0.3	3.875	A
3 - A160 West	1610	233	2571	0.626	1618	2.0	4.566	A
4 - Ulceby Road	166	1772	866	0.192	167	0.3	6.620	A
5 - East Halton Road	230	1552	974	0.236	231	0.4	6.202	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	420	246	2614	0.161	420	0.3	2.925	A
2 - Harbrough Road	248	583	1315	0.188	248	0.2	3.531	A
3 - A160 West	1348	195	2593	0.520	1351	1.3	3.479	A
4 - Ulceby Road	139	1480	996	0.140	140	0.2	5.401	A
5 - East Halton Road	193	1296	1087	0.177	193	0.3	5.151	A

2025 + Committed + Proposed, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1061/Harbrough Rd/Ulceby Rd/E Halton Rd	Standard Roundabout		1, 2, 3, 4, 5	5.03	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.03	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2025 + Committed + Proposed	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160 East		✓	1535	100.000
2 - Harbrough Road		✓	122	100.000
3 - A160 West		✓	718	100.000
4 - Ulceby Road		✓	111	100.000
5 - East Halton Road		✓	391	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	119	1283	19	114
	2 - Harbrough Road	18	0	41	19	44
	3 - A160 West	437	64	0	76	141
	4 - Ulceby Road	32	15	41	0	23
	5 - East Halton Road	40	114	207	30	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Harbrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	100	1	30	42	59
	2 - Harbrough Road	6	0	0	0	2
	3 - A160 West	78	5	0	32	37
	4 - Ulceby Road	52	7	38	0	50
	5 - East Halton Road	42	1	13	14	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - A160 East	1156	1156
	2 - Harbrough Road	92	92
	3 - A160 West	541	541
	4 - Ulceby Road	84	84
	5 - East Halton Road	294	294
16:00-16:15	1 - A160 East	1380	1380
	2 - Harbrough Road	110	110
	3 - A160 West	645	645
	4 - Ulceby Road	100	100
	5 - East Halton Road	352	352
16:15-16:30	1 - A160 East	1690	1690
	2 - Harbrough Road	134	134
	3 - A160 West	791	791
	4 - Ulceby Road	122	122
	5 - East Halton Road	430	430
16:30-16:45	1 - A160 East	1690	1690
	2 - Harbrough Road	134	134
	3 - A160 West	791	791
	4 - Ulceby Road	122	122
	5 - East Halton Road	430	430
16:45-17:00	1 - A160 East	1380	1380
	2 - Harbrough Road	110	110
	3 - A160 West	645	645
	4 - Ulceby Road	100	100
	5 - East Halton Road	352	352
17:00-17:15	1 - A160 East	1156	1156
	2 - Harbrough Road	92	92
	3 - A160 West	541	541
	4 - Ulceby Road	84	84
	5 - East Halton Road	294	294

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A160 East	0.69	6.11	2.8	A
2 - Harbrough Road	0.17	5.58	0.2	A
3 - A160 West	0.31	3.15	0.7	A
4 - Ulceby Road	0.10	4.41	0.1	A
5 - East Halton Road	0.32	4.31	0.5	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1156	353	2550	0.453	1151	1.1	3.312	A
2 - Harbrough Road	92	1271	1033	0.089	91	0.1	3.881	A
3 - A160 West	541	183	2600	0.208	539	0.4	2.685	A
4 - Ulceby Road	84	614	1380	0.061	83	0.1	3.844	A
5 - East Halton Road	294	456	1457	0.202	293	0.3	3.448	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1380	423	2508	0.550	1378	1.6	4.103	A
2 - Harbrough Road	110	1521	930	0.118	110	0.1	4.454	A
3 - A160 West	645	219	2579	0.250	645	0.5	2.862	A
4 - Ulceby Road	100	735	1327	0.075	100	0.1	4.064	A
5 - East Halton Road	352	545	1417	0.248	351	0.4	3.767	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1690	518	2451	0.690	1685	2.8	6.026	A
2 - Harbrough Road	134	1860	791	0.170	134	0.2	5.560	A
3 - A160 West	791	268	2550	0.310	790	0.7	3.142	A
4 - Ulceby Road	122	899	1254	0.097	122	0.1	4.408	A
5 - East Halton Road	430	668	1363	0.316	430	0.5	4.299	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1690	519	2450	0.690	1690	2.8	6.105	A
2 - Harbrough Road	134	1865	789	0.170	134	0.2	5.581	A
3 - A160 West	791	269	2550	0.310	791	0.7	3.145	A
4 - Ulceby Road	122	901	1253	0.098	122	0.1	4.410	A
5 - East Halton Road	430	668	1363	0.316	430	0.5	4.306	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1380	424	2507	0.550	1385	1.6	4.157	A
2 - Harbrough Road	110	1528	928	0.118	110	0.1	4.473	A
3 - A160 West	645	220	2578	0.250	646	0.5	2.867	A
4 - Ulceby Road	100	736	1326	0.075	100	0.1	4.068	A
5 - East Halton Road	352	546	1417	0.248	352	0.4	3.773	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A160 East	1156	355	2549	0.453	1158	1.1	3.343	A
2 - Harbrough Road	92	1277	1030	0.089	92	0.1	3.898	A
3 - A160 West	541	184	2600	0.208	541	0.4	2.691	A
4 - Ulceby Road	84	616	1379	0.061	84	0.1	3.851	A
5 - East Halton Road	294	457	1456	0.202	295	0.3	3.461	A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: J3 A160_A180.j10
Path: \\na.aecomnet.com\lfs\EMEA\Leeds-UKLDS2\Legacy\UKLDS2PFPSW001\WIP\LE_Projects\Newproje\60668866 - Humber Zero\400_Technical\Traffic & Transport\NH Comments 10.01.24\Junction Modelling\Modelling June 2024
Report generation date: 10/06/2024 10:22:33

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2025 Base									
1 - A160	D1	0.3	1.60	0.24	A	D2	0.7	2.22	0.38	A
2 - A180 East		0.8	5.60	0.44	A		0.2	4.41	0.15	A
3 - A180 West		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	2025 Base + Committed									
1 - A160	D3	0.4	1.62	0.25	A	D4	1.1	2.66	0.47	A
2 - A180 East		0.9	6.11	0.48	A		0.3	5.64	0.19	A
3 - A180 West		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	2025 Base + Committed + Proposed									
1 - A160	D5	0.4	1.62	0.25	A	D6	1.4	3.04	0.54	A
2 - A180 East		1.0	6.17	0.49	A		0.4	7.15	0.27	A
3 - A180 West		0.0	0.00	0.00	A		0.0	0.00	0.00	A

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

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

File summary

File Description

Title	
Location	
Site number	
Date	18/01/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NA\SimmonsA1
Description	

Units

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

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2025 Base	AM	ONE HOUR	06:45	08:15	15	✓
D2	2025 Base	PM	ONE HOUR	15:45	17:15	15	✓
D3	2025 Base + Committed	AM	ONE HOUR	06:45	08:15	15	✓
D4	2025 Base + Committed	PM	ONE HOUR	15:45	17:15	15	✓
D5	2025 Base + Committed + Proposed	AM	ONE HOUR	06:45	08:15	15	✓
D6	2025 Base + Committed + Proposed	PM	ONE HOUR	15:45	17:15	15	✓

Analysis Set Details

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

2025 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A160 / A180	Large Roundabout		1, 2, 3	1.85	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.85	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A160		
2	A180 East		
3	A180 West		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A160	7.70	8.39	5.0	37.9	102.0	36.0		
2 - A180 East	3.96	5.04	5.0	25.9	102.0	44.0		
3 - A180 West	4.61	8.19	30.0	75.4	102.0	30.0		

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A160	901	✓	38.00
2 - A180 East	1493	✓	142.00
3 - A180 West	492	✓	170.00

Bypass

Arm	Arm has bypass	Bypass utilisation (%)
1 - A160		
2 - A180 East		
3 - A180 West	✓	100

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final slope	Final intercept (PCU/hr)
1 - A160	✓	1.169	3211	1.169	3211
2 - A180 East	✓	0.650	1578	0.650	1578
3 - A180 West	✓	1.140	2877	1.140	2877

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2025 Base	AM	ONE HOUR	06:45	08:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160		ONE HOUR	✓	708	100.000
2 - A180 East		ONE HOUR	✓	467	100.000
3 - A180 West		ONE HOUR	✓	853	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	146	562
	2 - A180 East	467	0	0
	3 - A180 West	853	0	0

Proportions

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0.00	0.21	0.79
	2 - A180 East	1.00	0.00	0.00
	3 - A180 West	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	14	7
	2 - A180 East	3	0	0
	3 - A180 West	29	0	0

Average PCU Per Veh

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	1.000	1.140	1.070
	2 - A180 East	1.030	1.000	1.000
	3 - A180 West	1.290	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - A160	533	533
	2 - A180 East	352	352
	3 - A180 West	642	642
07:00-07:15	1 - A160	636	636
	2 - A180 East	420	420
	3 - A180 West	767	767
07:15-07:30	1 - A160	780	780
	2 - A180 East	514	514
	3 - A180 West	939	939
07:30-07:45	1 - A160	780	780
	2 - A180 East	514	514
	3 - A180 West	939	939
07:45-08:00	1 - A160	636	636
	2 - A180 East	420	420
	3 - A180 West	767	767
08:00-08:15	1 - A160	533	533
	2 - A180 East	352	352
	3 - A180 West	642	642

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A160	0.24	1.60	0.3	A	650	975
2 - A180 East	0.44	5.60	0.8	A	429	643
3 - A180 West	0.00	0.00	0.0	A	783	0

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	533	533	133	0	642	0	3211	0.166	532	350	0.0	0.2	1.456	A
2 - A180 East	352	352	88	0	0	422	1303	0.270	350	110	0.0	0.4	3.883	A
3 - A180 West	642	0	0	642	0	350	2478	0.000	0	422	0.0	0.0	0.000	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	636	636	159	0	767	0	3211	0.198	636	419	0.2	0.3	1.514	A
2 - A180 East	420	420	105	0	0	505	1250	0.336	419	131	0.4	0.5	4.462	A
3 - A180 West	767	0	0	767	0	419	2399	0.000	0	505	0.0	0.0	0.000	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	780	780	195	0	939	0	3211	0.243	779	513	0.3	0.3	1.603	A
2 - A180 East	514	514	129	0	0	619	1176	0.437	513	161	0.5	0.8	5.584	A
3 - A180 West	939	0	0	939	0	513	2292	0.000	0	619	0.0	0.0	0.000	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	780	780	195	0	939	0	3211	0.243	780	514	0.3	0.3	1.603	A
2 - A180 East	514	514	129	0	0	619	1176	0.437	514	161	0.8	0.8	5.603	A
3 - A180 West	939	0	0	939	0	514	2291	0.000	0	619	0.0	0.0	0.000	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	636	636	159	0	767	0	3211	0.198	637	421	0.3	0.3	1.517	A
2 - A180 East	420	420	105	0	0	505	1249	0.336	421	131	0.8	0.5	4.482	A
3 - A180 West	767	0	0	767	0	421	2397	0.000	0	505	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	533	533	133	0	642	0	3211	0.166	533	352	0.3	0.2	1.456	A
2 - A180 East	352	352	88	0	0	423	1303	0.270	352	110	0.5	0.4	3.902	A
3 - A180 West	642	0	0	642	0	352	2476	0.000	0	423	0.0	0.0	0.000	A

2025 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A160 - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A160 / A180	Large Roundabout		1, 2, 3	1.76	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.76	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A160	0	✓	38.00
2 - A180 East	0	✓	142.00
3 - A180 West	0	✓	170.00

Bypass

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2025 Base	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160		ONE HOUR	✓	1099	100.000
2 - A180 East		ONE HOUR	✓	146	100.000
3 - A180 West		ONE HOUR	✓	509	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	361	738
	2 - A180 East	146	0	0
	3 - A180 West	509	0	0

Proportions

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0.00	0.33	0.67
	2 - A180 East	1.00	0.00	0.00
	3 - A180 West	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	3	37
	2 - A180 East	9	0	0
	3 - A180 West	70	0	0

Average PCU Per Veh

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	1.000	1.030	1.370
	2 - A180 East	1.090	1.000	1.000
	3 - A180 West	1.700	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - A160	827	827
	2 - A180 East	110	110
	3 - A180 West	383	383
16:00-16:15	1 - A160	988	988
	2 - A180 East	131	131
	3 - A180 West	458	458
16:15-16:30	1 - A160	1210	1210
	2 - A180 East	161	161
	3 - A180 West	560	560
16:30-16:45	1 - A160	1210	1210
	2 - A180 East	161	161
	3 - A180 West	560	560
16:45-17:00	1 - A160	988	988
	2 - A180 East	131	131
	3 - A180 West	458	458
17:00-17:15	1 - A160	827	827
	2 - A180 East	110	110
	3 - A180 West	383	383

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A160	0.38	2.22	0.7	A	1008	1513
2 - A180 East	0.15	4.41	0.2	A	134	201
3 - A180 West	0.00	0.00	0.0	A	467	0

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	827	827	207	0	383	0	3211	0.258	826	109	0.0	0.4	1.865	A
2 - A180 East	110	110	27	0	0	554	1218	0.090	109	271	0.0	0.1	3.541	A
3 - A180 West	383	0	0	383	0	109	2752	0.000	0	554	0.0	0.0	0.000	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	988	988	247	0	458	0	3211	0.308	987	131	0.4	0.5	2.001	A
2 - A180 East	131	131	33	0	0	663	1147	0.114	131	324	0.1	0.1	3.863	A
3 - A180 West	458	0	0	458	0	131	2728	0.000	0	663	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1210	1210	303	0	560	0	3211	0.377	1209	161	0.5	0.7	2.221	A
2 - A180 East	161	161	40	0	0	812	1050	0.153	161	397	0.1	0.2	4.409	A
3 - A180 West	560	0	0	560	0	161	2694	0.000	0	812	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1210	1210	303	0	560	0	3211	0.377	1210	161	0.7	0.7	2.223	A
2 - A180 East	161	161	40	0	0	813	1050	0.153	161	397	0.2	0.2	4.413	A
3 - A180 West	560	0	0	560	0	161	2694	0.000	0	813	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	988	988	247	0	458	0	3211	0.308	989	131	0.7	0.6	2.002	A
2 - A180 East	131	131	33	0	0	664	1146	0.114	131	325	0.2	0.1	3.866	A
3 - A180 West	458	0	0	458	0	131	2727	0.000	0	664	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	827	827	207	0	383	0	3211	0.258	828	110	0.6	0.4	1.866	A
2 - A180 East	110	110	27	0	0	556	1217	0.090	110	272	0.1	0.1	3.548	A
3 - A180 West	383	0	0	383	0	110	2752	0.000	0	556	0.0	0.0	0.000	A

2025 Base + Committed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A160 - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A160 / A180	Large Roundabout		1, 2, 3	1.82	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.82	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A160	0	✓	38.00
2 - A180 East	0	✓	142.00
3 - A180 West	0	✓	170.00

Bypass

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2025 Base + Committed	AM	ONE HOUR	06:45	08:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160		ONE HOUR	✓	725	100.000
2 - A180 East		ONE HOUR	✓	506	100.000
3 - A180 West		ONE HOUR	✓	1107	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	146	579
	2 - A180 East	506	0	0
	3 - A180 West	1107	0	0

Proportions

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0.00	0.20	0.80
	2 - A180 East	1.00	0.00	0.00
	3 - A180 West	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	14	7
	2 - A180 East	3	0	0
	3 - A180 West	29	0	0

Average PCU Per Veh

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	1.000	1.140	1.070
	2 - A180 East	1.030	1.000	1.000
	3 - A180 West	1.290	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - A160	546	546
	2 - A180 East	381	381
	3 - A180 West	833	833
07:00-07:15	1 - A160	652	652
	2 - A180 East	455	455
	3 - A180 West	995	995
07:15-07:30	1 - A160	798	798
	2 - A180 East	557	557
	3 - A180 West	1219	1219
07:30-07:45	1 - A160	798	798
	2 - A180 East	557	557
	3 - A180 West	1219	1219
07:45-08:00	1 - A160	652	652
	2 - A180 East	455	455
	3 - A180 West	995	995
08:00-08:15	1 - A160	546	546
	2 - A180 East	381	381
	3 - A180 West	833	833

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A160	0.25	1.62	0.4	A	665	998
2 - A180 East	0.48	6.11	0.9	A	464	696
3 - A180 West	0.00	0.00	0.0	A	1016	0

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	546	546	136	0	833	0	3211	0.170	545	379	0.0	0.2	1.462	A
2 - A180 East	381	381	95	0	0	435	1295	0.294	379	110	0.0	0.4	4.041	A
3 - A180 West	833	0	0	833	0	379	2445	0.000	0	435	0.0	0.0	0.000	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	652	652	163	0	995	0	3211	0.203	652	454	0.2	0.3	1.523	A
2 - A180 East	455	455	114	0	0	520	1240	0.367	454	131	0.4	0.6	4.716	A
3 - A180 West	995	0	0	995	0	454	2359	0.000	0	520	0.0	0.0	0.000	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	798	798	200	0	1219	0	3211	0.249	798	556	0.3	0.4	1.615	A
2 - A180 East	557	557	139	0	0	637	1164	0.479	556	161	0.6	0.9	6.084	A
3 - A180 West	1219	0	0	1219	0	556	2243	0.000	0	637	0.0	0.0	0.000	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	798	798	200	0	1219	0	3211	0.249	798	557	0.4	0.4	1.615	A
2 - A180 East	557	557	139	0	0	637	1164	0.479	557	161	0.9	0.9	6.112	A
3 - A180 West	1219	0	0	1219	0	557	2242	0.000	0	637	0.0	0.0	0.000	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	652	652	163	0	995	0	3211	0.203	652	456	0.4	0.3	1.523	A
2 - A180 East	455	455	114	0	0	521	1239	0.367	456	131	0.9	0.6	4.741	A
3 - A180 West	995	0	0	995	0	456	2357	0.000	0	521	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	546	546	136	0	833	0	3211	0.170	546	382	0.3	0.2	1.465	A
2 - A180 East	381	381	95	0	0	436	1295	0.294	382	110	0.6	0.4	4.064	A
3 - A180 West	833	0	0	833	0	382	2442	0.000	0	436	0.0	0.0	0.000	A

2025 Base + Committed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A160 - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A160 / A180	Large Roundabout		1, 2, 3	2.16	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.16	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A160	0	✓	38.00
2 - A180 East	0	✓	142.00
3 - A180 West	0	✓	170.00

Bypass

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2025 Base + Committed	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160		ONE HOUR	✓	1367	100.000
2 - A180 East		ONE HOUR	✓	148	100.000
3 - A180 West		ONE HOUR	✓	553	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	361	1006
	2 - A180 East	148	0	0
	3 - A180 West	553	0	0

Proportions

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0.00	0.26	0.74
	2 - A180 East	1.00	0.00	0.00
	3 - A180 West	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	3	37
	2 - A180 East	9	0	0
	3 - A180 West	70	0	0

Average PCU Per Veh

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	1.000	1.030	1.370
	2 - A180 East	1.090	1.000	1.000
	3 - A180 West	1.700	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - A160	1029	1029
	2 - A180 East	111	111
	3 - A180 West	416	416
16:00-16:15	1 - A160	1229	1229
	2 - A180 East	133	133
	3 - A180 West	497	497
16:15-16:30	1 - A160	1505	1505
	2 - A180 East	163	163
	3 - A180 West	609	609
16:30-16:45	1 - A160	1505	1505
	2 - A180 East	163	163
	3 - A180 West	609	609
16:45-17:00	1 - A160	1229	1229
	2 - A180 East	133	133
	3 - A180 West	497	497
17:00-17:15	1 - A160	1029	1029
	2 - A180 East	111	111
	3 - A180 West	416	416

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A160	0.47	2.66	1.1	A	1254	1882
2 - A180 East	0.19	5.64	0.3	A	136	204
3 - A180 West	0.00	0.00	0.0	A	507	0

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1029	1029	257	0	416	0	3211	0.321	1027	111	0.0	0.6	2.075	A
2 - A180 East	111	111	28	0	0	756	1087	0.103	111	271	0.0	0.1	4.019	A
3 - A180 West	416	0	0	416	0	111	2751	0.000	0	756	0.0	0.0	0.000	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1229	1229	307	0	497	0	3211	0.383	1228	133	0.6	0.8	2.288	A
2 - A180 East	133	133	33	0	0	904	991	0.134	133	324	0.1	0.2	4.574	A
3 - A180 West	497	0	0	497	0	133	2726	0.000	0	904	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1505	1505	376	0	609	0	3211	0.469	1504	163	0.8	1.1	2.656	A
2 - A180 East	163	163	41	0	0	1107	859	0.190	163	397	0.2	0.3	5.635	A
3 - A180 West	609	0	0	609	0	163	2692	0.000	0	1107	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1505	1505	376	0	609	0	3211	0.469	1505	163	1.1	1.1	2.658	A
2 - A180 East	163	163	41	0	0	1108	858	0.190	163	397	0.3	0.3	5.644	A
3 - A180 West	609	0	0	609	0	163	2691	0.000	0	1108	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1229	1229	307	0	497	0	3211	0.383	1230	133	1.1	0.8	2.293	A
2 - A180 East	133	133	33	0	0	905	990	0.134	133	325	0.3	0.2	4.586	A
3 - A180 West	497	0	0	497	0	133	2725	0.000	0	905	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1029	1029	257	0	416	0	3211	0.321	1030	112	0.8	0.6	2.081	A
2 - A180 East	111	111	28	0	0	758	1085	0.103	112	272	0.2	0.1	4.030	A
3 - A180 West	416	0	0	416	0	112	2750	0.000	0	758	0.0	0.0	0.000	A

2025 Base + Committed + Proposed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A160 - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A160 / A180	Large Roundabout		1, 2, 3	1.74	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.74	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A160	0	✓	38.00
2 - A180 East	0	✓	142.00
3 - A180 West	0	✓	170.00

Bypass

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Base + Committed + Proposed	AM	ONE HOUR	06:45	08:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160		ONE HOUR	✓	725	100.000
2 - A180 East		ONE HOUR	✓	522	100.000
3 - A180 West		ONE HOUR	✓	1276	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	163	562
	2 - A180 East	522	0	0
	3 - A180 West	1276	0	0

Proportions

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0.00	0.22	0.78
	2 - A180 East	1.00	0.00	0.00
	3 - A180 West	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	14	7
	2 - A180 East	3	0	0
	3 - A180 West	29	0	0

Average PCU Per Veh

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	1.000	1.140	1.070
	2 - A180 East	1.030	1.000	1.000
	3 - A180 West	1.290	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - A160	546	546
	2 - A180 East	393	393
	3 - A180 West	961	961
07:00-07:15	1 - A160	652	652
	2 - A180 East	469	469
	3 - A180 West	1147	1147
07:15-07:30	1 - A160	798	798
	2 - A180 East	575	575
	3 - A180 West	1405	1405
07:30-07:45	1 - A160	798	798
	2 - A180 East	575	575
	3 - A180 West	1405	1405
07:45-08:00	1 - A160	652	652
	2 - A180 East	469	469
	3 - A180 West	1147	1147
08:00-08:15	1 - A160	546	546
	2 - A180 East	393	393
	3 - A180 West	961	961

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A160	0.25	1.62	0.4	A	665	998
2 - A180 East	0.49	6.17	1.0	A	479	718
3 - A180 West	0.00	0.00	0.0	A	1171	0

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	546	546	136	0	961	0	3211	0.170	545	391	0.0	0.2	1.464	A
2 - A180 East	393	393	98	0	0	422	1303	0.302	391	123	0.0	0.4	4.058	A
3 - A180 West	961	0	0	961	0	391	2431	0.000	0	422	0.0	0.0	0.000	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	652	652	163	0	1147	0	3211	0.203	652	469	0.2	0.3	1.525	A
2 - A180 East	469	469	117	0	0	505	1250	0.376	469	146	0.4	0.6	4.743	A
3 - A180 West	1147	0	0	1147	0	469	2343	0.000	0	505	0.0	0.0	0.000	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	798	798	200	0	1405	0	3211	0.249	798	573	0.3	0.4	1.618	A
2 - A180 East	575	575	144	0	0	619	1176	0.489	573	179	0.6	1.0	6.137	A
3 - A180 West	1405	0	0	1405	0	573	2223	0.000	0	619	0.0	0.0	0.000	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	798	798	200	0	1405	0	3211	0.249	798	575	0.4	0.4	1.618	A
2 - A180 East	575	575	144	0	0	619	1176	0.489	575	179	1.0	1.0	6.168	A
3 - A180 West	1405	0	0	1405	0	575	2222	0.000	0	619	0.0	0.0	0.000	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	652	652	163	0	1147	0	3211	0.203	652	471	0.4	0.3	1.525	A
2 - A180 East	469	469	117	0	0	505	1249	0.376	471	147	1.0	0.6	4.769	A
3 - A180 West	1147	0	0	1147	0	471	2340	0.000	0	505	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	546	546	136	0	961	0	3211	0.170	546	394	0.3	0.2	1.467	A
2 - A180 East	393	393	98	0	0	423	1303	0.302	394	123	0.6	0.4	4.082	A
3 - A180 West	961	0	0	961	0	394	2428	0.000	0	423	0.0	0.0	0.000	A

2025 Base + Committed + Proposed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A160 - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A160 / A180	Large Roundabout		1, 2, 3	2.64	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.64	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A160	0	✓	38.00
2 - A180 East	0	✓	142.00
3 - A180 West	0	✓	170.00

Bypass

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 Base + Committed + Proposed	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A160		ONE HOUR	✓	1561	100.000
2 - A180 East		ONE HOUR	✓	186	100.000
3 - A180 West		ONE HOUR	✓	553	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	409	1152
	2 - A180 East	186	0	0
	3 - A180 West	553	0	0

Proportions

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0.00	0.26	0.74
	2 - A180 East	1.00	0.00	0.00
	3 - A180 West	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	0	3	37
	2 - A180 East	9	0	0
	3 - A180 West	70	0	0

Average PCU Per Veh

		To		
		1 - A160	2 - A180 East	3 - A180 West
From	1 - A160	1.000	1.030	1.370
	2 - A180 East	1.090	1.000	1.000
	3 - A180 West	1.700	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - A160	1175	1175
	2 - A180 East	140	140
	3 - A180 West	416	416
16:00-16:15	1 - A160	1403	1403
	2 - A180 East	167	167
	3 - A180 West	497	497
16:15-16:30	1 - A160	1719	1719
	2 - A180 East	205	205
	3 - A180 West	609	609
16:30-16:45	1 - A160	1719	1719
	2 - A180 East	205	205
	3 - A180 West	609	609
16:45-17:00	1 - A160	1403	1403
	2 - A180 East	167	167
	3 - A180 West	497	497
17:00-17:15	1 - A160	1175	1175
	2 - A180 East	140	140
	3 - A180 West	416	416

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A160	0.54	3.04	1.4	A	1432	2149
2 - A180 East	0.27	7.15	0.4	A	171	256
3 - A180 West	0.00	0.00	0.0	A	507	0

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1175	1175	294	0	416	0	3211	0.366	1172	139	0.0	0.7	2.224	A
2 - A180 East	140	140	35	0	0	865	1016	0.138	139	307	0.0	0.2	4.471	A
3 - A180 West	416	0	0	416	0	139	2718	0.000	0	865	0.0	0.0	0.000	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1403	1403	351	0	497	0	3211	0.437	1402	167	0.7	1.0	2.508	A
2 - A180 East	167	167	42	0	0	1035	905	0.185	167	367	0.2	0.2	5.310	A
3 - A180 West	497	0	0	497	0	167	2687	0.000	0	1035	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1719	1719	430	0	609	0	3211	0.535	1717	204	1.0	1.4	3.034	A
2 - A180 East	205	205	51	0	0	1267	754	0.271	204	450	0.2	0.4	7.124	A
3 - A180 West	609	0	0	609	0	204	2644	0.000	0	1267	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1719	1719	430	0	609	0	3211	0.535	1719	205	1.4	1.4	3.041	A
2 - A180 East	205	205	51	0	0	1268	754	0.272	205	450	0.4	0.4	7.149	A
3 - A180 West	609	0	0	609	0	205	2644	0.000	0	1268	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1403	1403	351	0	497	0	3211	0.437	1405	168	1.4	1.0	2.515	A
2 - A180 East	167	167	42	0	0	1037	904	0.185	168	368	0.4	0.2	5.334	A
3 - A180 West	497	0	0	497	0	168	2686	0.000	0	1037	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalise level of service
1 - A160	1175	1175	294	0	416	0	3211	0.366	1176	140	1.0	0.7	2.233	A
2 - A180 East	140	140	35	0	0	868	1014	0.138	140	308	0.2	0.2	4.493	A
3 - A180 West	416	0	0	416	0	140	2717	0.000	0	868	0.0	0.0	0.000	A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: J4 M180_A15_A18.j10
Path: \\na.aecomnet.com\lfs\EMEA\Leeds-UKLDS2\Legacy\UKLDS2PFPSW001\WIP\LE_Projects\Newproje\60668866 - Humber Zero\400_Technical\Traffic & Transport\NH Comments 10.01.24\Junction Modelling\Modelling June 2024
Report generation date: 10/06/2024 10:27:11

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2025 Base									
1 - M180 East	D1	1.3	7.82	0.54	A	D2	27.2	113.85	1.04	F
2 - A18		6.9	28.19	0.88	D		2.6	13.57	0.72	B
3 - M180 West		11.5	46.71	0.94	E		14.4	52.27	0.96	F
4 - Barnetby Top		4.1	72.78	0.84	F		1.6	38.46	0.61	E
5 - A15		7.3	17.32	0.88	C		4.8	11.48	0.82	B
	2025 Base + Committed									
1 - M180 East	D3	1.5	9.07	0.57	A	D4	49.2	184.47	1.12	F
2 - A18		20.0	74.55	1.00	F		2.7	13.96	0.73	B
3 - M180 West		38.6	134.11	1.07	F		16.0	57.90	0.97	F
4 - Barnetby Top		15.3	215.30	1.10	F		1.5	36.68	0.59	E
5 - A15		14.3	31.95	0.94	D		5.0	12.00	0.83	B
	2025 Base + Committed + Proposed									
1 - M180 East	D5	1.4	8.76	0.57	A	D6	4.1	16.30	0.80	C
2 - A18		17.6	66.77	0.98	F		8.2	43.52	0.91	E
3 - M180 West		39.3	136.09	1.07	F		3.3	18.30	0.76	C
4 - Barnetby Top		15.4	216.11	1.10	F		0.6	14.04	0.35	B
5 - A15		28.7	57.72	1.00	F		2.3	5.29	0.68	A

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

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

File summary

File Description

Title	
Location	
Site number	
Date	18/01/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NA\SimmonsA1
Description	

Units

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

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2025 Base	AM	ONE HOUR	06:45	08:15	15	✓
D2	2025 Base	PM	ONE HOUR	15:45	17:15	15	✓
D3	2025 Base + Committed	AM	ONE HOUR	06:45	08:15	15	✓
D4	2025 Base + Committed	PM	ONE HOUR	15:45	17:15	15	✓
D5	2025 Base + Committed + Proposed	AM	ONE HOUR	06:45	08:15	15	✓
D6	2025 Base + Committed + Proposed	PM	ONE HOUR	15:45	17:15	15	✓

Analysis Set Details

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

2025 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - M180 East - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4, 5	27.69	D

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	27.69	D

Arms

Arms

Arm	Name	Description	No give-way line
1	M180 East		
2	A18		
3	M180 West		
4	Barnetby Top		
5	A15		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - M180 East	6.45	7.20	12.2	74.9	158.4	23.2		
2 - A18	6.33	7.60	15.7	82.9	162.1	16.0		
3 - M180 West	6.38	7.91	18.4	42.8	153.0	12.0		
4 - Barnetby Top	3.52	5.61	6.7	20.4	157.6	17.5		
5 - A15	6.21	6.68	3.2	60.1	159.3	15.2		

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - M180 East	0	✓	142.35
2 - A18	0	✓	74.51
3 - M180 West	0	✓	135.31
4 - Barnetby Top	0	✓	23.20
5 - A15	0	✓	59.36

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - M180 East	Direct		-278
2 - A18	Direct		-610
3 - M180 West	Direct		-670
4 - Barnetby Top	Direct		-280
5 - A15	Direct		-390

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - M180 East	1.150	2556
2 - A18	1.204	2514
3 - M180 West	1.232	2411
4 - Barnetby Top	0.898	1982
5 - A15	1.123	2496

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2025 Base	AM	ONE HOUR	06:45	08:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - M180 East		ONE HOUR	✓	537	100.000
2 - A18		ONE HOUR	✓	854	100.000
3 - M180 West		ONE HOUR	✓	858	100.000
4 - Barnetby Top		ONE HOUR	✓	199	100.000
5 - A15		ONE HOUR	✓	1450	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	62	1	28	446
	2 - A18	153	0	311	52	338
	3 - M180 West	2	238	1	46	571
	4 - Barnetby Top	54	39	67	0	39
	5 - A15	638	260	531	20	1

Proportions

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0.00	0.12	0.00	0.05	0.83
	2 - A18	0.18	0.00	0.36	0.06	0.40
	3 - M180 West	0.00	0.28	0.00	0.05	0.67
	4 - Barnetby Top	0.27	0.20	0.34	0.00	0.20
	5 - A15	0.44	0.18	0.37	0.01	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	10	0	20	10
	2 - A18	7	0	6	2	6
	3 - M180 West	0	14	0	12	10
	4 - Barnetby Top	8	0	13	0	14
	5 - A15	10	7	14	11	0

Average PCU Per Veh

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	1.000	1.100	1.000	1.200	1.100
	2 - A18	1.070	1.000	1.060	1.020	1.060
	3 - M180 West	1.000	1.140	1.000	1.120	1.100
	4 - Barnetby Top	1.080	1.000	1.130	1.000	1.140
	5 - A15	1.100	1.070	1.140	1.110	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - M180 East	404	404
	2 - A18	643	643
	3 - M180 West	646	646
	4 - Barnetby Top	150	150
	5 - A15	1092	1092
07:00-07:15	1 - M180 East	483	483
	2 - A18	768	768
	3 - M180 West	771	771
	4 - Barnetby Top	179	179
	5 - A15	1304	1304
07:15-07:30	1 - M180 East	591	591
	2 - A18	940	940
	3 - M180 West	945	945
	4 - Barnetby Top	219	219
	5 - A15	1596	1596
07:30-07:45	1 - M180 East	591	591
	2 - A18	940	940
	3 - M180 West	945	945
	4 - Barnetby Top	219	219
	5 - A15	1596	1596
07:45-08:00	1 - M180 East	483	483
	2 - A18	768	768
	3 - M180 West	771	771
	4 - Barnetby Top	179	179
	5 - A15	1304	1304
08:00-08:15	1 - M180 East	404	404
	2 - A18	643	643
	3 - M180 West	646	646
	4 - Barnetby Top	150	150
	5 - A15	1092	1092

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - M180 East	0.54	7.82	1.3	A	493	739
2 - A18	0.88	28.19	6.9	D	784	1175
3 - M180 West	0.94	46.71	11.5	E	787	1181
4 - Barnetby Top	0.84	72.78	4.1	F	183	274
5 - A15	0.88	17.32	7.3	C	1331	1996

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	404	101	867	1559	0.259	403	635	0.0	0.4	3.433	A
2 - A18	643	161	821	1526	0.421	640	449	0.0	0.8	4.290	A
3 - M180 West	646	161	778	1453	0.445	642	683	0.0	0.9	4.916	A
4 - Barnetby Top	150	37	1311	805	0.186	149	109	0.0	0.2	5.978	A
5 - A15	1092	273	415	2030	0.538	1087	1045	0.0	1.3	4.209	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	483	121	1037	1364	0.354	482	759	0.4	0.6	4.502	A
2 - A18	768	192	982	1332	0.577	765	537	0.8	1.4	6.700	A
3 - M180 West	771	193	931	1265	0.610	768	816	0.9	1.7	7.996	A
4 - Barnetby Top	179	45	1568	574	0.312	178	131	0.2	0.5	9.889	A
5 - A15	1304	326	496	1939	0.672	1300	1250	1.3	2.2	6.210	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	591	148	1251	1118	0.529	589	919	0.6	1.2	7.484	A
2 - A18	940	235	1193	1077	0.873	922	646	1.4	6.1	22.390	C
3 - M180 West	945	236	1129	1021	0.925	915	987	1.7	9.0	31.701	D
4 - Barnetby Top	219	55	1886	288	0.761	210	158	0.5	2.8	45.879	E
5 - A15	1596	399	591	1832	0.871	1579	1505	2.2	6.7	14.830	B

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	591	148	1267	1099	0.538	591	929	1.2	1.3	7.821	A
2 - A18	940	235	1203	1066	0.882	937	655	6.1	6.9	28.189	D
3 - M180 West	945	236	1140	1007	0.938	935	999	9.0	11.5	46.711	E
4 - Barnetby Top	219	55	1915	262	0.836	214	160	2.8	4.1	72.779	F
5 - A15	1596	399	602	1819	0.878	1594	1527	6.7	7.3	17.323	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	483	121	1069	1326	0.364	485	778	1.3	0.6	4.743	A
2 - A18	768	192	999	1311	0.586	789	556	6.9	1.5	7.601	A
3 - M180 West	771	193	949	1242	0.621	810	839	11.5	1.9	10.066	B
4 - Barnetby Top	179	45	1624	523	0.342	193	135	4.1	0.6	12.376	B
5 - A15	1304	326	524	1907	0.684	1323	1293	7.3	2.5	7.051	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	404	101	875	1549	0.261	405	641	0.6	0.4	3.477	A
2 - A18	643	161	827	1518	0.424	646	453	1.5	0.8	4.390	A
3 - M180 West	646	161	784	1446	0.447	650	689	1.9	0.9	5.054	A
4 - Barnetby Top	150	37	1324	793	0.189	151	110	0.6	0.3	6.123	A
5 - A15	1092	273	420	2024	0.539	1096	1055	2.5	1.3	4.321	A

2025 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - M180 East - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4, 5	42.12	E

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	42.12	E

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - M180 East	0	✓	142.35
2 - A18	0	✓	74.51
3 - M180 West	0	✓	135.31
4 - Barnetby Top	0	✓	23.20
5 - A15	0	✓	59.36

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2025 Base	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - M180 East		ONE HOUR	✓	732	100.000
2 - A18		ONE HOUR	✓	657	100.000
3 - M180 West		ONE HOUR	✓	944	100.000
4 - Barnetby Top		ONE HOUR	✓	144	100.000
5 - A15		ONE HOUR	✓	1397	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	160	0	11	561
	2 - A18	71	1	246	50	289
	3 - M180 West	2	338	1	83	520
	4 - Barnetby Top	25	26	46	0	47
	5 - A15	397	445	525	29	1

Proportions

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0.00	0.22	0.00	0.02	0.77
	2 - A18	0.11	0.00	0.37	0.08	0.44
	3 - M180 West	0.00	0.36	0.00	0.09	0.55
	4 - Barnetby Top	0.17	0.18	0.32	0.00	0.33
	5 - A15	0.28	0.32	0.38	0.02	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	12	0	10	9
	2 - A18	5	0	6	7	4
	3 - M180 West	50	6	0	8	8
	4 - Barnetby Top	29	9	7	0	14
	5 - A15	8	4	10	12	0

Average PCU Per Veh

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	1.000	1.120	1.000	1.100	1.090
	2 - A18	1.050	1.000	1.060	1.070	1.040
	3 - M180 West	1.500	1.060	1.000	1.080	1.080
	4 - Barnetby Top	1.290	1.090	1.070	1.000	1.140
	5 - A15	1.080	1.040	1.100	1.120	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - M180 East	551	551
	2 - A18	495	495
	3 - M180 West	711	711
	4 - Barnetby Top	108	108
	5 - A15	1052	1052
16:00-16:15	1 - M180 East	658	658
	2 - A18	591	591
	3 - M180 West	849	849
	4 - Barnetby Top	129	129
	5 - A15	1256	1256
16:15-16:30	1 - M180 East	806	806
	2 - A18	723	723
	3 - M180 West	1039	1039
	4 - Barnetby Top	159	159
	5 - A15	1538	1538
16:30-16:45	1 - M180 East	806	806
	2 - A18	723	723
	3 - M180 West	1039	1039
	4 - Barnetby Top	159	159
	5 - A15	1538	1538
16:45-17:00	1 - M180 East	658	658
	2 - A18	591	591
	3 - M180 West	849	849
	4 - Barnetby Top	129	129
	5 - A15	1256	1256
17:00-17:15	1 - M180 East	551	551
	2 - A18	495	495
	3 - M180 West	711	711
	4 - Barnetby Top	108	108
	5 - A15	1052	1052

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - M180 East	1.04	113.85	27.2	F	672	1008
2 - A18	0.72	13.57	2.6	B	603	904
3 - M180 West	0.96	52.27	14.4	F	866	1299
4 - Barnetby Top	0.61	38.46	1.6	E	132	198
5 - A15	0.82	11.48	4.8	B	1282	1923

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	551	138	1058	1339	0.412	548	371	0.0	0.8	4.971	A
2 - A18	495	124	880	1455	0.340	493	727	0.0	0.5	3.921	A
3 - M180 West	711	178	759	1477	0.481	707	613	0.0	1.0	4.993	A
4 - Barnetby Top	108	27	1336	782	0.139	108	130	0.0	0.2	6.024	A
5 - A15	1052	263	382	2067	0.509	1047	1062	0.0	1.1	3.781	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	658	165	1266	1101	0.598	655	444	0.8	1.6	8.787	A
2 - A18	591	148	1051	1248	0.473	589	869	0.5	0.9	5.728	A
3 - M180 West	849	212	907	1294	0.656	845	733	1.0	2.0	8.518	A
4 - Barnetby Top	129	32	1597	548	0.236	129	155	0.2	0.3	9.672	A
5 - A15	1256	314	456	1983	0.633	1253	1269	1.1	1.8	5.280	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	806	201	1533	793	1.016	748	541	1.6	16.1	58.003	F
2 - A18	723	181	1242	1019	0.710	717	1039	0.9	2.5	12.313	B
3 - M180 West	1039	260	1066	1098	0.946	1005	893	2.0	10.6	33.329	D
4 - Barnetby Top	159	40	1885	289	0.548	155	186	0.3	1.3	29.518	D
5 - A15	1538	385	546	1882	0.817	1527	1494	1.8	4.5	10.590	B

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	806	201	1548	776	1.039	762	544	16.1	27.2	113.852	F
2 - A18	723	181	1257	1000	0.723	723	1052	2.5	2.6	13.566	B
3 - M180 West	1039	260	1080	1081	0.962	1024	900	10.6	14.4	52.268	F
4 - Barnetby Top	159	40	1916	261	0.607	157	188	1.3	1.6	38.461	E
5 - A15	1538	385	555	1872	0.822	1537	1518	4.5	4.8	11.482	B

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	658	165	1296	1065	0.618	759	450	27.2	1.8	17.702	C
2 - A18	591	148	1141	1141	0.518	597	915	2.6	1.1	7.028	A
3 - M180 West	849	212	994	1187	0.715	895	743	14.4	2.8	15.179	C
4 - Barnetby Top	129	32	1727	431	0.300	134	162	1.6	0.5	13.894	B
5 - A15	1256	314	479	1958	0.642	1267	1382	4.8	2.0	5.691	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	551	138	1069	1327	0.415	555	374	1.8	0.8	5.141	A
2 - A18	495	124	889	1444	0.343	497	735	1.1	0.6	4.007	A
3 - M180 West	711	178	768	1466	0.485	718	618	2.8	1.0	5.213	A
4 - Barnetby Top	108	27	1354	766	0.142	110	131	0.5	0.2	6.211	A
5 - A15	1052	263	388	2060	0.511	1055	1076	2.0	1.1	3.863	A

2025 Base + Committed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - M180 East - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4, 5	69.84	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	69.84	F

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - M180 East	0	✓	142.35
2 - A18	0	✓	74.51
3 - M180 West	0	✓	135.31
4 - Barnetby Top	0	✓	23.20
5 - A15	0	✓	59.36

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2025 Base + Committed	AM	ONE HOUR	06:45	08:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - M180 East		ONE HOUR	✓	537	100.000
2 - A18		ONE HOUR	✓	874	100.000
3 - M180 West		ONE HOUR	✓	858	100.000
4 - Barnetby Top		ONE HOUR	✓	222	100.000
5 - A15		ONE HOUR	✓	1555	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	62	1	28	446
	2 - A18	173	0	311	52	338
	3 - M180 West	2	238	1	46	571
	4 - Barnetby Top	77	39	67	0	39
	5 - A15	659	260	531	20	85

Proportions

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0.00	0.12	0.00	0.05	0.83
	2 - A18	0.20	0.00	0.36	0.06	0.39
	3 - M180 West	0.00	0.28	0.00	0.05	0.67
	4 - Barnetby Top	0.35	0.18	0.30	0.00	0.18
	5 - A15	0.42	0.17	0.34	0.01	0.05

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	10	0	20	10
	2 - A18	7	0	6	2	6
	3 - M180 West	0	14	0	12	10
	4 - Barnetby Top	8	0	13	0	14
	5 - A15	10	7	14	11	0

Average PCU Per Veh

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	1.000	1.100	1.000	1.200	1.100
	2 - A18	1.070	1.000	1.060	1.020	1.060
	3 - M180 West	1.000	1.140	1.000	1.120	1.100
	4 - Barnetby Top	1.080	1.000	1.130	1.000	1.140
	5 - A15	1.100	1.070	1.140	1.110	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - M180 East	404	404
	2 - A18	658	658
	3 - M180 West	646	646
	4 - Barnetby Top	167	167
	5 - A15	1171	1171
07:00-07:15	1 - M180 East	483	483
	2 - A18	786	786
	3 - M180 West	771	771
	4 - Barnetby Top	200	200
	5 - A15	1398	1398
07:15-07:30	1 - M180 East	591	591
	2 - A18	962	962
	3 - M180 West	945	945
	4 - Barnetby Top	244	244
	5 - A15	1712	1712
07:30-07:45	1 - M180 East	591	591
	2 - A18	962	962
	3 - M180 West	945	945
	4 - Barnetby Top	244	244
	5 - A15	1712	1712
07:45-08:00	1 - M180 East	483	483
	2 - A18	786	786
	3 - M180 West	771	771
	4 - Barnetby Top	200	200
	5 - A15	1398	1398
08:00-08:15	1 - M180 East	404	404
	2 - A18	658	658
	3 - M180 West	646	646
	4 - Barnetby Top	167	167
	5 - A15	1171	1171

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - M180 East	0.57	9.07	1.5	A	493	739
2 - A18	1.00	74.55	20.0	F	802	1203
3 - M180 West	1.07	134.11	38.6	F	787	1181
4 - Barnetby Top	1.10	215.30	15.3	F	204	306
5 - A15	0.94	31.95	14.3	D	1427	2140

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	404	101	929	1488	0.272	403	682	0.0	0.4	3.660	A
2 - A18	658	164	883	1450	0.454	655	448	0.0	0.9	4.771	A
3 - M180 West	646	161	856	1358	0.476	642	682	0.0	1.0	5.560	A
4 - Barnetby Top	167	42	1388	735	0.227	166	109	0.0	0.3	6.871	A
5 - A15	1171	293	447	1994	0.587	1164	1108	0.0	1.5	4.749	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	483	121	1110	1279	0.377	482	815	0.4	0.7	4.979	A
2 - A18	786	196	1056	1242	0.633	782	536	0.9	1.8	8.224	A
3 - M180 West	771	193	1023	1151	0.670	767	815	1.0	2.2	10.271	B
4 - Barnetby Top	200	50	1659	492	0.406	198	131	0.3	0.7	13.255	B
5 - A15	1398	349	533	1897	0.737	1392	1324	1.5	3.0	7.775	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	591	148	1310	1049	0.564	588	968	0.7	1.4	8.574	A
2 - A18	962	241	1272	982	0.980	916	627	1.8	13.3	42.426	E
3 - M180 West	945	236	1223	906	1.043	868	965	2.2	21.4	63.769	F
4 - Barnetby Top	244	61	1937	242	1.008	216	153	0.7	8.0	102.810	F
5 - A15	1712	428	603	1819	0.941	1676	1550	3.0	12.0	23.502	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	591	148	1328	1029	0.575	591	983	1.4	1.5	9.068	A
2 - A18	962	241	1285	966	0.996	936	634	13.3	20.0	74.550	F
3 - M180 West	945	236	1239	885	1.067	876	981	21.4	38.6	134.113	F
4 - Barnetby Top	244	61	1960	222	1.102	215	155	8.0	15.3	215.304	F
5 - A15	1712	428	608	1812	0.945	1703	1566	12.0	14.3	31.953	D

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	483	121	1204	1172	0.412	485	869	1.5	0.8	5.820	A
2 - A18	786	196	1095	1195	0.657	857	594	20.0	2.1	13.731	B
3 - M180 West	771	193	1078	1084	0.712	914	874	38.6	3.0	41.852	E
4 - Barnetby Top	200	50	1848	322	0.619	253	144	15.3	2.0	80.281	F
5 - A15	1398	349	635	1783	0.784	1438	1466	14.3	4.2	12.713	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	404	101	946	1469	0.275	406	694	0.8	0.4	3.748	A
2 - A18	658	164	895	1436	0.458	663	456	2.1	0.9	4.964	A
3 - M180 West	646	161	865	1346	0.480	654	693	3.0	1.0	5.841	A
4 - Barnetby Top	167	42	1408	718	0.233	174	111	2.0	0.3	7.294	A
5 - A15	1171	293	458	1981	0.591	1181	1123	4.2	1.6	5.024	A

2025 Base + Committed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - M180 East - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4, 5	58.10	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	58.10	F

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - M180 East	0	✓	142.35
2 - A18	0	✓	74.51
3 - M180 West	0	✓	135.31
4 - Barnetby Top	0	✓	23.20
5 - A15	0	✓	59.36

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2025 Base + Committed	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - M180 East		ONE HOUR	✓	770	100.000
2 - A18		ONE HOUR	✓	657	100.000
3 - M180 West		ONE HOUR	✓	944	100.000
4 - Barnetby Top		ONE HOUR	✓	144	100.000
5 - A15		ONE HOUR	✓	1411	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	172	0	24	574
	2 - A18	71	1	246	50	289
	3 - M180 West	2	338	1	83	520
	4 - Barnetby Top	25	26	46	0	47
	5 - A15	397	445	525	29	15

Proportions

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0.00	0.22	0.00	0.03	0.75
	2 - A18	0.11	0.00	0.37	0.08	0.44
	3 - M180 West	0.00	0.36	0.00	0.09	0.55
	4 - Barnetby Top	0.17	0.18	0.32	0.00	0.33
	5 - A15	0.28	0.32	0.37	0.02	0.01

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	12	0	10	9
	2 - A18	5	0	6	7	4
	3 - M180 West	50	6	0	8	8
	4 - Barnetby Top	29	9	7	0	14
	5 - A15	8	4	10	12	0

Average PCU Per Veh

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	1.000	1.120	1.000	1.100	1.090
	2 - A18	1.050	1.000	1.060	1.070	1.040
	3 - M180 West	1.500	1.060	1.000	1.080	1.080
	4 - Barnetby Top	1.290	1.090	1.070	1.000	1.140
	5 - A15	1.080	1.040	1.100	1.120	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - M180 East	580	580
	2 - A18	495	495
	3 - M180 West	711	711
	4 - Barnetby Top	108	108
	5 - A15	1062	1062
16:00-16:15	1 - M180 East	692	692
	2 - A18	591	591
	3 - M180 West	849	849
	4 - Barnetby Top	129	129
	5 - A15	1268	1268
16:15-16:30	1 - M180 East	848	848
	2 - A18	723	723
	3 - M180 West	1039	1039
	4 - Barnetby Top	159	159
	5 - A15	1554	1554
16:30-16:45	1 - M180 East	848	848
	2 - A18	723	723
	3 - M180 West	1039	1039
	4 - Barnetby Top	159	159
	5 - A15	1554	1554
16:45-17:00	1 - M180 East	692	692
	2 - A18	591	591
	3 - M180 West	849	849
	4 - Barnetby Top	129	129
	5 - A15	1268	1268
17:00-17:15	1 - M180 East	580	580
	2 - A18	495	495
	3 - M180 West	711	711
	4 - Barnetby Top	108	108
	5 - A15	1062	1062

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - M180 East	1.12	184.47	49.2	F	707	1060
2 - A18	0.73	13.96	2.7	B	603	904
3 - M180 West	0.97	57.90	16.0	F	866	1299
4 - Barnetby Top	0.59	36.68	1.5	E	132	198
5 - A15	0.83	12.00	5.0	B	1295	1942

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	580	145	1069	1327	0.437	576	371	0.0	0.8	5.236	A
2 - A18	495	124	909	1419	0.349	492	736	0.0	0.6	4.072	A
3 - M180 West	711	178	789	1440	0.494	707	613	0.0	1.0	5.238	A
4 - Barnetby Top	108	27	1356	764	0.142	108	139	0.0	0.2	6.188	A
5 - A15	1062	266	382	2067	0.514	1058	1082	0.0	1.1	3.815	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	692	173	1278	1087	0.637	688	444	0.8	1.9	9.817	A
2 - A18	591	148	1087	1205	0.490	589	879	0.6	1.0	6.119	A
3 - M180 West	849	212	942	1251	0.678	844	733	1.0	2.2	9.389	A
4 - Barnetby Top	129	32	1620	527	0.246	129	166	0.2	0.4	10.187	B
5 - A15	1268	317	456	1983	0.640	1265	1292	1.1	1.9	5.365	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	848	212	1546	778	1.089	752	540	1.9	25.8	82.044	F
2 - A18	723	181	1256	1001	0.723	717	1041	1.0	2.6	13.034	B
3 - M180 West	1039	260	1081	1081	0.962	1000	893	2.2	12.1	37.109	E
4 - Barnetby Top	159	40	1883	291	0.545	155	198	0.4	1.3	29.171	D
5 - A15	1554	388	544	1884	0.824	1542	1494	1.9	4.7	10.951	B

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	848	212	1563	758	1.118	754	544	25.8	49.2	184.472	F
2 - A18	723	181	1263	993	0.729	723	1054	2.6	2.7	13.958	B
3 - M180 West	1039	260	1086	1073	0.968	1024	900	12.1	16.0	57.897	F
4 - Barnetby Top	159	40	1910	267	0.594	157	200	1.3	1.5	36.677	E
5 - A15	1554	388	555	1872	0.830	1552	1512	4.7	5.0	12.004	B

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	692	173	1309	1051	0.658	880	450	49.2	2.3	51.461	F
2 - A18	591	148	1243	1017	0.581	596	945	2.7	1.5	9.083	A
3 - M180 West	849	212	1096	1062	0.799	894	743	16.0	4.7	27.387	D
4 - Barnetby Top	129	32	1812	355	0.365	133	178	1.5	0.7	18.614	C
5 - A15	1268	317	478	1959	0.647	1281	1467	5.0	2.0	5.797	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	580	145	1082	1312	0.442	585	374	2.3	0.9	5.476	A
2 - A18	495	124	920	1406	0.352	498	747	1.5	0.6	4.185	A
3 - M180 West	711	178	800	1427	0.498	725	619	4.7	1.1	5.621	A
4 - Barnetby Top	108	27	1383	740	0.146	110	142	0.7	0.2	6.476	A
5 - A15	1062	266	391	2057	0.517	1066	1102	2.0	1.2	3.917	A

2025 Base + Committed + Proposed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - M180 East - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4, 5	78.07	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	78.07	F

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - M180 East	0	✓	142.35
2 - A18	0	✓	74.51
3 - M180 West	0	✓	135.31
4 - Barnetby Top	0	✓	23.20
5 - A15	0	✓	59.36

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Base + Committed + Proposed	AM	ONE HOUR	06:45	08:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - M180 East		ONE HOUR	✓	537	100.000
2 - A18		ONE HOUR	✓	874	100.000
3 - M180 West		ONE HOUR	✓	858	100.000
4 - Barnetby Top		ONE HOUR	✓	222	100.000
5 - A15		ONE HOUR	✓	1638	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	62	1	28	446
	2 - A18	173	0	311	52	338
	3 - M180 West	2	238	1	46	571
	4 - Barnetby Top	77	39	67	0	39
	5 - A15	742	260	531	20	85

Proportions

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0.00	0.12	0.00	0.05	0.83
	2 - A18	0.20	0.00	0.36	0.06	0.39
	3 - M180 West	0.00	0.28	0.00	0.05	0.67
	4 - Barnetby Top	0.35	0.18	0.30	0.00	0.18
	5 - A15	0.45	0.16	0.32	0.01	0.05

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	10	0	20	10
	2 - A18	7	0	6	2	6
	3 - M180 West	0	14	0	12	10
	4 - Barnetby Top	8	0	13	0	14
	5 - A15	10	7	14	11	0

Average PCU Per Veh

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	1.000	1.100	1.000	1.200	1.100
	2 - A18	1.070	1.000	1.060	1.020	1.060
	3 - M180 West	1.000	1.140	1.000	1.120	1.100
	4 - Barnetby Top	1.080	1.000	1.130	1.000	1.140
	5 - A15	1.100	1.070	1.140	1.110	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - M180 East	404	404
	2 - A18	658	658
	3 - M180 West	646	646
	4 - Barnetby Top	167	167
	5 - A15	1233	1233
07:00-07:15	1 - M180 East	483	483
	2 - A18	786	786
	3 - M180 West	771	771
	4 - Barnetby Top	200	200
	5 - A15	1473	1473
07:15-07:30	1 - M180 East	591	591
	2 - A18	962	962
	3 - M180 West	945	945
	4 - Barnetby Top	244	244
	5 - A15	1803	1803
07:30-07:45	1 - M180 East	591	591
	2 - A18	962	962
	3 - M180 West	945	945
	4 - Barnetby Top	244	244
	5 - A15	1803	1803
07:45-08:00	1 - M180 East	483	483
	2 - A18	786	786
	3 - M180 West	771	771
	4 - Barnetby Top	200	200
	5 - A15	1473	1473
08:00-08:15	1 - M180 East	404	404
	2 - A18	658	658
	3 - M180 West	646	646
	4 - Barnetby Top	167	167
	5 - A15	1233	1233

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - M180 East	0.57	8.76	1.4	A	493	739
2 - A18	0.98	66.77	17.6	F	802	1203
3 - M180 West	1.07	136.09	39.3	F	787	1181
4 - Barnetby Top	1.10	216.11	15.4	F	204	306
5 - A15	1.00	57.72	28.7	F	1503	2255

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	404	101	929	1488	0.272	403	744	0.0	0.4	3.659	A
2 - A18	658	164	883	1451	0.454	655	448	0.0	0.9	4.770	A
3 - M180 West	646	161	856	1358	0.476	642	682	0.0	1.0	5.560	A
4 - Barnetby Top	167	42	1388	735	0.227	166	109	0.0	0.3	6.871	A
5 - A15	1233	308	447	1994	0.618	1226	1108	0.0	1.8	5.122	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	483	121	1109	1280	0.377	482	889	0.4	0.7	4.973	A
2 - A18	786	196	1056	1243	0.632	782	536	0.9	1.8	8.213	A
3 - M180 West	771	193	1023	1152	0.670	767	815	1.0	2.2	10.268	B
4 - Barnetby Top	200	50	1659	492	0.405	198	131	0.3	0.7	13.252	B
5 - A15	1473	368	533	1897	0.776	1465	1324	1.8	3.7	9.032	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	591	148	1294	1068	0.554	589	1046	0.7	1.3	8.249	A
2 - A18	962	241	1261	996	0.966	921	622	1.8	12.0	39.175	E
3 - M180 West	945	236	1224	904	1.045	866	958	2.2	21.8	64.557	F
4 - Barnetby Top	244	61	1937	242	1.010	215	153	0.7	8.0	103.338	F
5 - A15	1803	451	603	1818	0.992	1737	1550	3.7	20.4	34.380	D

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	591	148	1314	1045	0.566	591	1064	1.3	1.4	8.758	A
2 - A18	962	241	1276	978	0.984	940	630	12.0	17.6	66.775	F
3 - M180 West	945	236	1241	883	1.069	875	975	21.8	39.3	136.090	F
4 - Barnetby Top	244	61	1960	222	1.103	215	155	8.0	15.4	216.113	F
5 - A15	1803	451	609	1812	0.995	1770	1566	20.4	28.7	57.719	F

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	483	121	1232	1139	0.424	485	966	1.4	0.8	6.103	A
2 - A18	786	196	1114	1172	0.670	847	603	17.6	2.2	13.939	B
3 - M180 West	771	193	1074	1088	0.709	917	887	39.3	2.9	41.904	E
4 - Barnetby Top	200	50	1847	323	0.617	253	144	15.4	2.0	79.864	F
5 - A15	1473	368	634	1784	0.826	1565	1466	28.7	5.7	23.802	C

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	404	101	948	1466	0.276	406	759	0.8	0.4	3.759	A
2 - A18	658	164	897	1434	0.459	663	457	2.2	0.9	4.985	A
3 - M180 West	646	161	866	1345	0.480	653	695	2.9	1.0	5.843	A
4 - Barnetby Top	167	42	1408	717	0.233	174	111	2.0	0.3	7.301	A
5 - A15	1233	308	458	1981	0.622	1249	1124	5.7	1.8	5.527	A

2025 Base + Committed + Proposed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - M180 East - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4, 5	17.18	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	17.18	C

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - M180 East	0	✓	142.35
2 - A18	0	✓	74.51
3 - M180 West	0	✓	135.31
4 - Barnetby Top	0	✓	23.20
5 - A15	0	✓	59.36

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 Base + Committed + Proposed	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - M180 East		ONE HOUR	✓	853	100.000
2 - A18		ONE HOUR	✓	657	100.000
3 - M180 West		ONE HOUR	✓	606	100.000
4 - Barnetby Top		ONE HOUR	✓	144	100.000
5 - A15		ONE HOUR	✓	1411	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	172	0	24	657
	2 - A18	71	1	246	50	289
	3 - M180 West	2	0	1	83	520
	4 - Barnetby Top	25	26	46	0	47
	5 - A15	397	445	525	29	15

Proportions

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0.00	0.20	0.00	0.03	0.77
	2 - A18	0.11	0.00	0.37	0.08	0.44
	3 - M180 West	0.00	0.00	0.00	0.14	0.86
	4 - Barnetby Top	0.17	0.18	0.32	0.00	0.33
	5 - A15	0.28	0.32	0.37	0.02	0.01

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	0	12	0	10	9
	2 - A18	5	0	6	7	4
	3 - M180 West	50	6	0	8	8
	4 - Barnetby Top	29	9	7	0	14
	5 - A15	8	4	10	12	0

Average PCU Per Veh

		To				
		1 - M180 East	2 - A18	3 - M180 West	4 - Barnetby Top	5 - A15
From	1 - M180 East	1.000	1.120	1.000	1.100	1.090
	2 - A18	1.050	1.000	1.060	1.070	1.040
	3 - M180 West	1.500	1.060	1.000	1.080	1.080
	4 - Barnetby Top	1.290	1.090	1.070	1.000	1.140
	5 - A15	1.080	1.040	1.100	1.120	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - M180 East	642	642
	2 - A18	495	495
	3 - M180 West	456	456
	4 - Barnetby Top	108	108
	5 - A15	1062	1062
16:00-16:15	1 - M180 East	767	767
	2 - A18	591	591
	3 - M180 West	545	545
	4 - Barnetby Top	129	129
	5 - A15	1268	1268
16:15-16:30	1 - M180 East	939	939
	2 - A18	723	723
	3 - M180 West	667	667
	4 - Barnetby Top	159	159
	5 - A15	1554	1554
16:30-16:45	1 - M180 East	939	939
	2 - A18	723	723
	3 - M180 West	667	667
	4 - Barnetby Top	159	159
	5 - A15	1554	1554
16:45-17:00	1 - M180 East	767	767
	2 - A18	591	591
	3 - M180 West	545	545
	4 - Barnetby Top	129	129
	5 - A15	1268	1268
17:00-17:15	1 - M180 East	642	642
	2 - A18	495	495
	3 - M180 West	456	456
	4 - Barnetby Top	108	108
	5 - A15	1062	1062

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - M180 East	0.80	16.30	4.1	C	783	1174
2 - A18	0.91	43.52	8.2	E	603	904
3 - M180 West	0.76	18.30	3.3	C	556	834
4 - Barnetby Top	0.35	14.04	0.6	B	132	198
5 - A15	0.68	5.29	2.3	A	1295	1942

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	642	161	816	1617	0.397	639	371	0.0	0.7	4.024	A
2 - A18	495	124	973	1343	0.368	492	483	0.0	0.6	4.434	A
3 - M180 West	456	114	851	1363	0.335	454	613	0.0	0.5	4.271	A
4 - Barnetby Top	108	27	1166	935	0.116	108	139	0.0	0.1	4.915	A
5 - A15	1062	266	129	2351	0.452	1059	1145	0.0	0.9	2.986	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	767	192	977	1433	0.535	765	444	0.7	1.2	5.888	A
2 - A18	591	148	1164	1113	0.531	588	578	0.6	1.2	7.183	A
3 - M180 West	545	136	1018	1157	0.471	543	734	0.5	0.9	6.318	A
4 - Barnetby Top	129	32	1395	730	0.177	129	167	0.1	0.2	6.768	A
5 - A15	1268	317	154	2322	0.546	1267	1370	0.9	1.3	3.659	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	939	235	1195	1182	0.794	928	541	1.2	3.9	14.962	B
2 - A18	723	181	1418	807	0.896	701	705	1.2	6.7	31.107	D
3 - M180 West	667	167	1228	898	0.743	659	891	0.9	2.9	15.783	C
4 - Barnetby Top	159	40	1686	468	0.339	157	202	0.2	0.6	13.045	B
5 - A15	1554	388	186	2287	0.679	1550	1657	1.3	2.2	5.221	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	939	235	1198	1179	0.797	938	544	3.9	4.1	16.305	C
2 - A18	723	181	1427	795	0.910	717	709	6.7	8.2	43.519	E
3 - M180 West	667	167	1246	876	0.761	666	898	2.9	3.3	18.297	C
4 - Barnetby Top	159	40	1708	448	0.354	158	204	0.6	0.6	14.036	B
5 - A15	1554	388	189	2284	0.680	1553	1678	2.2	2.3	5.293	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	767	192	982	1427	0.537	778	449	4.1	1.3	6.183	A
2 - A18	591	148	1177	1097	0.539	618	583	8.2	1.2	8.356	A
3 - M180 West	545	136	1048	1121	0.486	554	748	3.3	1.0	6.964	A
4 - Barnetby Top	129	32	1430	697	0.186	131	171	0.6	0.3	7.198	A
5 - A15	1268	317	159	2317	0.547	1272	1403	2.3	1.3	3.712	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - M180 East	642	161	821	1612	0.398	644	373	1.3	0.7	4.087	A
2 - A18	495	124	979	1335	0.371	497	486	1.2	0.6	4.527	A
3 - M180 West	456	114	859	1354	0.337	458	618	1.0	0.6	4.353	A
4 - Barnetby Top	108	27	1176	926	0.117	109	141	0.3	0.2	4.983	A
5 - A15	1062	266	130	2350	0.452	1064	1155	1.3	0.9	3.013	A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: J5 A1060_A1733_HumberRd.j10
Path: \\na.aecomnet.com\lfs\EMEA\Leeds-UKLDS2\Legacy\UKLDS2PFPSW001\WIP\LE_Projects\Newproje\60668866 - Humber Zero\400_Technical\Traffic & Transport\NH Comments 10.01.24\Junction Modelling\Modelling June 2024
Report generation date: 10/06/2024 10:35:37

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2025 Base									
1 - Humber Road	D1	0.5	4.10	0.22	A	D2	1.1	4.60	0.44	A
2 - Manby Road		0.5	2.76	0.29	A		0.3	2.55	0.18	A
3 - Phillips 66		0.0	0.00	0.00	A		0.0	6.69	0.01	A
4 - A160 West		0.6	3.60	0.32	A		0.5	3.35	0.25	A
5 - Conoco Access		0.0	1.93	0.00	A		0.0	0.00	0.00	A
	2025 Base + Committed									
1 - Humber Road	D3	0.5	4.05	0.23	A	D4	1.6	5.57	0.54	A
2 - Manby Road		0.6	3.03	0.35	A		0.3	2.69	0.19	A
3 - Phillips 66		0.0	0.00	0.00	A		0.0	7.18	0.01	A
4 - A160 West		0.8	4.02	0.36	A		0.6	3.68	0.30	A
5 - Conoco Access		0.0	2.04	0.00	A		0.0	0.00	0.00	A
	2025 Base + Committed + Proposed									
1 - Humber Road	D5	0.5	4.18	0.23	A	D6	1.7	5.76	0.55	A
2 - Manby Road		0.6	3.02	0.35	A		0.3	2.71	0.19	A
3 - Phillips 66		0.0	0.00	0.00	A		0.0	7.24	0.01	A
4 - A160 West		0.9	4.16	0.38	A		0.6	3.69	0.30	A
5 - Conoco Access		0.0	2.07	0.00	A		0.0	0.00	0.00	A

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

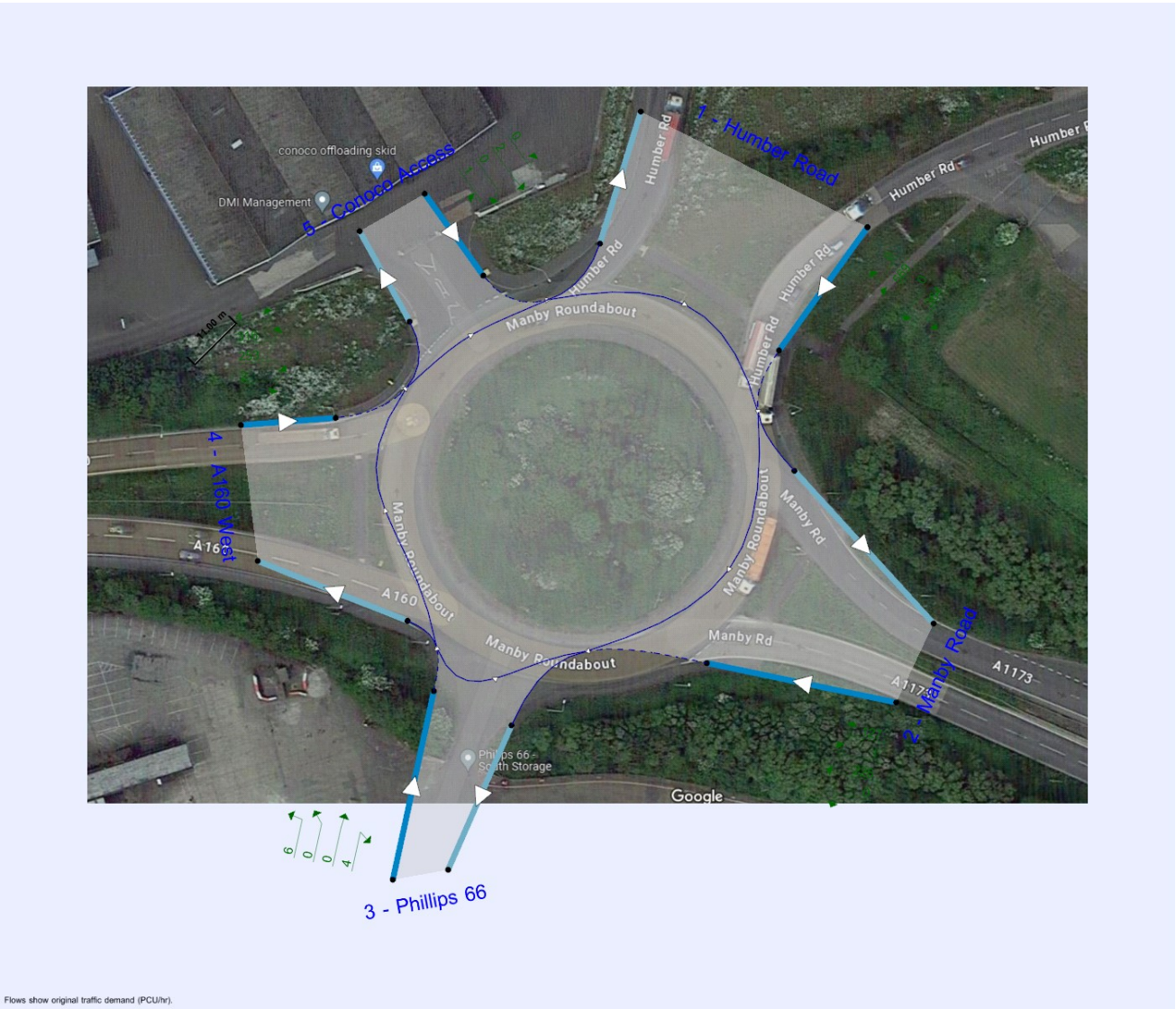
File summary

File Description

Title	
Location	
Site number	
Date	17/01/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NA\SimmonsA1
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2025 Base	AM	ONE HOUR	06:45	08:15	15
D2	2025 Base	PM	ONE HOUR	15:45	17:15	15
D3	2025 Base + Committed	AM	ONE HOUR	06:45	08:15	15
D4	2025 Base + Committed	PM	ONE HOUR	15:45	17:15	15
D5	2025 Base + Committed + Proposed	AM	ONE HOUR	06:45	08:15	15
D6	2025 Base + Committed + Proposed	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2025 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1060 A1733 Humber Road	Standard Roundabout		1, 2, 3, 4, 5	3.40	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.40	A

Arms

Arms

Arm	Name	Description	No give-way line
1	Humber Road		
2	Manby Road		
3	Phillips 66		
4	A160 West		
5	Conoco Access		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - Humber Road	7.01	7.85	22.3	35.0	85.6	36.0		
2 - Manby Road	7.11	8.73	4.4	57.3	85.6	30.0		
3 - Phillips 66	2.98	8.16	4.6	17.2	85.6	33.0		
4 - A160 West	6.38	8.73	1.6	21.0	85.6	41.0		
5 - Conoco Access	7.83	8.15	15.0	9.7	85.6	52.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final slope	Final intercept (PCU/hr)
1 - Humber Road	✓	0.521	2121	0.521	2121
2 - Manby Road	✓	0.576	2453	0.576	2453
3 - Phillips 66	✓	0.387	1220	0.387	1220
4 - A160 West	✓	0.527	2218	0.527	2218
5 - Conoco Access	✓	0.538	2426	0.538	2426

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2025 Base	AM	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Humber Road		✓	399	100.000
2 - Manby Road		✓	587	100.000
3 - Phillips 66		✓	0	100.000
4 - A160 West		✓	576	100.000
5 - Conoco Access		✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	13	61	0	324	1
	2 - Manby Road	345	0	0	241	1
	3 - Phillips 66	0	0	0	0	0
	4 - A160 West	383	188	2	0	3
	5 - Conoco Access	4	0	0	2	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	42	38	100	92	0
	2 - Manby Road	22	67	100	22	0
	3 - Phillips 66	100	0	0	0	0
	4 - A160 West	48	19	100	67	100
	5 - Conoco Access	0	0	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - Humber Road	300	300
	2 - Manby Road	442	442
	3 - Phillips 66	0	0
	4 - A160 West	434	434
	5 - Conoco Access	5	5
07:00-07:15	1 - Humber Road	359	359
	2 - Manby Road	528	528
	3 - Phillips 66	0	0
	4 - A160 West	518	518
	5 - Conoco Access	5	5
07:15-07:30	1 - Humber Road	439	439
	2 - Manby Road	646	646
	3 - Phillips 66	0	0
	4 - A160 West	634	634
	5 - Conoco Access	7	7
07:30-07:45	1 - Humber Road	439	439
	2 - Manby Road	646	646
	3 - Phillips 66	0	0
	4 - A160 West	634	634
	5 - Conoco Access	7	7
07:45-08:00	1 - Humber Road	359	359
	2 - Manby Road	528	528
	3 - Phillips 66	0	0
	4 - A160 West	518	518
	5 - Conoco Access	5	5
08:00-08:15	1 - Humber Road	300	300
	2 - Manby Road	442	442
	3 - Phillips 66	0	0
	4 - A160 West	434	434
	5 - Conoco Access	5	5

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Humber Road	0.22	4.10	0.5	A
2 - Manby Road	0.29	2.76	0.5	A
3 - Phillips 66	0.00	0.00	0.0	A
4 - A160 West	0.32	3.60	0.6	A
5 - Conoco Access	0.00	1.93	0.0	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	300	144	2046	0.147	299	0.3	3.684	A
2 - Manby Road	442	256	2305	0.192	441	0.3	2.353	A
3 - Phillips 66	0	696	951	0.000	0	0.0	0.000	A
4 - A160 West	434	270	2076	0.209	432	0.4	3.006	A
5 - Conoco Access	5	699	2050	0.002	5	0.0	1.759	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	359	172	2031	0.177	358	0.4	3.849	A
2 - Manby Road	528	307	2276	0.232	527	0.4	2.510	A
3 - Phillips 66	0	833	898	0.000	0	0.0	0.000	A
4 - A160 West	518	323	2048	0.253	517	0.5	3.232	A
5 - Conoco Access	5	836	1976	0.003	5	0.0	1.825	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	439	211	2011	0.218	439	0.5	4.094	A
2 - Manby Road	646	376	2236	0.289	646	0.5	2.760	A
3 - Phillips 66	0	1020	825	0.000	0	0.0	0.000	A
4 - A160 West	634	396	2009	0.316	634	0.6	3.592	A
5 - Conoco Access	7	1024	1875	0.004	7	0.0	1.926	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	439	211	2011	0.218	439	0.5	4.096	A
2 - Manby Road	646	377	2236	0.289	646	0.5	2.760	A
3 - Phillips 66	0	1021	825	0.000	0	0.0	0.000	A
4 - A160 West	634	396	2009	0.316	634	0.6	3.596	A
5 - Conoco Access	7	1025	1875	0.004	7	0.0	1.927	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	359	173	2031	0.177	359	0.4	3.853	A
2 - Manby Road	528	308	2276	0.232	528	0.4	2.514	A
3 - Phillips 66	0	834	897	0.000	0	0.0	0.000	A
4 - A160 West	518	324	2047	0.253	518	0.5	3.238	A
5 - Conoco Access	5	838	1975	0.003	5	0.0	1.829	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	300	145	2046	0.147	301	0.3	3.689	A
2 - Manby Road	442	258	2305	0.192	442	0.3	2.357	A
3 - Phillips 66	0	698	950	0.000	0	0.0	0.000	A
4 - A160 West	434	271	2075	0.209	434	0.4	3.013	A
5 - Conoco Access	5	702	2049	0.002	5	0.0	1.760	A

2025 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1060 A1733 Humber Road	Standard Roundabout		1, 2, 3, 4, 5	3.81	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.81	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2025 Base	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Humber Road		✓	792	100.000
2 - Manby Road		✓	344	100.000
3 - Phillips 66		✓	10	100.000
4 - A160 West		✓	489	100.000
5 - Conoco Access		✓	3	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	51	316	0	425	0
	2 - Manby Road	120	0	0	223	1
	3 - Phillips 66	0	4	0	6	0
	4 - A160 West	233	250	2	0	4
	5 - Conoco Access	0	2	0	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	37	21	0	61	0
	2 - Manby Road	37	9	100	20	0
	3 - Phillips 66	0	50	0	67	0
	4 - A160 West	91	20	75	40	100
	5 - Conoco Access	0	0	0	100	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - Humber Road	596	596
	2 - Manby Road	259	259
	3 - Phillips 66	8	8
	4 - A160 West	368	368
	5 - Conoco Access	0	0
16:00-16:15	1 - Humber Road	712	712
	2 - Manby Road	309	309
	3 - Phillips 66	9	9
	4 - A160 West	440	440
	5 - Conoco Access	0	0
16:15-16:30	1 - Humber Road	872	872
	2 - Manby Road	379	379
	3 - Phillips 66	11	11
	4 - A160 West	538	538
	5 - Conoco Access	0	0
16:30-16:45	1 - Humber Road	872	872
	2 - Manby Road	379	379
	3 - Phillips 66	11	11
	4 - A160 West	538	538
	5 - Conoco Access	0	0
16:45-17:00	1 - Humber Road	712	712
	2 - Manby Road	309	309
	3 - Phillips 66	9	9
	4 - A160 West	440	440
	5 - Conoco Access	0	0
17:00-17:15	1 - Humber Road	596	596
	2 - Manby Road	259	259
	3 - Phillips 66	8	8
	4 - A160 West	368	368
	5 - Conoco Access	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Humber Road	0.44	4.60	1.1	A
2 - Manby Road	0.18	2.55	0.3	A
3 - Phillips 66	0.01	6.69	0.0	A
4 - A160 West	0.25	3.35	0.5	A
5 - Conoco Access	0.00	0.00	0.0	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	596	192	2021	0.295	594	0.6	3.546	A
2 - Manby Road	259	358	2247	0.115	258	0.2	2.270	A
3 - Phillips 66	8	615	982	0.008	7	0.0	5.901	A
4 - A160 West	368	132	2148	0.171	367	0.3	2.962	A
5 - Conoco Access	0	495	2160	0.000	0	0.0	0.000	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	712	230	2001	0.356	711	0.8	3.927	A
2 - Manby Road	309	429	2206	0.140	309	0.2	2.379	A
3 - Phillips 66	9	737	935	0.010	9	0.0	6.210	A
4 - A160 West	440	158	2135	0.206	439	0.4	3.113	A
5 - Conoco Access	0	593	2107	0.000	0	0.0	0.000	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	872	282	1974	0.442	871	1.1	4.588	A
2 - Manby Road	379	525	2150	0.176	378	0.3	2.546	A
3 - Phillips 66	11	902	871	0.013	11	0.0	6.686	A
4 - A160 West	538	194	2116	0.254	538	0.5	3.345	A
5 - Conoco Access	0	726	2035	0.000	0	0.0	0.000	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	872	282	1974	0.442	872	1.1	4.599	A
2 - Manby Road	379	526	2150	0.176	379	0.3	2.547	A
3 - Phillips 66	11	903	871	0.013	11	0.0	6.689	A
4 - A160 West	538	194	2116	0.254	538	0.5	3.345	A
5 - Conoco Access	0	727	2035	0.000	0	0.0	0.000	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	712	230	2001	0.356	713	0.8	3.942	A
2 - Manby Road	309	430	2205	0.140	309	0.2	2.380	A
3 - Phillips 66	9	738	934	0.010	9	0.0	6.214	A
4 - A160 West	440	158	2135	0.206	440	0.4	3.115	A
5 - Conoco Access	0	594	2106	0.000	0	0.0	0.000	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	596	193	2021	0.295	597	0.6	3.562	A
2 - Manby Road	259	360	2245	0.115	259	0.2	2.271	A
3 - Phillips 66	8	618	981	0.008	8	0.0	5.910	A
4 - A160 West	368	133	2148	0.171	368	0.3	2.966	A
5 - Conoco Access	0	497	2158	0.000	0	0.0	0.000	A

2025 Base + Committed, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1060 A1733 Humber Road	Standard Roundabout		1, 2, 3, 4, 5	3.63	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.63	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2025 Base + Committed	AM	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Humber Road		✓	423	100.000
2 - Manby Road		✓	700	100.000
3 - Phillips 66		✓	0	100.000
4 - A160 West		✓	636	100.000
5 - Conoco Access		✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	13	61	4	326	19
	2 - Manby Road	456	0	0	243	1
	3 - Phillips 66	0	0	0	0	0
	4 - A160 West	434	197	2	0	3
	5 - Conoco Access	4	0	0	2	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	42	38	100	92	0
	2 - Manby Road	22	67	100	22	0
	3 - Phillips 66	100	0	0	0	0
	4 - A160 West	48	19	100	67	100
	5 - Conoco Access	0	0	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - Humber Road	318	318
	2 - Manby Road	527	527
	3 - Phillips 66	0	0
	4 - A160 West	479	479
	5 - Conoco Access	5	5
07:00-07:15	1 - Humber Road	380	380
	2 - Manby Road	629	629
	3 - Phillips 66	0	0
	4 - A160 West	572	572
	5 - Conoco Access	5	5
07:15-07:30	1 - Humber Road	466	466
	2 - Manby Road	771	771
	3 - Phillips 66	0	0
	4 - A160 West	700	700
	5 - Conoco Access	7	7
07:30-07:45	1 - Humber Road	466	466
	2 - Manby Road	771	771
	3 - Phillips 66	0	0
	4 - A160 West	700	700
	5 - Conoco Access	7	7
07:45-08:00	1 - Humber Road	380	380
	2 - Manby Road	629	629
	3 - Phillips 66	0	0
	4 - A160 West	572	572
	5 - Conoco Access	5	5
08:00-08:15	1 - Humber Road	318	318
	2 - Manby Road	527	527
	3 - Phillips 66	0	0
	4 - A160 West	479	479
	5 - Conoco Access	5	5

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Humber Road	0.23	4.05	0.5	A
2 - Manby Road	0.35	3.03	0.6	A
3 - Phillips 66	0.00	0.00	0.0	A
4 - A160 West	0.36	4.02	0.8	A
5 - Conoco Access	0.00	2.04	0.0	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	318	151	2042	0.156	317	0.3	3.614	A
2 - Manby Road	527	274	2295	0.230	526	0.4	2.479	A
3 - Phillips 66	0	795	912	0.000	0	0.0	0.000	A
4 - A160 West	479	367	2025	0.237	477	0.4	3.205	A
5 - Conoco Access	5	827	1981	0.002	5	0.0	1.820	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	380	181	2027	0.188	380	0.4	3.786	A
2 - Manby Road	629	329	2264	0.278	629	0.5	2.685	A
3 - Phillips 66	0	952	851	0.000	0	0.0	0.000	A
4 - A160 West	572	439	1986	0.288	571	0.6	3.507	A
5 - Conoco Access	5	990	1893	0.003	5	0.0	1.905	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	466	221	2006	0.232	465	0.5	4.047	A
2 - Manby Road	771	403	2221	0.347	770	0.6	3.024	A
3 - Phillips 66	0	1166	769	0.000	0	0.0	0.000	A
4 - A160 West	700	538	1935	0.362	699	0.8	4.016	A
5 - Conoco Access	7	1212	1774	0.004	7	0.0	2.036	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	466	221	2006	0.232	466	0.5	4.049	A
2 - Manby Road	771	403	2221	0.347	771	0.6	3.026	A
3 - Phillips 66	0	1167	768	0.000	0	0.0	0.000	A
4 - A160 West	700	538	1934	0.362	700	0.8	4.021	A
5 - Conoco Access	7	1213	1773	0.004	7	0.0	2.037	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	380	181	2027	0.188	381	0.4	3.792	A
2 - Manby Road	629	329	2263	0.278	630	0.5	2.688	A
3 - Phillips 66	0	954	851	0.000	0	0.0	0.000	A
4 - A160 West	572	440	1986	0.288	573	0.6	3.512	A
5 - Conoco Access	5	992	1892	0.003	5	0.0	1.909	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	318	151	2042	0.156	319	0.3	3.619	A
2 - Manby Road	527	276	2294	0.230	527	0.4	2.487	A
3 - Phillips 66	0	799	911	0.000	0	0.0	0.000	A
4 - A160 West	479	368	2024	0.237	479	0.4	3.214	A
5 - Conoco Access	5	830	1979	0.002	5	0.0	1.822	A

2025 Base + Committed, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1060 A1733 Humber Road	Standard Roundabout		1, 2, 3, 4, 5	4.48	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.48	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2025 Base + Committed	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Humber Road		✓	970	100.000
2 - Manby Road		✓	350	100.000
3 - Phillips 66		✓	10	100.000
4 - A160 West		✓	565	100.000
5 - Conoco Access		✓	3	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	51	358	4	532	25
	2 - Manby Road	123	0	0	226	1
	3 - Phillips 66	0	4	0	6	0
	4 - A160 West	306	253	2	0	4
	5 - Conoco Access	0	2	0	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	37	21	0	61	0
	2 - Manby Road	37	9	100	20	0
	3 - Phillips 66	0	50	0	67	0
	4 - A160 West	91	20	75	40	100
	5 - Conoco Access	0	0	0	100	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - Humber Road	730	730
	2 - Manby Road	263	263
	3 - Phillips 66	8	8
	4 - A160 West	425	425
	5 - Conoco Access	0	0
16:00-16:15	1 - Humber Road	872	872
	2 - Manby Road	315	315
	3 - Phillips 66	9	9
	4 - A160 West	508	508
	5 - Conoco Access	0	0
16:15-16:30	1 - Humber Road	1068	1068
	2 - Manby Road	385	385
	3 - Phillips 66	11	11
	4 - A160 West	622	622
	5 - Conoco Access	0	0
16:30-16:45	1 - Humber Road	1068	1068
	2 - Manby Road	385	385
	3 - Phillips 66	11	11
	4 - A160 West	622	622
	5 - Conoco Access	0	0
16:45-17:00	1 - Humber Road	872	872
	2 - Manby Road	315	315
	3 - Phillips 66	9	9
	4 - A160 West	508	508
	5 - Conoco Access	0	0
17:00-17:15	1 - Humber Road	730	730
	2 - Manby Road	263	263
	3 - Phillips 66	8	8
	4 - A160 West	425	425
	5 - Conoco Access	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Humber Road	0.54	5.57	1.6	A
2 - Manby Road	0.19	2.69	0.3	A
3 - Phillips 66	0.01	7.18	0.0	A
4 - A160 West	0.30	3.68	0.6	A
5 - Conoco Access	0.00	0.00	0.0	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	730	194	2020	0.362	727	0.8	3.891	A
2 - Manby Road	263	460	2188	0.120	263	0.2	2.345	A
3 - Phillips 66	8	719	942	0.008	7	0.0	6.154	A
4 - A160 West	425	153	2137	0.199	424	0.4	3.169	A
5 - Conoco Access	0	554	2128	0.000	0	0.0	0.000	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	872	233	2000	0.436	871	1.1	4.461	A
2 - Manby Road	315	551	2135	0.147	314	0.2	2.478	A
3 - Phillips 66	9	860	887	0.010	9	0.0	6.549	A
4 - A160 West	508	183	2121	0.239	508	0.5	3.368	A
5 - Conoco Access	0	664	2069	0.000	0	0.0	0.000	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	1068	285	1973	0.541	1066	1.6	5.547	A
2 - Manby Road	385	675	2064	0.187	385	0.3	2.688	A
3 - Phillips 66	11	1053	812	0.014	11	0.0	7.175	A
4 - A160 West	622	224	2100	0.296	621	0.6	3.674	A
5 - Conoco Access	0	813	1989	0.000	0	0.0	0.000	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	1068	285	1972	0.541	1068	1.6	5.574	A
2 - Manby Road	385	676	2064	0.187	385	0.3	2.689	A
3 - Phillips 66	11	1055	812	0.014	11	0.0	7.180	A
4 - A160 West	622	225	2100	0.296	622	0.6	3.677	A
5 - Conoco Access	0	814	1988	0.000	0	0.0	0.000	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	872	233	2000	0.436	874	1.1	4.489	A
2 - Manby Road	315	553	2134	0.147	315	0.2	2.481	A
3 - Phillips 66	9	863	886	0.010	9	0.0	6.559	A
4 - A160 West	508	184	2121	0.239	509	0.5	3.373	A
5 - Conoco Access	0	665	2068	0.000	0	0.0	0.000	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	730	195	2019	0.362	731	0.8	3.920	A
2 - Manby Road	263	463	2186	0.121	264	0.2	2.347	A
3 - Phillips 66	8	722	941	0.008	8	0.0	6.163	A
4 - A160 West	425	154	2137	0.199	426	0.4	3.176	A
5 - Conoco Access	0	557	2126	0.000	0	0.0	0.000	A

2025 Base + Committed + Proposed, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1060 A1733 Humber Road	Standard Roundabout		1, 2, 3, 4, 5	3.71	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.71	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2025 Base + Committed + Proposed	AM	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Humber Road		✓	423	100.000
2 - Manby Road		✓	702	100.000
3 - Phillips 66		✓	0	100.000
4 - A160 West		✓	677	100.000
5 - Conoco Access		✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	13	65	0	344	1
	2 - Manby Road	458	0	0	243	1
	3 - Phillips 66	0	0	0	0	0
	4 - A160 West	477	197	0	0	3
	5 - Conoco Access	4	0	0	2	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	42	38	100	92	0
	2 - Manby Road	22	67	100	22	0
	3 - Phillips 66	100	0	0	0	0
	4 - A160 West	48	19	100	67	100
	5 - Conoco Access	0	0	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - Humber Road	318	318
	2 - Manby Road	529	529
	3 - Phillips 66	0	0
	4 - A160 West	510	510
	5 - Conoco Access	5	5
07:00-07:15	1 - Humber Road	380	380
	2 - Manby Road	631	631
	3 - Phillips 66	0	0
	4 - A160 West	609	609
	5 - Conoco Access	5	5
07:15-07:30	1 - Humber Road	466	466
	2 - Manby Road	773	773
	3 - Phillips 66	0	0
	4 - A160 West	745	745
	5 - Conoco Access	7	7
07:30-07:45	1 - Humber Road	466	466
	2 - Manby Road	773	773
	3 - Phillips 66	0	0
	4 - A160 West	745	745
	5 - Conoco Access	7	7
07:45-08:00	1 - Humber Road	380	380
	2 - Manby Road	631	631
	3 - Phillips 66	0	0
	4 - A160 West	609	609
	5 - Conoco Access	5	5
08:00-08:15	1 - Humber Road	318	318
	2 - Manby Road	529	529
	3 - Phillips 66	0	0
	4 - A160 West	510	510
	5 - Conoco Access	5	5

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Humber Road	0.23	4.18	0.5	A
2 - Manby Road	0.35	3.02	0.6	A
3 - Phillips 66	0.00	0.00	0.0	A
4 - A160 West	0.38	4.16	0.9	A
5 - Conoco Access	0.00	2.07	0.0	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	318	149	2043	0.156	317	0.3	3.730	A
2 - Manby Road	529	270	2298	0.230	527	0.4	2.477	A
3 - Phillips 66	0	797	912	0.000	0	0.0	0.000	A
4 - A160 West	510	355	2031	0.251	508	0.5	3.265	A
5 - Conoco Access	5	859	1964	0.002	5	0.0	1.836	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	380	179	2028	0.188	380	0.4	3.907	A
2 - Manby Road	631	323	2267	0.278	631	0.5	2.683	A
3 - Phillips 66	0	954	851	0.000	0	0.0	0.000	A
4 - A160 West	609	425	1994	0.305	608	0.6	3.591	A
5 - Conoco Access	5	1028	1873	0.003	5	0.0	1.927	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	466	219	2007	0.232	465	0.5	4.177	A
2 - Manby Road	773	396	2225	0.347	772	0.6	3.020	A
3 - Phillips 66	0	1168	768	0.000	0	0.0	0.000	A
4 - A160 West	745	520	1944	0.383	744	0.9	4.149	A
5 - Conoco Access	7	1259	1749	0.004	7	0.0	2.066	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	466	219	2007	0.232	466	0.5	4.179	A
2 - Manby Road	773	396	2225	0.347	773	0.6	3.023	A
3 - Phillips 66	0	1169	767	0.000	0	0.0	0.000	A
4 - A160 West	745	521	1944	0.384	745	0.9	4.156	A
5 - Conoco Access	7	1261	1748	0.004	7	0.0	2.067	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	380	179	2028	0.188	381	0.4	3.913	A
2 - Manby Road	631	324	2266	0.278	632	0.5	2.686	A
3 - Phillips 66	0	956	850	0.000	0	0.0	0.000	A
4 - A160 West	609	426	1994	0.305	610	0.6	3.602	A
5 - Conoco Access	5	1031	1871	0.003	5	0.0	1.930	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	318	150	2043	0.156	319	0.3	3.738	A
2 - Manby Road	529	271	2297	0.230	529	0.4	2.483	A
3 - Phillips 66	0	800	910	0.000	0	0.0	0.000	A
4 - A160 West	510	356	2030	0.251	510	0.5	3.277	A
5 - Conoco Access	5	863	1962	0.002	5	0.0	1.838	A

2025 Base + Committed + Proposed, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1060 A1733 Humber Road	Standard Roundabout		1, 2, 3, 4, 5	4.59	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.59	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2025 Base + Committed + Proposed	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Humber Road		✓	984	100.000
2 - Manby Road		✓	354	100.000
3 - Phillips 66		✓	10	100.000
4 - A160 West		✓	575	100.000
5 - Conoco Access		✓	3	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	51	364	0	569	0
	2 - Manby Road	127	0	0	226	1
	3 - Phillips 66	0	4	0	6	0
	4 - A160 West	316	253	2	0	4
	5 - Conoco Access	0	2	0	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Humber Road	2 - Manby Road	3 - Phillips 66	4 - A160 West	5 - Conoco Access
From	1 - Humber Road	37	21	0	61	0
	2 - Manby Road	37	9	100	20	0
	3 - Phillips 66	0	50	0	67	0
	4 - A160 West	91	20	75	40	100
	5 - Conoco Access	0	0	0	100	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
15:45-16:00	1 - Humber Road	741	741
	2 - Manby Road	267	267
	3 - Phillips 66	8	8
	4 - A160 West	433	433
	5 - Conoco Access	0	0
16:00-16:15	1 - Humber Road	885	885
	2 - Manby Road	318	318
	3 - Phillips 66	9	9
	4 - A160 West	517	517
	5 - Conoco Access	0	0
16:15-16:30	1 - Humber Road	1083	1083
	2 - Manby Road	390	390
	3 - Phillips 66	11	11
	4 - A160 West	633	633
	5 - Conoco Access	0	0
16:30-16:45	1 - Humber Road	1083	1083
	2 - Manby Road	390	390
	3 - Phillips 66	11	11
	4 - A160 West	633	633
	5 - Conoco Access	0	0
16:45-17:00	1 - Humber Road	885	885
	2 - Manby Road	318	318
	3 - Phillips 66	9	9
	4 - A160 West	517	517
	5 - Conoco Access	0	0
17:00-17:15	1 - Humber Road	741	741
	2 - Manby Road	267	267
	3 - Phillips 66	8	8
	4 - A160 West	433	433
	5 - Conoco Access	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Humber Road	0.55	5.76	1.7	A
2 - Manby Road	0.19	2.71	0.3	A
3 - Phillips 66	0.01	7.24	0.0	A
4 - A160 West	0.30	3.69	0.6	A
5 - Conoco Access	0.00	0.00	0.0	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	741	194	2020	0.367	738	0.8	3.986	A
2 - Manby Road	267	466	2184	0.122	266	0.2	2.355	A
3 - Phillips 66	8	731	937	0.008	7	0.0	6.185	A
4 - A160 West	433	137	2146	0.202	431	0.4	3.179	A
5 - Conoco Access	0	565	2122	0.000	0	0.0	0.000	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	885	233	2000	0.442	883	1.1	4.584	A
2 - Manby Road	318	558	2131	0.149	318	0.2	2.491	A
3 - Phillips 66	9	875	882	0.010	9	0.0	6.590	A
4 - A160 West	517	164	2131	0.243	517	0.5	3.378	A
5 - Conoco Access	0	676	2062	0.000	0	0.0	0.000	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	1083	285	1973	0.549	1081	1.7	5.731	A
2 - Manby Road	390	683	2059	0.189	389	0.3	2.705	A
3 - Phillips 66	11	1071	806	0.014	11	0.0	7.236	A
4 - A160 West	633	201	2112	0.300	632	0.6	3.685	A
5 - Conoco Access	0	828	1980	0.000	0	0.0	0.000	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	1083	285	1972	0.549	1083	1.7	5.761	A
2 - Manby Road	390	685	2059	0.189	390	0.3	2.707	A
3 - Phillips 66	11	1072	805	0.014	11	0.0	7.242	A
4 - A160 West	633	201	2112	0.300	633	0.6	3.688	A
5 - Conoco Access	0	829	1980	0.000	0	0.0	0.000	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	885	233	2000	0.442	887	1.1	4.613	A
2 - Manby Road	318	561	2130	0.149	319	0.2	2.496	A
3 - Phillips 66	9	877	880	0.010	9	0.0	6.601	A
4 - A160 West	517	165	2131	0.243	518	0.5	3.381	A
5 - Conoco Access	0	678	2061	0.000	0	0.0	0.000	A

17:00 - 17:15

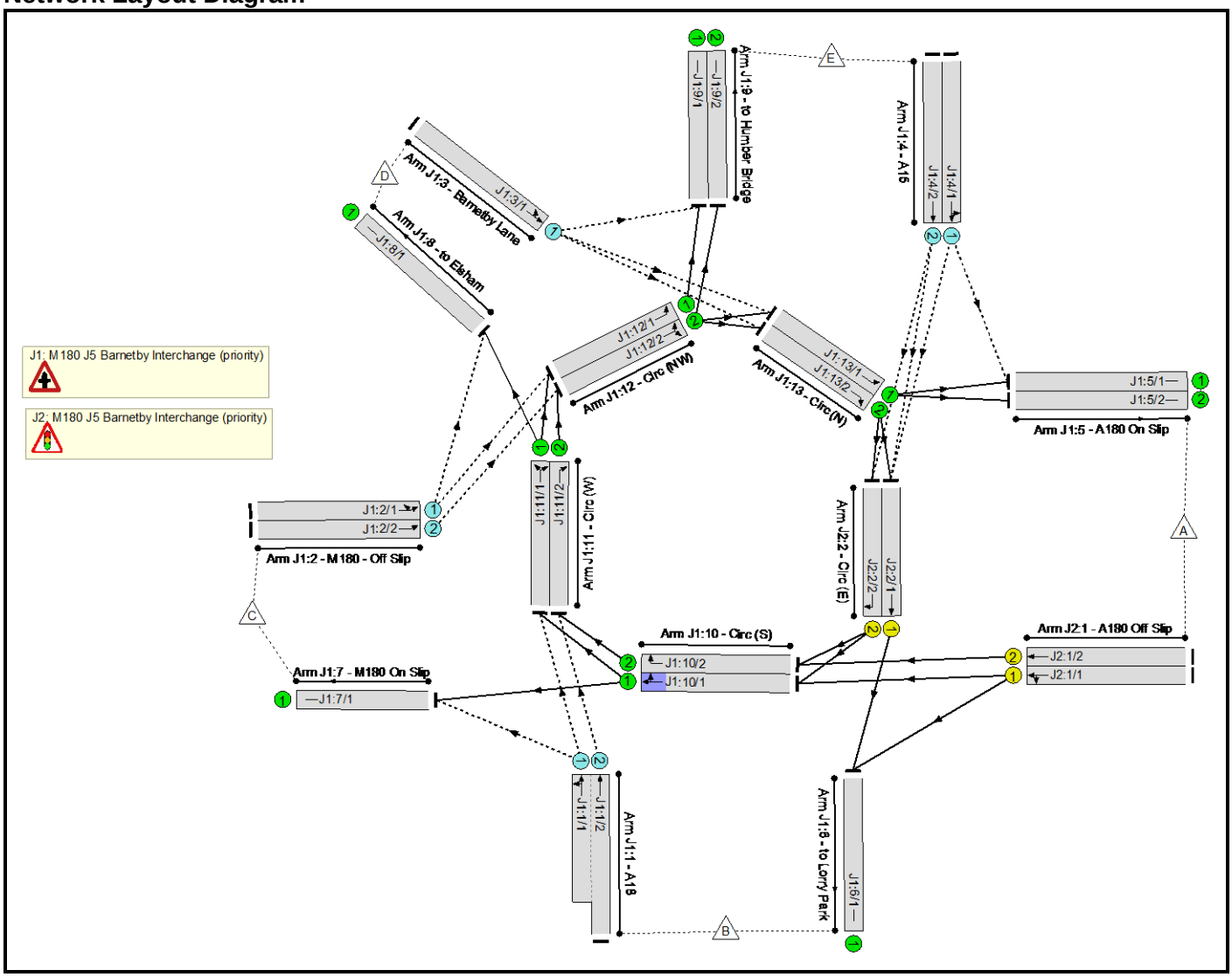
Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Humber Road	741	195	2019	0.367	742	0.8	4.014	A
2 - Manby Road	267	469	2183	0.122	267	0.2	2.359	A
3 - Phillips 66	8	734	936	0.008	8	0.0	6.197	A
4 - A160 West	433	138	2145	0.202	433	0.4	3.189	A
5 - Conoco Access	0	567	2121	0.000	0	0.0	0.000	A

Full Input Data And Results

User and Project Details

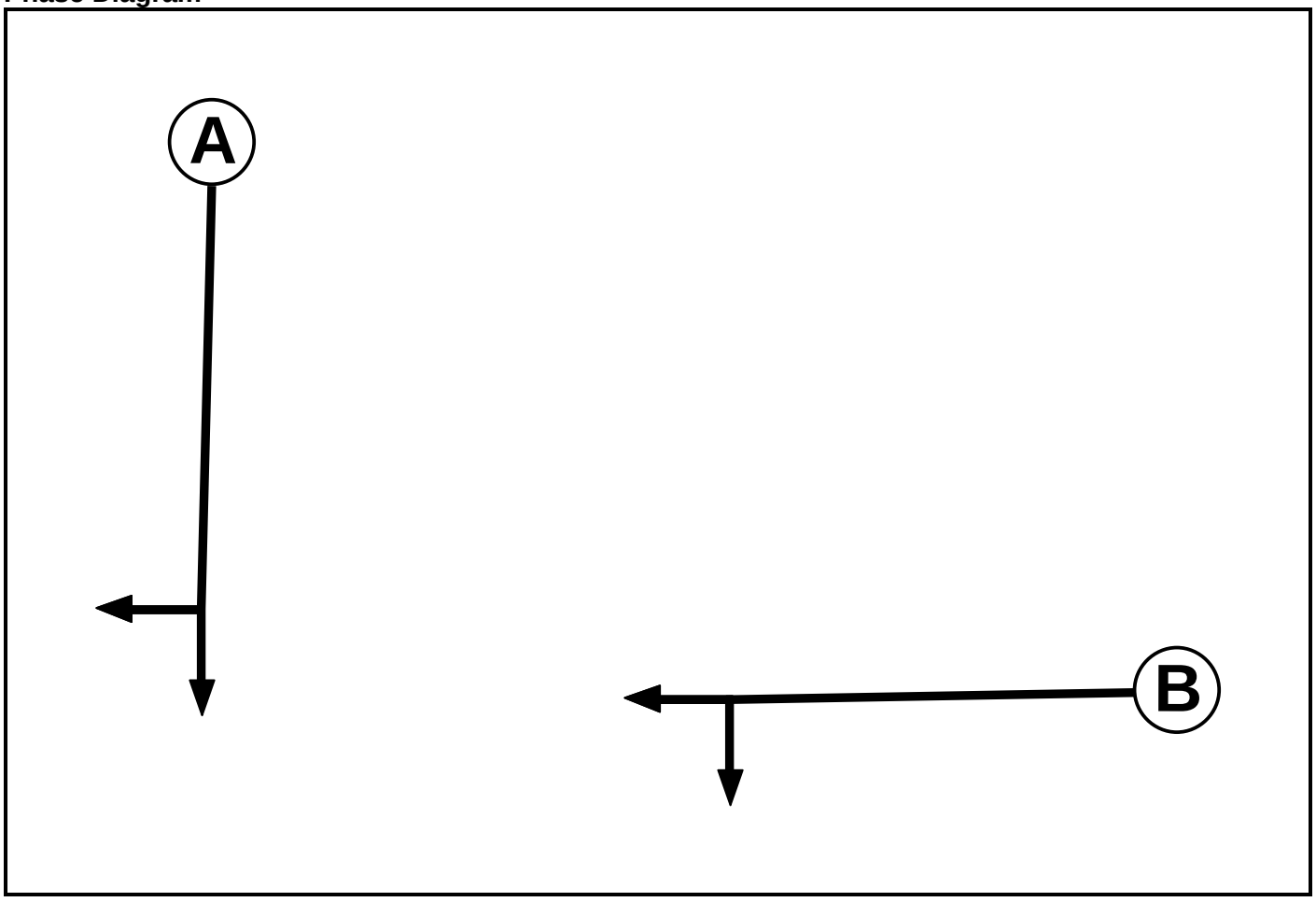
File name:	Barnetby Top Mitigation AM.lsg3x

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7

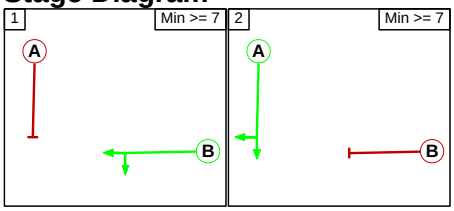
Phase Intergreens Matrix

	Starting Phase		
Terminating Phase		A	B
	A		6
	B	10	

Phases in Stage

Stage No.	Phases in Stage
1	B
2	A

Stage Diagram



Full Input Data And Results

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
From Stage		1	2
	1		10
	2	6	

Full Input Data And Results

Give-Way Lane Input Data

Junction: J1: M180 J5 Barnetby Interchange (priority)											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
J1:1/1 (A18)	J1:7/1 (Left)	1274	0	J1:10/1	0.70	All	-	-	-	-	-
				J1:10/2	0.70	All					
	J1:11/1 (Ahead)	1274	0	J1:10/1	0.70	All					
				J1:10/2	0.70	All					
J1:1/2 (A18)	J1:11/2 (Ahead)	1274	0	J1:10/1	0.70	All	-	-	-	-	-
				J1:10/2	0.70	All					
J1:2/1 (M180 - Off Slip)	J1:8/1 (U-Turn)	1246	0	J1:11/1	0.72	All	-	-	-	-	-
				J1:11/2	0.72	All					
	J1:12/1 (Ahead)	1246	0	J1:11/1	0.72	All					
				J1:11/2	0.72	All					
J1:2/2 (M180 - Off Slip)	J1:12/2 (Ahead)	1246	0	J1:11/1	0.72	All	-	-	-	-	-
				J1:11/2	0.72	All					
J1:3/1 (Barnetby Lane)	J1:9/1 (Left)	1934	0	J1:12/1	0.95	All	-	-	-	-	-
				J1:12/2	0.95	All					
	J1:13/1 (Ahead)	1934	0	J1:12/1	0.95	All					
				J1:12/2	0.95	All					
	J1:13/2 (Ahead)	1934	0	J1:12/1	0.95	All					
				J1:12/2	0.95	All					
J1:4/1 (A15)	J1:5/1 (Left)	1205	0	J1:13/1	0.75	All	-	-	-	-	-
				J1:13/2	0.75	All					
	J2:2/1 (Ahead)	1205	0	J1:13/1	0.75	All					
				J1:13/2	0.75	All					
J1:4/2	J2:2/1 (Ahead)	1205	0	J1:13/1	0.75	All	-	-	-	-	-

(A15)				J1:13/2	0.75	All					
	J2:2/2 (Ahead)	1205	0	J1:13/1	0.75	All					
				J1:13/2	0.75	All					

Junction: J2: M180 J5 Barnetby Interchange (priority)
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: J1: M180 J5 Barnetby Interchange (priority)												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
J1:1/1 (A18)	O		2	3	12.0	User	1900	-	-	-	-	-
J1:1/2 (A18)	O		2	3	27.0	User	1900	-	-	-	-	-
J1:2/1 (M180 - Off Slip)	O		2	3	58.0	User	1900	-	-	-	-	-
J1:2/2 (M180 - Off Slip)	O		2	3	58.0	User	1900	-	-	-	-	-
J1:3/1 (Barnetby Lane)	O		2	3	60.0	Geom	-	3.25	0.00	Y	Arm J1:9 Left	21.00
											Arm J1:13 Ahead	107.00
J1:4/1 (A15)	O		2	3	60.0	User	1900	-	-	-	-	-
J1:4/2 (A15)	O		2	3	60.0	User	1900	-	-	-	-	-
J1:5/1 (A180 On Slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:5/2 (A180 On Slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:6/1 (to Lorry Park)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:7/1 (M180 On Slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:8/1 (to Elsham)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:9/1 (to Humber Bridge)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:9/2 (to Humber Bridge)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:10/1 (Circ (S))	U		2	3	20.9	User	1900	-	-	-	-	-
J1:10/2 (Circ (S))	U		2	3	20.9	User	1900	-	-	-	-	-
J1:11/1 (Circ (W))	U		2	3	30.6	User	1900	-	-	-	-	-
J1:11/2 (Circ (W))	U		2	3	30.6	User	1900	-	-	-	-	-
J1:12/1 (Circ (NW))	U		2	3	9.4	User	1900	-	-	-	-	-

J1:12/2 (Circ (NW))	U		2	3	9.4	User	1900	-	-	-	-	-
J1:13/1 (Circ (N))	U		2	3	13.0	User	1900	-	-	-	-	-
J1:13/2 (Circ (N))	U		2	3	13.0	User	1900	-	-	-	-	-

Junction: J2: M180 J5 Barnetby Interchange (priority)

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
J2:1/1 (A180 Off Slip)	U	B	2	3	53.0	Geom	-	3.65	1.00	Y	Arm J1:6 Left Arm J1:10 Ahead	180.00 Inf
J2:1/2 (A180 Off Slip)	U	B	2	3	53.0	Geom	-	3.65	1.00	Y	Arm J1:10 Ahead	180.00
J2:2/1 (Circ (E))	U	A	2	3	20.0	Geom	-	3.65	0.00	Y	Arm J1:6 Ahead	90.00
J2:2/2 (Circ (E))	U	A	2	3	20.0	Geom	-	3.65	0.00	Y	Arm J1:10 Right	90.00

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM 2024 With Lorry Park'	07:45	08:45	01:00	
2: 'AM 2024 With Lorry Park + Proposed Dev'	07:45	08:45	01:00	

Scenario 1: 'AM 2024 With Lorry Park' (FG1: 'AM 2024 With Lorry Park', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	231	0	28	428	687
	B	207	0	523	31	471	1232
	C	1	358	0	34	598	991
	D	42	34	48	0	40	164
	E	557	356	548	47	0	1508
	Tot.	807	979	1119	140	1537	4582

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: AM 2024 With Lorry Park
Junction: J1: M180 J5 Barnetby Interchange (priority)	
J1:1/1 (short)	616
J1:1/2 (with short)	1232(In) 616(Out)
J1:2/1	495
J1:2/2	496
J1:3/1	164
J1:4/1	753
J1:4/2	755
J1:5/1	681
J1:5/2	126
J1:6/1	979
J1:7/1	1119
J1:8/1	140
J1:9/1	648
J1:9/2	889
J1:10/1	756
J1:10/2	343
J1:11/1	253
J1:11/2	959
J1:12/1	608
J1:12/2	1455
J1:13/1	250
J1:13/2	440
Junction: J2: M180 J5 Barnetby Interchange (priority)	
J2:1/1	344
J2:1/2	343
J2:2/1	748
J2:2/2	643

Full Input Data And Results

Lane Saturation Flows

Junction: J1: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (A18 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:1/2 (A18 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/1 (M180 - Off Slip Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/2 (M180 - Off Slip Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/1 (Barnetby Lane)	3.25	0.00	Y	Arm J1:9 Left	21.00	24.4 %	1887	1887
				Arm J1:13 Ahead	107.00	75.6 %		
J1:4/1 (A15 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/2 (A15 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:5/1 (A180 On Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:5/2 (A180 On Slip Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (to Lorry Park Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/1 (M180 On Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:8/1 (to Elsham Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/1 (to Humber Bridge Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/2 (to Humber Bridge Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:10/1 (Circ (S) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:10/2 (Circ (S) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/1 (Circ (W) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2 (Circ (W) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Circ (NW) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/2 (Circ (NW) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/1 (Circ (N) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/2 (Circ (N) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Junction: J2: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (A180 Off Slip)	3.65	1.00	Y	Arm J1:6 Left	180.00	67.2 %	1927	1927
				Arm J1:10 Ahead	Inf	32.8 %		
J2:1/2 (A180 Off Slip)	3.65	1.00	Y	Arm J1:10 Ahead	180.00	100.0 %	1922	1922
J2:2/1 (Circ (E))	3.65	0.00	Y	Arm J1:6 Ahead	90.00	100.0 %	1948	1948
J2:2/2 (Circ (E))	3.65	0.00	Y	Arm J1:10 Right	90.00	100.0 %	1948	1948

Scenario 2: 'AM 2024 With Lorry Park + Proposed Dev' (FG2: 'AM 2024 With Lorry Park + Proposed Dev', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	231	0	28	428	687
	B	207	0	523	31	471	1232
	C	1	358	0	34	598	991
	D	42	34	48	0	40	164
	E	640	356	548	47	0	1591
	Tot.	890	979	1119	140	1537	4665

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: AM 2024 With Lorry Park + Proposed Dev
Junction: J1: M180 J5 Barnetby Interchange (priority)	
J1:1/1 (short)	617
J1:1/2 (with short)	1232(In) 615(Out)
J1:2/1	496
J1:2/2	495
J1:3/1	164
J1:4/1	795
J1:4/2	796
J1:5/1	764
J1:5/2	126
J1:6/1	979
J1:7/1	1119
J1:8/1	140
J1:9/1	650
J1:9/2	887
J1:10/1	756
J1:10/2	343
J1:11/1	254
J1:11/2	958
J1:12/1	610
J1:12/2	1453
J1:13/1	250
J1:13/2	440
Junction: J2: M180 J5 Barnetby Interchange (priority)	
J2:1/1	344
J2:1/2	343
J2:2/1	748
J2:2/2	643

Full Input Data And Results

Lane Saturation Flows

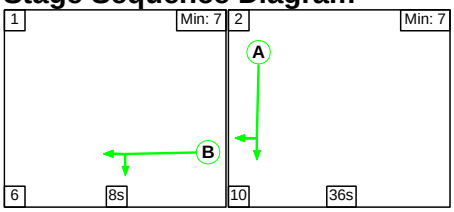
Junction: J1: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (A18 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:1/2 (A18 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/1 (M180 - Off Slip Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/2 (M180 - Off Slip Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/1 (Barnetby Lane)	3.25	0.00	Y	Arm J1:9 Left	21.00	24.4 %	1887	1887
				Arm J1:13 Ahead	107.00	75.6 %		
J1:4/1 (A15 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/2 (A15 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:5/1 (A180 On Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:5/2 (A180 On Slip Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (to Lorry Park Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/1 (M180 On Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:8/1 (to Elsham Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/1 (to Humber Bridge Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/2 (to Humber Bridge Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:10/1 (Circ (S) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:10/2 (Circ (S) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/1 (Circ (W) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2 (Circ (W) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Circ (NW) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/2 (Circ (NW) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/1 (Circ (N) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/2 (Circ (N) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Junction: J2: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (A180 Off Slip)	3.65	1.00	Y	Arm J1:6 Left	180.00	67.2 %	1927	1927
				Arm J1:10 Ahead	Inf	32.8 %		
J2:1/2 (A180 Off Slip)	3.65	1.00	Y	Arm J1:10 Ahead	180.00	100.0 %	1922	1922
J2:2/1 (Circ (E))	3.65	0.00	Y	Arm J1:6 Ahead	90.00	100.0 %	1948	1948
J2:2/2 (Circ (E))	3.65	0.00	Y	Arm J1:10 Right	90.00	100.0 %	1948	1948

Scenario 1: 'AM 2024 With Lorry Park' (FG1: 'AM 2024 With Lorry Park', Plan 1: 'Network Control Plan 1')

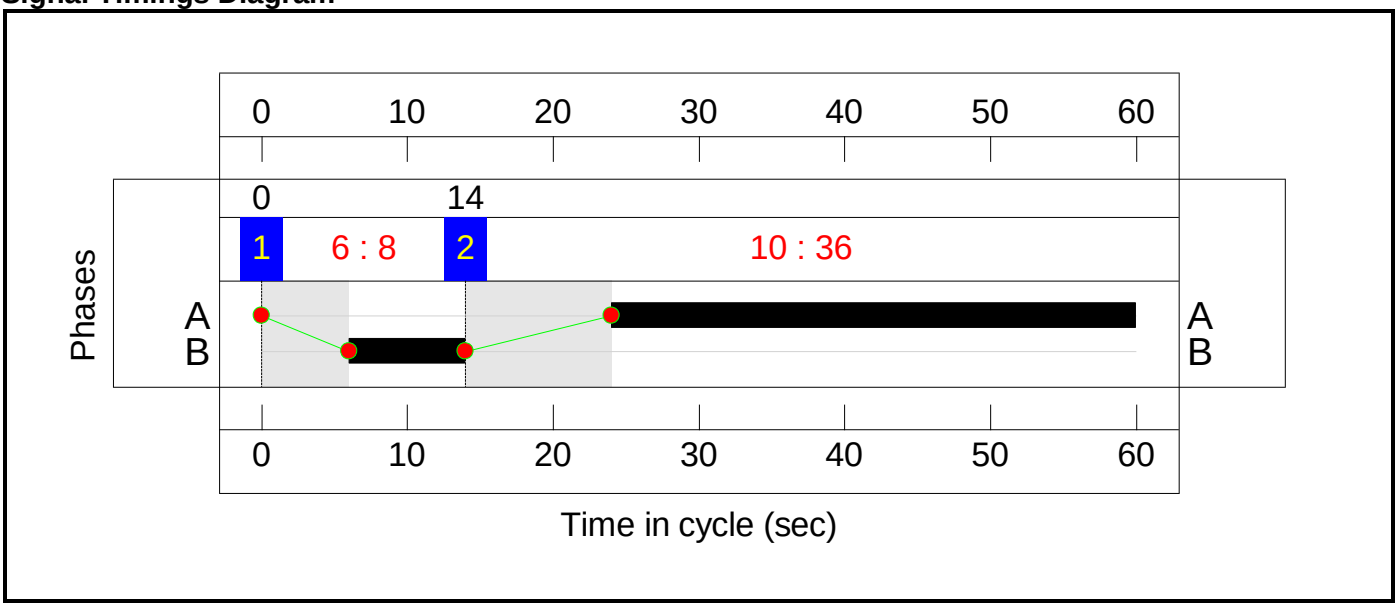
Stage Sequence Diagram



Stage Timings

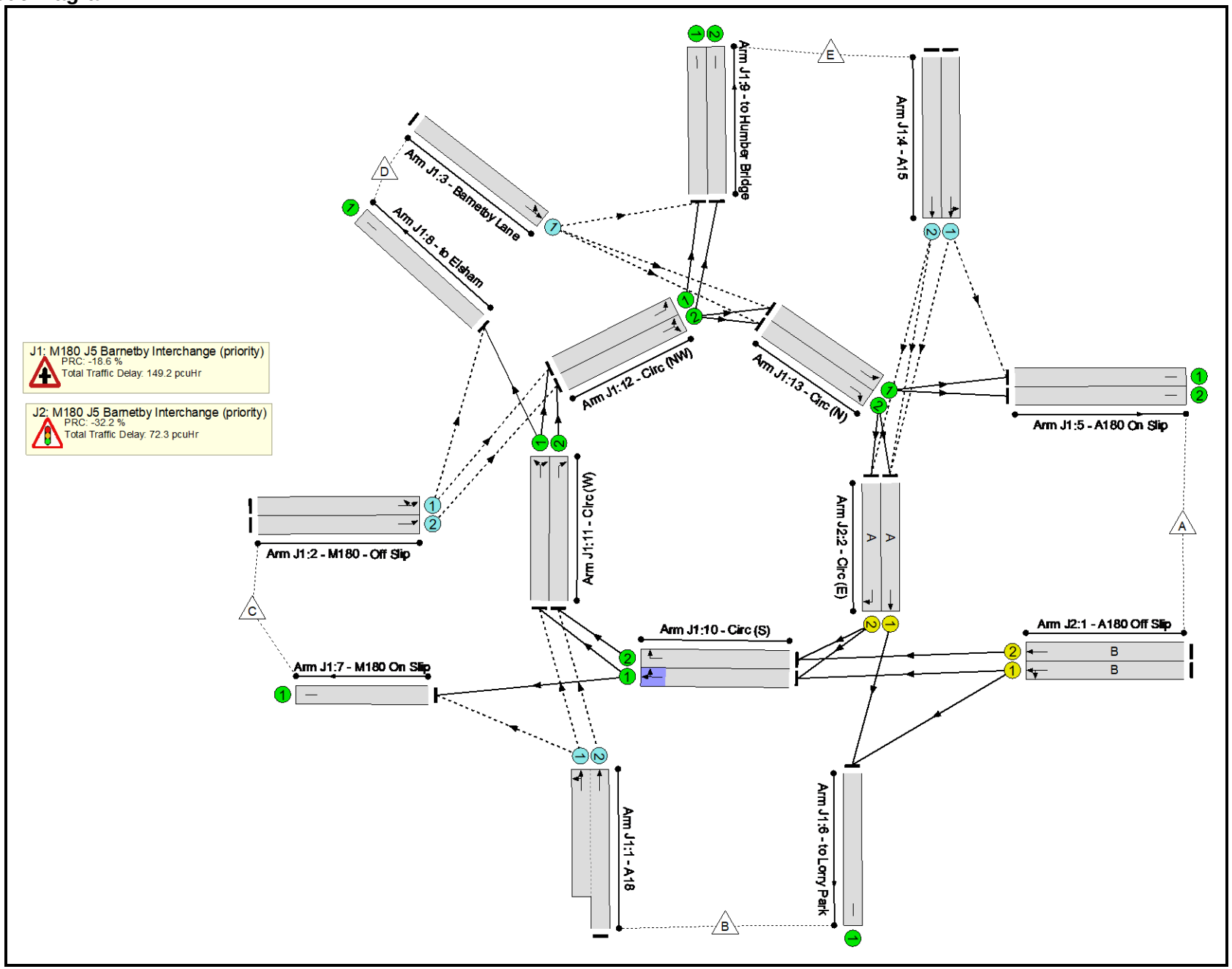
Stage	1	2
Duration	8	36
Change Point	0	14

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**119.0%**
J1: M180 J5 Barnetby Interchange (priority)	-	-	**N/A**	-	-		-	-	-	-	-	-	**106.7%**
1/2+1/1	A18 Left Ahead	O	N/A	N/A	-		-	-	-	1232	1900:1900	590+590	104.4 : 104.4%
2/1	M180 - Off Slip U-Turn Ahead	O	N/A	N/A	-		-	-	-	495	1900	465	106.5%
2/2	M180 - Off Slip Ahead	O	N/A	N/A	-		-	-	-	496	1900	465	106.7%
3/1	Barnetby Lane Left Ahead	O	N/A	N/A	-		-	-	-	164	1887	323	50.8%
4/1	A15 Left Ahead	O	N/A	N/A	-		-	-	-	753	1900	711	105.9%
4/2	A15 Ahead	O	N/A	N/A	-		-	-	-	755	1900	711	106.2%
5/1	A180 On Slip	U	N/A	N/A	-		-	-	-	681	Inf	Inf	0.0%
5/2	A180 On Slip	U	N/A	N/A	-		-	-	-	126	Inf	Inf	0.0%
6/1	to Lorry Park	U	N/A	N/A	-		-	-	-	979	Inf	Inf	0.0%
7/1	M180 On Slip	U	N/A	N/A	-		-	-	-	1119	Inf	Inf	0.0%
8/1	to Elsham	U	N/A	N/A	-		-	-	-	140	Inf	Inf	0.0%
9/1	to Humber Bridge	U	N/A	N/A	-		-	-	-	648	Inf	Inf	0.0%
9/2	to Humber Bridge	U	N/A	N/A	-		-	-	-	889	Inf	Inf	0.0%
10/1	Circ (S) Ahead Right	U	N/A	N/A	-		-	-	-	756	1900	1900	37.0%
10/2	Circ (S) Right	U	N/A	N/A	-		-	-	-	343	1900	1900	15.2%
11/1	Circ (W) Left Right	U	N/A	N/A	-		-	-	-	253	1900	1900	12.1%
11/2	Circ (W) Right	U	N/A	N/A	-		-	-	-	959	1900	1900	46.2%
12/1	Circ (NW) Left	U	N/A	N/A	-		-	-	-	608	1900	1900	29.7%

Full Input Data And Results

12/2	Circ (NW) Left Right	U	N/A	N/A	-		-	-	-	1455	1900	1900	70.7%
13/1	Circ (N) Ahead	U	N/A	N/A	-		-	-	-	250	1900	1900	12.7%
13/2	Circ (N) Right	U	N/A	N/A	-		-	-	-	440	1900	1900	22.0%
J2: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**119.0%**
1/1	A180 Off Slip Left Ahead	U	N/A	N/A	B		1	8	-	344	1927	289	119.0%
1/2	A180 Off Slip Ahead	U	N/A	N/A	B		1	8	-	343	1922	288	119.0%
2/1	Circ (E) Ahead	U	N/A	N/A	A		1	36	-	748	1948	1201	58.7%
2/2	Circ (E) Right	U	N/A	N/A	A		1	36	-	643	1948	1201	50.6%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**4876**	**0**	**0**	**23.3**	**198.2**	**0.0**	**221.5**	**-**	**-**	**-**	**-**
J1: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**4876**	**0**	**0**	**12.7**	**136.5**	**0.0**	**149.2**	**-**	**-**	**-**	**-**
1/2+1/1	1232	1181	2361	0	0	4.2	34.6	-	38.8	113.3	27.4	34.6	62.0
2/1	495	465	465	0	0	1.9	21.0	-	22.9	166.6	20.6	21.0	41.6
2/2	496	465	465	0	0	2.0	21.4	-	23.3	169.4	20.7	21.4	42.1
3/1	164	164	164	0	0	0.7	0.5	-	1.2	25.9	2.1	0.5	2.7
4/1	753	711	711	0	0	2.0	27.8	-	29.8	142.5	36.6	27.8	64.4
4/2	755	711	711	0	0	2.0	28.7	-	30.7	146.4	36.9	28.7	65.6
5/1	646	646	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	899	899	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1065	1065	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	131	131	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	604	604	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	809	809	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	703	703	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
10/2	288	288	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
11/1	230	230	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
11/2	879	879	-	-	-	0.0	0.4	-	0.4	1.8	0.0	0.4	0.4
12/1	564	564	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
12/2	1343	1343	-	-	-	0.0	1.2	-	1.2	3.3	4.8	1.2	6.0
13/1	241	241	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
13/2	417	417	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
J2: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**0**	**0**	**0**	**10.6**	**61.7**	**0.0**	**72.3**	**-**	**-**	**-**	**-**

Full Input Data And Results

1/1	344	289	-	-	-	4.1	30.3	-	34.4	360.0	6.6	30.3	37.0
1/2	343	288	-	-	-	4.1	30.2	-	34.3	359.6	6.6	30.2	36.8
2/1	705	705	-	-	-	1.1	0.7	-	1.8	9.2	6.1	0.7	6.8
2/2	608	608	-	-	-	1.3	0.5	-	1.9	11.0	6.3	0.5	6.8

C1

PRC for Signalled Lanes (%): -32.2
PRC Over All Lanes (%): -32.2

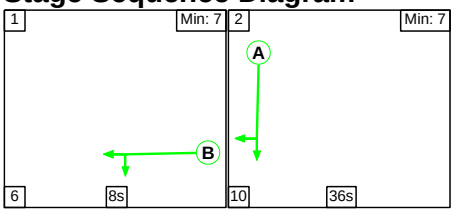
Total Delay for Signalled Lanes (pcuHr): 72.31
Total Delay Over All Lanes(pcuHr): 221.54

Cycle Time (s): 60

Full Input Data And Results

Scenario 2: 'AM 2024 With Lorry Park + Proposed Dev' (FG2: 'AM 2024 With Lorry Park + Proposed Dev', Plan 1: 'Network Control Plan 1')

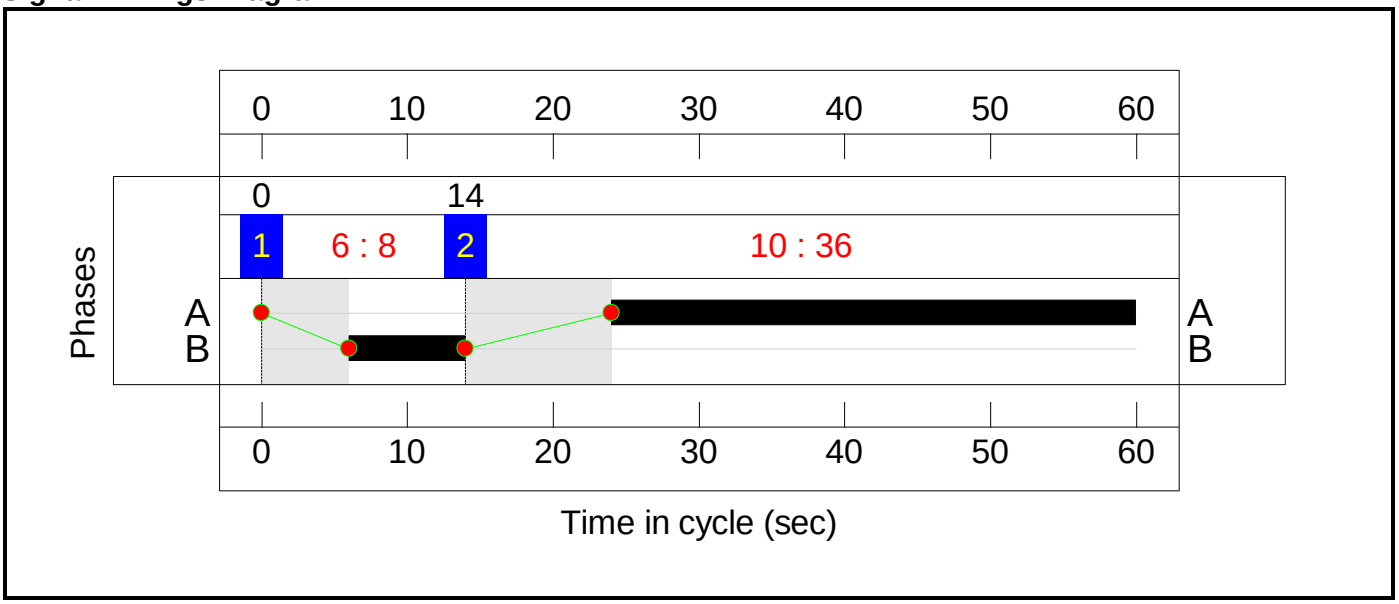
Stage Sequence Diagram



Stage Timings

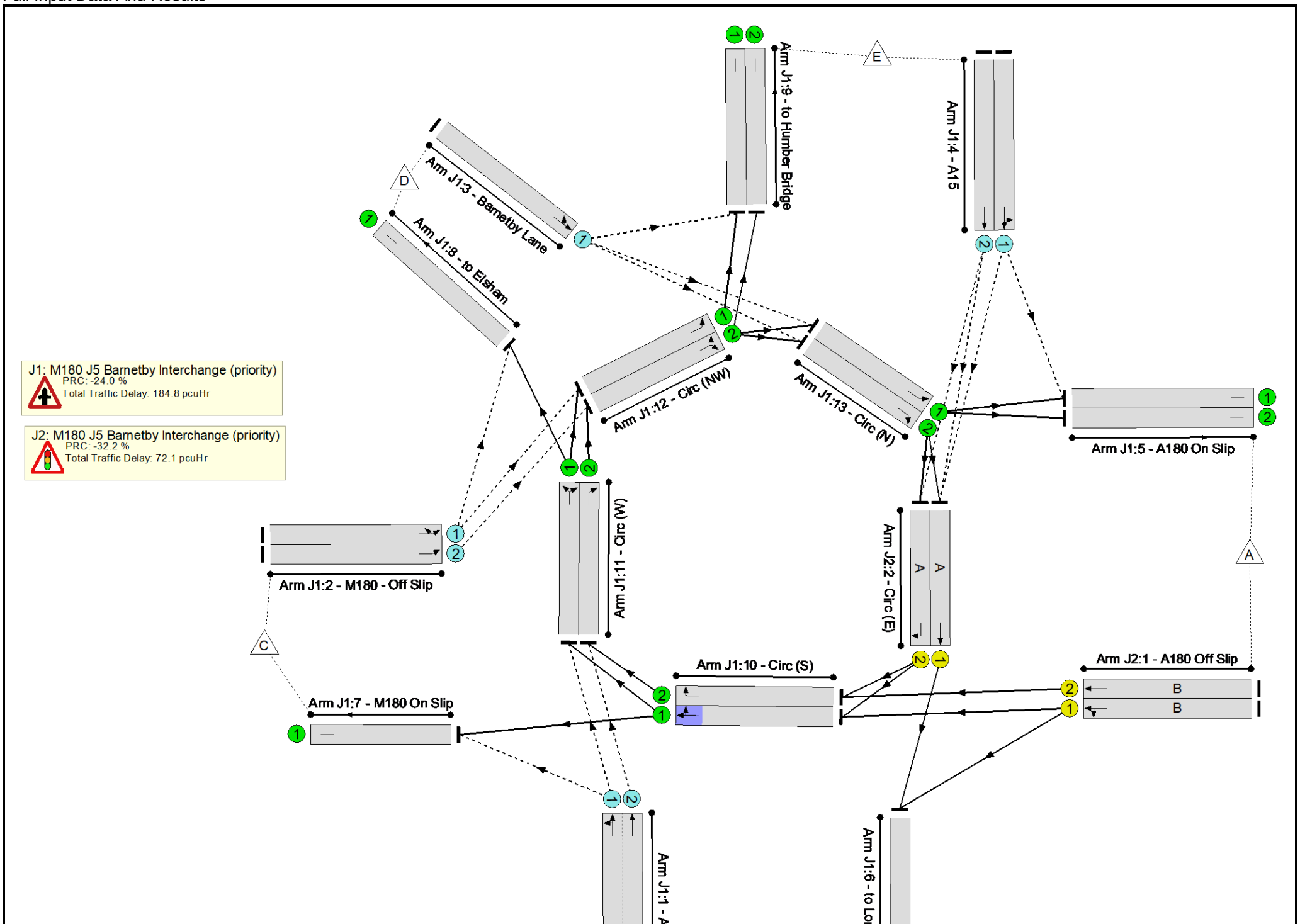
Stage	1	2
Duration	8	36
Change Point	0	14

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


J1: M180 J5 Barnetby Interchange (priority)
PRC: -24.0 %
Total Traffic Delay: 184.8 pcuHr
J2: M180 J5 Barnetby Interchange (priority)
PRC: -32.2 %
Total Traffic Delay: 72.1 pcuHr
Arm J1:9 - to Humber Bridge
Arm J1:4 - A15
Arm J1:3 - Barnetby Lane
Arm J1:8 - to Elsham
Arm J1:12 - Circ (NW)
Arm J1:13 - Circ (N)
Arm J1:5 - A180 On Slip
Arm J1:2 - M180 - Off Slip
Arm J1:11 - Circ (W)
Arm J2:2 - Circ (E)
Arm J1:10 - Circ (S)
Arm J2:1 - A180 Off Slip
Arm J1:7 - M180 On Slip
Arm J1:1 - A
Arm J1:6 - to Lo
A
B
C
D
E

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**119.0%**
J1: M180 J5 Barnetby Interchange (priority)	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.6%**
1/2+1/1	A18 Left Ahead	O	N/A	N/A	-		-	-	-	1232	1900:1900	611+611	100.6 : 100.9%
2/1	M180 - Off Slip U-Turn Ahead	O	N/A	N/A	-		-	-	-	496	1900	449	110.4%
2/2	M180 - Off Slip Ahead	O	N/A	N/A	-		-	-	-	495	1900	449	110.2%
3/1	Barnetby Lane Left Ahead	O	N/A	N/A	-		-	-	-	164	1887	315	52.0%
4/1	A15 Left Ahead	O	N/A	N/A	-		-	-	-	795	1900	713	111.5%
4/2	A15 Ahead	O	N/A	N/A	-		-	-	-	796	1900	713	111.6%
5/1	A180 On Slip	U	N/A	N/A	-		-	-	-	764	Inf	Inf	0.0%
5/2	A180 On Slip	U	N/A	N/A	-		-	-	-	126	Inf	Inf	0.0%
6/1	to Lorry Park	U	N/A	N/A	-		-	-	-	979	Inf	Inf	0.0%
7/1	M180 On Slip	U	N/A	N/A	-		-	-	-	1119	Inf	Inf	0.0%
8/1	to Elsham	U	N/A	N/A	-		-	-	-	140	Inf	Inf	0.0%
9/1	to Humber Bridge	U	N/A	N/A	-		-	-	-	650	Inf	Inf	0.0%
9/2	to Humber Bridge	U	N/A	N/A	-		-	-	-	887	Inf	Inf	0.0%
10/1	Circ (S) Ahead Right	U	N/A	N/A	-		-	-	-	756	1900	1900	35.6%
10/2	Circ (S) Right	U	N/A	N/A	-		-	-	-	343	1900	1900	15.2%
11/1	Circ (W) Left Right	U	N/A	N/A	-		-	-	-	254	1900	1900	12.2%
11/2	Circ (W) Right	U	N/A	N/A	-		-	-	-	958	1900	1900	47.3%
12/1	Circ (NW) Left	U	N/A	N/A	-		-	-	-	610	1900	1900	29.1%

Full Input Data And Results

12/2	Circ (NW) Left Right	U	N/A	N/A	-		-	-	-	1453	1900	1900	71.0%
13/1	Circ (N) Ahead	U	N/A	N/A	-		-	-	-	250	1900	1900	13.1%
13/2	Circ (N) Right	U	N/A	N/A	-		-	-	-	440	1900	1900	21.4%
J2: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**119.0%**
1/1	A180 Off Slip Left Ahead	U	N/A	N/A	B		1	8	-	344	1927	289	119.0%
1/2	A180 Off Slip Ahead	U	N/A	N/A	B		1	8	-	343	1922	288	119.0%
2/1	Circ (E) Ahead	U	N/A	N/A	A		1	36	-	748	1948	1201	56.4%
2/2	Circ (E) Right	U	N/A	N/A	A		1	36	-	643	1948	1201	48.4%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**4934**	**0**	**0**	**25.9**	**231.0**	**0.0**	**256.9**	**-**	**-**	**-**	**-**
J1: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**4934**	**0**	**0**	**15.5**	**169.4**	**0.0**	**184.8**	**-**	**-**	**-**	**-**
1/2+1/1	1232	1222	2445	0	0	2.7	20.1	-	22.8	66.7	27.4	20.1	47.5
2/1	496	449	449	0	0	2.4	27.8	-	30.3	219.6	21.5	27.8	49.3
2/2	495	449	449	0	0	2.4	27.4	-	29.8	216.6	21.5	27.4	48.8
3/1	164	164	164	0	0	0.7	0.5	-	1.2	26.7	2.1	0.5	2.7
4/1	795	713	713	0	0	3.6	45.3	-	48.9	221.2	39.1	45.3	84.4
4/2	796	713	713	0	0	3.6	45.7	-	49.4	223.2	39.1	45.7	84.9
5/1	698	698	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	125	125	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	872	872	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1057	1057	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	128	128	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	592	592	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	817	817	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	676	676	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
10/2	288	288	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
11/1	231	231	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
11/2	900	900	-	-	-	0.0	0.4	-	0.4	1.8	0.0	0.4	0.4
12/1	552	552	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
12/2	1349	1349	-	-	-	0.0	1.2	-	1.2	3.3	4.3	1.2	5.5
13/1	249	249	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
13/2	407	407	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
J2: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**0**	**0**	**0**	**10.4**	**61.6**	**0.0**	**72.1**	**-**	**-**	**-**	**-**

Full Input Data And Results

1/1	344	289	-	-	-	4.1	30.3	-	34.4	360.0	6.6	30.3	37.0
1/2	343	288	-	-	-	4.1	30.2	-	34.3	359.6	6.6	30.2	36.8
2/1	678	678	-	-	-	1.0	0.6	-	1.7	8.8	5.7	0.6	6.3
2/2	581	581	-	-	-	1.3	0.5	-	1.7	10.7	6.0	0.5	6.5

C1

PRC for Signalled Lanes (%): -32.2
PRC Over All Lanes (%): -32.2

Total Delay for Signalled Lanes (pcuHr): 72.05
Total Delay Over All Lanes(pcuHr): 256.86

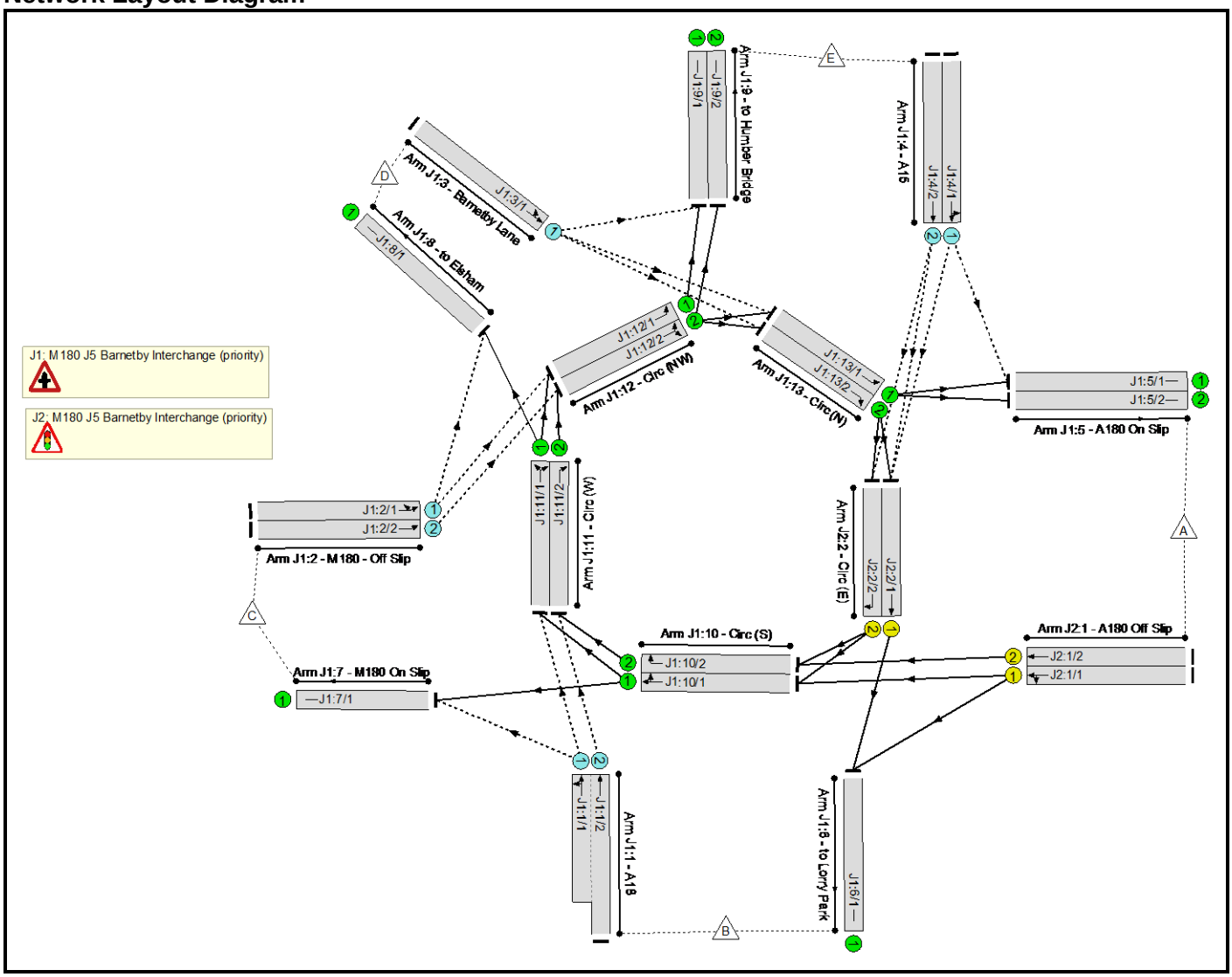
Cycle Time (s): 60

Full Input Data And Results

User and Project Details

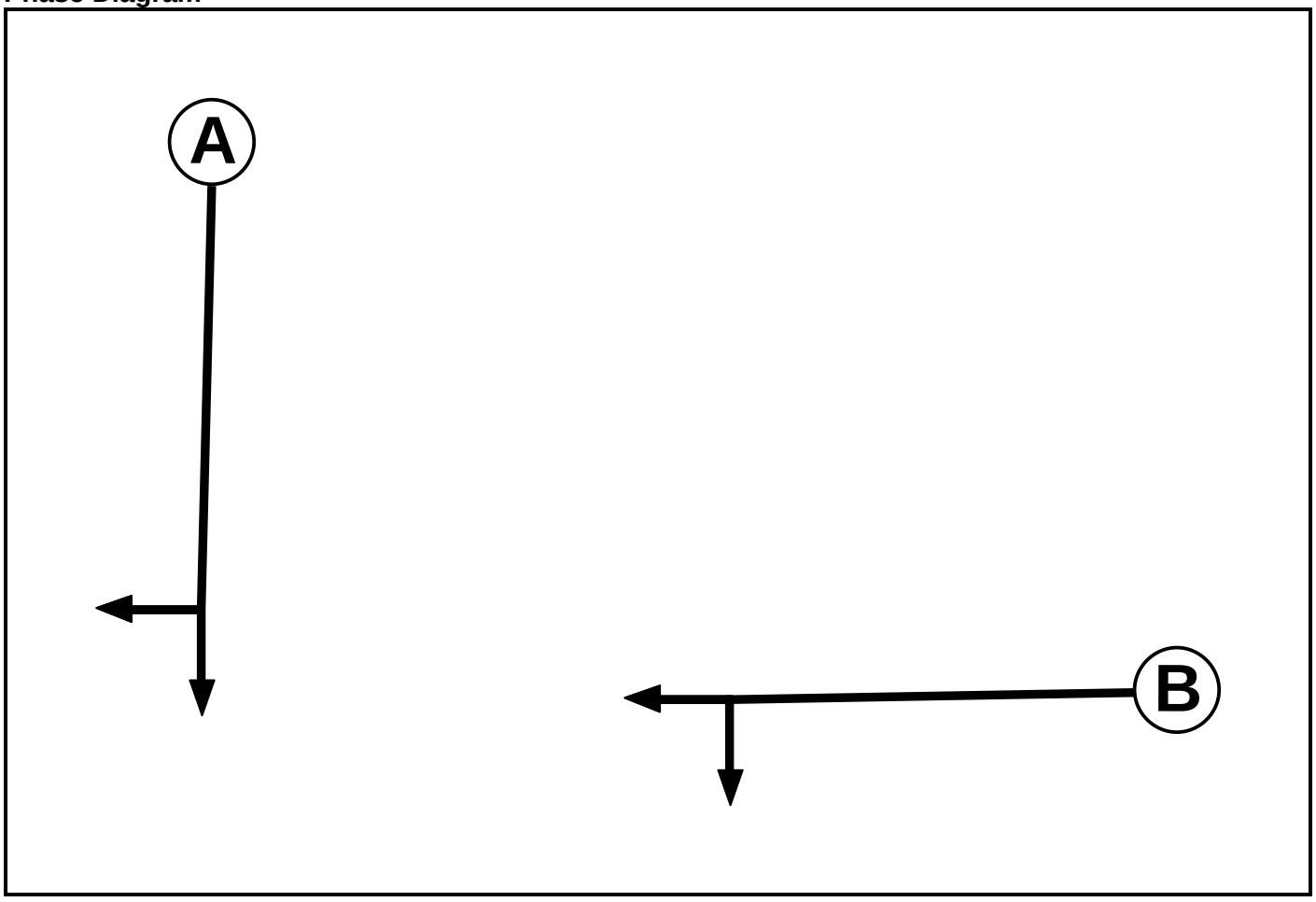
File name:	Barnetby Top Mitigation PM.lsg3x

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7

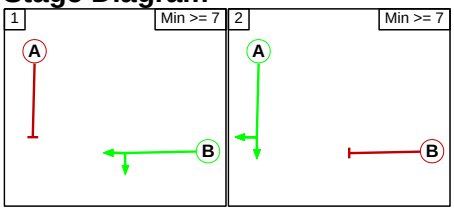
Phase Intergreens Matrix

	Starting Phase		
Terminating Phase		A	B
	A		6
	B	7	

Phases in Stage

Stage No.	Phases in Stage
1	B
2	A

Stage Diagram



Full Input Data And Results

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
		1	2
From Stage	1		7
	2	6	

Full Input Data And Results

Give-Way Lane Input Data

Junction: J1: M180 J5 Barnetby Interchange (priority)											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
J1:1/1 (A18)	J1:7/1 (Left)	1176	0	J1:10/1	0.70	All	-	-	-	-	-
				J1:10/2	0.70	All					
	J1:11/1 (Ahead)	1176	0	J1:10/1	0.70	All					
				J1:10/2	0.70	All					
J1:1/2 (A18)	J1:11/2 (Ahead)	1176	0	J1:10/1	0.70	All	-	-	-	-	-
				J1:10/2	0.70	All					
J1:2/1 (M180 - Off Slip)	J1:8/1 (U-Turn)	1188	0	J1:11/1	0.72	All	-	-	-	-	-
				J1:11/2	0.72	All					
	J1:12/1 (Ahead)	1188	0	J1:11/1	0.72	All					
				J1:11/2	0.72	All					
J1:2/2 (M180 - Off Slip)	J1:12/2 (Ahead)	1188	0	J1:11/1	0.72	All	-	-	-	-	-
				J1:11/2	0.72	All					
J1:3/1 (Barnetby Lane)	J1:9/1 (Left)	1793	0	J1:12/1	0.95	All	-	-	-	-	-
				J1:12/2	0.95	All					
	J1:13/1 (Ahead)	1793	0	J1:12/1	0.95	All					
				J1:12/2	0.95	All					
	J1:13/2 (Ahead)	1793	0	J1:12/1	0.95	All					
				J1:12/2	0.95	All					
J1:4/1 (A15)	J1:5/1 (Left)	1142	0	J1:13/1	0.75	All	-	-	-	-	-
				J1:13/2	0.75	All					
	J2:2/1 (Ahead)	1142	0	J1:13/1	0.75	All					
				J1:13/2	0.75	All					
J1:4/2	J2:2/1 (Ahead)	1142	0	J1:13/1	0.75	All	-	-	-	-	-

(A15)				J1:13/2	0.75	All					
	J2:2/2 (Ahead)	1142	0	J1:13/1	0.75	All					
				J1:13/2	0.75	All					

Junction: J2: M180 J5 Barnetby Interchange (priority)
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: J1: M180 J5 Barnetby Interchange (priority)												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
J1:1/1 (A18)	O		2	3	12.0	User	1900	-	-	-	-	-
J1:1/2 (A18)	O		2	3	27.0	User	1900	-	-	-	-	-
J1:2/1 (M180 - Off Slip)	O		2	3	58.0	User	1900	-	-	-	-	-
J1:2/2 (M180 - Off Slip)	O		2	3	58.0	User	1900	-	-	-	-	-
J1:3/1 (Barnetby Lane)	O		2	3	60.0	Geom	-	3.25	0.00	Y	Arm J1:9 Left	21.00
											Arm J1:13 Ahead	107.00
J1:4/1 (A15)	O		2	3	60.0	User	1900	-	-	-	-	-
J1:4/2 (A15)	O		2	3	60.0	User	1900	-	-	-	-	-
J1:5/1 (A180 On Slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:5/2 (A180 On Slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:6/1 (to Lorry Park)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:7/1 (M180 On Slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:8/1 (to Elsham)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:9/1 (to Humber Bridge)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:9/2 (to Humber Bridge)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:10/1 (Circ (S))	U		2	3	20.9	User	1900	-	-	-	-	-
J1:10/2 (Circ (S))	U		2	3	20.9	User	1900	-	-	-	-	-
J1:11/1 (Circ (W))	U		2	3	30.6	User	1900	-	-	-	-	-
J1:11/2 (Circ (W))	U		2	3	30.6	User	1900	-	-	-	-	-
J1:12/1 (Circ (NW))	U		2	3	9.4	User	1900	-	-	-	-	-

J1:12/2 (Circ (NW))	U		2	3	9.4	User	1900	-	-	-	-	-
J1:13/1 (Circ (N))	U		2	3	13.0	User	1900	-	-	-	-	-
J1:13/2 (Circ (N))	U		2	3	13.0	User	1900	-	-	-	-	-

Junction: J2: M180 J5 Barnetby Interchange (priority)

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
J2:1/1 (A180 Off Slip)	U	B	2	3	53.0	Geom	-	3.65	1.00	Y	Arm J1:6 Left Arm J1:10 Ahead	180.00 Inf
J2:1/2 (A180 Off Slip)	U	B	2	3	53.0	Geom	-	3.65	1.00	Y	Arm J1:10 Ahead	180.00
J2:2/1 (Circ (E))	U	A	2	3	20.0	Geom	-	3.65	0.00	Y	Arm J1:6 Ahead	90.00
J2:2/2 (Circ (E))	U	A	2	3	20.0	Geom	-	3.65	0.00	Y	Arm J1:10 Right	90.00

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'PM 2024 With Lorry Park'	16:45	17:45	01:00	
2: 'PM 2024 With Lorry Park + Proposed Dev'	16:45	17:45	01:00	

Scenario 1: 'PM 2024 With Lorry Park' (FG1: 'PM 2024 With Lorry Park', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	369	0	49	497	915
	B	137	0	441	62	337	977
	C	0	454	0	59	552	1065
	D	24	31	29	0	24	108
	E	418	460	561	17	0	1456
	Tot.	579	1314	1031	187	1410	4521

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: PM 2024 With Lorry Park
Junction: J1: M180 J5 Barnetby Interchange (priority)	
J1:1/1 (short)	535
J1:1/2 (with short)	977(In) 442(Out)
J1:2/1	533
J1:2/2	532
J1:3/1	108
J1:4/1	728
J1:4/2	728
J1:5/1	498
J1:5/2	81
J1:6/1	1314
J1:7/1	1031
J1:8/1	187
J1:9/1	570
J1:9/2	840
J1:10/1	696
J1:10/2	457
J1:11/1	200
J1:11/2	899
J1:12/1	546
J1:12/2	1431
J1:13/1	161
J1:13/2	514
Junction: J2: M180 J5 Barnetby Interchange (priority)	
J2:1/1	458
J2:1/2	457
J2:2/1	945
J2:2/2	607

Full Input Data And Results

Lane Saturation Flows

Junction: J1: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (A18 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:1/2 (A18 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/1 (M180 - Off Slip Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/2 (M180 - Off Slip Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/1 (Barnetby Lane)	3.25	0.00	Y	Arm J1:9 Left	21.00	22.2 %	1889	1889
				Arm J1:13 Ahead	107.00	77.8 %		
J1:4/1 (A15 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/2 (A15 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:5/1 (A180 On Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:5/2 (A180 On Slip Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (to Lorry Park Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/1 (M180 On Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:8/1 (to Elsham Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/1 (to Humber Bridge Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/2 (to Humber Bridge Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:10/1 (Circ (S) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:10/2 (Circ (S) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/1 (Circ (W) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2 (Circ (W) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Circ (NW) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/2 (Circ (NW) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/1 (Circ (N) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/2 (Circ (N) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Junction: J2: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (A180 Off Slip)	3.65	1.00	Y	Arm J1:6 Left	180.00	80.6 %	1925	1925
				Arm J1:10 Ahead	Inf	19.4 %		
J2:1/2 (A180 Off Slip)	3.65	1.00	Y	Arm J1:10 Ahead	180.00	100.0 %	1922	1922
J2:2/1 (Circ (E))	3.65	0.00	Y	Arm J1:6 Ahead	90.00	100.0 %	1948	1948
J2:2/2 (Circ (E))	3.65	0.00	Y	Arm J1:10 Right	90.00	100.0 %	1948	1948

Scenario 2: 'PM 2024 With Lorry Park + Proposed Dev' (FG2: 'PM 2024 With Lorry Park + Proposed Dev', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	369	0	49	580	998
	B	137	0	441	62	337	977
	C	0	454	0	59	552	1065
	D	24	31	29	0	24	108
	E	418	460	561	17	0	1456
	Tot.	579	1314	1031	187	1493	4604

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: PM 2024 With Lorry Park + Proposed Dev
Junction: J1: M180 J5 Barnetby Interchange (priority)	
J1:1/1 (short)	532
J1:1/2 (with short)	977(In) 445(Out)
J1:2/1	533
J1:2/2	532
J1:3/1	108
J1:4/1	727
J1:4/2	729
J1:5/1	498
J1:5/2	81
J1:6/1	1314
J1:7/1	1031
J1:8/1	187
J1:9/1	609
J1:9/2	884
J1:10/1	738
J1:10/2	498
J1:11/1	239
J1:11/2	943
J1:12/1	585
J1:12/2	1475
J1:13/1	161
J1:13/2	514
Junction: J2: M180 J5 Barnetby Interchange (priority)	
J2:1/1	500
J2:1/2	498
J2:2/1	945
J2:2/2	607

Full Input Data And Results

Lane Saturation Flows

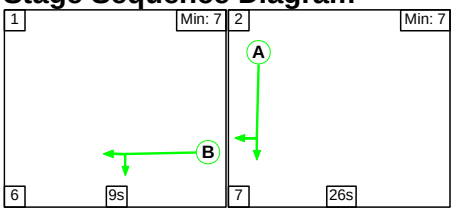
Junction: J1: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (A18 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:1/2 (A18 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/1 (M180 - Off Slip Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/2 (M180 - Off Slip Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/1 (Barnetby Lane)	3.25	0.00	Y	Arm J1:9 Left	21.00	22.2 %	1889	1889
				Arm J1:13 Ahead	107.00	77.8 %		
J1:4/1 (A15 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/2 (A15 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:5/1 (A180 On Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:5/2 (A180 On Slip Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (to Lorry Park Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/1 (M180 On Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:8/1 (to Elsham Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/1 (to Humber Bridge Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/2 (to Humber Bridge Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:10/1 (Circ (S) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:10/2 (Circ (S) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/1 (Circ (W) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2 (Circ (W) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Circ (NW) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/2 (Circ (NW) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/1 (Circ (N) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/2 (Circ (N) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Junction: J2: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (A180 Off Slip)	3.65	1.00	Y	Arm J1:6 Left	180.00	73.8 %	1926	1926
				Arm J1:10 Ahead	Inf	26.2 %		
J2:1/2 (A180 Off Slip)	3.65	1.00	Y	Arm J1:10 Ahead	180.00	100.0 %	1922	1922
J2:2/1 (Circ (E))	3.65	0.00	Y	Arm J1:6 Ahead	90.00	100.0 %	1948	1948
J2:2/2 (Circ (E))	3.65	0.00	Y	Arm J1:10 Right	90.00	100.0 %	1948	1948

Scenario 1: 'PM 2024 With Lorry Park' (FG1: 'PM 2024 With Lorry Park', Plan 1: 'Network Control Plan 1')

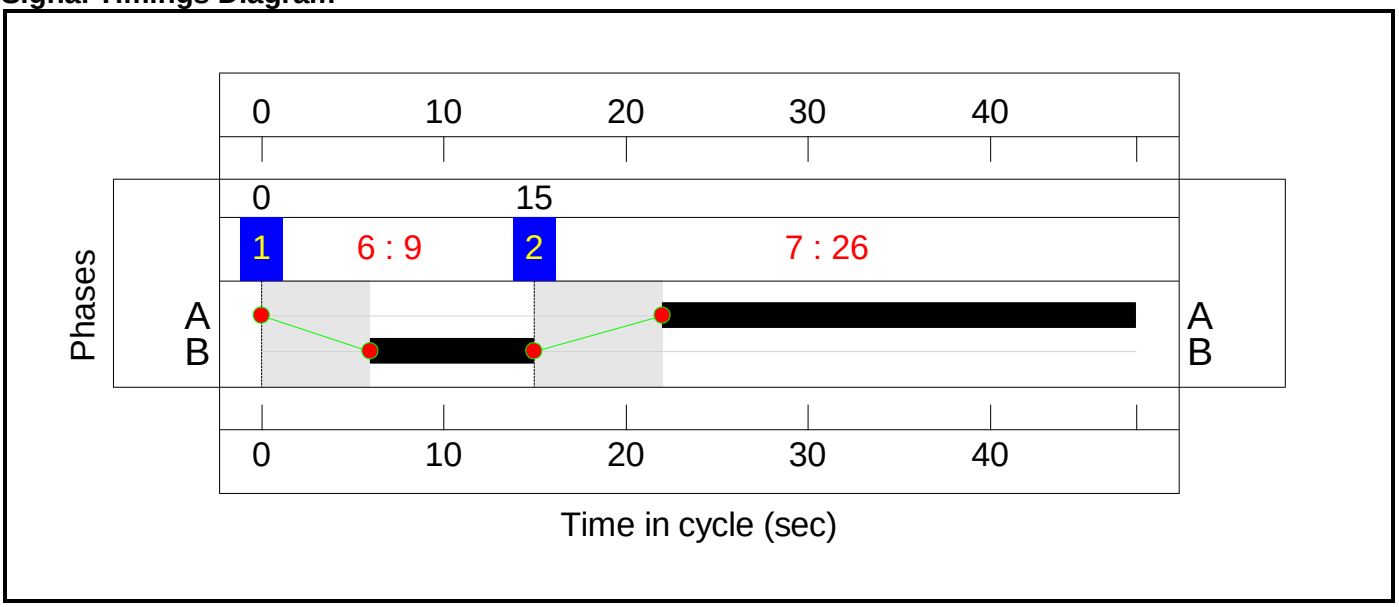
Stage Sequence Diagram



Stage Timings

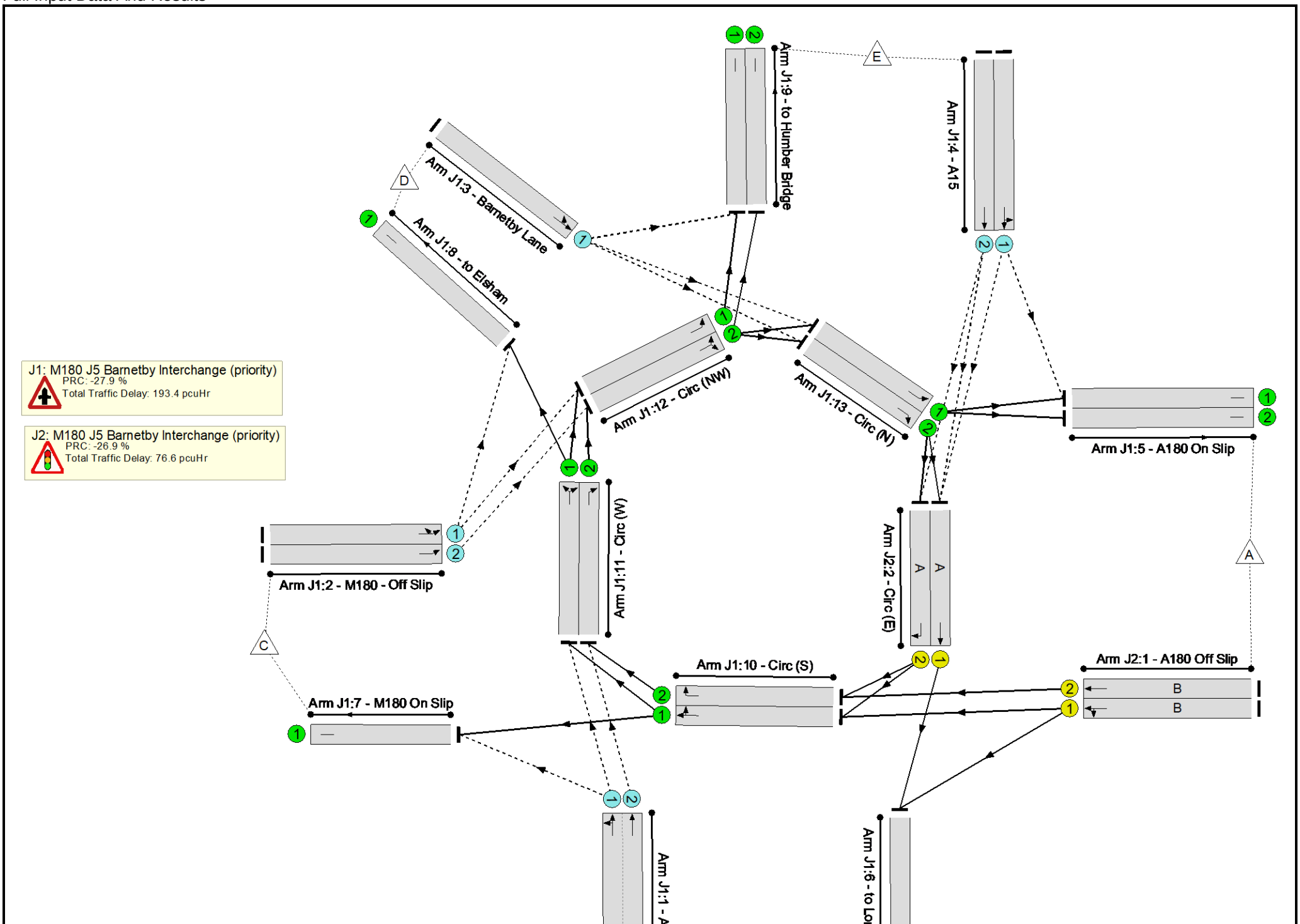
Stage	1	2
Duration	9	26
Change Point	0	15

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


J1: M180 J5 Barnetby Interchange (priority)
PRC: -27.9 %
Total Traffic Delay: 193.4 pcuHr
J2: M180 J5 Barnetby Interchange (priority)
PRC: -26.9 %
Total Traffic Delay: 76.6 pcuHr
Arm J1:9 - to Humber Bridge
Arm J1:4 - A15
Arm J1:3 - Barnetby Lane
Arm J1:8 - to Elsham
Arm J1:12 - Circ (NW)
Arm J1:13 - Circ (N)
Arm J1:5 - A180 On Slip
Arm J1:2 - M180 - Off Slip
Arm J1:11 - Circ (W)
Arm J2:2 - Circ (E)
Arm J1:10 - Circ (S)
Arm J2:1 - A180 Off Slip
Arm J1:7 - M180 On Slip
Arm J1:1 - A
Arm J1:6 - to Lo
A
B
C
D
E

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.1%**
J1: M180 J5 Barnetby Interchange (priority)	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.1%**
1/2+1/1	A18 Left Ahead	O	N/A	N/A	-		-	-	-	977	1900:1900	465+465	95.1 : 115.1%
2/1	M180 - Off Slip U-Turn Ahead	O	N/A	N/A	-		-	-	-	533	1900	466	114.3%
2/2	M180 - Off Slip Ahead	O	N/A	N/A	-		-	-	-	532	1900	466	114.1%
3/1	Barnetby Lane Left Ahead	O	N/A	N/A	-		-	-	-	108	1889	325	33.2%
4/1	A15 Left Ahead	O	N/A	N/A	-		-	-	-	728	1900	678	107.4%
4/2	A15 Ahead	O	N/A	N/A	-		-	-	-	728	1900	678	107.4%
5/1	A180 On Slip	U	N/A	N/A	-		-	-	-	498	Inf	Inf	0.0%
5/2	A180 On Slip	U	N/A	N/A	-		-	-	-	81	Inf	Inf	0.0%
6/1	to Lorry Park	U	N/A	N/A	-		-	-	-	1314	Inf	Inf	0.0%
7/1	M180 On Slip	U	N/A	N/A	-		-	-	-	1031	Inf	Inf	0.0%
8/1	to Elsham	U	N/A	N/A	-		-	-	-	187	Inf	Inf	0.0%
9/1	to Humber Bridge	U	N/A	N/A	-		-	-	-	570	Inf	Inf	0.0%
9/2	to Humber Bridge	U	N/A	N/A	-		-	-	-	840	Inf	Inf	0.0%
10/1	Circ (S) Ahead Right	U	N/A	N/A	-		-	-	-	696	1900	1900	34.0%
10/2	Circ (S) Right	U	N/A	N/A	-		-	-	-	457	1900	1900	21.1%
11/1	Circ (W) Left Right	U	N/A	N/A	-		-	-	-	200	1900	1900	9.3%
11/2	Circ (W) Right	U	N/A	N/A	-		-	-	-	899	1900	1900	44.3%
12/1	Circ (NW) Left	U	N/A	N/A	-		-	-	-	546	1900	1900	25.1%

Full Input Data And Results

12/2	Circ (NW) Left Right	U	N/A	N/A	-		-	-	-	1431	1900	1900	68.9%
13/1	Circ (N) Ahead	U	N/A	N/A	-		-	-	-	161	1900	1900	8.5%
13/2	Circ (N) Right	U	N/A	N/A	-		-	-	-	514	1900	1900	24.1%
J2: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**114.2%**
1/1	A180 Off Slip Left Ahead	U	N/A	N/A	B		1	9	-	458	1925	401	114.2%
1/2	A180 Off Slip Ahead	U	N/A	N/A	B		1	9	-	457	1922	400	114.1%
2/1	Circ (E) Ahead	U	N/A	N/A	A		1	26	-	945	1948	1096	78.2%
2/2	Circ (E) Right	U	N/A	N/A	A		1	26	-	607	1948	1096	51.8%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**4210**	**0**	**0**	**22.9**	**247.2**	**0.0**	**270.0**	**-**	**-**	**-**	**-**
J1: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**4210**	**0**	**0**	**12.5**	**180.9**	**0.0**	**193.4**	**-**	**-**	**-**	**-**
1/2+1/1	977	907	1814	0	0	3.8	42.9	-	46.7	171.9	18.4	42.9	61.3
2/1	533	466	466	0	0	2.5	37.0	-	39.5	266.8	16.9	37.0	53.9
2/2	532	466	466	0	0	2.5	36.5	-	39.0	264.0	16.8	36.5	53.4
3/1	108	108	108	0	0	0.3	0.2	-	0.6	18.4	1.0	0.2	1.3
4/1	728	678	678	0	0	1.7	31.0	-	32.7	161.6	23.3	31.0	54.2
4/2	728	678	678	0	0	1.7	31.0	-	32.7	161.6	23.3	31.0	54.2
5/1	469	469	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	81	81	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1180	1180	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	934	934	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	165	165	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	501	501	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	774	774	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	645	645	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
10/2	400	400	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
11/1	176	176	-	-	-	0.0	0.1	-	0.1	1.0	0.0	0.1	0.1
11/2	842	842	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
12/1	477	477	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
12/2	1309	1309	-	-	-	0.0	1.1	-	1.1	3.1	4.8	1.1	5.9
13/1	161	161	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
13/2	458	458	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
J2: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**0**	**0**	**0**	**10.4**	**66.2**	**0.0**	**76.6**	**-**	**-**	**-**	**-**

Full Input Data And Results

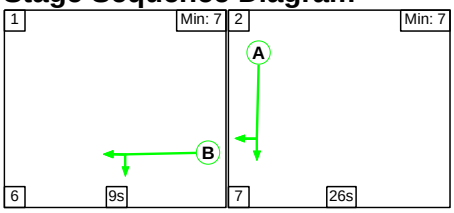
1/1	458	401	-	-	-	3.7	32.1	-	35.8	281.3	6.9	32.1	38.9
1/2	457	400	-	-	-	3.7	31.9	-	35.6	280.4	6.8	31.9	38.7
2/1	857	857	-	-	-	1.9	1.8	-	3.7	15.6	8.2	1.8	10.0
2/2	567	567	-	-	-	1.0	0.5	-	1.5	9.5	5.1	0.5	5.6

C1 PRC for Signalled Lanes (%): -26.9 Total Delay for Signalled Lanes (pcuHr): 76.60 Cycle Time (s): 48
PRC Over All Lanes (%): -27.9 Total Delay Over All Lanes(pcuHr): 270.03

Full Input Data And Results

Scenario 2: 'PM 2024 With Lorry Park + Proposed Dev' (FG2: 'PM 2024 With Lorry Park + Proposed Dev', Plan 1: 'Network Control Plan 1')

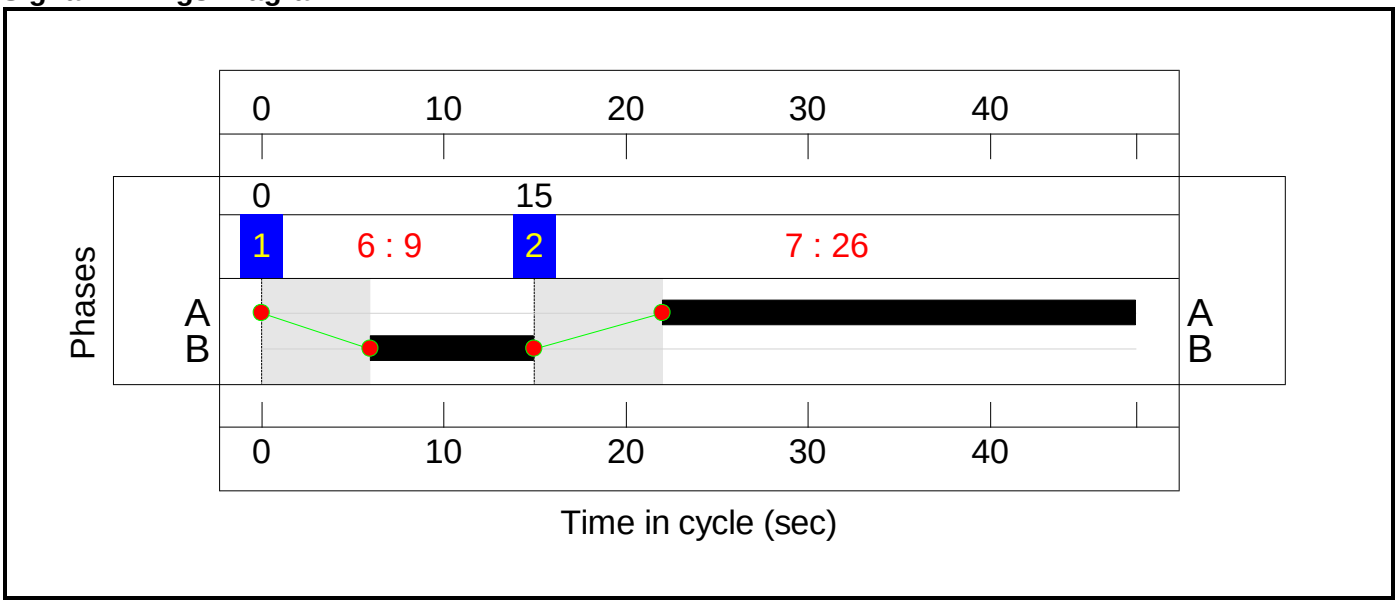
Stage Sequence Diagram



Stage Timings

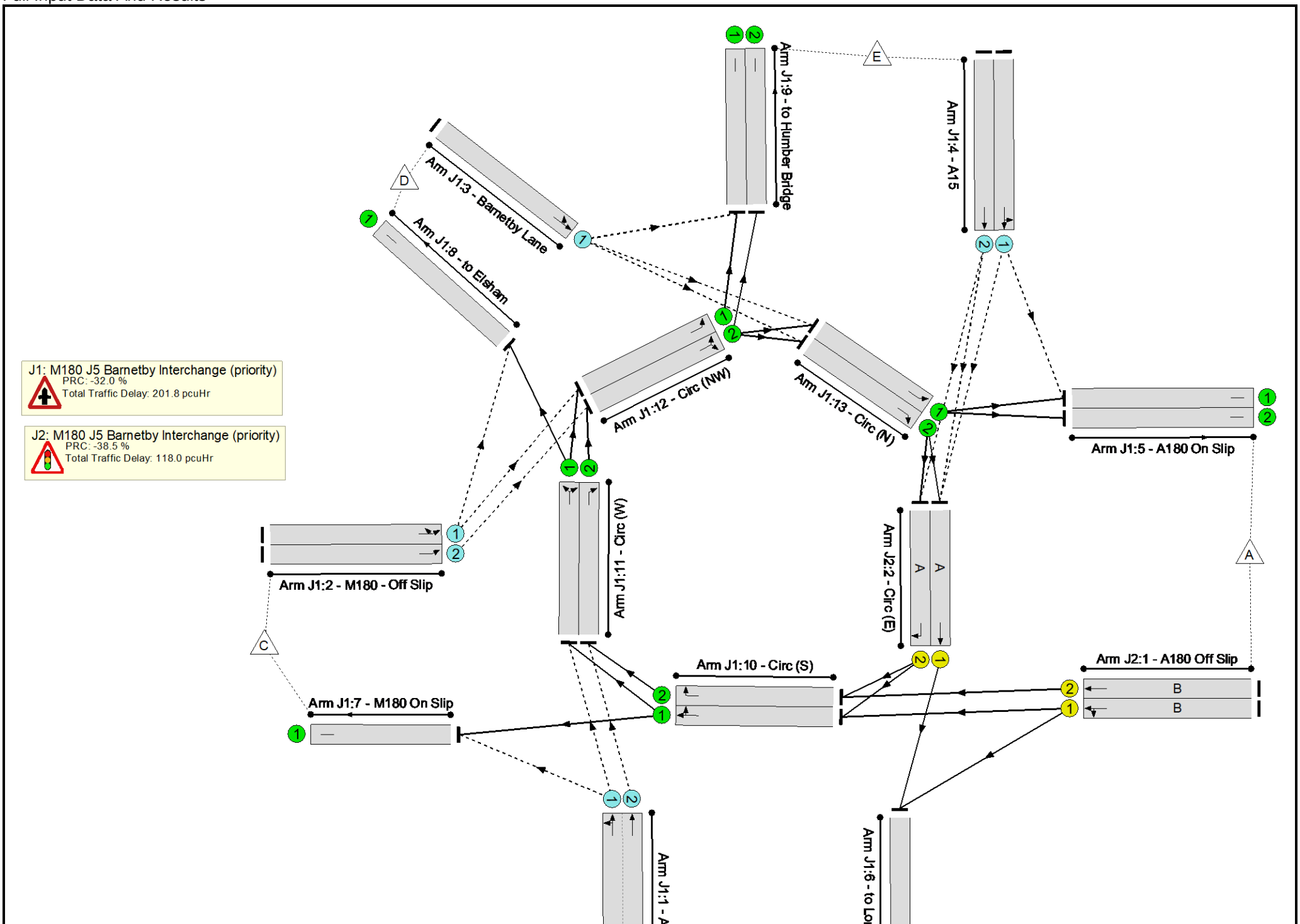
Stage	1	2
Duration	9	26
Change Point	0	15

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


J1: M180 J5 Barnetby Interchange (priority)
PRC: -32.0 %
Total Traffic Delay: 201.8 pcuHr
J2: M180 J5 Barnetby Interchange (priority)
PRC: -38.5 %
Total Traffic Delay: 118.0 pcuHr
Arm J1:9 - to Humber Bridge
Arm J1:4 - A15
Arm J1:3 - Barnetby Lane
Arm J1:8 - to Elsham
Arm J1:12 - Circ (NW)
Arm J1:13 - Circ (N)
Arm J1:5 - A180 On Slip
Arm J1:11 - Circ (W)
Arm J2:2 - Circ (E)
Arm J1:2 - M180 - Off Slip
Arm J1:10 - Circ (S)
Arm J2:1 - A180 Off Slip
Arm J1:7 - M180 On Slip
Arm J1:1 - A
Arm J1:6 - to Lo
A
B
C
D
E

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**124.6%**
J1: M180 J5 Barnetby Interchange (priority)	-	-	**N/A**	-	-		-	-	-	-	-	-	**118.8%**
1/2+1/1	A18 Left Ahead	O	N/A	N/A	-		-	-	-	977	1900:1900	448+448	99.4 : 118.8%
2/1	M180 - Off Slip U-Turn Ahead	O	N/A	N/A	-		-	-	-	533	1900	459	116.2%
2/2	M180 - Off Slip Ahead	O	N/A	N/A	-		-	-	-	532	1900	459	116.0%
3/1	Barnetby Lane Left Ahead	O	N/A	N/A	-		-	-	-	108	1889	339	31.9%
4/1	A15 Left Ahead	O	N/A	N/A	-		-	-	-	727	1900	683	106.5%
4/2	A15 Ahead	O	N/A	N/A	-		-	-	-	729	1900	683	106.8%
5/1	A180 On Slip	U	N/A	N/A	-		-	-	-	498	Inf	Inf	0.0%
5/2	A180 On Slip	U	N/A	N/A	-		-	-	-	81	Inf	Inf	0.0%
6/1	to Lorry Park	U	N/A	N/A	-		-	-	-	1314	Inf	Inf	0.0%
7/1	M180 On Slip	U	N/A	N/A	-		-	-	-	1031	Inf	Inf	0.0%
8/1	to Elsham	U	N/A	N/A	-		-	-	-	187	Inf	Inf	0.0%
9/1	to Humber Bridge	U	N/A	N/A	-		-	-	-	609	Inf	Inf	0.0%
9/2	to Humber Bridge	U	N/A	N/A	-		-	-	-	884	Inf	Inf	0.0%
10/1	Circ (S) Ahead Right	U	N/A	N/A	-		-	-	-	738	1900	1900	35.5%
10/2	Circ (S) Right	U	N/A	N/A	-		-	-	-	498	1900	1900	21.1%
11/1	Circ (W) Left Right	U	N/A	N/A	-		-	-	-	239	1900	1900	10.4%
11/2	Circ (W) Right	U	N/A	N/A	-		-	-	-	943	1900	1900	44.5%
12/1	Circ (NW) Left	U	N/A	N/A	-		-	-	-	585	1900	1900	26.2%

Full Input Data And Results

12/2	Circ (NW) Left Right	U	N/A	N/A	-		-	-	-	1475	1900	1900	68.6%
13/1	Circ (N) Ahead	U	N/A	N/A	-		-	-	-	161	1900	1900	8.5%
13/2	Circ (N) Right	U	N/A	N/A	-		-	-	-	514	1900	1900	23.8%
J2: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**124.6%**
1/1	A180 Off Slip Left Ahead	U	N/A	N/A	B		1	9	-	500	1926	401	124.6%
1/2	A180 Off Slip Ahead	U	N/A	N/A	B		1	9	-	498	1922	400	124.4%
2/1	Circ (E) Ahead	U	N/A	N/A	A		1	26	-	945	1948	1096	77.9%
2/2	Circ (E) Right	U	N/A	N/A	A		1	26	-	607	1948	1096	52.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**4176**	**0**	**0**	**26.1**	**293.7**	**0.0**	**319.8**	**-**	**-**	**-**	**-**
J1: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**4176**	**0**	**0**	**13.4**	**188.4**	**0.0**	**201.8**	**-**	**-**	**-**	**-**
1/2+1/1	977	893	1785	0	0	4.4	47.5	-	51.8	190.9	18.3	47.5	65.8
2/1	533	459	459	0	0	2.8	40.4	-	43.2	291.6	16.9	40.4	57.3
2/2	532	459	459	0	0	2.7	39.9	-	42.7	288.8	16.8	39.9	56.8
3/1	108	108	108	0	0	0.3	0.2	-	0.5	17.6	1.0	0.2	1.2
4/1	727	683	683	0	0	1.6	28.6	-	30.2	149.4	23.0	28.6	51.6
4/2	729	683	683	0	0	1.6	29.4	-	31.1	153.4	23.3	29.4	52.7
5/1	472	472	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	81	81	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1150	1150	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	925	925	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	159	159	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	522	522	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	776	776	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	675	675	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
10/2	400	400	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
11/1	198	198	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
11/2	845	845	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
12/1	498	498	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
12/2	1304	1304	-	-	-	0.0	1.1	-	1.1	3.1	5.9	1.1	7.0
13/1	161	161	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
13/2	452	452	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
J2: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**0**	**0**	**0**	**12.7**	**105.3**	**0.0**	**118.0**	**-**	**-**	**-**	**-**

Full Input Data And Results

1/1	500	401	-	-	-	4.9	51.8	-	56.7	408.4	8.0	51.8	59.8
1/2	498	400	-	-	-	4.9	51.2	-	56.1	405.6	7.9	51.2	59.2
2/1	854	854	-	-	-	1.9	1.7	-	3.7	15.5	8.2	1.7	9.9
2/2	570	570	-	-	-	1.0	0.5	-	1.5	9.4	5.1	0.5	5.6

C1 PRC for Signalled Lanes (%): -38.5 Total Delay for Signalled Lanes (pcuHr): 117.99 Cycle Time (s): 48

PRC Over All Lanes (%): -38.5 Total Delay Over All Lanes(pcuHr): 319.78

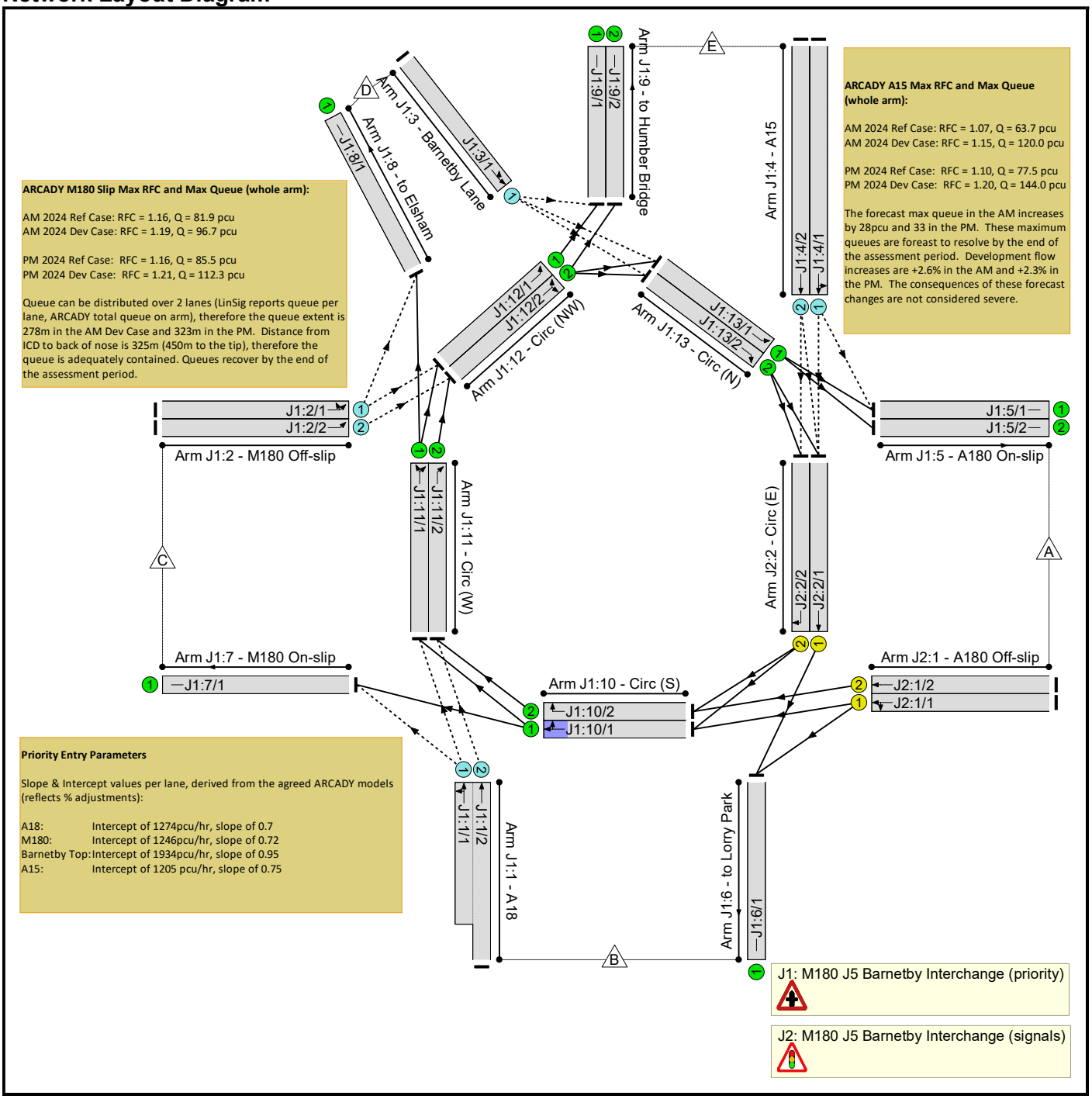
Full Input Data And Results

User and Project Details

Project:	**065182 Barnetby Top Lorry Park**
Title:	**M180 Jcn 5 Junction Improvement**
Location:	
Model Purpose:	Model of the existing priority controlled layout.
Model Assumptions:	Slopes and intercepts have been taken from the calibrated ARCADY, amended with intercept corrections rather than % capacity adjustments. NB results differ as the ARCADY is One Hour (profiles) while LinSig models a flat hour. The priority parameters for the A18 entry have been adjusted to give the same queue and DoS as the ref case, but with a slope of 1.0. This allows the model to give a better response to signal timing adjustments - teh higher slope value means little traffic enters the roundabout when opposed, but more can enter when there are gaps which is more aligned with real operation.
Safety Considerations:	+1s has been applied to both intergreens to reflect potential high speeds and long vehicle content. Short additional intergreens are configured to help create gaps for the A18 entry. These would be linked to queue detatection, i.e. only used when a queue exists and limited to ~+4s. These can be configured in the controller as an additional AR stage and/or with an AR extension.
Additional detail:	
File name:	065182 M180 Jcn 5 AM Improved Layout 4a (ARCADY).lsg3x
Author:	R Bishop
Company:	SLR
Address:	Birmingham

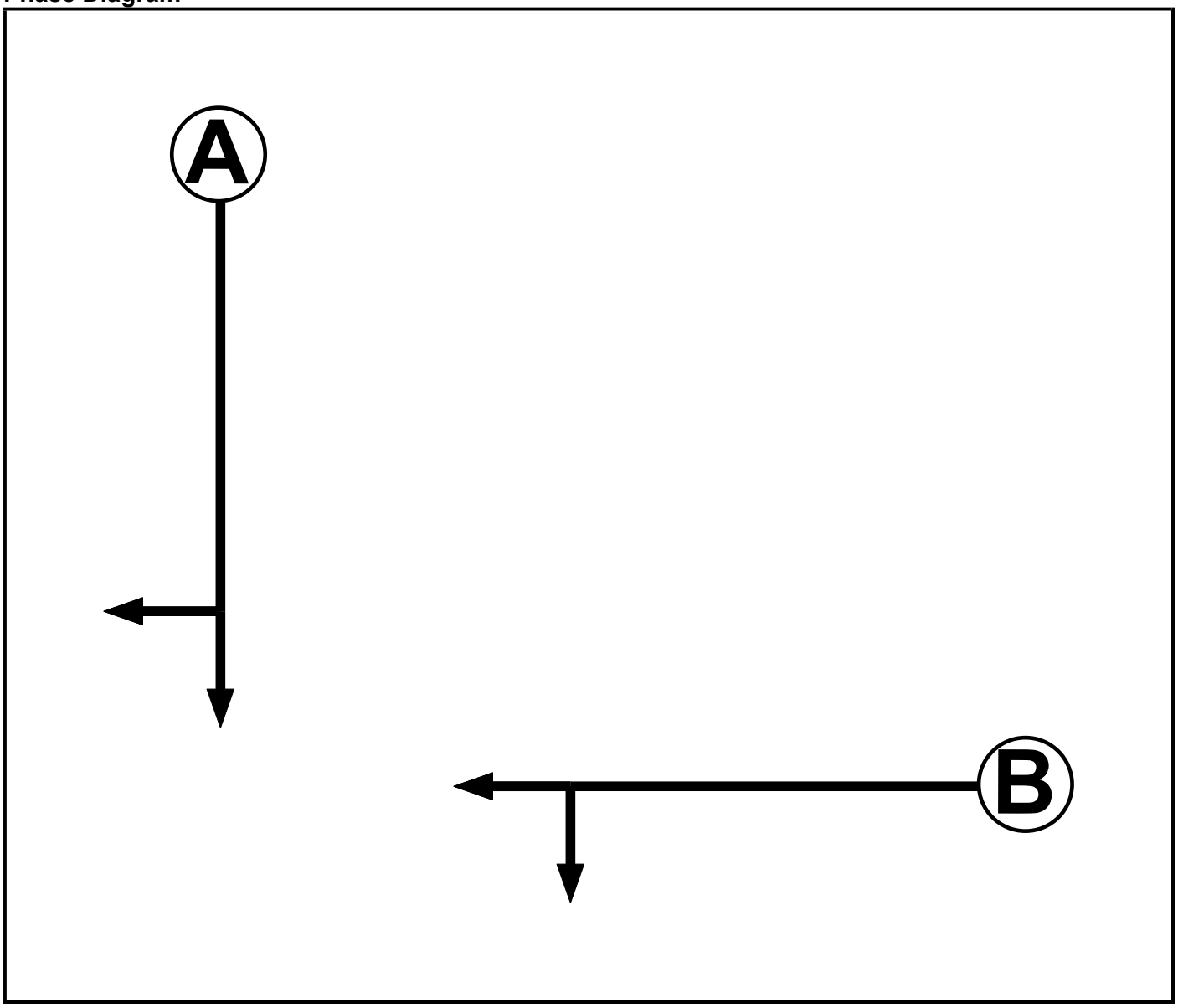
Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		-9999	7
B	Traffic		-9999	7

Phase Intergreens Matrix

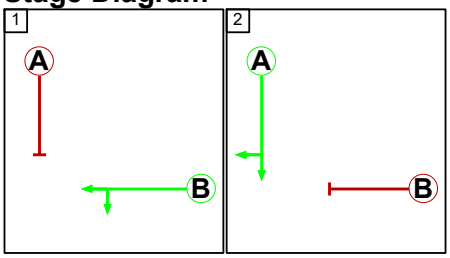
	Starting Phase		
		A	B
Terminating Phase	A		6
	B	10	

Phases in Stage

Stage No.	Phases in Stage
1	B
2	A

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
		1	2
From Stage	1		10
	2	6	

Full Input Data And Results

Give-Way Lane Input Data

Junction: J1: M180 J5 Barnetby Interchange (priority)											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
J1:1/1 (A18)	J1:7/1 (Left)	1274	0	J1:10/1	0.70	All	-	-	-	-	-
				J1:10/2	0.70	All					
	J1:11/1 (Ahead)	1274	0	J1:10/1	0.70	All					
				J1:10/2	0.70	All					
J1:1/2 (A18)	J1:11/2 (Ahead)	1274	0	J1:10/1	0.70	All	-	-	-	-	-
				J1:10/2	0.70	All					
J1:2/1 (M180 Off-slip)	J1:8/1 (Left)	1246	0	J1:11/1	0.72	All	-	-	-	-	-
				J1:11/2	0.72	All					
	J1:12/1 (Ahead)	1246	0	J1:11/1	0.72	All					
				J1:11/2	0.72	All					
J1:2/2 (M180 Off-slip)	J1:12/2 (Ahead)	1246	0	J1:11/1	0.72	All	-	-	-	-	-
				J1:11/2	0.72	All					
J1:3/1 (Barnetby Lane)	J1:9/1 (U-Turn)	1934	0	J1:12/1	0.95	All	-	-	-	-	-
				J1:12/2	0.95	All					
	J1:13/1 (Ahead)	1934	0	J1:12/1	0.95	All					
				J1:12/2	0.95	All					
	J1:13/2 (Ahead)	1934	0	J1:12/1	0.95	All					
				J1:12/2	0.95	All					
J1:4/1 (A15)	J1:5/1 (Left)	1205	0	J1:13/1	0.75	All	-	-	-	-	-
				J1:13/2	0.75	All					
	J2:2/1 (Ahead)	1205	0	J1:13/1	0.75	All					
				J1:13/2	0.75	All					
J1:4/2	J2:2/1 (Ahead)	1205	0	J1:13/1	0.75	All	-	-	-	-	-

(A15)				J1:13/2	0.75	All					
	J2:2/2 (Ahead)	1205	0	J1:13/1	0.75	All					
				J1:13/2	0.75	All					

Junction: J2: M180 J5 Barnetby Interchange (signals)
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: J1: M180 J5 Barnetby Interchange (priority)												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
J1:1/1 (A18)	O		2	3	12.0	User	1900	-	-	-	-	-
J1:1/2 (A18)	O		2	3	27.0	User	1900	-	-	-	-	-
J1:2/1 (M180 Off-slip)	O		2	3	58.0	User	1900	-	-	-	-	-
J1:2/2 (M180 Off-slip)	O		2	3	58.0	User	1900	-	-	-	-	-
J1:3/1 (Barnetby Lane)	O		2	3	60.0	Geom	-	3.25	0.00	Y	Arm J1:9 U-Turn Arm J1:13 Ahead	21.00 107.00
J1:4/1 (A15)	O		2	3	60.0	User	1900	-	-	-	-	-
J1:4/2 (A15)	O		2	3	60.0	User	1900	-	-	-	-	-
J1:5/1 (A180 On-slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:5/2 (A180 On-slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:6/1 (to Lorry Park)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:7/1 (M180 On-slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:8/1 (to Elsham)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:9/1 (to Humber Bridge)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:9/2 (to Humber Bridge)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:10/1 (Circ (S))	U		2	3	20.9	User	1900	-	-	-	-	-
J1:10/2 (Circ (S))	U		2	3	20.9	User	1900	-	-	-	-	-
J1:11/1 (Circ (W))	U		2	3	30.6	User	1900	-	-	-	-	-
J1:11/2 (Circ (W))	U		2	3	30.6	User	1900	-	-	-	-	-
J1:12/1 (Circ (NW))	U		2	3	9.4	User	1900	-	-	-	-	-

J1:12/2 (Circ (NW))	U		2	3	9.4	User	1900	-	-	-	-	-
J1:13/1 (Circ (N))	U		2	3	13.0	User	1900	-	-	-	-	-
J1:13/2 (Circ (N))	U		2	3	13.0	User	1900	-	-	-	-	-

Junction: J2: M180 J5 Barnetby Interchange (signals)

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
J2:1/1 (A180 Off-slip)	U	B	2	3	53.0	Geom	-	3.65	1.00	Y	Arm J1:6 Left	180.00
											Arm J1:10 Ahead	Inf
J2:1/2 (A180 Off-slip)	U	B	2	3	53.0	Geom	-	3.65	1.00	Y	Arm J1:10 Ahead	180.00
J2:2/1 (Circ (E))	U	A	2	3	20.0	Geom	-	3.65	0.00	Y	Arm J1:6 Ahead	90.00
J2:2/2 (Circ (E))	U	A	2	3	20.0	Geom	-	3.65	0.00	Y	Arm J1:10 Right	90.00

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM 2024 No Dev'	07:45	08:45	01:00	
2: 'PM 2024 No Dev'	16:45	17:45	01:00	
3: 'AM 2024 With Dev'	07:45	08:45	01:00	
4: 'PM 2024 With Dev'	16:45	17:45	01:00	

Scenario 1: 'PM 2024 With Dev' (FG3: 'AM 2024 With Dev', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	231	0	28	428	687
	B	207	0	523	31	471	1232
	C	1	358	0	34	598	991
	D	42	34	48	0	40	164
	E	557	356	548	47	0	1508
	Tot.	807	979	1119	140	1537	4582

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: PM 2024 With Dev
Junction: J1: M180 J5 Barnetby Interchange (priority)	
J1:1/1 (short)	616
J1:1/2 (with short)	1232(In) 616(Out)
J1:2/1	495
J1:2/2	496
J1:3/1	164
J1:4/1	754
J1:4/2	754
J1:5/1	683
J1:5/2	124
J1:6/1	979
J1:7/1	1119
J1:8/1	140
J1:9/1	648
J1:9/2	889
J1:10/1	756
J1:10/2	343
J1:11/1	253
J1:11/2	959
J1:12/1	608
J1:12/2	1455
J1:13/1	250
J1:13/2	440
Junction: J2: M180 J5 Barnetby Interchange (signals)	
J2:1/1	344
J2:1/2	343
J2:2/1	748
J2:2/2	643

Full Input Data And Results

Lane Saturation Flows

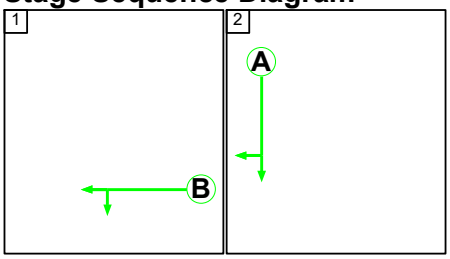
Junction: J1: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (A18 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:1/2 (A18 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/1 (M180 Off-slip Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/2 (M180 Off-slip Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/1 (Barnetby Lane)	3.25	0.00	Y	Arm J1:9 U-Turn	21.00	24.4 %	1887	1887
				Arm J1:13 Ahead	107.00	75.6 %		
J1:4/1 (A15 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/2 (A15 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:5/1 (A180 On-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:5/2 (A180 On-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (to Lorry Park Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/1 (M180 On-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:8/1 (to Elsham Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/1 (to Humber Bridge Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/2 (to Humber Bridge Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:10/1 (Circ (S) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:10/2 (Circ (S) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/1 (Circ (W) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2 (Circ (W) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Circ (NW) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/2 (Circ (NW) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/1 (Circ (N) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/2 (Circ (N) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Junction: J2: M180 J5 Barnetby Interchange (signals)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (A180 Off-slip)	3.65	1.00	Y	Arm J1:6 Left	180.00	67.2 %	1927	1927
				Arm J1:10 Ahead	Inf	32.8 %		
J2:1/2 (A180 Off-slip)	3.65	1.00	Y	Arm J1:10 Ahead	180.00	100.0 %	1922	1922
J2:2/1 (Circ (E))	3.65	0.00	Y	Arm J1:6 Ahead	90.00	100.0 %	1948	1948
J2:2/2 (Circ (E))	3.65	0.00	Y	Arm J1:10 Right	90.00	100.0 %	1948	1948

Scenario 1: 'PM 2024 With Dev' (FG3: 'AM 2024 With Dev', Plan 1: 'Network Control Plan 1')

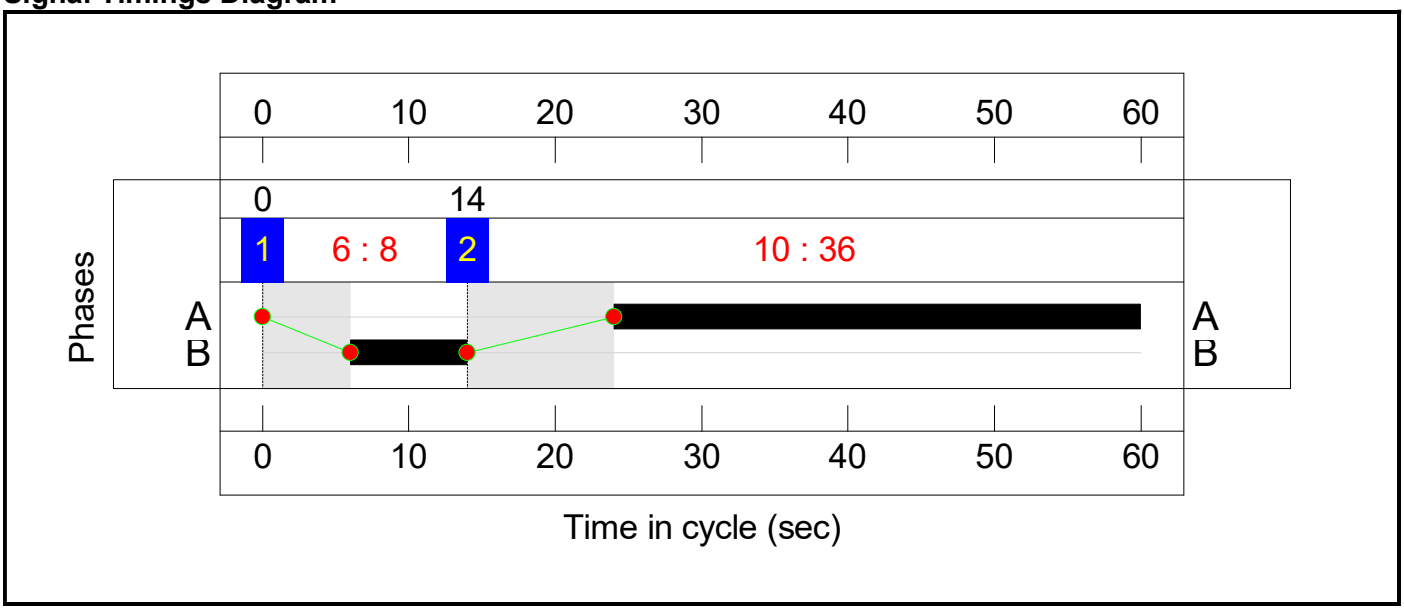
Stage Sequence Diagram



Stage Timings

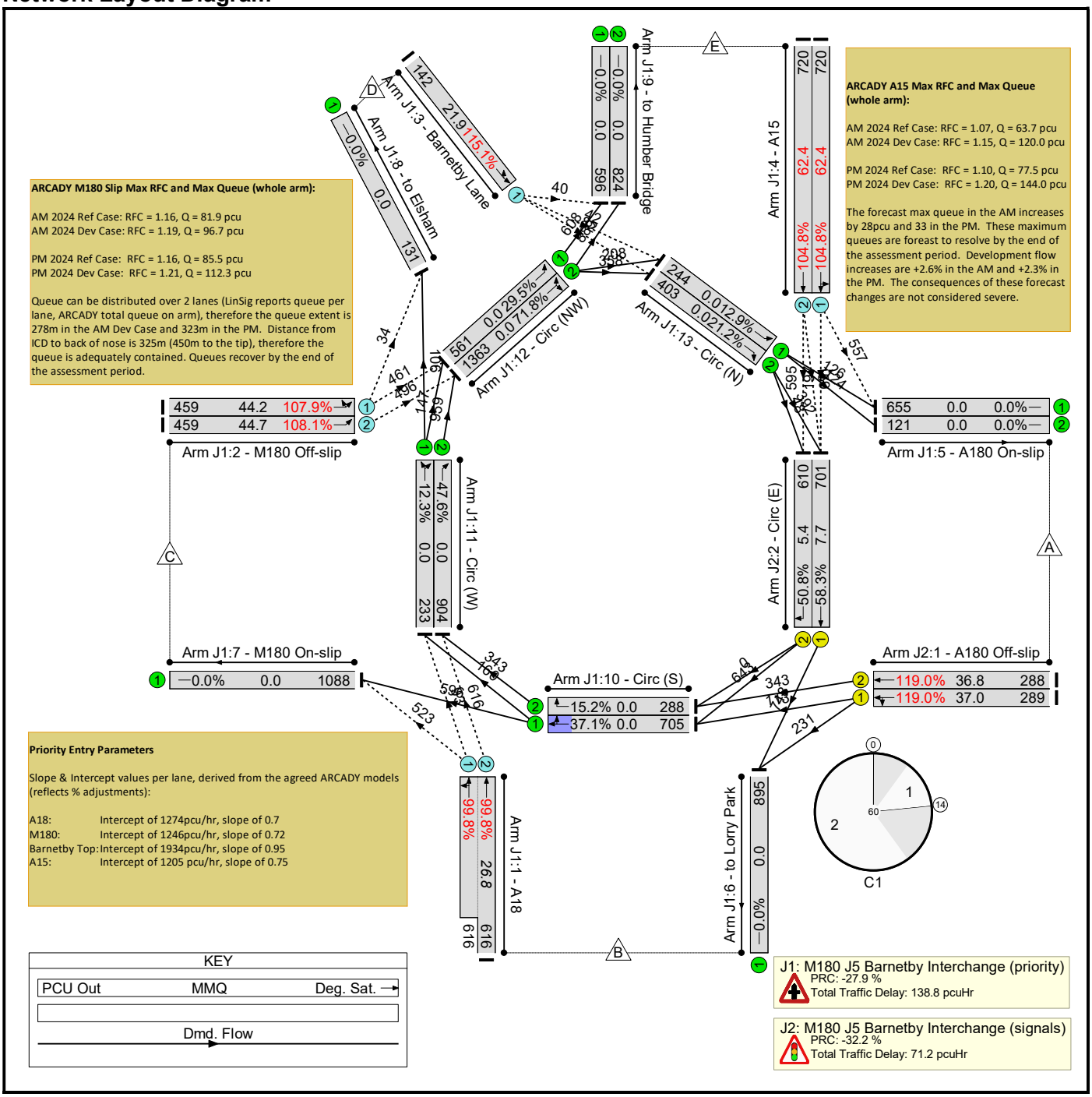
Stage	1	2
Duration	8	36
Change Point	0	14

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: M180 Jcn 5 Junction Improvement	-	-	**N/A**	-	-		-	-	-	-	-	-	**119.0%**
J1: M180 J5 Barnetby Interchange (priority)	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.1%**
1/2+1/1	A18 Left Ahead	O	N/A	N/A	-		-	-	-	1232	1900:1900	617+617	99.8 : 99.8%
2/1	M180 Off-slip Left Ahead	O	N/A	N/A	-		-	-	-	495	1900	459	107.9%
2/2	M180 Off-slip Ahead	O	N/A	N/A	-		-	-	-	496	1900	459	108.1%
3/1	Barnetby Lane U-Turn Ahead	O	N/A	N/A	-		-	-	-	164	1887	142	115.1%
4/1	A15 Left Ahead	O	N/A	N/A	-		-	-	-	754	1900	720	104.8%
4/2	A15 Ahead	O	N/A	N/A	-		-	-	-	754	1900	720	104.8%
5/1	A180 On-slip	U	N/A	N/A	-		-	-	-	683	Inf	Inf	0.0%
5/2	A180 On-slip	U	N/A	N/A	-		-	-	-	124	Inf	Inf	0.0%
6/1	to Lorry Park	U	N/A	N/A	-		-	-	-	979	Inf	Inf	0.0%
7/1	M180 On-slip	U	N/A	N/A	-		-	-	-	1119	Inf	Inf	0.0%
8/1	to Elsham	U	N/A	N/A	-		-	-	-	140	Inf	Inf	0.0%
9/1	to Humber Bridge	U	N/A	N/A	-		-	-	-	648	Inf	Inf	0.0%
9/2	to Humber Bridge	U	N/A	N/A	-		-	-	-	889	Inf	Inf	0.0%
10/1	Circ (S) Ahead Right	U	N/A	N/A	-		-	-	-	756	1900	1900	37.1%
10/2	Circ (S) Right	U	N/A	N/A	-		-	-	-	343	1900	1900	15.2%
11/1	Circ (W) Ahead Right	U	N/A	N/A	-		-	-	-	253	1900	1900	12.3%
11/2	Circ (W) Right	U	N/A	N/A	-		-	-	-	959	1900	1900	47.6%
12/1	Circ (NW) Left	U	N/A	N/A	-		-	-	-	608	1900	1900	29.5%

Full Input Data And Results

12/2	Circ (NW) Left Right	U	N/A	N/A	-		-	-	-	1455	1900	1900	71.8%
13/1	Circ (N) Ahead	U	N/A	N/A	-		-	-	-	250	1900	1900	12.9%
13/2	Circ (N) Right	U	N/A	N/A	-		-	-	-	440	1900	1900	21.2%
J2: M180 J5 Barnetby Interchange (signals)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**119.0%**
1/1	A180 Off-slip Left Ahead	U	N/A	N/A	B		1	8	-	344	1927	289	119.0%
1/2	A180 Off-slip Ahead	U	N/A	N/A	B		1	8	-	343	1922	288	119.0%
2/1	Circ (E) Ahead	U	N/A	N/A	A		1	36	-	748	1948	1201	58.3%
2/2	Circ (E) Right	U	N/A	N/A	A		1	36	-	643	1948	1201	50.8%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: M180 Jcn 5 Junction Improvement	**-**	**-**	**4964**	**0**	**0**	**22.4**	**187.7**	**0.0**	**210.0**	**-**	**-**	**-**	**-**
J1: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**4964**	**0**	**0**	**11.7**	**127.1**	**0.0**	**138.8**	**-**	**-**	**-**	**-**
1/2+1/1	1232	1232	2464	0	0	2.1	16.8	-	18.9 (9.5+9.5)	55.3 (55.3:55.3)	9.9	16.8	26.8
2/1	495	459	459	0	0	2.1	23.3	-	25.4	184.8	20.9	23.3	44.2
2/2	496	459	459	0	0	2.1	23.7	-	25.9	187.7	20.9	23.7	44.7
3/1	164	142	142	0	0	1.5	13.7	-	15.2	333.8	8.2	13.7	21.9
4/1	754	720	720	0	0	2.0	24.7	-	26.7	127.5	37.7	24.7	62.4
4/2	754	720	720	0	0	2.0	24.7	-	26.7	127.5	37.7	24.7	62.4
5/1	655	655	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	121	121	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	895	895	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1088	1088	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	131	131	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	596	596	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	824	824	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	705	705	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	288	288	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	233	233	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	904	904	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	561	561	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1363	1363	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	244	244	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	403	403	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

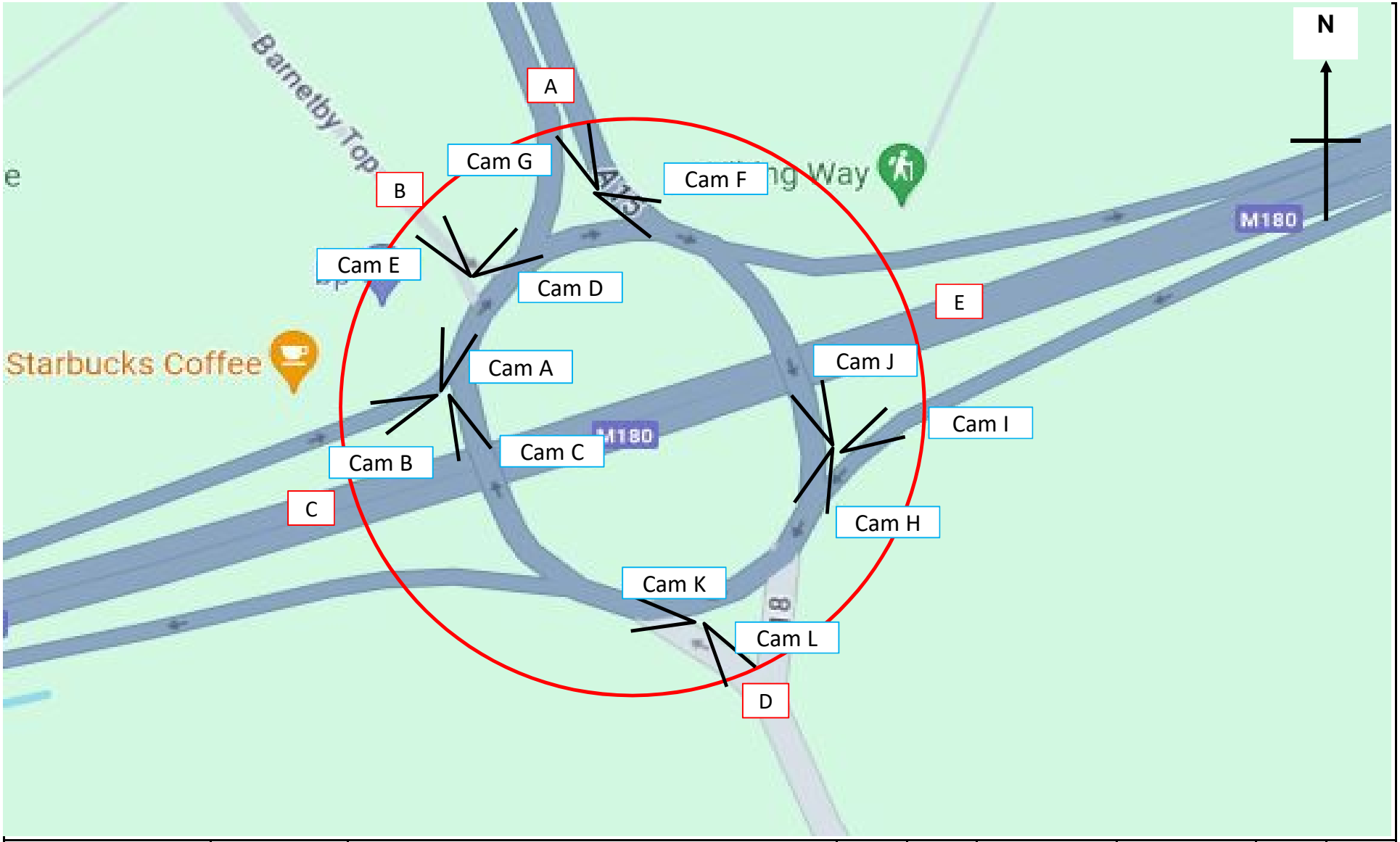
J2: M180 J5 Barnetby Interchange (signals)	**-**	**-**	**0**	**0**	**0**	**10.7**	**60.5**	**0.0**	**71.2**	**-**	**-**	**-**	**-**
1/1	344	289	-	-	-	4.1	30.3	-	34.4	360.0	6.6	30.3	37.0
1/2	343	288	-	-	-	4.1	30.2	-	34.3	359.6	6.6	30.2	36.8
2/1	701	701	-	-	-	1.4	0.0	-	1.4	7.0	7.7	0.0	7.7
2/2	610	610	-	-	-	1.2	0.0	-	1.2	7.0	5.4	0.0	5.4

C1 PRC for Signalled Lanes (%): -32.2 Total Delay for Signalled Lanes (pcuHr): 71.21 Cycle Time (s): 60

PRC Over All Lanes (%): -32.2 Total Delay Over All Lanes(pcuHr): 210.02

Appendix C Traffic Signal Information

Appendix D Raw Queue Data



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 1 - M180 / A180 junction (M180 J5)	**Project No:**	15052	**Drawing No:**	15052-01	**Drawn By:** DC
	Survey Date:	Tuesday 20th February 2024	**Project Name:**	Immingham			
	Survey Times:	06:00 – 09:00 / 15:00 – 18:00	**Drawing Title:**	Site Layout and Observed Movements			

Site: 1
Location: M180 / A180 junction (M180 J5)
Date: Tuesday, February 20, 2024

Time	ARM A	
	Lane 1	Lane 2
6:00	1	0
6:05	0	2
6:10	0	3
6:15	0	0
6:20	3	0
6:25	1	0
6:30	1	1
6:35	3	3
6:40	0	4
6:45	3	2
6:50	0	6
6:55	0	4
7:00	5	2
7:05	2	2
7:10	3	5
7:15	3	1
7:20	8	7
7:25	5	2
7:30	7	10
7:35	3	6
7:40	14	8
7:45	20	8
7:50	10	1
7:55	14	10
8:00	11	2
8:05	13	5
8:10	5	4
8:15	20	3
8:20	13	2
8:25	8	2
8:30	2	1
8:35	14	10
8:40	14	1
8:45	2	1
8:50	5	3
8:55	5	1
Max Queue	20	10

Time	ARM B	
	Lane 1	Lane 2
6:00	1	0
6:05	1	1
6:10	2	1
6:15	2	1
6:20	2	1
6:25	1	0
6:30	3	0
6:35	6	1
6:40	2	2
6:45	3	0
6:50	3	1
6:55	2	1
7:00	2	1
7:05	3	2
7:10	5	3
7:15	2	2
7:20	7	1
7:25	6	2
7:30	5	1
7:35	3	2
7:40	5	1
7:45	7	2
7:50	2	0
7:55	3	3
8:00	2	2
8:05	8	3
8:10	2	3
8:15	8	1
8:20	4	0
8:25	6	1
8:30	3	1
8:35	8	1
8:40	9	3
8:45	4	2
8:50	1	3
8:55	5	2
Max Queue	9	3

Time	ARM C	
	Lane 1	Lane 2
6:00	2	1
6:05	1	1
6:10	2	2
6:15	8	1
6:20	11	4
6:25	5	1
6:30	5	2
6:35	9	2
6:40	8	4
6:45	15	2
6:50	14	2
6:55	22	10
7:00	23	13
7:05	14	8
7:10	16	10
7:15	11	5
7:20	12	7
7:25	18	9
7:30	22	11
7:35	15	6
7:40	9	7
7:45	4	5
7:50	13	12
7:55	9	5
8:00	23	11
8:05	29	19
8:10	28	13
8:15	20	8
8:20	21	7
8:25	28	8
8:30	28	5
8:35	12	8
8:40	11	7
8:45	23	6
8:50	9	2
8:55	3	2
Max Queue	29	19

Site: 1
Location: M180 / A180 junction (M180 J5)
Date: Tuesday, February 20, 2024

Time	ARM A	
Time	ARM A	
	Lane 1	Lane 2
15:00	1	4
15:05	2	2
15:10	1	1
15:15	2	1
15:20	0	3
15:25	6	4
15:30	0	2
15:35	2	0
15:40	4	4
15:45	2	4
15:50	0	1
15:55	1	9
16:00	21	5
16:05	5	10
16:10	1	6
16:15	0	0
16:20	1	2
16:25	3	2
16:30	8	6
16:35	6	10
16:40	6	5
16:45	11	3
16:50	6	1
16:55	6	3
17:00	4	3
17:05	16	5
17:10	5	3
17:15	3	7
17:20	9	3
17:25	9	0
17:30	4	3
17:35	5	7
17:40	17	2
17:45	4	6
17:50	6	5
17:55	3	4
Max Queue	21	10

Time	ARM B	
Time	ARM B	
	Lane 1	Lane 2
15:00	2	2
15:05	8	3
15:10	4	1
15:15	2	0
15:20	3	3
15:25	3	0
15:30	4	2
15:35	2	0
15:40	4	3
15:45	4	3
15:50	3	0
15:55	3	2
16:00	7	3
16:05	3	1
16:10	4	1
16:15	4	0
16:20	7	2
16:25	3	1
16:30	4	2
16:35	3	2
16:40	2	2
16:45	3	2
16:50	3	2
16:55	2	2
17:00	6	3
17:05	5	0
17:10	5	3
17:15	4	3
17:20	3	2
17:25	1	0
17:30	6	1
17:35	6	0
17:40	3	2
17:45	3	1
17:50	1	0
17:55	4	1
Max Queue	8	3

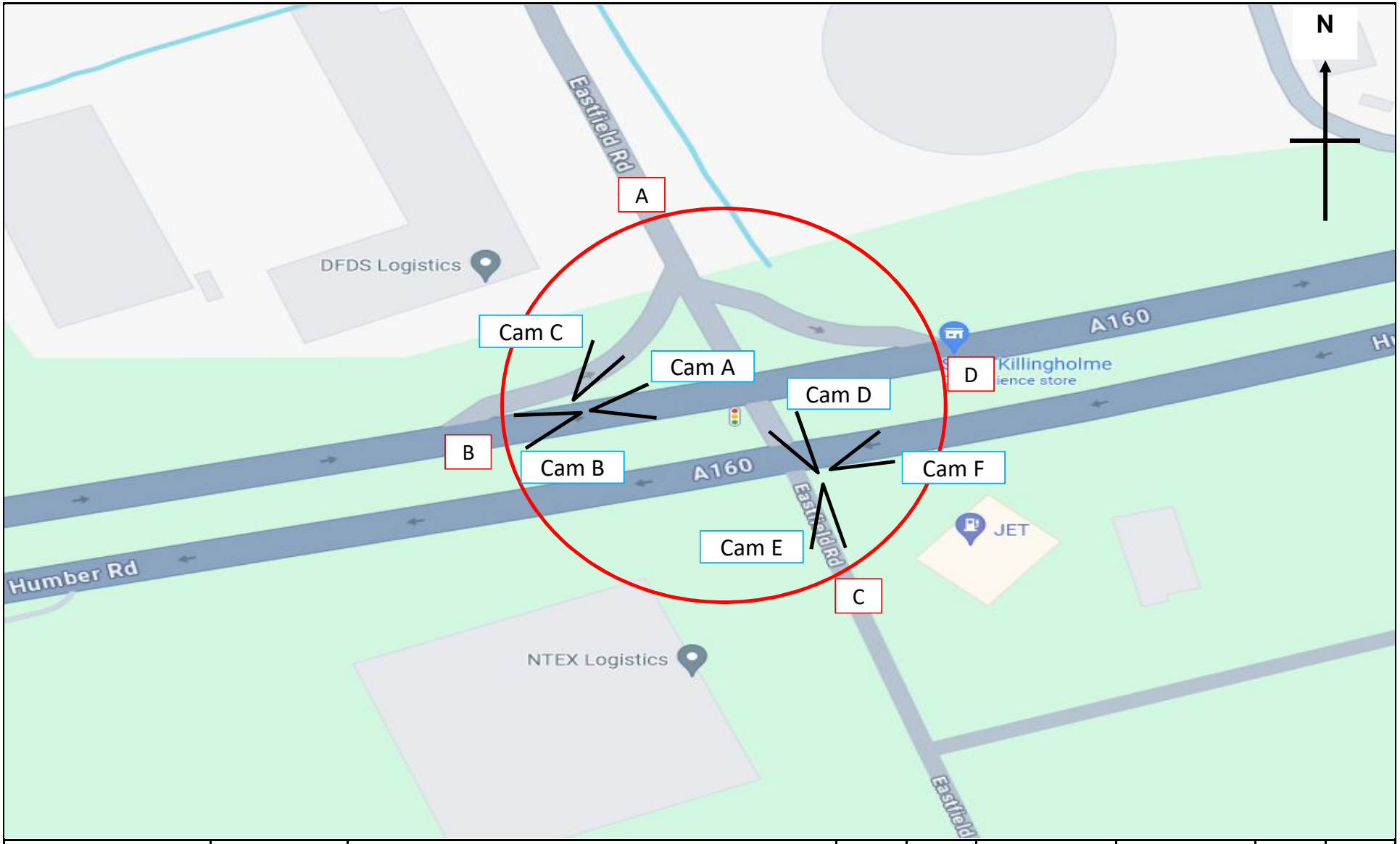
Time	ARM C	
Time	ARM C	
	Lane 1	Lane 2
15:00	2	2
15:05	7	4
15:10	8	4
15:15	8	6
15:20	4	3
15:25	5	3
15:30	11	8
15:35	15	2
15:40	4	3
15:45	7	4
15:50	18	12
15:55	11	7
16:00	15	9
16:05	22	9
16:10	20	12
16:15	12	6
16:20	22	12
16:25	23	7
16:30	8	5
16:35	9	8
16:40	13	9
16:45	20	6
16:50	17	8
16:55	17	15
17:00	21	7
17:05	16	4
17:10	11	9
17:15	19	15
17:20	15	5
17:25	17	4
17:30	14	5
17:35	12	10
17:40	5	4
17:45	11	5
17:50	9	3
17:55	4	5
Max Queue	23	15

Time	ARM D	
	Lane 1	Lane 2
6:00	1	2
6:05	2	1
6:10	3	2
6:15	1	1
6:20	1	0
6:25	4	1
6:30	4	1
6:35	1	0
6:40	6	4
6:45	20	6
6:50	1	1
6:55	9	5
7:00	9	1
7:05	7	5
7:10	4	2
7:15	1	1
7:20	6	3
7:25	9	7
7:30	9	8
7:35	2	5
7:40	4	6
7:45	3	1
7:50	6	1
7:55	3	2
8:00	7	1
8:05	5	4
8:10	6	1
8:15	8	11
8:20	6	8
8:25	10	2
8:30	4	4
8:35	13	1
8:40	17	0
8:45	5	3
8:50	2	4
8:55	9	4
Max Queue	20	11

Time	ARM E	
	Lane 1	Lane 2
6:00	0	3
6:05	0	2
6:10	0	3
6:15	1	4
6:20	0	3
6:25	0	3
6:30	1	6
6:35	0	2
6:40	1	2
6:45	2	6
6:50	0	7
6:55	1	5
7:00	1	12
7:05	0	7
7:10	1	10
7:15	1	5
7:20	1	9
7:25	1	13
7:30	3	9
7:35	1	3
7:40	0	4
7:45	3	11
7:50	1	4
7:55	0	9
8:00	3	9
8:05	1	8
8:10	2	10
8:15	2	16
8:20	10	23
8:25	3	17
8:30	1	14
8:35	3	6
8:40	1	4
8:45	1	7
8:50	1	11
8:55	1	6
Max Queue	10	23

Time	ARM D	
Time	ARM D	
	Lane 1	Lane 2
15:00	4	1
15:05	5	0
15:10	13	2
15:15	6	0
15:20	2	2
15:25	3	1
15:30	6	2
15:35	5	0
15:40	2	1
15:45	8	1
15:50	22	3
15:55	3	1
16:00	10	1
16:05	6	2
16:10	23	5
16:15	3	2
16:20	6	2
16:25	2	1
16:30	10	3
16:35	8	4
16:40	3	7
16:45	7	0
16:50	4	2
16:55	3	3
17:00	4	1
17:05	6	2
17:10	32	4
17:15	7	1
17:20	6	2
17:25	3	1
17:30	1	2
17:35	3	2
17:40	6	5
17:45	4	1
17:50	2	3
17:55	6	0
Max Queue	32	7

Time	ARM E	
Time	ARM E	
	Lane 1	Lane 2
15:00	1	12
15:05	2	11
15:10	2	13
15:15	1	4
15:20	2	9
15:25	1	6
15:30	1	12
15:35	2	9
15:40	2	9
15:45	2	7
15:50	4	12
15:55	4	12
16:00	2	9
16:05	4	9
16:10	15	17
16:15	20	27
16:20	10	20
16:25	9	27
16:30	14	23
16:35	18	21
16:40	11	15
16:45	26	28
16:50	28	34
16:55	24	27
17:00	9	24
17:05	12	26
17:10	17	26
17:15	9	24
17:20	12	19
17:25	6	20
17:30	8	8
17:35	11	15
17:40	8	16
17:45	8	12
17:50	4	12
17:55	1	7
Max Queue	28	34



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 2 - A160 / Eastfield	**Project No:**	15052	**Drawing No:**	15052-02	**Drawn By:** DC
	Survey Date:	Tuesday 20th February 2024	**Project Name:**	Immingham			
	Survey Times:	06:00 – 09:00 / 15:00 – 18:00	**Drawing Title:**	Site Layout and Observed Movements			

Site: 2
Location: A160 / Eastfield
Date: Tuesday, February 20, 2024

Time	ARM A	
	Lane 1	Lane 2
6:00	1	6
6:05	3	3
6:10	2	4
6:15	2	7
6:20	1	10
6:25	1	11
6:30	3	10
6:35	0	8
6:40	1	3
6:45	1	5
6:50	2	4
6:55	2	7
7:00	1	4
7:05	1	5
7:10	1	3
7:15	2	3
7:20	2	4
7:25	4	3
7:30	4	4
7:35	3	3
7:40	1	5
7:45	3	6
7:50	1	2
7:55	2	4
8:00	3	4
8:05	4	3
8:10	3	6
8:15	3	2
8:20	1	2
8:25	2	7
8:30	3	1
8:35	3	3
8:40	3	2
8:45	1	6
8:50	1	2
8:55	4	2
Max Queue	4	11

Time	ARM B			
	Lane 1	Lane 2	Lane 3	Lane 4
6:00	0	5	3	3
6:05	3	6	4	4
6:10	1	9	7	1
6:15	2	5	6	1
6:20	0	5	5	1
6:25	2	4	4	2
6:30	2	7	7	1
6:35	2	7	7	1
6:40	3	8	6	3
6:45	1	13	4	2
6:50	4	13	10	1
6:55	1	5	3	3
7:00	4	6	5	3
7:05	2	8	8	2
7:10	2	8	8	2
7:15	6	7	9	4
7:20	0	15	16	3
7:25	0	15	16	2
7:30	2	8	10	1
7:35	0	16	17	3
7:40	0	16	17	2
7:45	3	16	16	0
7:50	2	16	14	2
7:55	0	14	15	3
8:00	0	13	13	3
8:05	1	11	12	1
8:10	3	7	9	1
8:15	0	7	12	2
8:20	0	5	7	1
8:25	0	15	5	2
8:30	1	7	7	2
8:35	0	4	4	2
8:40	0	7	5	2
8:45	0	6	6	1
8:50	0	7	12	2
8:55	0	6	8	1
Max Queue	6	16	17	4

Time	ARM C
	Lane 1
6:00	7
6:05	3
6:10	4
6:15	5
6:20	5
6:25	4
6:30	4
6:35	5
6:40	6
6:45	8
6:50	5
6:55	1
7:00	5
7:05	4
7:10	3
7:15	3
7:20	5
7:25	6
7:30	5
7:35	3
7:40	5
7:45	7
7:50	5
7:55	6
8:00	5
8:05	5
8:10	3
8:15	3
8:20	4
8:25	6
8:30	3
8:35	3
8:40	4
8:45	4
8:50	4
8:55	4
Max Queue	8

Site: 2
Location: A160 / Eastfield
Date: Tuesday, February 20, 2024

Time	ARM A

Time	ARM B

Time	ARM C

Time	ARM A	
	Lane 1	Lane 2
15:00	2	7
15:05	5	2
15:10	2	7
15:15	2	4
15:20	4	8
15:25	4	7
15:30	5	10
15:35	3	15
15:40	2	3
15:45	1	8
15:50	5	8
15:55	2	6
16:00	3	36
16:05	5	39
16:10	5	38
16:15	2	35
16:20	2	25
16:25	5	32
16:30	4	36
16:35	4	33
16:40	3	16
16:45	2	11
16:50	2	21
16:55	1	13
17:00	4	23
17:05	4	31
17:10	3	14
17:15	5	19
17:20	3	20
17:25	4	16
17:30	2	38
17:35	4	43
17:40	4	45
17:45	5	36
17:50	6	13
17:55	2	4
Max Queue	6	45

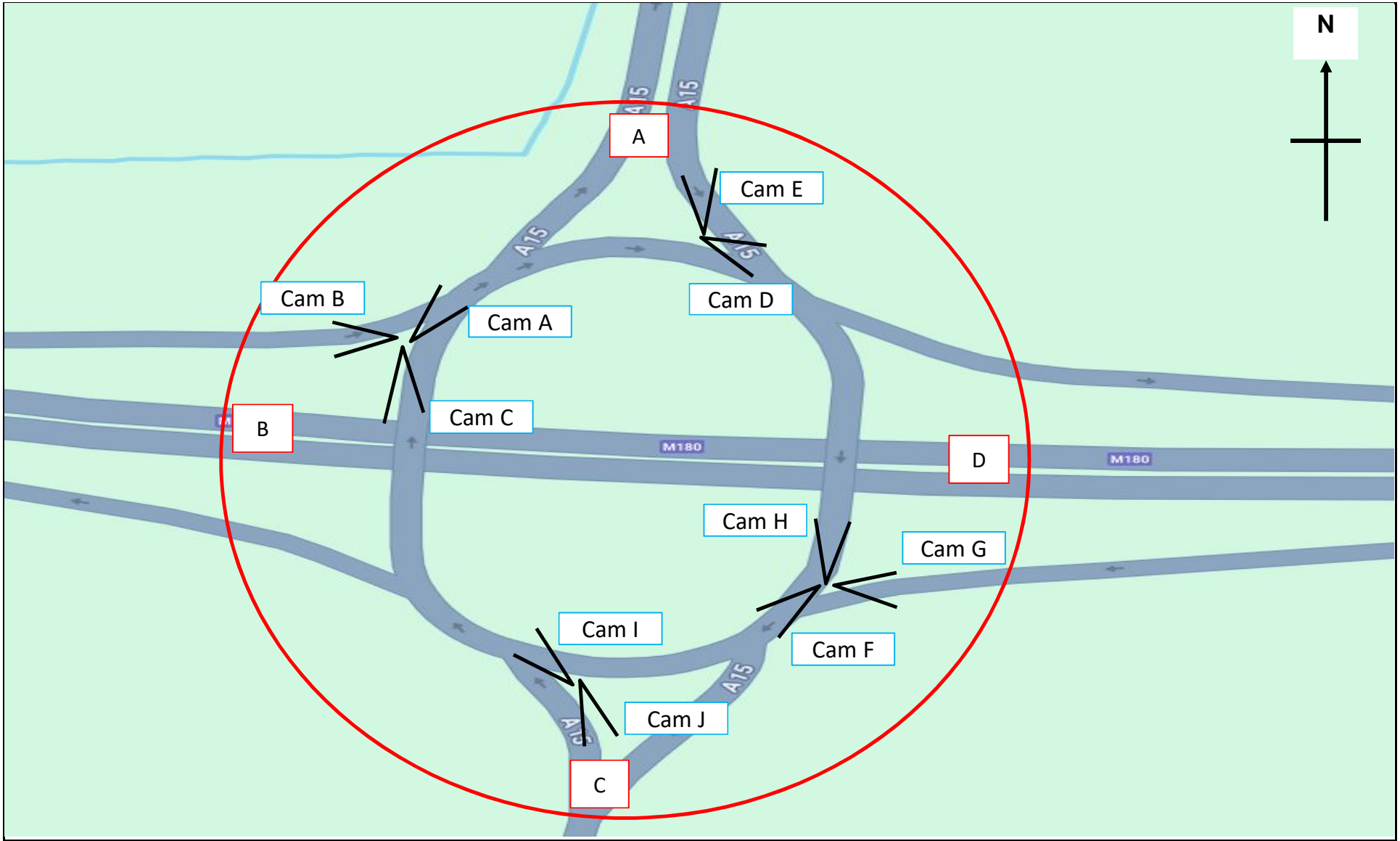
Time	ARM B			
	Lane 1	Lane 2	Lane 3	Lane 4
15:00	0	13	8	1
15:05	0	14	15	0
15:10	0	6	7	0
15:15	1	13	7	0
15:20	0	7	4	1
15:25	0	11	7	2
15:30	0	8	5	1
15:35	0	9	5	1
15:40	0	7	6	1
15:45	0	9	5	1
15:50	0	11	5	2
15:55	0	6	9	1
16:00	1	8	4	2
16:05	0	9	5	2
16:10	0	12	3	2
16:15	3	7	8	1
16:20	0	8	7	2
16:25	0	5	5	1
16:30	0	10	9	4
16:35	1	7	6	2
16:40	0	4	4	2
16:45	0	5	3	2
16:50	0	15	10	3
16:55	1	3	3	1
17:00	0	3	2	1
17:05	0	8	10	0
17:10	0	8	10	0
17:15	0	10	8	2
17:20	0	10	6	2
17:25	0	6	5	1
17:30	1	7	3	2
17:35	0	5	10	1
17:40	1	8	4	2
17:45	0	5	4	0
17:50	0	5	4	1
17:55	0	5	3	1
Max Queue	3	15	15	4

Time	ARM C
	Lane 1
15:00	5
15:05	6
15:10	2
15:15	3
15:20	4
15:25	6
15:30	3
15:35	5
15:40	5
15:45	4
15:50	5
15:55	5
16:00	5
16:05	4
16:10	5
16:15	4
16:20	5
16:25	3
16:30	6
16:35	6
16:40	6
16:45	4
16:50	4
16:55	6
17:00	9
17:05	4
17:10	6
17:15	4
17:20	7
17:25	5
17:30	5
17:35	5
17:40	4
17:45	3
17:50	4
17:55	4
Max Queue	9

Time	ARM D		
	Lane 1	Lane 2	Lane 3
6:00	3	2	8
6:05	4	4	4
6:10	6	2	2
6:15	7	4	5
6:20	4	2	2
6:25	5	1	4
6:30	7	3	4
6:35	9	6	3
6:40	8	7	6
6:45	7	2	6
6:50	4	3	7
6:55	6	7	6
7:00	7	7	7
7:05	9	6	4
7:10	11	8	7
7:15	11	5	6
7:20	8	5	6
7:25	10	9	4
7:30	9	7	3
7:35	12	11	1
7:40	10	6	6
7:45	13	5	1
7:50	13	4	4
7:55	7	5	1
8:00	5	4	2
8:05	14	6	5
8:10	7	5	3
8:15	13	7	1
8:20	8	6	2
8:25	9	6	4
8:30	6	6	2
8:35	3	2	3
8:40	5	4	3
8:45	8	4	4
8:50	4	2	3
8:55	8	6	3
Max Queue	14	11	8

Time	ARM D

Time	ARM D		
	Lane 1	Lane 2	Lane 3
15:00	4	4	3
15:05	7	6	1
15:10	12	11	2
15:15	8	7	2
15:20	7	5	4
15:25	7	9	2
15:30	6	6	3
15:35	8	6	0
15:40	8	11	6
15:45	10	13	2
15:50	8	8	3
15:55	6	13	2
16:00	10	15	4
16:05	9	18	4
16:10	9	16	3
16:15	9	4	1
16:20	9	12	1
16:25	8	9	4
16:30	10	15	5
16:35	7	12	6
16:40	11	13	2
16:45	9	16	3
16:50	8	12	3
16:55	6	10	1
17:00	7	11	4
17:05	11	23	2
17:10	10	12	3
17:15	6	14	3
17:20	7	10	2
17:25	8	10	3
17:30	5	8	5
17:35	5	4	4
17:40	6	9	3
17:45	6	7	3
17:50	8	6	4
17:55	3	6	3
Max Queue	12	23	6



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 3 - Broughton Interchange Road	**Project No:**	15052	**Drawing No:**	15052-03	**Drawn By:**	DC
	Survey Date:	Tuesday 20th February 2024	**Project Name:**	Immingham				
	Survey Times:	06:00 – 09:00 / 15:00 – 18:00	**Drawing Title:**	Site Layout and Observed Movements				

Site: 3
Location: Broughton Interchange Road
Date: Tuesday, February 20, 2024

Time	ARM A	
	Lane 1	Lane 2
6:00	1	0
6:05	1	1
6:10	0	1
6:15	4	1
6:20	0	0
6:25	2	1
6:30	6	0
6:35	0	0
6:40	0	0
6:45	5	0
6:50	6	1
6:55	1	0
7:00	5	3
7:05	0	0
7:10	15	1
7:15	6	1
7:20	9	2
7:25	3	1
7:30	10	0
7:35	8	0
7:40	4	2
7:45	7	1
7:50	6	1
7:55	9	1
8:00	3	0
8:05	1	0
8:10	1	0
8:15	7	4
8:20	5	4
8:25	2	2
8:30	3	0
8:35	8	2
8:40	11	2
8:45	0	0
8:50	3	1
8:55	1	0
Max Queue	15	4

Time	ARM B	
	Lane 1	Lane 2
6:00	1	1
6:05	0	1
6:10	1	1
6:15	0	2
6:20	1	0
6:25	1	0
6:30	1	2
6:35	1	1
6:40	1	2
6:45	3	1
6:50	2	1
6:55	1	3
7:00	2	9
7:05	7	1
7:10	3	5
7:15	3	1
7:20	1	1
7:25	2	5
7:30	6	3
7:35	6	2
7:40	11	6
7:45	6	3
7:50	6	7
7:55	5	7
8:00	10	14
8:05	5	5
8:10	3	7
8:15	8	4
8:20	8	4
8:25	9	6
8:30	5	12
8:35	18	19
8:40	8	18
8:45	6	3
8:50	2	2
8:55	2	2
Max Queue	18	19

Time	ARM C	
	Lane 1	Lane 2
6:00	0	0
6:05	0	1
6:10	1	0
6:15	0	5
6:20	0	0
6:25	0	2
6:30	0	8
6:35	2	2
6:40	2	1
6:45	3	4
6:50	2	15
6:55	1	5
7:00	4	14
7:05	5	1
7:10	1	5
7:15	2	8
7:20	1	11
7:25	1	4
7:30	5	7
7:35	3	22
7:40	3	24
7:45	4	9
7:50	1	30
7:55	3	9
8:00	5	12
8:05	3	2
8:10	3	15
8:15	2	16
8:20	3	5
8:25	3	5
8:30	3	24
8:35	4	23
8:40	2	7
8:45	4	4
8:50	2	7
8:55	1	2
Max Queue	5	30

Site: 3
Location: Broughton Interchange Road
Date: Tuesday, February 20, 2024

Time	ARM A	
Time	ARM A	
	Lane 1	Lane 2
15:00	11	0
15:05	0	1
15:10	1	3
15:15	3	0
15:20	1	4
15:25	11	3
15:30	3	3
15:35	1	2
15:40	0	0
15:45	5	2
15:50	6	0
15:55	0	1
16:00	3	4
16:05	0	2
16:10	0	0
16:15	6	1
16:20	8	0
16:25	0	0
16:30	1	0
16:35	6	2
16:40	4	0
16:45	2	2
16:50	3	0
16:55	10	1
17:00	4	2
17:05	0	0
17:10	1	2
17:15	0	0
17:20	2	0
17:25	2	0
17:30	1	3
17:35	0	0
17:40	2	0
17:45	2	0
17:50	0	0
17:55	0	1
Max Queue	11	4

Time	ARM B	
Time	ARM B	
	Lane 1	Lane 2
15:00	4	2
15:05	2	2
15:10	1	2
15:15	2	5
15:20	2	2
15:25	1	4
15:30	6	3
15:35	5	3
15:40	2	1
15:45	4	2
15:50	3	2
15:55	2	5
16:00	3	4
16:05	6	9
16:10	17	7
16:15	14	3
16:20	3	4
16:25	13	12
16:30	7	6
16:35	3	4
16:40	4	8
16:45	7	9
16:50	9	3
16:55	7	6
17:00	4	8
17:05	4	2
17:10	11	2
17:15	15	2
17:20	9	6
17:25	13	12
17:30	21	15
17:35	4	3
17:40	11	4
17:45	10	5
17:50	11	7
17:55	6	7
Max Queue	21	15

Time	ARM C	
Time	ARM C	
	Lane 1	Lane 2
15:00	2	8
15:05	2	9
15:10	1	2
15:15	2	4
15:20	0	14
15:25	1	11
15:30	3	12
15:35	4	10
15:40	3	15
15:45	4	6
15:50	4	6
15:55	2	12
16:00	2	26
16:05	1	24
16:10	4	8
16:15	4	21
16:20	2	15
16:25	3	20
16:30	2	15
16:35	5	12
16:40	1	21
16:45	4	14
16:50	2	21
16:55	3	9
17:00	2	11
17:05	2	18
17:10	4	4
17:15	0	24
17:20	5	22
17:25	4	4
17:30	3	13
17:35	1	15
17:40	5	19
17:45	3	2
17:50	4	17
17:55	2	21
Max Queue	5	26

Time	ARM D	
	Lane 1	Lane 2
6:00	3	1
6:05	1	1
6:10	2	1
6:15	1	2
6:20	3	3
6:25	1	1
6:30	4	3
6:35	1	3
6:40	2	2
6:45	5	1
6:50	4	8
6:55	4	3
7:00	4	3
7:05	4	14
7:10	6	8
7:15	5	14
7:20	6	3
7:25	9	3
7:30	15	4
7:35	2	14
7:40	4	15
7:45	15	15
7:50	8	15
7:55	3	13
8:00	2	16
8:05	2	9
8:10	5	11
8:15	6	16
8:20	8	15
8:25	4	14
8:30	4	15
8:35	1	11
8:40	4	15
8:45	1	10
8:50	2	3
8:55	2	5
Max Queue	15	16

Time	ARM D	
Time	ARM D	
	Lane 1	Lane 2
15:00	1	8
15:05	7	5
15:10	2	4
15:15	7	8
15:20	3	4
15:25	4	5
15:30	3	5
15:35	6	4
15:40	3	14
15:45	2	14
15:50	3	6
15:55	2	5
16:00	2	9
16:05	2	14
16:10	2	16
16:15	4	15
16:20	4	16
16:25	5	14
16:30	6	16
16:35	7	15
16:40	3	15
16:45	3	16
16:50	5	15
16:55	5	14
17:00	1	16
17:05	2	16
17:10	1	15
17:15	4	16
17:20	15	15
17:25	4	17
17:30	7	16
17:35	3	16
17:40	2	15
17:45	1	14
17:50	3	15
17:55	2	12
Max Queue	15	17

Appendix E Barnetby Lorry Park LinSig Model Outputs

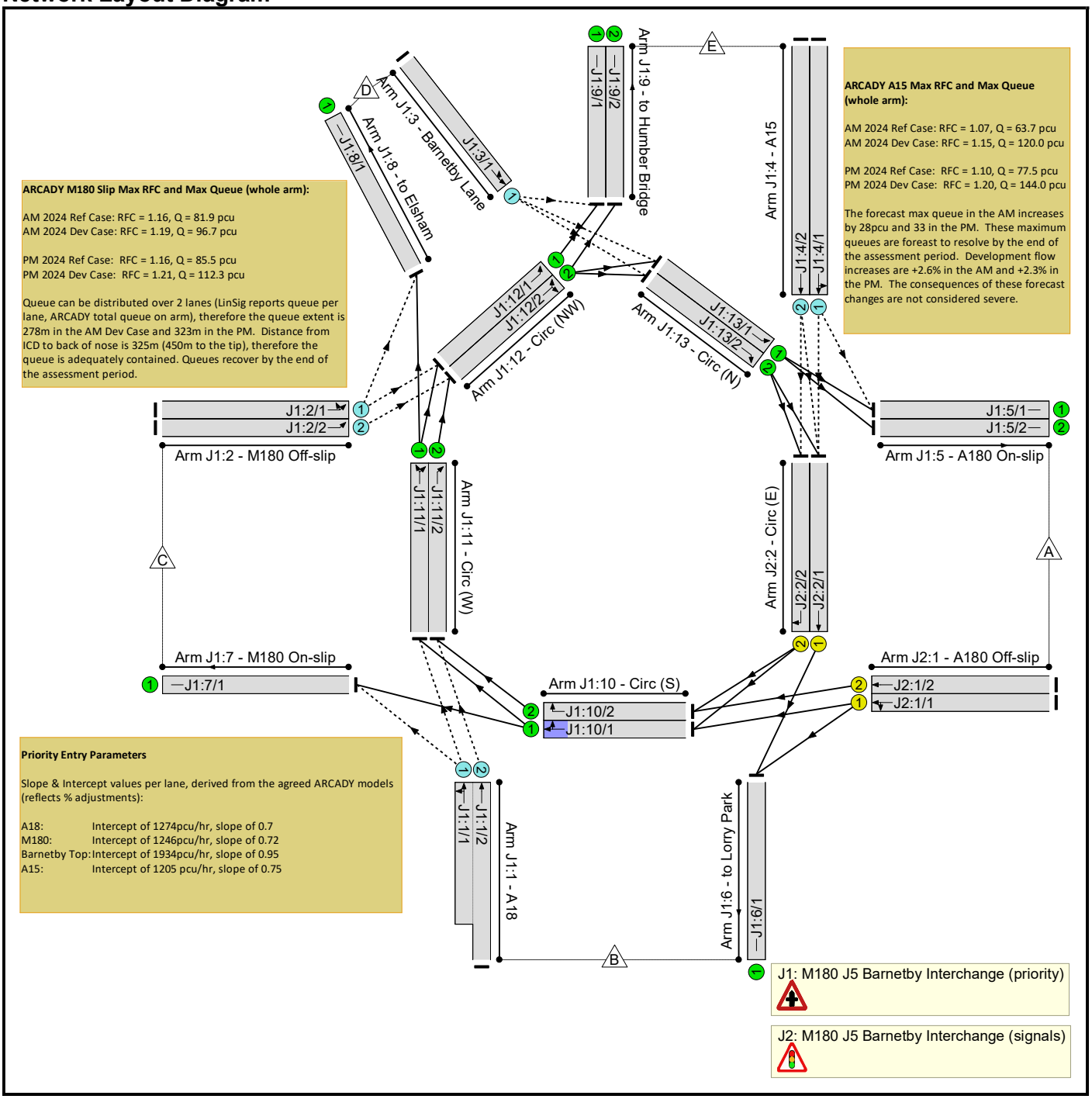
Full Input Data And Results

User and Project Details

Project:	**065182 Barnetby Top Lorry Park**
Title:	**M180 Jcn 5 Junction Improvement**
Location:	
Model Purpose:	Model of the existing priority controlled layout.
Model Assumptions:	Slopes and intercepts have been taken from the calibrated ARCADY, amended with intercept corrections rather than % capacity adjustments. NB results differ as the ARCADY is One Hour (profiles) while LinSig models a flat hour. The priority parameters for the A18 entry have been adjusted to give the same queue and DoS as the ref case, but with a slope of 1.0. This allows the model to give a better response to signal timing adjustments - teh higher slope value means little traffic enters the roundabout when opposed, but more can enter when there are gaps which is more aligned with real operation.
Safety Considerations:	+1s has been applied to both intergreens to reflect potential high speeds and long vehicle content. Short additional intergreens are configured to help create gaps for the A18 entry. These would be linked to queue detatection, i.e. only used when a queue exists and limited to ~+4s. These can be configured in the controller as an additional AR stage and/or with an AR extension.
Additional detail:	
File name:	065182 M180 Jcn 5 AM Improved Layout 4a (ARCADY).lsg3x
Author:	R Bishop
Company:	SLR
Address:	Birmingham

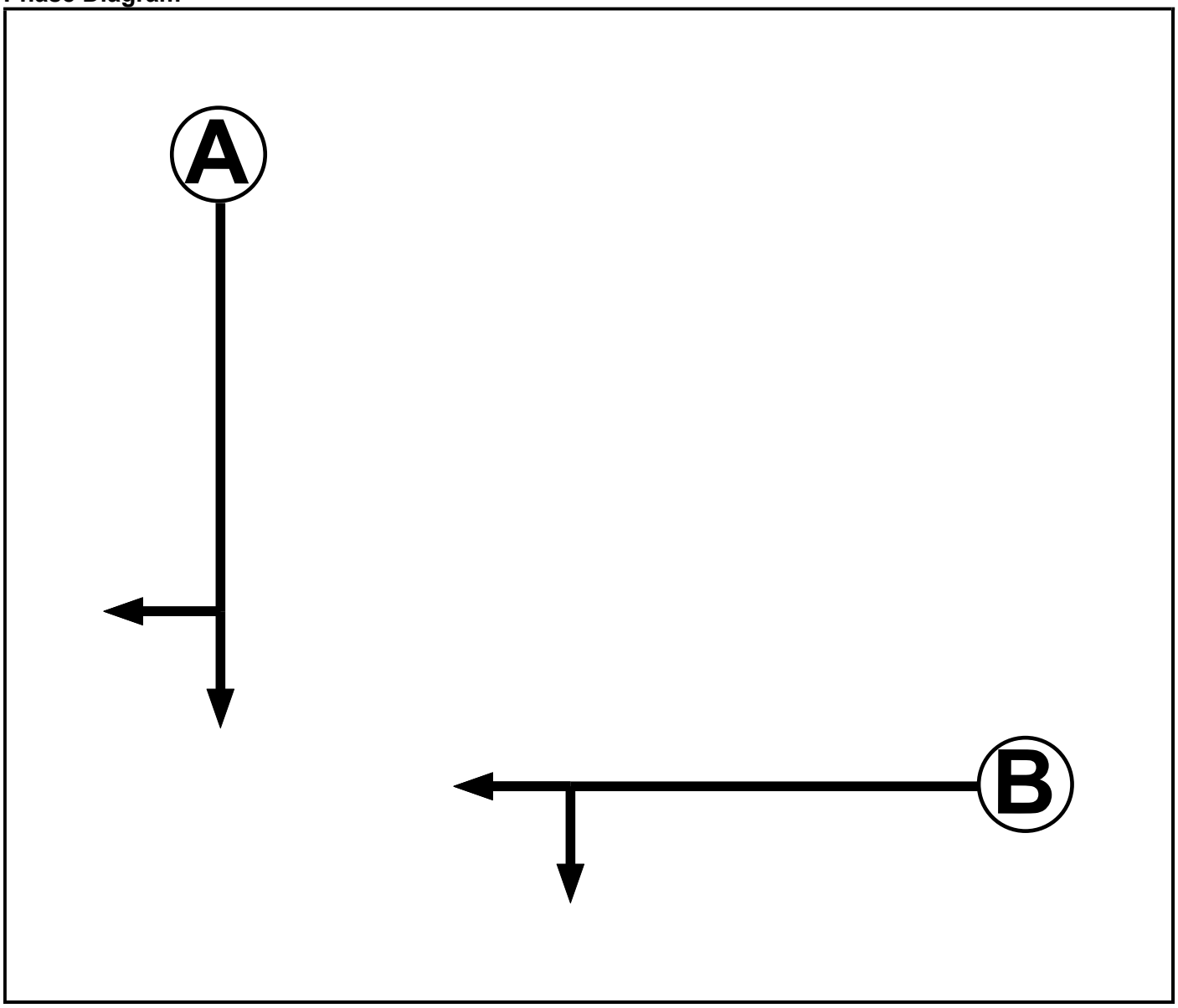
Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		-9999	7
B	Traffic		-9999	7

Phase Intergreens Matrix

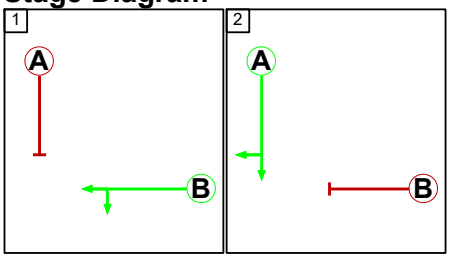
	Starting Phase		
		A	B
Terminating Phase	A		6
	B	10	

Phases in Stage

Stage No.	Phases in Stage
1	B
2	A

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
		1	2
From Stage	1		10
	2	6	

Full Input Data And Results

Give-Way Lane Input Data

Junction: J1: M180 J5 Barnetby Interchange (priority)											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
J1:1/1 (A18)	J1:7/1 (Left)	1274	0	J1:10/1	0.70	All	-	-	-	-	-
				J1:10/2	0.70	All					
	J1:11/1 (Ahead)	1274	0	J1:10/1	0.70	All					
				J1:10/2	0.70	All					
J1:1/2 (A18)	J1:11/2 (Ahead)	1274	0	J1:10/1	0.70	All	-	-	-	-	-
				J1:10/2	0.70	All					
J1:2/1 (M180 Off-slip)	J1:8/1 (Left)	1246	0	J1:11/1	0.72	All	-	-	-	-	-
				J1:11/2	0.72	All					
	J1:12/1 (Ahead)	1246	0	J1:11/1	0.72	All					
				J1:11/2	0.72	All					
J1:2/2 (M180 Off-slip)	J1:12/2 (Ahead)	1246	0	J1:11/1	0.72	All	-	-	-	-	-
				J1:11/2	0.72	All					
J1:3/1 (Barnetby Lane)	J1:9/1 (U-Turn)	1934	0	J1:12/1	0.95	All	-	-	-	-	-
				J1:12/2	0.95	All					
	J1:13/1 (Ahead)	1934	0	J1:12/1	0.95	All					
				J1:12/2	0.95	All					
	J1:13/2 (Ahead)	1934	0	J1:12/1	0.95	All					
				J1:12/2	0.95	All					
J1:4/1 (A15)	J1:5/1 (Left)	1205	0	J1:13/1	0.75	All	-	-	-	-	-
				J1:13/2	0.75	All					
	J2:2/1 (Ahead)	1205	0	J1:13/1	0.75	All					
				J1:13/2	0.75	All					
J1:4/2	J2:2/1 (Ahead)	1205	0	J1:13/1	0.75	All	-	-	-	-	-

(A15)				J1:13/2	0.75	All					
	J2:2/2 (Ahead)	1205	0	J1:13/1	0.75	All					
				J1:13/2	0.75	All					

Junction: J2: M180 J5 Barnetby Interchange (signals)
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: J1: M180 J5 Barnetby Interchange (priority)												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
J1:1/1 (A18)	O		2	3	12.0	User	1900	-	-	-	-	-
J1:1/2 (A18)	O		2	3	27.0	User	1900	-	-	-	-	-
J1:2/1 (M180 Off-slip)	O		2	3	58.0	User	1900	-	-	-	-	-
J1:2/2 (M180 Off-slip)	O		2	3	58.0	User	1900	-	-	-	-	-
J1:3/1 (Barnetby Lane)	O		2	3	60.0	Geom	-	3.25	0.00	Y	Arm J1:9 U-Turn Arm J1:13 Ahead	21.00 107.00
J1:4/1 (A15)	O		2	3	60.0	User	1900	-	-	-	-	-
J1:4/2 (A15)	O		2	3	60.0	User	1900	-	-	-	-	-
J1:5/1 (A180 On-slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:5/2 (A180 On-slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:6/1 (to Lorry Park)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:7/1 (M180 On-slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:8/1 (to Elsham)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:9/1 (to Humber Bridge)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:9/2 (to Humber Bridge)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:10/1 (Circ (S))	U		2	3	20.9	User	1900	-	-	-	-	-
J1:10/2 (Circ (S))	U		2	3	20.9	User	1900	-	-	-	-	-
J1:11/1 (Circ (W))	U		2	3	30.6	User	1900	-	-	-	-	-
J1:11/2 (Circ (W))	U		2	3	30.6	User	1900	-	-	-	-	-
J1:12/1 (Circ (NW))	U		2	3	9.4	User	1900	-	-	-	-	-

J1:12/2 (Circ (NW))	U		2	3	9.4	User	1900	-	-	-	-	-
J1:13/1 (Circ (N))	U		2	3	13.0	User	1900	-	-	-	-	-
J1:13/2 (Circ (N))	U		2	3	13.0	User	1900	-	-	-	-	-

Junction: J2: M180 J5 Barnetby Interchange (signals)

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
J2:1/1 (A180 Off-slip)	U	B	2	3	53.0	Geom	-	3.65	1.00	Y	Arm J1:6 Left	180.00
											Arm J1:10 Ahead	Inf
J2:1/2 (A180 Off-slip)	U	B	2	3	53.0	Geom	-	3.65	1.00	Y	Arm J1:10 Ahead	180.00
J2:2/1 (Circ (E))	U	A	2	3	20.0	Geom	-	3.65	0.00	Y	Arm J1:6 Ahead	90.00
J2:2/2 (Circ (E))	U	A	2	3	20.0	Geom	-	3.65	0.00	Y	Arm J1:10 Right	90.00

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM 2024 No Dev'	07:45	08:45	01:00	
2: 'PM 2024 No Dev'	16:45	17:45	01:00	
3: 'AM 2024 With Dev'	07:45	08:45	01:00	
4: 'PM 2024 With Dev'	16:45	17:45	01:00	

Scenario 1: 'PM 2024 With Dev' (FG3: 'AM 2024 With Dev', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	231	0	28	428	687
	B	207	0	523	31	471	1232
	C	1	358	0	34	598	991
	D	42	34	48	0	40	164
	E	557	356	548	47	0	1508
	Tot.	807	979	1119	140	1537	4582

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: PM 2024 With Dev
Junction: J1: M180 J5 Barnetby Interchange (priority)	
J1:1/1 (short)	616
J1:1/2 (with short)	1232(In) 616(Out)
J1:2/1	495
J1:2/2	496
J1:3/1	164
J1:4/1	754
J1:4/2	754
J1:5/1	683
J1:5/2	124
J1:6/1	979
J1:7/1	1119
J1:8/1	140
J1:9/1	648
J1:9/2	889
J1:10/1	756
J1:10/2	343
J1:11/1	253
J1:11/2	959
J1:12/1	608
J1:12/2	1455
J1:13/1	250
J1:13/2	440
Junction: J2: M180 J5 Barnetby Interchange (signals)	
J2:1/1	344
J2:1/2	343
J2:2/1	748
J2:2/2	643

Full Input Data And Results

Lane Saturation Flows

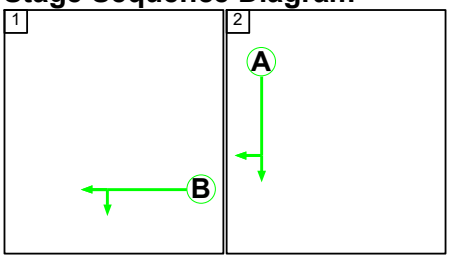
Junction: J1: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (A18 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:1/2 (A18 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/1 (M180 Off-slip Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/2 (M180 Off-slip Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/1 (Barnetby Lane)	3.25	0.00	Y	Arm J1:9 U-Turn	21.00	24.4 %	1887	1887
				Arm J1:13 Ahead	107.00	75.6 %		
J1:4/1 (A15 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/2 (A15 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:5/1 (A180 On-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:5/2 (A180 On-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (to Lorry Park Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/1 (M180 On-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:8/1 (to Elsham Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/1 (to Humber Bridge Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/2 (to Humber Bridge Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:10/1 (Circ (S) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:10/2 (Circ (S) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/1 (Circ (W) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2 (Circ (W) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Circ (NW) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/2 (Circ (NW) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/1 (Circ (N) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/2 (Circ (N) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Junction: J2: M180 J5 Barnetby Interchange (signals)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (A180 Off-slip)	3.65	1.00	Y	Arm J1:6 Left	180.00	67.2 %	1927	1927
				Arm J1:10 Ahead	Inf	32.8 %		
J2:1/2 (A180 Off-slip)	3.65	1.00	Y	Arm J1:10 Ahead	180.00	100.0 %	1922	1922
J2:2/1 (Circ (E))	3.65	0.00	Y	Arm J1:6 Ahead	90.00	100.0 %	1948	1948
J2:2/2 (Circ (E))	3.65	0.00	Y	Arm J1:10 Right	90.00	100.0 %	1948	1948

Scenario 1: 'PM 2024 With Dev' (FG3: 'AM 2024 With Dev', Plan 1: 'Network Control Plan 1')

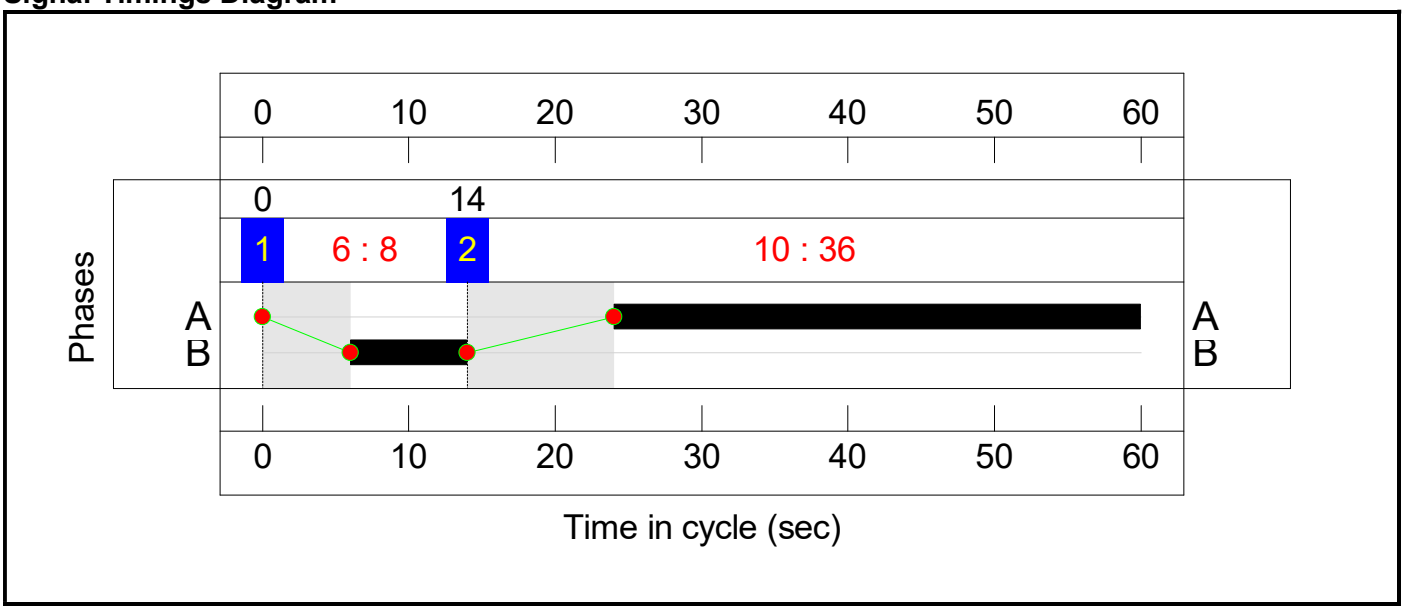
Stage Sequence Diagram



Stage Timings

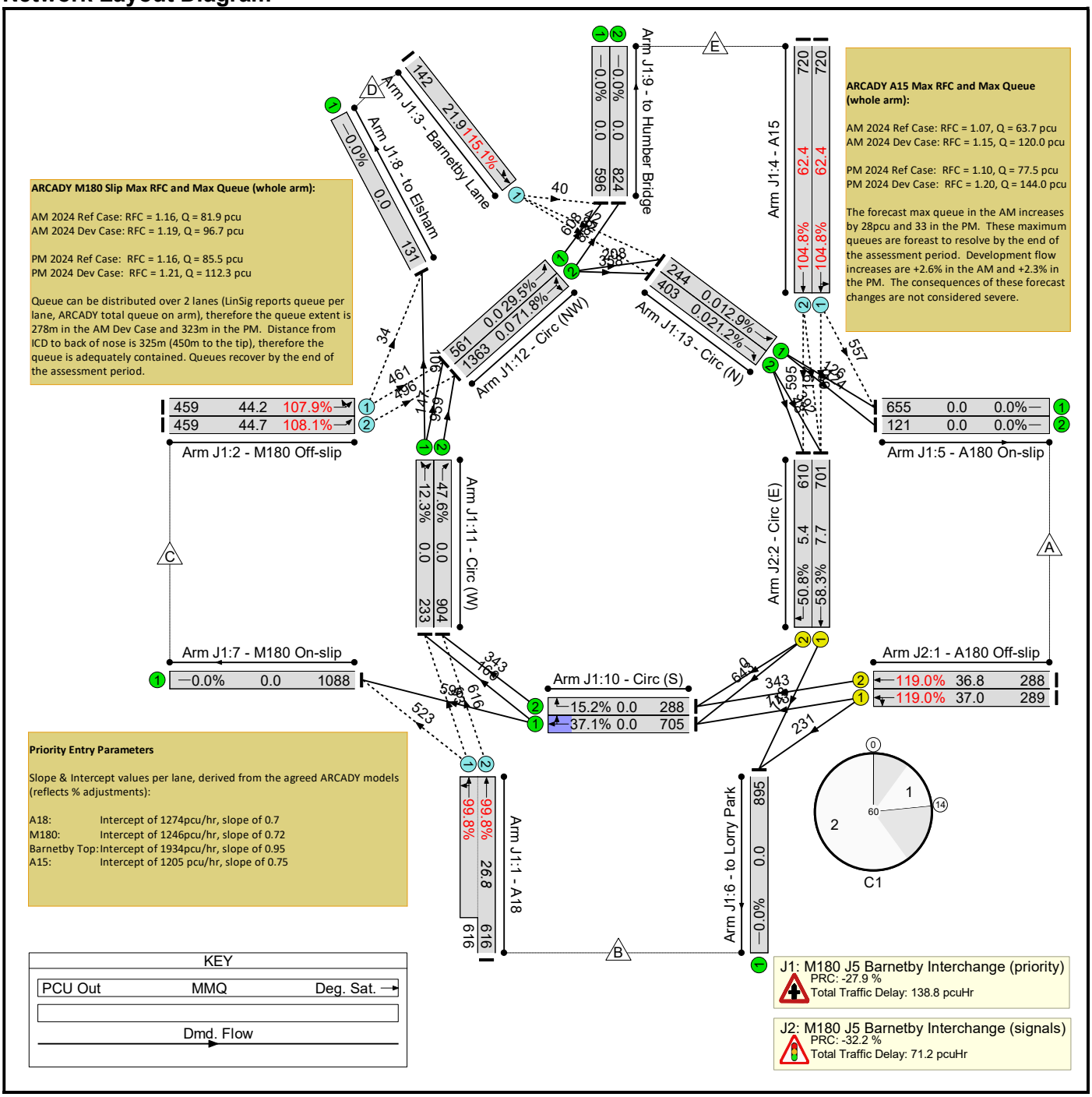
Stage	1	2
Duration	8	36
Change Point	0	14

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: M180 Jcn 5 Junction Improvement	-	-	**N/A**	-	-		-	-	-	-	-	-	**119.0%**
J1: M180 J5 Barnetby Interchange (priority)	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.1%**
1/2+1/1	A18 Left Ahead	O	N/A	N/A	-		-	-	-	1232	1900:1900	617+617	99.8 : 99.8%
2/1	M180 Off-slip Left Ahead	O	N/A	N/A	-		-	-	-	495	1900	459	107.9%
2/2	M180 Off-slip Ahead	O	N/A	N/A	-		-	-	-	496	1900	459	108.1%
3/1	Barnetby Lane U-Turn Ahead	O	N/A	N/A	-		-	-	-	164	1887	142	115.1%
4/1	A15 Left Ahead	O	N/A	N/A	-		-	-	-	754	1900	720	104.8%
4/2	A15 Ahead	O	N/A	N/A	-		-	-	-	754	1900	720	104.8%
5/1	A180 On-slip	U	N/A	N/A	-		-	-	-	683	Inf	Inf	0.0%
5/2	A180 On-slip	U	N/A	N/A	-		-	-	-	124	Inf	Inf	0.0%
6/1	to Lorry Park	U	N/A	N/A	-		-	-	-	979	Inf	Inf	0.0%
7/1	M180 On-slip	U	N/A	N/A	-		-	-	-	1119	Inf	Inf	0.0%
8/1	to Elsham	U	N/A	N/A	-		-	-	-	140	Inf	Inf	0.0%
9/1	to Humber Bridge	U	N/A	N/A	-		-	-	-	648	Inf	Inf	0.0%
9/2	to Humber Bridge	U	N/A	N/A	-		-	-	-	889	Inf	Inf	0.0%
10/1	Circ (S) Ahead Right	U	N/A	N/A	-		-	-	-	756	1900	1900	37.1%
10/2	Circ (S) Right	U	N/A	N/A	-		-	-	-	343	1900	1900	15.2%
11/1	Circ (W) Ahead Right	U	N/A	N/A	-		-	-	-	253	1900	1900	12.3%
11/2	Circ (W) Right	U	N/A	N/A	-		-	-	-	959	1900	1900	47.6%
12/1	Circ (NW) Left	U	N/A	N/A	-		-	-	-	608	1900	1900	29.5%

Full Input Data And Results

12/2	Circ (NW) Left Right	U	N/A	N/A	-		-	-	-	1455	1900	1900	71.8%
13/1	Circ (N) Ahead	U	N/A	N/A	-		-	-	-	250	1900	1900	12.9%
13/2	Circ (N) Right	U	N/A	N/A	-		-	-	-	440	1900	1900	21.2%
J2: M180 J5 Barnetby Interchange (signals)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**119.0%**
1/1	A180 Off-slip Left Ahead	U	N/A	N/A	B		1	8	-	344	1927	289	119.0%
1/2	A180 Off-slip Ahead	U	N/A	N/A	B		1	8	-	343	1922	288	119.0%
2/1	Circ (E) Ahead	U	N/A	N/A	A		1	36	-	748	1948	1201	58.3%
2/2	Circ (E) Right	U	N/A	N/A	A		1	36	-	643	1948	1201	50.8%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: M180 Jcn 5 Junction Improvement	**-**	**-**	**4964**	**0**	**0**	**22.4**	**187.7**	**0.0**	**210.0**	**-**	**-**	**-**	**-**
J1: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**4964**	**0**	**0**	**11.7**	**127.1**	**0.0**	**138.8**	**-**	**-**	**-**	**-**
1/2+1/1	1232	1232	2464	0	0	2.1	16.8	-	18.9 (9.5+9.5)	55.3 (55.3:55.3)	9.9	16.8	26.8
2/1	495	459	459	0	0	2.1	23.3	-	25.4	184.8	20.9	23.3	44.2
2/2	496	459	459	0	0	2.1	23.7	-	25.9	187.7	20.9	23.7	44.7
3/1	164	142	142	0	0	1.5	13.7	-	15.2	333.8	8.2	13.7	21.9
4/1	754	720	720	0	0	2.0	24.7	-	26.7	127.5	37.7	24.7	62.4
4/2	754	720	720	0	0	2.0	24.7	-	26.7	127.5	37.7	24.7	62.4
5/1	655	655	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	121	121	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	895	895	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1088	1088	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	131	131	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	596	596	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	824	824	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	705	705	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	288	288	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	233	233	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	904	904	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	561	561	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1363	1363	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	244	244	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	403	403	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

J2: M180 J5 Barnetby Interchange (signals)	**-**	**-**	**0**	**0**	**0**	**10.7**	**60.5**	**0.0**	**71.2**	**-**	**-**	**-**	**-**
1/1	344	289	-	-	-	4.1	30.3	-	34.4	360.0	6.6	30.3	37.0
1/2	343	288	-	-	-	4.1	30.2	-	34.3	359.6	6.6	30.2	36.8
2/1	701	701	-	-	-	1.4	0.0	-	1.4	7.0	7.7	0.0	7.7
2/2	610	610	-	-	-	1.2	0.0	-	1.2	7.0	5.4	0.0	5.4

C1 PRC for Signalled Lanes (%): -32.2 Total Delay for Signalled Lanes (pcuHr): 71.21 Cycle Time (s): 60

PRC Over All Lanes (%): -32.2 Total Delay Over All Lanes(pcuHr): 210.02

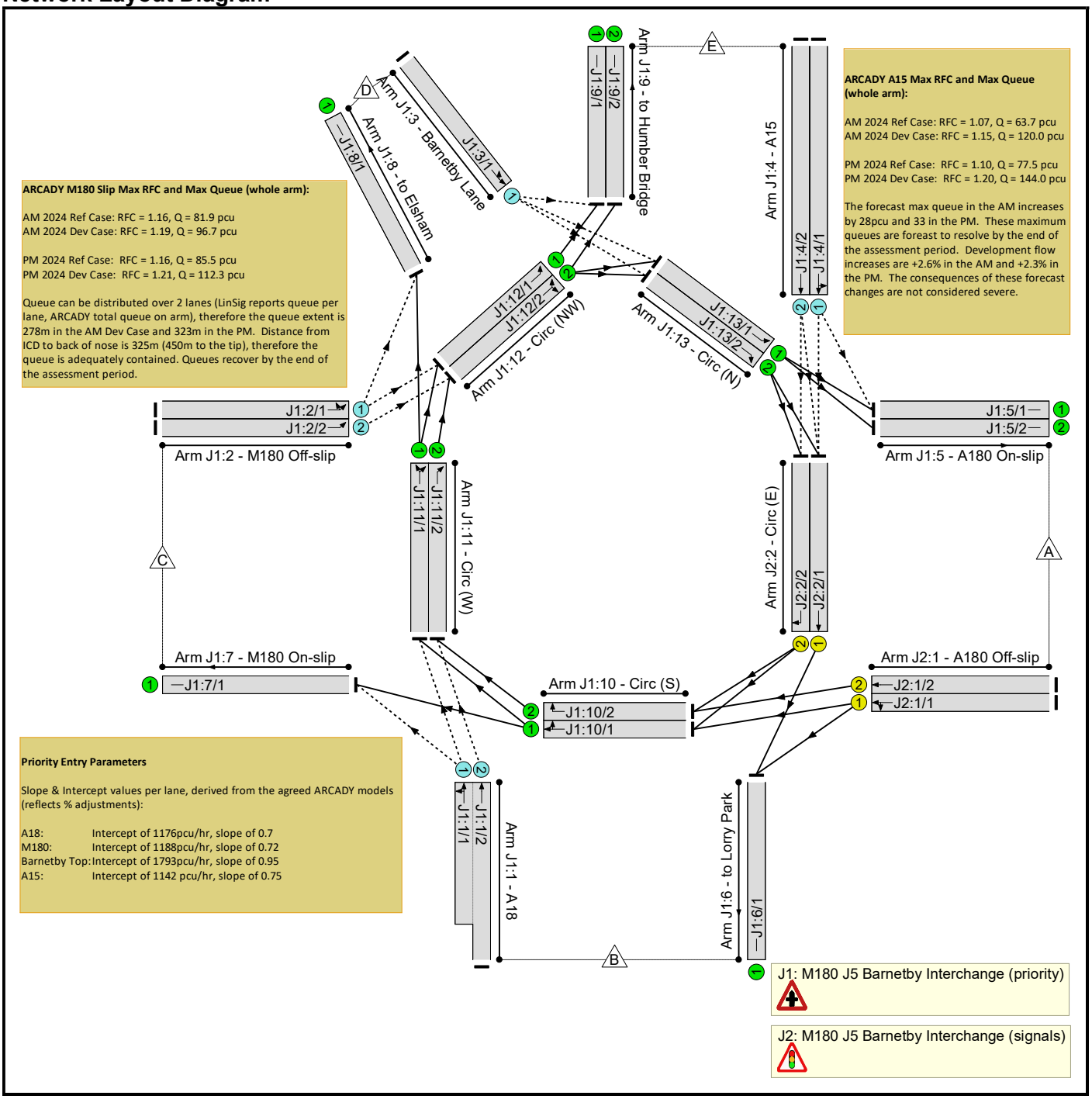
Full Input Data And Results

User and Project Details

Project:	**065182 Barnetby Top Lorry Park**
Title:	**M180 Jcn 5 Junction Improvement**
Location:	
Model Purpose:	Model of the existing priority controlled layout.
Model Assumptions:	Slopes and intercepts have been taken from the calibrated ARCADY, amended with intercept corrections rather than % capacity adjustments. NB results differ as the ARCADY is One Hour (profiles) while LinSig models a flat hour. The priority parameters for the A18 entry have been adjusted to give the same queue and DoS as the ref case, but with a slope of 1.0. This allows the model to give a better response to signal timing adjustments - the higher slope value means little traffic enters the roundabout when opposed, but more can enter when there are gaps. This gives results that are more in line with real operation.
Safety Considerations:	+1s has been applied to both intergreens to reflect potential high speeds and long vehicle content. Short additional intergreens are configured to help create gaps for the A18 entry. These would be linked to queue detatection, i.e. only used when a queue exists and limited to ~+4s. These can be configured in the controller as an additional AR stage and/or with an AR extension.
Additional detail:	
File name:	065182 M180 Jcn 5 PM Improved Layout 4a (ARCADY).lsg3x
Author:	R Bishop
Company:	SLR
Address:	Birmingham

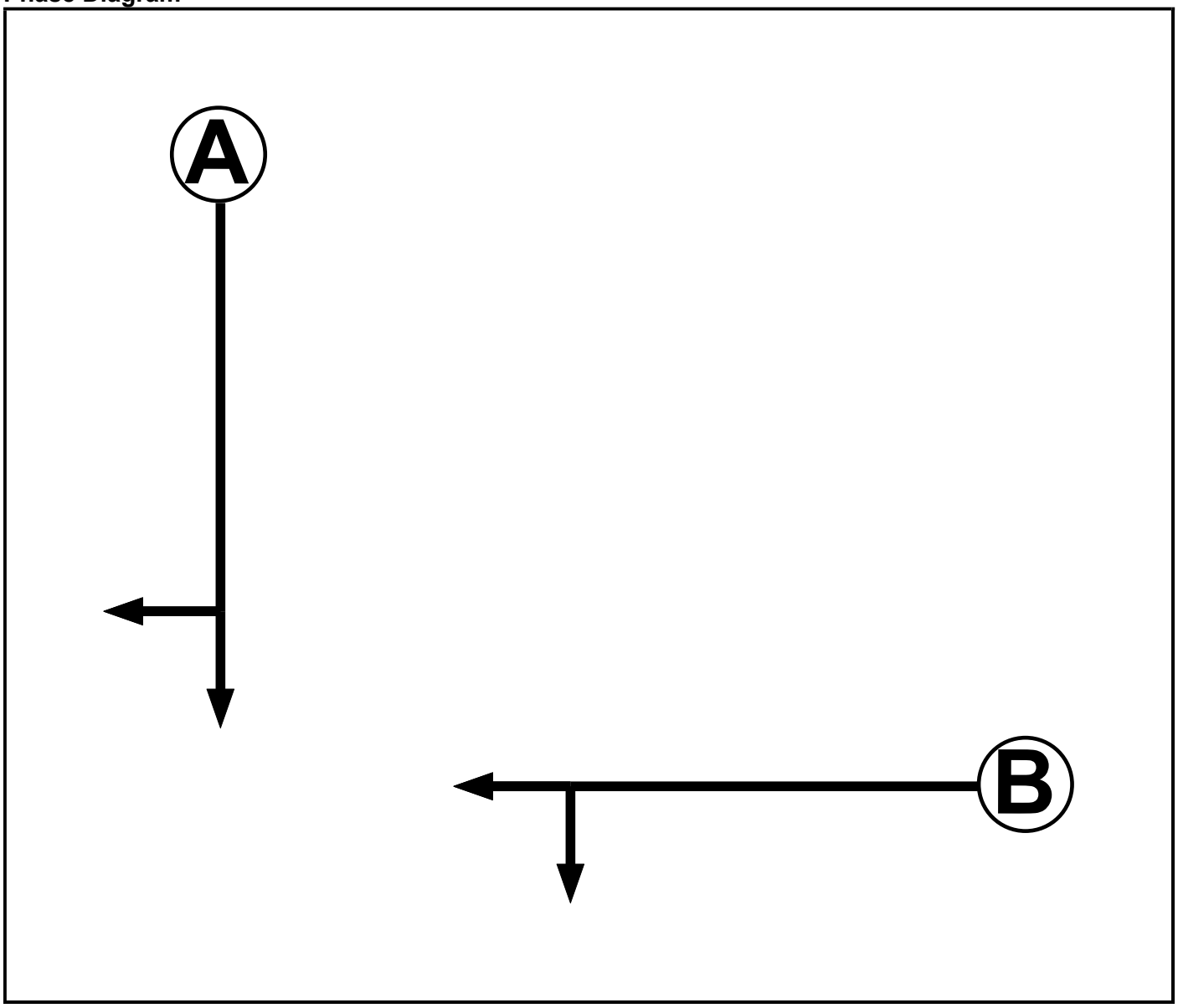
Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		-9999	7
B	Traffic		-9999	7

Phase Intergreens Matrix

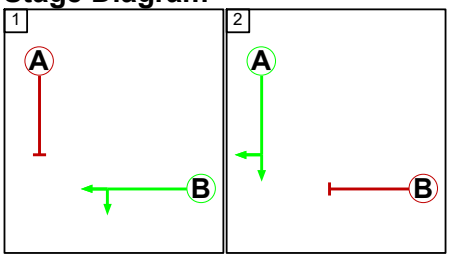
	Starting Phase		
		A	B
Terminating Phase	A		6
	B	7	

Phases in Stage

Stage No.	Phases in Stage
1	B
2	A

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
		1	2
From Stage	1		7
	2	6	

Full Input Data And Results

Give-Way Lane Input Data

Junction: J1: M180 J5 Barnetby Interchange (priority)											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
J1:1/1 (A18)	J1:7/1 (Left)	1176	0	J1:10/1	0.70	All	-	-	-	-	-
				J1:10/2	0.70	All					
	J1:11/1 (Ahead)	1176	0	J1:10/1	0.70	All					
				J1:10/2	0.70	All					
J1:1/2 (A18)	J1:11/2 (Ahead)	1176	0	J1:10/1	0.70	All	-	-	-	-	-
				J1:10/2	0.70	All					
J1:2/1 (M180 Off-slip)	J1:8/1 (Left)	1188	0	J1:11/1	0.72	All	-	-	-	-	-
				J1:11/2	0.72	All					
	J1:12/1 (Ahead)	1188	0	J1:11/1	0.72	All					
				J1:11/2	0.72	All					
J1:2/2 (M180 Off-slip)	J1:12/2 (Ahead)	1188	0	J1:11/1	0.72	All	-	-	-	-	-
				J1:11/2	0.72	All					
J1:3/1 (Barnetby Lane)	J1:9/1 (U-Turn)	1793	0	J1:12/1	0.95	All	-	-	-	-	-
				J1:12/2	0.95	All					
	J1:13/1 (Ahead)	1793	0	J1:12/1	0.95	All					
				J1:12/2	0.95	All					
	J1:13/2 (Ahead)	1793	0	J1:12/1	0.95	All					
				J1:12/2	0.95	All					
J1:4/1 (A15)	J1:5/1 (Left)	1142	0	J1:13/1	0.75	All	-	-	-	-	-
				J1:13/2	0.75	All					
	J2:2/1 (Ahead)	1142	0	J1:13/1	0.75	All					
				J1:13/2	0.75	All					
J1:4/2	J2:2/1 (Ahead)	1142	0	J1:13/1	0.75	All	-	-	-	-	-

(A15)				J1:13/2	0.75	All					
	J2:2/2 (Ahead)	1142	0	J1:13/1	0.75	All					
				J1:13/2	0.75	All					

Junction: J2: M180 J5 Barnetby Interchange (signals)
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: J1: M180 J5 Barnetby Interchange (priority)												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
J1:1/1 (A18)	O		2	3	12.0	User	1900	-	-	-	-	-
J1:1/2 (A18)	O		2	3	27.0	User	1900	-	-	-	-	-
J1:2/1 (M180 Off-slip)	O		2	3	58.0	User	1900	-	-	-	-	-
J1:2/2 (M180 Off-slip)	O		2	3	58.0	User	1900	-	-	-	-	-
J1:3/1 (Barnetby Lane)	O		2	3	60.0	Geom	-	3.25	0.00	Y	Arm J1:9 U-Turn Arm J1:13 Ahead	21.00 107.00
J1:4/1 (A15)	O		2	3	60.0	User	1900	-	-	-	-	-
J1:4/2 (A15)	O		2	3	60.0	User	1900	-	-	-	-	-
J1:5/1 (A180 On-slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:5/2 (A180 On-slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:6/1 (to Lorry Park)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:7/1 (M180 On-slip)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:8/1 (to Elsham)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:9/1 (to Humber Bridge)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:9/2 (to Humber Bridge)	U		2	3	8.7	Inf	-	-	-	-	-	-
J1:10/1 (Circ (S))	U		2	3	20.9	User	1900	-	-	-	-	-
J1:10/2 (Circ (S))	U		2	3	20.9	User	1900	-	-	-	-	-
J1:11/1 (Circ (W))	U		2	3	30.6	User	1900	-	-	-	-	-
J1:11/2 (Circ (W))	U		2	3	30.6	User	1900	-	-	-	-	-
J1:12/1 (Circ (NW))	U		2	3	9.4	User	1900	-	-	-	-	-

J1:12/2 (Circ (NW))	U		2	3	9.4	User	1900	-	-	-	-	-
J1:13/1 (Circ (N))	U		2	3	13.0	User	1900	-	-	-	-	-
J1:13/2 (Circ (N))	U		2	3	13.0	User	1900	-	-	-	-	-

Junction: J2: M180 J5 Barnetby Interchange (signals)

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
J2:1/1 (A180 Off-slip)	U	B	2	3	53.0	Geom	-	3.65	1.00	Y	Arm J1:6 Left	180.00
											Arm J1:10 Ahead	Inf
J2:1/2 (A180 Off-slip)	U	B	2	3	53.0	Geom	-	3.65	1.00	Y	Arm J1:10 Ahead	180.00
J2:2/1 (Circ (E))	U	A	2	3	20.0	Geom	-	3.65	0.00	Y	Arm J1:6 Ahead	90.00
J2:2/2 (Circ (E))	U	A	2	3	20.0	Geom	-	3.65	0.00	Y	Arm J1:10 Right	90.00

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM 2024 No Dev'	07:45	08:45	01:00	
2: 'PM 2024 No Dev'	16:45	17:45	01:00	
3: 'AM 2024 With Dev'	07:45	08:45	01:00	
4: 'PM 2024 With Dev'	16:45	17:45	01:00	

Scenario 1: 'PM 2024 With Dev' (FG4: 'PM 2024 With Dev', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	369	0	49	497	915
	B	137	0	441	62	337	977
	C	0	454	0	59	552	1065
	D	24	31	29	0	24	108
	E	418	460	561	17	0	1456
	Tot.	579	1314	1031	187	1410	4521

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: PM 2024 With Dev
Junction: J1: M180 J5 Barnetby Interchange (priority)	
J1:1/1 (short)	503
J1:1/2 (with short)	977(In) 474(Out)
J1:2/1	532
J1:2/2	533
J1:3/1	108
J1:4/1	728
J1:4/2	728
J1:5/1	499
J1:5/2	80
J1:6/1	1314
J1:7/1	1031
J1:8/1	187
J1:9/1	537
J1:9/2	873
J1:10/1	696
J1:10/2	457
J1:11/1	168
J1:11/2	931
J1:12/1	513
J1:12/2	1464
J1:13/1	161
J1:13/2	514
Junction: J2: M180 J5 Barnetby Interchange (signals)	
J2:1/1	458
J2:1/2	457
J2:2/1	945
J2:2/2	607

Full Input Data And Results

Lane Saturation Flows

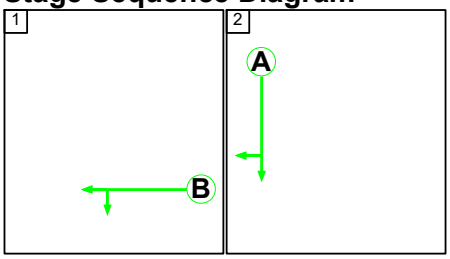
Junction: J1: M180 J5 Barnetby Interchange (priority)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (A18 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:1/2 (A18 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/1 (M180 Off-slip Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:2/2 (M180 Off-slip Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/1 (Barnetby Lane)	3.25	0.00	Y	Arm J1:9 U-Turn	21.00	22.2 %	1889	1889
				Arm J1:13 Ahead	107.00	77.8 %		
J1:4/1 (A15 Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/2 (A15 Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:5/1 (A180 On-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:5/2 (A180 On-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (to Lorry Park Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/1 (M180 On-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:8/1 (to Elsham Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/1 (to Humber Bridge Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:9/2 (to Humber Bridge Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:10/1 (Circ (S) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:10/2 (Circ (S) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/1 (Circ (W) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2 (Circ (W) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Circ (NW) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/2 (Circ (NW) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/1 (Circ (N) Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
J1:13/2 (Circ (N) Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Junction: J2: M180 J5 Barnetby Interchange (signals)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (A180 Off-slip)	3.65	1.00	Y	Arm J1:6 Left	180.00	80.6 %	1925	1925
				Arm J1:10 Ahead	Inf	19.4 %		
J2:1/2 (A180 Off-slip)	3.65	1.00	Y	Arm J1:10 Ahead	180.00	100.0 %	1922	1922
J2:2/1 (Circ (E))	3.65	0.00	Y	Arm J1:6 Ahead	90.00	100.0 %	1948	1948
J2:2/2 (Circ (E))	3.65	0.00	Y	Arm J1:10 Right	90.00	100.0 %	1948	1948

Scenario 1: 'PM 2024 With Dev' (FG4: 'PM 2024 With Dev', Plan 1: 'Network Control Plan 1')

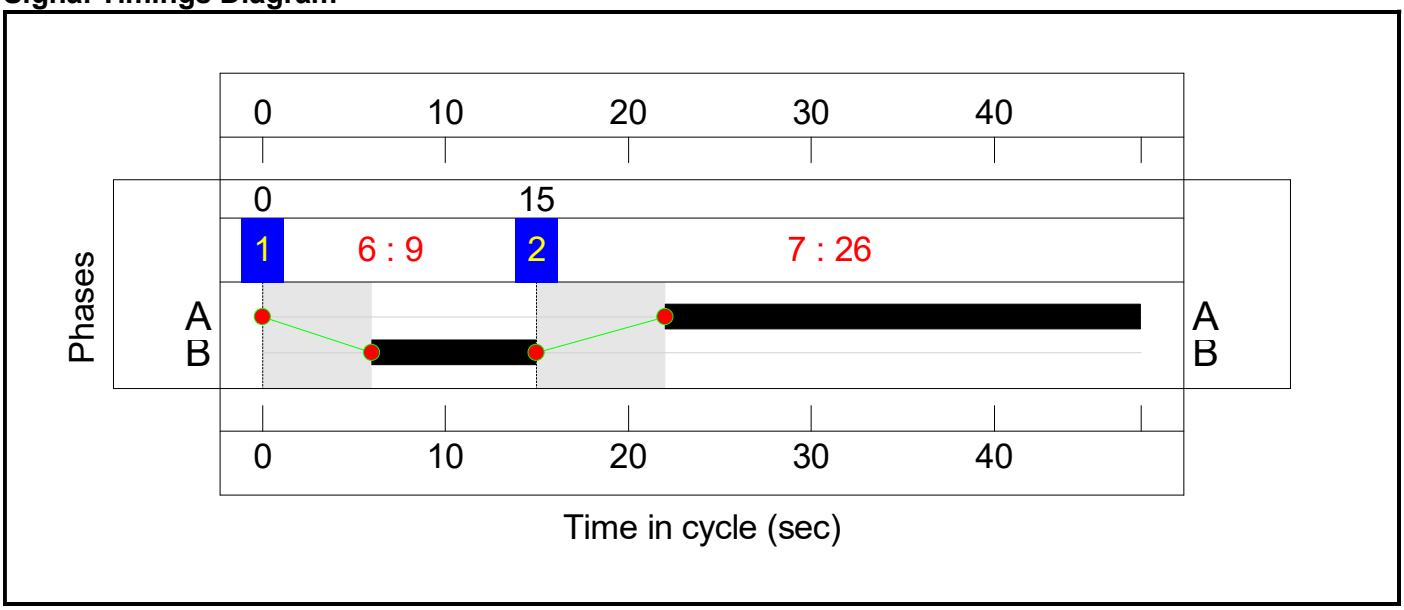
Stage Sequence Diagram



Stage Timings

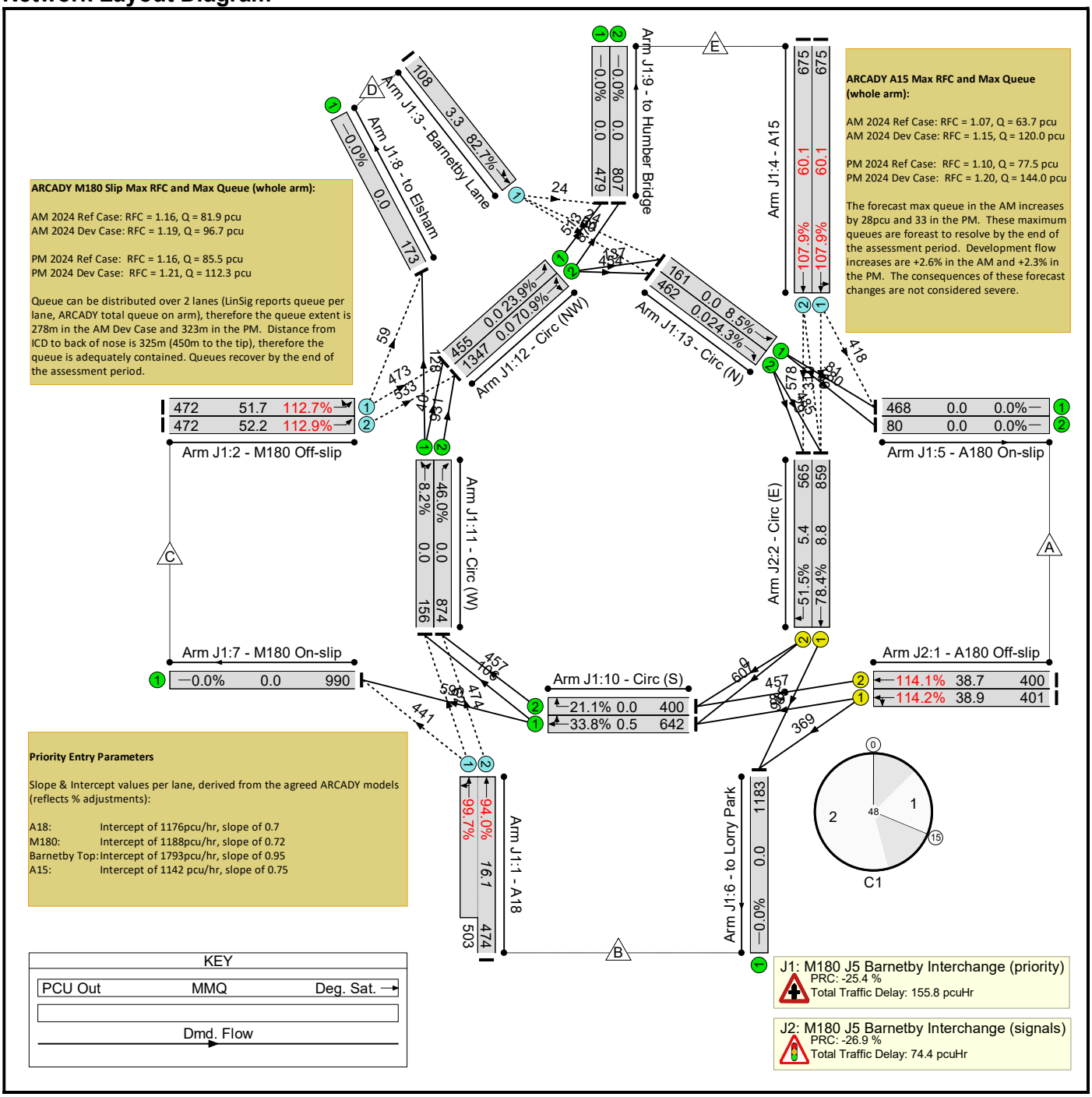
Stage	1	2
Duration	9	26
Change Point	0	15

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: M180 Jcn 5 Junction Improvement	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.2%**
J1: M180 J5 Barnetby Interchange (priority)	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.9%**
1/2+1/1	A18 Left Ahead	O	N/A	N/A	-		-	-	-	977	1900:1900	505+505	94.0 : 99.7%
2/1	M180 Off-slip Left Ahead	O	N/A	N/A	-		-	-	-	532	1900	472	112.7%
2/2	M180 Off-slip Ahead	O	N/A	N/A	-		-	-	-	533	1900	472	112.9%
3/1	Barnetby Lane U-Turn Ahead	O	N/A	N/A	-		-	-	-	108	1889	131	82.7%
4/1	A15 Left Ahead	O	N/A	N/A	-		-	-	-	728	1900	675	107.9%
4/2	A15 Ahead	O	N/A	N/A	-		-	-	-	728	1900	675	107.9%
5/1	A180 On-slip	U	N/A	N/A	-		-	-	-	499	Inf	Inf	0.0%
5/2	A180 On-slip	U	N/A	N/A	-		-	-	-	80	Inf	Inf	0.0%
6/1	to Lorry Park	U	N/A	N/A	-		-	-	-	1314	Inf	Inf	0.0%
7/1	M180 On-slip	U	N/A	N/A	-		-	-	-	1031	Inf	Inf	0.0%
8/1	to Elsham	U	N/A	N/A	-		-	-	-	187	Inf	Inf	0.0%
9/1	to Humber Bridge	U	N/A	N/A	-		-	-	-	537	Inf	Inf	0.0%
9/2	to Humber Bridge	U	N/A	N/A	-		-	-	-	873	Inf	Inf	0.0%
10/1	Circ (S) Ahead Right	U	N/A	N/A	-		-	-	-	696	1900	1900	33.8%
10/2	Circ (S) Right	U	N/A	N/A	-		-	-	-	457	1900	1900	21.1%
11/1	Circ (W) Ahead Right	U	N/A	N/A	-		-	-	-	168	1900	1900	8.2%
11/2	Circ (W) Right	U	N/A	N/A	-		-	-	-	931	1900	1900	46.0%
12/1	Circ (NW) Left	U	N/A	N/A	-		-	-	-	513	1900	1900	23.9%

Full Input Data And Results

12/2	Circ (NW) Left Right	U	N/A	N/A	-		-	-	-	1464	1900	1900	70.9%
13/1	Circ (N) Ahead	U	N/A	N/A	-		-	-	-	161	1900	1900	8.5%
13/2	Circ (N) Right	U	N/A	N/A	-		-	-	-	514	1900	1900	24.3%
J2: M180 J5 Barnetby Interchange (signals)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**114.2%**
1/1	A180 Off-slip Left Ahead	U	N/A	N/A	B		1	9	-	458	1925	401	114.2%
1/2	A180 Off-slip Ahead	U	N/A	N/A	B		1	9	-	457	1922	400	114.1%
2/1	Circ (E) Ahead	U	N/A	N/A	A		1	26	-	945	1948	1096	78.4%
2/2	Circ (E) Right	U	N/A	N/A	A		1	26	-	607	1948	1096	51.5%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: M180 Jcn 5 Junction Improvement	**-**	**-**	**4355**	**0**	**0**	**21.8**	**208.4**	**0.0**	**230.2**	**-**	**-**	**-**	**-**
J1: M180 J5 Barnetby Interchange (priority)	**-**	**-**	**4355**	**0**	**0**	**11.4**	**144.4**	**0.0**	**155.8**	**-**	**-**	**-**	**-**
1/2+1/1	977	977	1954	0	0	2.0	9.6	-	11.6 (5.6+6.0)	42.6 (42.2:43.1)	6.6	9.6	16.1
2/1	532	472	472	0	0	2.4	33.9	-	36.2	245.0	17.9	33.9	51.7
2/2	533	472	472	0	0	2.4	34.3	-	36.7	247.8	17.9	34.3	52.2
3/1	108	108	108	0	0	0.4	2.0	-	2.4	79.6	1.3	2.0	3.3
4/1	728	675	675	0	0	2.1	32.4	-	34.5	170.6	27.7	32.4	60.1
4/2	728	675	675	0	0	2.1	32.4	-	34.5	170.6	27.7	32.4	60.1
5/1	468	468	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	80	80	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1183	1183	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	990	990	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	173	173	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	479	479	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	807	807	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	642	642	-	-	-	0.0	0.0	-	0.0	0.0	0.5	0.0	0.5
10/2	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	156	156	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	874	874	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	455	455	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1347	1347	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	161	161	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	462	462	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

J2: M180 J5 Barnetby Interchange (signals)	**-**	**-**	**0**	**0**	**0**	**10.4**	**63.9**	**0.0**	**74.4**	**-**	**-**	**-**	**-**
1/1	458	401	-	-	-	3.7	32.1	-	35.8	281.3	6.9	32.1	38.9
1/2	457	400	-	-	-	3.7	31.9	-	35.6	280.4	6.8	31.9	38.7
2/1	859	859	-	-	-	1.7	0.0	-	1.7	7.0	8.8	0.0	8.8
2/2	565	565	-	-	-	1.3	0.0	-	1.3	8.3	5.4	0.0	5.4

C1 PRC for Signalled Lanes (%): -26.9 Total Delay for Signalled Lanes (pcuHr): 74.37 Cycle Time (s): 48

PRC Over All Lanes (%): -26.9 Total Delay Over All Lanes(pcuHr): 230.22