Riverside Energy Park

Temporary Jetty Outage Review (Simultaneous Operations - Riverside Resource Recovery Facility and Riverside Energy Park)

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RIVERSIDE ENERGY

TECHNICAL NOTE

Job Name: Riverside Energy Park

Job No: 42166

Note No: TN010 Rev 1

Date: 13/06/19

Prepared By: Adrian Neve / Morteza Mortezai-Nejad

Subject: **Temporary Jetty Outage Review (Simultaneous Operations - Riverside Resource Recovery Facility and Riverside Energy Park)**

1. Introduction

1.1. This technical note responds to the following question raised by the Examining Authority (ExA) at the Issue Specific Hearing on the draft Development Consent Order (dDCO) (ISH2) held on 06 June 2019:

- *"The ExA questioned whether the Applicant had assessed a jetty outage at both RRRF and REP - i.e. there would be 600 movements between the two facilities. Mr Griffiths stated that the Applicant would provide a technical note that confirmed the ES assumptions on transport in the context of a jetty outage."*

1.2. To begin with, it is worth noting that an operational jetty outage situation is rare. Indeed, there has not been a jetty outage occurrence at the Riverside Resource Recovery Facility (RRRF) since operations commenced in 2011.

1.3. This note provides a summary of the movement of heavy commercial vehicles (HCVs) for the likely transport effects arising from REP and RRRF operating simultaneously at maximum capacity under a temporary jetty outage scenario (i.e. 100% by road). The potential effects are reported in this note with reference to the morning peak period on the surrounding road network (07:45-08:45hrs). This note therefore provides a worst case assessment of the likely transport effects, drawing on the assessment work presented in **Chapter 6 Transport** of the **ES** (**6.1, Rev 1, REP2-017**) and the **Transport Assessment** (**TA**), **Appendix B.1** to the **ES** (**6.3, APP-066**) and on supplementary assessment re-provided at **Appendix B** to this note, which is described later (and has been previously submitted to the Examination at Deadline 2 as **Appendix A to Appendix G** of the **Applicant's Response to Relevant Representations (8.02.03, REP2-054)).**

1.4. The following terminology and criteria are used in this note. The criteria for REP align with that used in the assessment work presented in **Section 6.4.25** to **6.4.40** of **Chapter 6 Transport** of the **ES** (**6.1, Rev 1, REP2-017**) and **Section 5** of the TA, **Appendix B.1** to the **ES** (**6.3, APP-066**) and are supplemented by the proposed jetty outage restrictions:

Terminology

- Heavy Commercial Vehicle (HCV): a vehicle with a gross operating weight (i.e. vehicle + payload) in excess of 7.5 tonnes (t), as defined within section 138 of the Road Traffic Regulation Act 1984.
- Refuse Collection Vehicle (RCV): a vehicle used to transport waste material with a payload assumed to be approximately 7 t.
- A vehicle 'movement' – a vehicle observed travelling in one direction (e.g. movement in or movement out).
- '2028 Do Minimum' scenario - 10 years post-application. Includes uplifted baseline movements based on background traffic growth and committed developments
- '2028 Do Something' scenario - Includes the operational phase development movements based on the '100% by road' scenario in addition to the 2028 Do Minimum movements.

RRRF

- Maximum annual permitted throughput: 785,000 tonnes / annum (tpa).
- Daily movements of HCVs carrying waste capped by a jetty outage restriction under Condition 27 of the RRRF T&CPA permission (16/02167/FUL):
  - 30 HCVs per peak period (07:30-09:00hrs and 16:30-18:00hrs); and
  - 300 HCVs per day (300 movements in and 300 movements out).
- Capped HCV movements under Condition 27 exclude the transportation of Incinerator Bottom Ash (IBA), Air Pollution Control Residue (APCR), lime, Powder Activated Carbon (PAC), Fuel Oil and other consumables.
- Capped HCV movements do not include workforce car or van movements.
- Energy Recovery Facility (ERF) operation: 24 hours, 365 days/year.
- ERF waste material is assumed to be transported in 7 t loads (RCV containers).

REP (as per parameters assessed in the **TA, Appendix B.1** to the **ES** (**6.3, APP-066**))

- Maximum annual throughput in the ES:
  - 805,920 tpa for ERF material; and
  - up to 40,000 tpa food and green waste for the Anaerobic Digestion (AD) facility.
- ERF material transported in 7 t loads by RCVs across 365 days, 24 hrs per day.
- Food and green waste transported:
  - 70% in 7 t loads (28,000 tpa); and
  - 30% in 20 t loads (12,000 tpa).
- For the jetty outage scenarios in this note- Daily movements of HCVs carrying waste to the ERF and Anaerobic Digestion facility capped by a jetty outage restriction under Requirement 14 of the **dDCO (3.1, Rev 2, submitted at Deadline 3)**:
  - 30 HCVs per peak period (07:30-09:00hrs and 16:30-18:00hrs); and
  - 300 HCVs per day (300 movements in and 300 movements out).
- IBA, APCR, lime, PAC; fuel oil and other consumables all moved by road in 20 t loads for this assessment.
- Compost and liquid digestate each 43% of input (17,200 tpa) transported in 20 t loads.
- A flat average profile of movements across the operating hours.
- Out of the 83 staff based at REP (5 Management; 78 Workers), around 56 people would commute by car. Some staff are likely to operate across both REP and RRRF facilities.
- Operation: 24 hours, 365 days/year, with the exception of the food and green waste municipal collection (12 hours and 260 days/year).

2. Transport Assessment Reasonable Worst Case Scenario

2.1. **Appendix B.1** to the **ES (6.3, APP-066)**, contained an assessment of the 100% by road scenario (reasonable worst case). The quantum of movements for that scenario is set out at **Plate 6.1** of **Chapter 6 Transport** of the **ES (6.1, Rev 1, REP2-017)** and the same figure reproduced at **Figure 5.1** of the **TA (Appendix B.1** to the **ES (6.3, APP-066)**.That figure is provided below for reference.

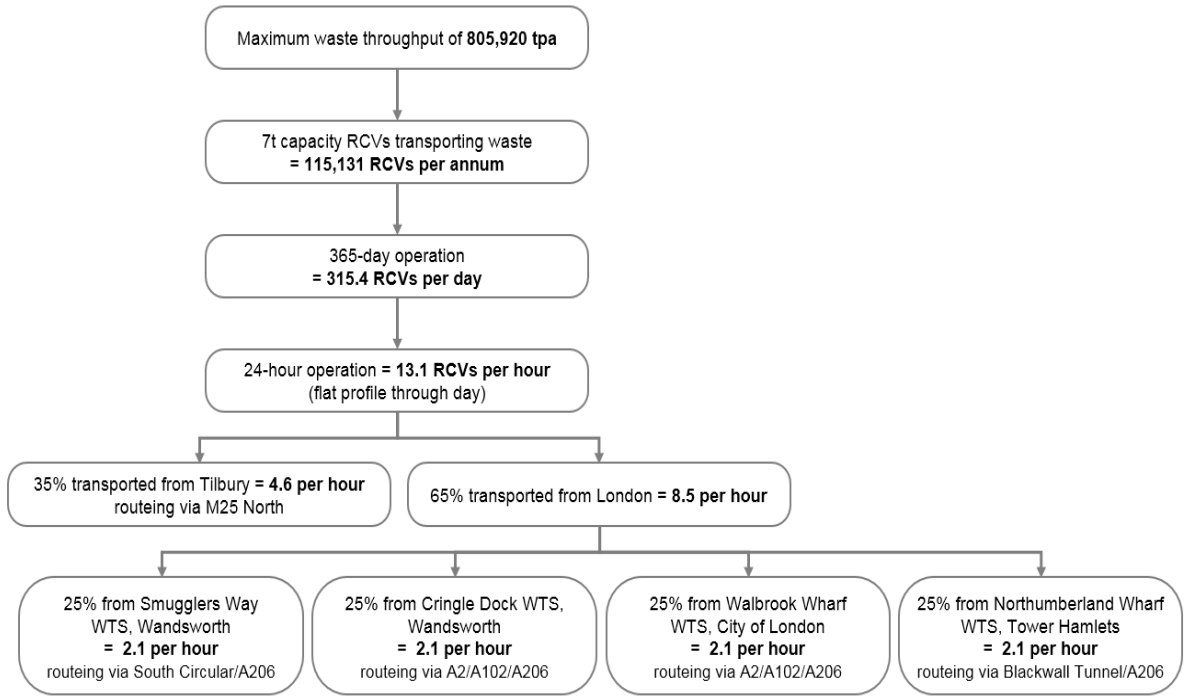

Plate 2.1: ERF 100% Road Scenario Trip Generation Methodology
[source Plate 6.1 of Chapter 6 Transport of the ES (6.3, Rev1, REP2-017)]

2.2. For that scenario waste material for the Anaerobic Digestion facility at REP was assumed to be transported 100% by road. The assessed HCV movements for waste material to the Anaerobic Digestion facility at REP is set out **at Plate 6.3** of **Chapter 6 Transport** of the **ES (6.1, Rev 1, REP2-017)** and **Figure 5.3** of the **TA (Appendix B.1** to the **ES (6.3, APP-066).** That figure is provided below for reference.

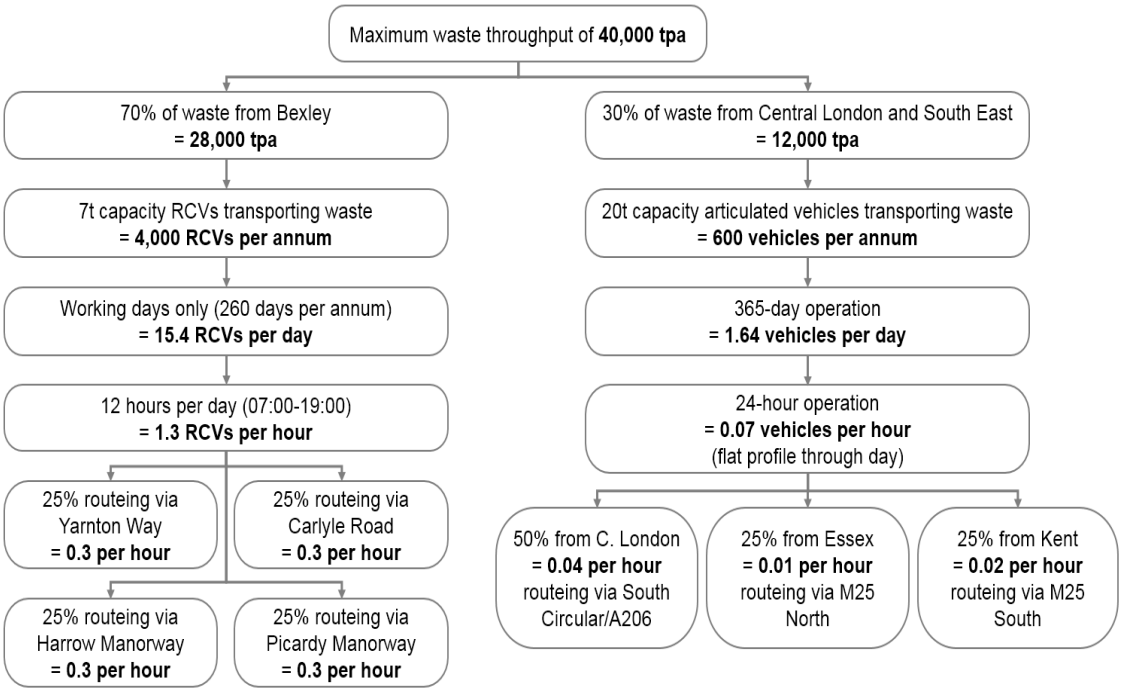

Plate 2.2: Anaerobic Digestion Facility Trip Generation Methodology [source Plate 6.3 of Chapter 6 Transport of the ES (6.3, Rev1, REP2-017)]

2.3. The assessment in the TA **(Appendix B.1** to the **ES (6.3, APP-066)** has been carried out against a baseline of traffic movements established using observed traffic data, collected during April 2018. That baseline data included HCV movements to the operations at RRRF (under normal operating conditions) which were not disaggregated from other vehicle movements within the assessment. **Section 6.3** of the **TA** (**Appendix B.1** to the **ES** (**6.3, APP-066**)) sets out how the baseline traffic was factored up to predict a ten years post-application future base year (i.e. the '2028 Do Minimum' scenario).

2.4. The assessment of the 100% by road reasonable worst case scenario in **Chapter 6 Transport** of the **ES** (**6.1, Rev 1, REP2-017**)) and the **TA** (**Appendix B.1** to the **ES** (**6.3, APP-066**)) represents an estimation of the HCV movements to REP under a jetty outage. This is because the 100% road scenario assumed a cumulative 332 HCV movements for the ERF and the Anaerobic Digestion facility;. Those HCV movements were added to the '2028 Do Minimum' scenario to create the '2028 Do Something' scenario. As is set out later, the cap in Requirement 14 of the **dDCO (3.1, Rev 2, submitted at Deadline 3),** is set at a cumulative 300 HCV movements for the ERF and the Anaerobic Digestion facility

2.5. For the assessments within the TA **(Appendix B.1** to the **ES (6.3, APP-066)**, RRRF operates under normal operating conditions (i.e. within its consented restriction of 90 HCV movements per day as set by Condition 27 of planning application reference 16/02167/FUL)). Therefore, the TA does not represent the quantum of HCV movements which might occur should REP and RRRF be operating simultaneously at full output during a temporary jetty outage event. As mentioned above, a jetty outage for RRRF has never occurred and as such this scenario was not included in the assessments in **Chapter 6 Transport of the ES (REP2-017)** and the **TA** (**Appendix B.1** to the **ES** (**6.3, APP-066**)) as it was not considered to be a reasonable worst case**.** The scenarios assessed were agreed through the scoping stage for the TA, including with London Borough of Bexley and Transport for London (TfL).

2.6. The Applicant does however note, following discussions held at the ISH on 6 June 2019, that should a jetty outage occur in tandem with both RRRF and REP operating at full capacity, this unlikely scenario could be realised and therefore should be addressed for completeness.

3. Comparison of HCV Movements for Different Scenarios

3.1. **Table 3.1**, below, sets out the predicted HCV movements for REP for the '100% by road scenario (equivalent to a jetty outage scenario) as assessed within the **TA** (**Appendix B.1** to the **ES** (**6.3, APP-066**) and indicates the likely HCV movements under a capped jetty outage operation at REP – reflecting the proposed Requirement 14 limits of the dDCO **(3.1, Rev 2, submitted at Deadline 3)**.

3.2. **Table 3.1** also sets the movement of HCVs for RRRF under a jetty outage scenario (as set by Condition 27 of the planning consent for RRRF (LPA ref: 16/02167/FUL)). An indication is also provided of the HCV movements for the associated bi-products (IBA and APCR moved in 20 t loads) and associated ancillary HCV movements to/from REP and RRRF to achieve their maximum waste throughput.

3.3. **Table 3.1** further sets out an estimation of the number of HCV movements at RRRF likely to have been included within the observed baseline traffic movements and used in the assessment of transport effects as set out in **Chapter 6 Transport of the ES (REP2-017)** and the **TA** (**Appendix B.1** to the **ES** (**6.3, APP-066**))**.** These movements have been estimated using an Automatic Traffic Count (ATC) cordon line to the immediate south of the main entrance to RRRF located at the northern end of Norman Road. The data were collected from 14th to 27th April 2018. **Table 3.2** sets out a summary of the number of HCVs recorded across that cordon during the survey. That data would include HCV movements to and from the existing land uses immediately to the west of RRRF. The traffic data are therefore considered very robust.

3.4. For information, the HCV movements anticipated through **Requirement 14** of the **dDCO** (**3.1, Rev 2, submitted at Deadline 3**) are also provided in **Table 3.1**.

Table 3.1: Materials and Heavy Commercial Vehicle movements: summary for REP and RRRF
[Note: HCV movements rounded and inbound only. Figures would be double for total movements.]

Materials Component	Detail/ Units	REP Materials by Road		RRRF Materials by Road	
		100% (Assessed in TA)	Requirement 14 Jetty Outage	Assessed in TA (estimated)	Condition 27 Jetty Outage
ERF Material Input	% by Road	100%	95%	Normal Operation	100%
	tpa	805,920	766,500		785,000
AD Material Input	% by Road	100%	100%	Not Applicable	Not Applicable
	tpa	40,000	40,000		
ERF Input (7t loads/365 days/24hr	**HCV/day**	**315**[1]	**300 (capped)**	**80 (estimated)**[2]	**300 (capped)**[3]
	HCV/hr	13	20 (capped) (30/1.5 hrs)	2 (estimated)	20 (capped) (30/1.5 hrs)
AD Input (30%/7t loads/260 days) (70%/20t loads/365 day)	**HCV/day**	**17**[4]	**Inc at ERF**	Not applicable	Not applicable
	HCV/hr	<1	Inc at ERF		
ERF Consumables and By-Products	**HCV/day**	**6**[5]	**6**	**Inc at ERF**	**6 (estimated)**
	HCV/hr	<1	<1	Inc at ERF	<1
AD By-Products	HCV/day	**6**[6]	**6**	Not applicable	Not applicable
	HCV/hr	<1	<1		
IBA	**HCV/day**	By river	**27**	By river	**26 (estimated)**
	HCV/hr		>1		>1
Total	HCV/day	**343**	**339**	**80**	**332**
	HCV/hr	15	22/23	2	22

[1] Appendix B.1 Transport Assessment Figure 5.1
[2] Estimated as average of all northbound HCVs from ATC data south of RRRF Main Entrance (ref. ATC9). TA value was included within peak period data within baseline flows at junction count.
[3] HCVs carrying waste capped by Condition 27 of RRRF Planning Consent
[4] Appendix B.1 Transport Assessment Figure 5.3
[5] Appendix B.1 Transport Assessment Paragraph 5.3.11 (11 movements = 6 HCV/day)
[6] Appendix B.1 Transport Assessment Paragraph 5.3.15 (11 movements = 6 HCV/day)

Table 3.2: HCV Movements across Data Cordon Line at Norman Road (northern end)

Day 14/04/18 to 27/04/18	HCVs In			HCVs Out		
	07:30-09:00	16:30-18:00	Daily	07:30-09:00	16:30-18:00	Daily
Saturday	3	1	13	0	3	14
Sunday	1	0	9	0	0	11
Monday	3	4	86	4	7	85
Tuesday	6	4	87	4	9	91
Wednesday	10	1	95	4	6	99
Thursday	7	3	86	2	3	85
Friday	2	2	64	2	2	62
Saturday	2	2	14	1	4	21
Sunday	1	2	9	0	2	13
Monday	8	3	75	6	3	73
Tuesday	10	3	93	8	6	95
Wednesday	11	3	78	3	3	82
Thursday	6	3	75	6	7	77
Friday	10	3	66	3	3	46

3.5. **Table 3.1** indicates that the '100% by road' scenario assesses 332 HCV movements into REP – when including HCV movements to the Anaerobic Digestion facility and other associated HCV movements. The assessment in **Chapter 6 Transport of the ES (REP2-017)** and the **TA** (**Appendix B.1** to the **ES** (**6.3, APP-066**)) is 32 HCV movements greater than the now proposed 300 HCV movement cumulative cap for ERF and Anaerobic Digestion facility waste imports as proposed by **Requirement 14** of the **dDCO** (**3.1, Rev 2, submitted at Deadline 3**). The assessed average hourly movement, however, is 7 HCVs below the proposed capped movement of 20 HCVs.

3.6. **Table 3.2** provides the total number of HCV movements recorded across the cordon line towards RRRF during the ATC in April 2018 – including those not associated with the operation of RRRF. The data show that the daily number of HCV movements to RRRF, for all operations, varied between 64 to 95 inbound HCV movements and 46 to 99 outbound HCV movements on weekdays (not allow a deduction for those vehicles not associated with the operation of RRRF). The period of the survey represented a normal operational period, where the number of HCV movements delivering waste is capped by Condition 27 at 90 inbound HCV movements per day and 90 outbound HCV movements per day.

4. Supplementary Network Analysis and Implications of Jetty Outage Scenario at RRRF

4.1. **Chapter 6 Transport** of the **ES** (**6.1, Rev 1, REP2-017**) and the **TA** (**Appendix B.1** to the **ES** (**6.3, APP-066**)) presents the assessment of the operation of the following three junctions on A2016 Picardy Manorway, within close proximity to the site:

- A2016/ Clydesdale Way/ Yarnton Way roundabout;
- A2016/ Norman Road; and
- A2016/ Anderson Way/ B253.

4.2. The assessment allows for:

- the distribution of traffic across the network in accordance with the operations at RRRF and the predicted operations at REP;
- the left-in/left-out nature of the junction of Norman Road with Picardy Manorway; and
- predicted growth on the network to 2028 from background increases and known land developments.

4.3. **Tables 6.7** to **6.9** of the **TA** (**Appendix B.1** to the **ES** (**6.3, APP-066**)) summarise the outputs from the capacity modelling of the operation of the above junctions during the network peak periods. These tables are reproduced at **Appendix A**.

4.4. The assessment demonstrates that:

- all junctions operate with a significant amount of spare capacity in the '2028 Do Minimum' scenario (i.e. before adding REP into the network and with RRRF operating under a normal scenario) during both the a.m. and p.m. network peak periods; and
- all junctions continue to operate with spare capacity in the '2028 Do-Something' scenario in both peaks with REP added into the network. It should be noted that 85%-90% Degree of Saturation (DOS) or 0.85-0.90 Ratio of Flow to Capacity (RFC) of modelled theoretical capacity is taken to be an optimum operation for a junction – the highest modelled result was 0.78 RFC at the Picardy Manorway/Bronze Age Way in the p.m. peak. Most other parts of the modelled network remained below 70% DOS or 0.70 RFC.

4.5. During engagement with TfL on road network sensitivity during construction, supplementary analysis has been carried out for the peak construction period. That evidence is used in this note to illustrate the available capacity within the local road network and how the network would continue to operate within theoretical capacity during a jetty outage with REP and RRRF operating simultaneously. The evidence, provided at **Appendix B** to this note, considers when higher peak hour movements are predicted in 2022 for short periods during the construction programme than during the cumulative 100% by road reasonable worst case scenario where REP and RRRF could be operating at full (capped) output during a jetty outage. The analysis shows that the three junctions on Picardy Manorway would only reach their theoretical capacity (i.e. at which time congestion would be expected to start to occur) with an additional level of traffic in excess of 150%. This is estimated to be in excess of 700 vehicles per hour – significantly in excess of the possible cumulative hourly operation of REP and RRRF under a jetty outage scenario (assumed to be capped in the order of 44 HCVs per hour inbound and 44 HCV per hour outbound movements during a peak hour).

4.6. The current contracts for ERF waste import to RRRF are predominantly focused towards Central London. A jetty outage scenario would therefore add most of the HCV movements to the A2016 to the west of Norman Road and not the A2016/A206 corridor to the south of Picardy Manorway (i.e. Bronze Age Way and beyond).

4.7. When considering the combined jetty outage scenarios of both RRRF and REP, the level of increase in traffic movements to reach the theoretical maximum capacity is substantially below the cumulative prediction for growth on the network.

5. Summary and Conclusion

5.1. The operation of REP and the prediction of growth in traffic on the local road network has been assessed using a number of robust assumptions. It is considered that the assessment work provides sufficient evidence to demonstrate that Norman Road and the adjacent junctions on Picardy Manorway would operate with sufficient reserve capacity should both REP and RRRF need to revert to a temporary jetty outage scenario.

5.2. The increased vehicle movements generated by the above 'worst case scenario' (i.e. the simultaneous operation of REP and RRRF at fully capacity during a temporary jetty outage) is not judged to change the assessment of effects on the transport network for the criteria as assessed for the 100% by road reasonable worst case scenario assessed within Chapter 6 Transport of the ES (6.1, REP2-017). The resultant impacts would continue to be judged as Not Significant.

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Appendix A: Junction Assessment Summary Tables Extracted from the Transport Assessment (TA), Appendix B.1 to the ES (6.3, APP-066)

TA Table 6.7: LinSig Results for A2016 Picardy Manorway/ Norman Road

Arm	AM Peak			PM Peak		
	MMQ	Delay	DOS	MMQ	Delay	DOS
2018 Baseline						
Norman Road	0.9	27.0	16.7%	1.6	28.5	28.4%
Picardy Manorway (WB)	7.3	7.5	57.2%	3.9	5.8	38.5%
Picardy Manorway (EB)	1.4	4.4	31.5%	3.7	5.1	42.9%
2028 Do Minimum						
Norman Road	0.9	27.1	17.6%	1.7	28.8	30.5%
Picardy Manorway (WB)	9.3	8.7	65.2%	5.5	6.6	48.6%
Picardy Manorway (EB)	4.9	6.4	45.7%	8.1	7.9	60.4%
2028 Do Something (100%)						
Norman Road	1.3	27.9	24.3%	2.2	30.0	38.1%
Picardy Manorway (WB)	9.4	8.8	66.1%	5.7	6.7	49.5%
Picardy Manorway (EB)	4.9	6.4	46.8%	8.1	8.0	61.2%

TA Table 6.8: ARCADY Results for A2016 Picardy Manorway/ Clydesdale Way/ Yarnton Way/ A2016 Eastern Way

Arm	AM Peak			PM Peak		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
2018 Baseline						
A2016 Picardy Manorway	1.7	3.39	0.6	0.8	2.31	0.41
Clydesdale Way	0.2	8.84	0.13	0.1	5.24	0.08
Yarnton Way	0.4	2.41	0.25	0.4	2.13	0.28
A2016 Eastern Way	0.6	2.99	0.37	1.5	4.61	0.57
2028 Do Minimum						
A2016 Picardy Manorway	2.4	4.32	0.69	1.2	2.83	0.52
Clydesdale Way	0.3	12.55	0.19	0.1	6.68	0.11
Yarnton Way	0.5	2.85	0.31	0.6	2.54	0.34
A2016 Eastern Way	0.9	3.58	0.46	2.3	6.31	0.68
2028 Do Something (100% by Road)						
A2016 Picardy Manorway	2.5	4.46	0.7	1.2	2.89	0.53
Clydesdale Way	0.3	13.15	0.2	0.1	6.83	0.11
Yarnton Way	0.5	2.9	0.31	0.6	2.58	0.34
A2016 Eastern Way	1	3.66	0.47	2.4	6.54	0.69

TA Table 6.9: ARCADY Results for A2016 Picardy Manorway/ Anderson Way/ A2016 Bronze Age Way/ B253 Picardy Manorway

Arm	AM Peak			PM Peak		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
2018 Baseline						
A2016 Picardy Manorway	1.00	2.89	0.47	2.10	4.33	0.66
Clydesdale Way	0.20	2.19	0.15	0.40	3.28	0.29
Yarnton Way	1.50	3.92	0.58	1.00	3.42	0.46
A2016 Eastern Way	0.80	4.54	0.41	0.30	2.73	0.20
2028 Do Minimum						
A2016 Picardy Manorway	1.60	4.13	0.60	3.70	6.71	0.77
Clydesdale Way	0.30	2.48	0.21	1.40	6.05	0.57
Yarnton Way	3.00	6.27	0.73	1.70	5.19	0.61
A2016 Eastern Way	1.50	7.77	0.59	0.40	3.47	0.27
2028 Do Something (100%)						
A2016 Picardy Manorway	1.70	4.25	0.61	3.90	7.05	0.78
Clydesdale Way	0.30	2.51	0.21	1.50	6.26	0.58
Yarnton Way	3.10	6.51	0.74	1.70	5.35	0.61
A2016 Eastern Way	1.60	8.08	0.60	0.40	3.52	0.28

Appendix B: TN007 ‘Construction Phase Sensitivity Test’

TECHNICAL NOTE

Job Name: Riverside Energy Park

Job No: 42166

Note No: TN007

Date: 23/01/2019

Prepared By: Morteza M.Nejad

Subject: **Construction Phase Sensitivity Test**

Introduction

This technical note provides a review of the maximum capacity of local junctions during the construction phase of the proposed development at Riverside Energy Park (REP).

At the pre-application meeting held on 9th October 2018, TfL officers requested that the maximum capacity of the three junctions on Picardy Manorway during the peak construction period in 2022 should be assessed in order to determine if the peak construction traffic, as set out in Section 4 of the REP Transport Assessment (TA), could be accommodated at the local junctions and to subsequently inform discussions on the effective operation of the network during the construction stages. The three local junctions assessed are as follows:

- Junciton 1 - A2016/ Clydesdale Way/ Yarnton Way roundabout (ARCADY)
- Junciton 2 - A2016/ Norman Road (LINSIG)
- Junciton 3 - A2016/ Anderson Way/ B253

Assumptions and Scenarios Tested

As set out in Section 4 of the REP TA, the construction phase traffic consists of construction material trips, construction worker trips and also trips associated with the construction of the Electrical Connection Route. The peak period of construction is expected to be in the year of 2022 which would be month 13 of the construction programme. This peak in construction related traffic is the period during which the greatest number of construction workers are expected to be required onsite.

It has been projected that approximately 1097 workers would be operating at the worksite at REP at the peak month 13. Of those workers, the current parking proposal allows for 552 parking spaces at the construction compound and has been used as an proxy for car based travel during that period. The construction peak is projected to be short-lived and would half in maginitude within 3 months either side of the peak month.

Table 1: Illustration of predicted construction wortkforce numbers per month

Month	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
Personnel	0	0	49	50	143	147	156	202	205	377	556	989	1097	696	549
Parking	0	0	43	44	96	99	107	123	126	209	297	501	552	359	291
Month	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
Personnel	497	575	441	413	341	330	334	289	291	234	207	179	96	91	85
Parking	267	305	244	231	198	194	196	171	171	147	130	110	74	71	67
Month	*31*	*32*	*33*	*34*	*35*	*36*	*37*	*38*	*39*	*40*	*41*	*42*	*43*	*44*	*45*
Personnel	78	108	106	103	99	98	169	83	83	83	83	83	83	83	83
Parking	63	95	93	91	87	86	76	0	0	0	0	0	0	0	0

Construction workers are assumed to work between 08:00 – 18:00, with arrivals taking place between 07:00 – 08:00 and departures between 18:00 – 19:00. This is a worst case assumption as the arrival/ departure of workers and contractors are likely to be spread across a longer arrival and departure period.

There are many variables which would affect the movement profile including:

- Toolbox talks + briefings;
- changing/PPE in-out;
- flexibility due to tasks + co-ordination with other workstream; and
- extended pours etc

All other key assumptions have been set out in detail in Section 4 of the REP TA.

The following three time periods have been tested for the year of 2022 assuming that 100% of the construction workforce would arrive during the hour tested:

- 06:00 – 07:00
- 07:00 – 08:00
- 07:30 – 08:30

The traffic flows tested include background traffic growth and flows associated with committed developments, as set out in Section 6 of the REP TA.

Summary of Results

The three time periods stated above have been tested with 100% of the construction traffic. Additionally, for the 07:30-08:30 time period which has the highest level of background traffic, another test has been undertaken in which the construction traffic is proportionally increased until the junction operates above maximum capacity. A summary of the results have been shown in Table 1 below and full modelling outputs provided in Appendix A.

The construction programme would be developed during the lead into the start of construction and would be reflected in the Construction Traffic Management Plan (CTMP). The CTMP would reflect the refined predictions of workforce numbers and set out the measures that could be adopted to reduce further the percentage of the workforce commuting by car and reduce the number of cars using the network during peak times. The CTMP would allow for emerging changes to the local road network, which may include alterations to the A2016 / Bexley Road roundabout.

Table 2: Summary of Junction Modelling Results

Time	Junction 1 RFC		Junction 2 DOS		Junction 3 RFC	
	100% construction traffic	152% Construction Traffic	100% construction traffic	225% construction traffic	100% construction traffic	160% Construction Traffic
06:00-07:00	0.61	-	59.8%	-	0.69	-
07:00-08:00	0.78	-	75.2%	-	0.81	-
07:30-08:30	0.82	1.02	77.4%	103.6%	0.83	1.03

It is evident that all three junctions assessed operate with spare capacity with 100% of construction traffic flows during the peak period of construction. The tests show that the junctions reach maximum capacity during the 07:30 – 08:30 time period if the following levels of construction traffic were to be applied:

- Junciton 1: 152% of construction traffic – 870 PCUs
- Junciton 2: 225% of construction traffic – 2243 PCUs
- Junciton 3: 160% of construction traffic – 698 PCUs

Overall, it has been shown that the three junctions on Picardy Manorway are able to operate with no issues during the peak period of contruction in the year 2022.

TECHNICAL NOTE

Appendix A: Modelling Outputs

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Junction 1_Failure Test_152.j9
Path: \\pba.int\cbh\Projects\42166 Riverside 2\Transport\5. Drawings & Models\Traffic Modelling\Failure Tests\AM Peak
Report generation date: 24/01/2019 11:11:43

»2022 DS AM - 100% Construction Traffic, 0600 - 0700
»2022 DS AM - 100% Construction Traffic, 0700 - 0800
»2022 DS AM - 100% Construction Traffic, 0730 - 0830
»2022 DS AM - 152% Construction Traffic, 0730 - 0830

Summary of junction performance

	0600 - 0700				0700 - 0800				0730 - 0830			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2022 DS AM - 100% Construction Traffic											
1 - A2016 Picardy Manorway	1.7	3.46	0.61	A	3.9	6.22	0.78	A	4.8	7.38	0.82	A
2 - Clydesdale Way	0.1	8.65	0.10	A	0.3	20.69	0.24	C	0.6	32.15	0.38	D
3 - Yarnton Way	0.3	2.62	0.19	A	0.4	3.51	0.28	A	0.6	3.77	0.34	A
4 - A2016 Eastern Way	0.8	3.57	0.41	A	1.2	4.53	0.53	A	1.6	5.47	0.59	A
	2022 DS AM - 152% Construction Traffic											
1 - A2016 Picardy Manorway									9.3	13.35	0.90	B
2 - Clydesdale Way									5.4	250.28	1.02	F
3 - Yarnton Way									0.7	4.68	0.39	A
4 - A2016 Eastern Way									2.6	8.25	0.70	A

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

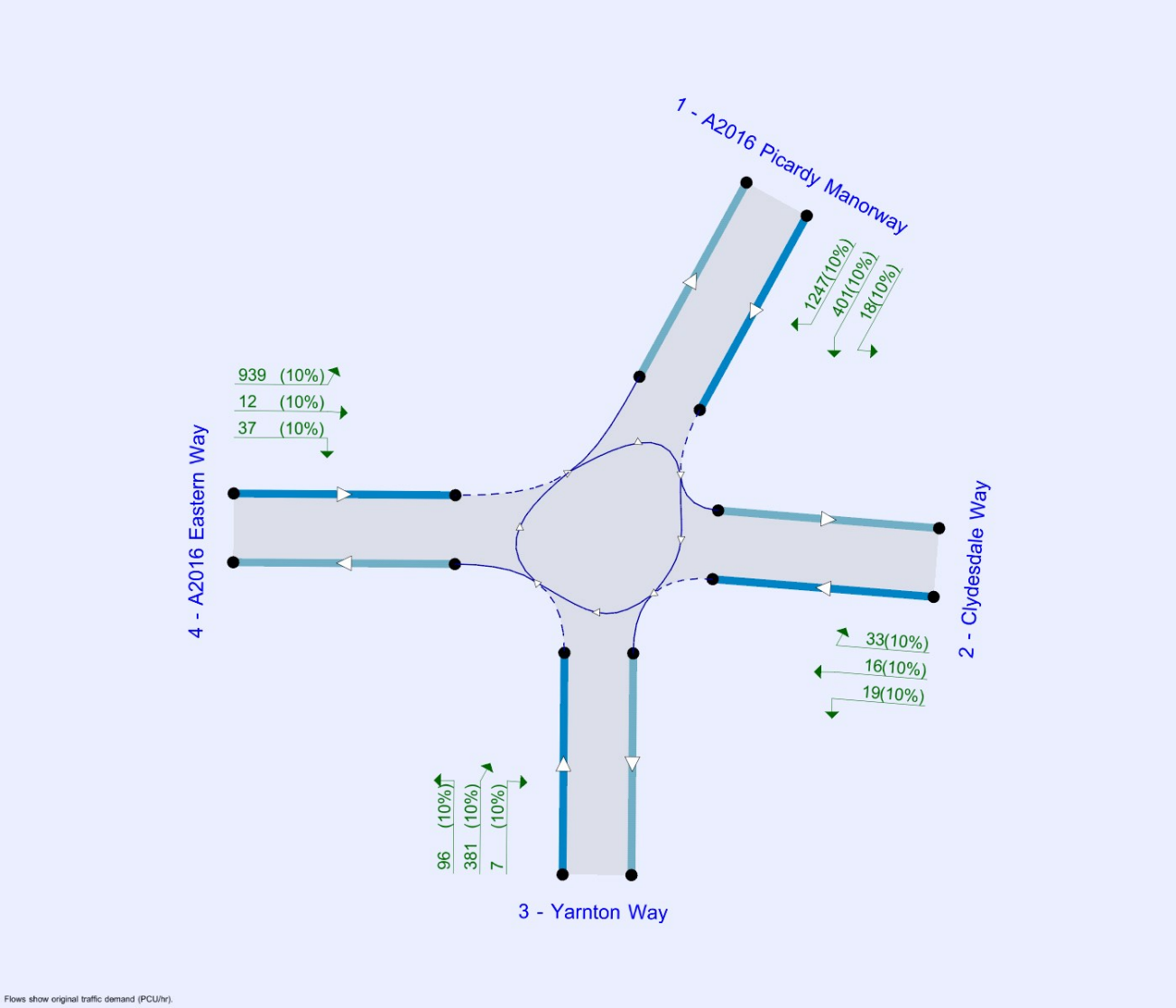
File summary

File Description

Title	Junction 1 - Senstivity Test
Location	Picardy Manorway/Eastern Way
Site number	
Date	09/07/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	PBA\jtsmith
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)
D2	2022 DS AM - 100% Construction Traffic	0600 - 0700	ONE HOUR	05:45	07:15	15
D5	2022 DS AM - 100% Construction Traffic	0700 - 0800	ONE HOUR	06:45	08:15	15
D8	2022 DS AM - 100% Construction Traffic	0730 - 0830	ONE HOUR	07:15	08:45	15
D9	2022 DS AM - 152% Construction Traffic	0730 - 0830	ONE HOUR	07:15	08:45	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2022 DS AM - 100% Construction Traffic, 0600 - 0700

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Junction 1	Standard Roundabout	1, 2, 3, 4	3.48	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A2016 Picardy Manorway	
2	Clydesdale Way	
3	Yarnton Way	
4	A2016 Eastern Way	

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)	Exit only
1 - A2016 Picardy Manorway	8.00	11.00	19.0	21.0	59.0	32.0	
2 - Clydesdale Way	4.30	6.00	3.7	10.5	59.0	29.0	
3 - Yarnton Way	10.60	10.60	0.0	23.0	59.0	21.0	
4 - A2016 Eastern Way	7.30	10.90	8.4	21.0	59.0	52.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A2016 Picardy Manorway	0.791	3014
2 - Clydesdale Way	0.508	1450
3 - Yarnton Way	0.858	3333
4 - A2016 Eastern Way	0.678	2474

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)
D2	2022 DS AM - 100% Construction Traffic	0600 - 0700	ONE HOUR	05:45	07:15	15

Default vehicle mix	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 - A2016 Picardy Manorway		✓	1657	100.000
2 - Clydesdale Way		✓	47	100.000
3 - Yarnton Way		✓	321	100.000
4 - A2016 Eastern Way		✓	707	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A2016 Picardy Manorway	2 - Clydesdale Way	3 - Yarnton Way	4 - A2016 Eastern Way
From	1 - A2016 Picardy Manorway	504	17	151	985
	2 - Clydesdale Way	27	0	7	13
	3 - Yarnton Way	246	4	5	66
	4 - A2016 Eastern Way	664	7	13	23

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A2016 Picardy Manorway	2 - Clydesdale Way	3 - Yarnton Way	4 - A2016 Eastern Way
From	1 - A2016 Picardy Manorway	10	10	10	10
	2 - Clydesdale Way	10	10	10	10
	3 - Yarnton Way	10	10	10	10
	4 - A2016 Eastern Way	10	10	10	10

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
05:45-06:00	1 - A2016 Picardy Manorway	1247	1247
	2 - Clydesdale Way	35	35
	3 - Yarnton Way	242	242
	4 - A2016 Eastern Way	532	532
06:00-06:15	1 - A2016 Picardy Manorway	1490	1490
	2 - Clydesdale Way	42	42
	3 - Yarnton Way	289	289
	4 - A2016 Eastern Way	636	636
06:15-06:30	1 - A2016 Picardy Manorway	1824	1824
	2 - Clydesdale Way	52	52
	3 - Yarnton Way	353	353
	4 - A2016 Eastern Way	778	778
06:30-06:45	1 - A2016 Picardy Manorway	1824	1824
	2 - Clydesdale Way	52	52
	3 - Yarnton Way	353	353
	4 - A2016 Eastern Way	778	778
06:45-07:00	1 - A2016 Picardy Manorway	1490	1490
	2 - Clydesdale Way	42	42
	3 - Yarnton Way	289	289
	4 - A2016 Eastern Way	636	636
07:00-07:15	1 - A2016 Picardy Manorway	1247	1247
	2 - Clydesdale Way	35	35
	3 - Yarnton Way	242	242
	4 - A2016 Eastern Way	532	532

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - A2016 Picardy Manorway	0.61	3.46	1.7	A
2 - Clydesdale Way	0.10	8.65	0.1	A
3 - Yarnton Way	0.19	2.62	0.3	A
4 - A2016 Eastern Way	0.41	3.57	0.8	A

Main Results for each time segment

05:45 - 06:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1247	39	2983	0.418	1244	0.8	2.274	A
2 - Clydesdale Way	35	1262	808	0.044	35	0.1	5.119	A
3 - Yarnton Way	242	1165	2332	0.104	241	0.1	1.893	A
4 - A2016 Eastern Way	532	590	2074	0.257	531	0.4	2.564	A

06:00 - 06:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1490	47	2977	0.500	1488	1.1	2.657	A
2 - Clydesdale Way	42	1510	683	0.062	42	0.1	6.182	A
3 - Yarnton Way	289	1394	2136	0.135	288	0.2	2.143	A
4 - A2016 Eastern Way	636	706	1995	0.319	635	0.5	2.909	A

06:15 - 06:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1824	57	2969	0.615	1822	1.7	3.446	A
2 - Clydesdale Way	52	1848	511	0.101	52	0.1	8.618	A
3 - Yarnton Way	353	1706	1868	0.189	353	0.3	2.613	A
4 - A2016 Eastern Way	778	864	1888	0.412	777	0.8	3.563	A

06:30 - 06:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1824	57	2969	0.615	1824	1.7	3.460	A
2 - Clydesdale Way	52	1851	510	0.102	52	0.1	8.649	A
3 - Yarnton Way	353	1709	1866	0.189	353	0.3	2.617	A
4 - A2016 Eastern Way	778	865	1887	0.413	778	0.8	3.571	A

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)	LOS
1 - A2016 Picardy Manorway	1490	47	2977	0.500	1492	1.1	2.673	A
2 - Clydesdale Way	42	1514	681	0.062	42	0.1	6.205	A
3 - Yarnton Way	289	1398	2133	0.135	289	0.2	2.149	A
4 - A2016 Eastern Way	636	708	1994	0.319	637	0.5	2.921	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)	LOS
1 - A2016 Picardy Manorway	1247	39	2983	0.418	1249	0.8	2.286	A
2 - Clydesdale Way	35	1267	806	0.044	35	0.1	5.139	A
3 - Yarnton Way	242	1170	2329	0.104	242	0.1	1.899	A
4 - A2016 Eastern Way	532	592	2072	0.257	533	0.4	2.572	A

2022 DS AM - 100% Construction Traffic, 0700 - 0800

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Junction 1	Standard Roundabout	1, 2, 3, 4	5.69	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2022 DS AM - 100% Construction Traffic	0700 - 0800	ONE HOUR	06:45	08:15	15

Default vehicle mix	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 - A2016 Picardy Manorway		✓	2082	100.000
2 - Clydesdale Way		✓	54	100.000
3 - Yarnton Way		✓	405	100.000
4 - A2016 Eastern Way		✓	884	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A2016 Picardy Manorway	2 - Clydesdale Way	3 - Yarnton Way	4 - A2016 Eastern Way
From	1 - A2016 Picardy Manorway	500	18	292	1272
	2 - Clydesdale Way	22	0	13	19
	3 - Yarnton Way	303	6	7	89
	4 - A2016 Eastern Way	799	12	26	47

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A2016 Picardy Manorway	2 - Clydesdale Way	3 - Yarnton Way	4 - A2016 Eastern Way
From	1 - A2016 Picardy Manorway	10	10	10	10
	2 - Clydesdale Way	10	10	10	10
	3 - Yarnton Way	10	10	10	10
	4 - A2016 Eastern Way	10	10	10	10

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - A2016 Picardy Manorway	1567	1567
	2 - Clydesdale Way	41	41
	3 - Yarnton Way	305	305
	4 - A2016 Eastern Way	666	666
07:00-07:15	1 - A2016 Picardy Manorway	1872	1872
	2 - Clydesdale Way	49	49
	3 - Yarnton Way	364	364
	4 - A2016 Eastern Way	795	795
07:15-07:30	1 - A2016 Picardy Manorway	2292	2292
	2 - Clydesdale Way	59	59
	3 - Yarnton Way	446	446
	4 - A2016 Eastern Way	973	973
07:30-07:45	1 - A2016 Picardy Manorway	2292	2292
	2 - Clydesdale Way	59	59
	3 - Yarnton Way	446	446
	4 - A2016 Eastern Way	973	973
07:45-08:00	1 - A2016 Picardy Manorway	1872	1872
	2 - Clydesdale Way	49	49
	3 - Yarnton Way	364	364
	4 - A2016 Eastern Way	795	795
08:00-08:15	1 - A2016 Picardy Manorway	1567	1567
	2 - Clydesdale Way	41	41
	3 - Yarnton Way	305	305
	4 - A2016 Eastern Way	666	666

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - A2016 Picardy Manorway	0.78	6.22	3.9	A
2 - Clydesdale Way	0.24	20.69	0.3	C
3 - Yarnton Way	0.28	3.51	0.4	A
4 - A2016 Eastern Way	0.53	4.53	1.2	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)	LOS
1 - A2016 Picardy Manorway	1567	74	2956	0.530	1563	1.2	2.834	A
2 - Clydesdale Way	41	1609	632	0.064	40	0.1	6.686	A
3 - Yarnton Way	305	1396	2135	0.143	304	0.2	2.162	A
4 - A2016 Eastern Way	666	629	2047	0.325	663	0.5	2.858	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)	LOS
1 - A2016 Picardy Manorway	1872	88	2944	0.636	1869	1.9	3.673	A
2 - Clydesdale Way	49	1925	472	0.103	48	0.1	9.343	A
3 - Yarnton Way	364	1670	1900	0.192	364	0.3	2.578	A
4 - A2016 Eastern Way	795	752	1964	0.405	794	0.7	3.384	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)	LOS
1 - A2016 Picardy Manorway	2292	108	2929	0.783	2285	3.8	6.073	A
2 - Clydesdale Way	59	2353	255	0.234	59	0.3	20.132	C
3 - Yarnton Way	446	2041	1581	0.282	445	0.4	3.484	A
4 - A2016 Eastern Way	973	920	1850	0.526	971	1.2	4.499	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)	LOS
1 - A2016 Picardy Manorway	2292	108	2929	0.783	2292	3.9	6.216	A
2 - Clydesdale Way	59	2360	251	0.237	59	0.3	20.695	C
3 - Yarnton Way	446	2048	1575	0.283	446	0.4	3.506	A
4 - A2016 Eastern Way	973	923	1848	0.527	973	1.2	4.525	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)	LOS
1 - A2016 Picardy Manorway	1872	88	2944	0.636	1880	1.9	3.748	A
2 - Clydesdale Way	49	1935	467	0.104	49	0.1	9.509	A
3 - Yarnton Way	364	1680	1891	0.193	365	0.3	2.595	A
4 - A2016 Eastern Way	795	756	1961	0.405	797	0.8	3.407	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)	LOS
1 - A2016 Picardy Manorway	1567	74	2955	0.530	1570	1.3	2.865	A
2 - Clydesdale Way	41	1617	628	0.065	41	0.1	6.744	A
3 - Yarnton Way	305	1403	2129	0.143	305	0.2	2.171	A
4 - A2016 Eastern Way	666	632	2045	0.325	666	0.5	2.875	A

2022 DS AM - 100% Construction Traffic, 0730 - 0830

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Junction 1	Standard Roundabout	1, 2, 3, 4	6.85	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2022 DS AM - 100% Construction Traffic	0730 - 0830	ONE HOUR	07:15	08:45	15

Default vehicle mix	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 - A2016 Picardy Manorway		✓	2159	100.000
2 - Clydesdale Way		✓	68	100.000
3 - Yarnton Way		✓	501	100.000
4 - A2016 Eastern Way		✓	956	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A2016 Picardy Manorway	2 - Clydesdale Way	3 - Yarnton Way	4 - A2016 Eastern Way
From	1 - A2016 Picardy Manorway	497	18	401	1243
	2 - Clydesdale Way	33	0	19	16
	3 - Yarnton Way	381	7	17	96
	4 - A2016 Eastern Way	863	12	37	44

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A2016 Picardy Manorway	2 - Clydesdale Way	3 - Yarnton Way	4 - A2016 Eastern Way
From	1 - A2016 Picardy Manorway	10	10	10	10
	2 - Clydesdale Way	10	10	10	10
	3 - Yarnton Way	10	10	10	10
	4 - A2016 Eastern Way	10	10	10	10

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:15-07:30	1 - A2016 Picardy Manorway	1625	1625
	2 - Clydesdale Way	51	51
	3 - Yarnton Way	377	377
	4 - A2016 Eastern Way	720	720
07:30-07:45	1 - A2016 Picardy Manorway	1941	1941
	2 - Clydesdale Way	61	61
	3 - Yarnton Way	450	450
	4 - A2016 Eastern Way	859	859
07:45-08:00	1 - A2016 Picardy Manorway	2377	2377
	2 - Clydesdale Way	75	75
	3 - Yarnton Way	552	552
	4 - A2016 Eastern Way	1053	1053
08:00-08:15	1 - A2016 Picardy Manorway	2377	2377
	2 - Clydesdale Way	75	75
	3 - Yarnton Way	552	552
	4 - A2016 Eastern Way	1053	1053
08:15-08:30	1 - A2016 Picardy Manorway	1941	1941
	2 - Clydesdale Way	61	61
	3 - Yarnton Way	450	450
	4 - A2016 Eastern Way	859	859
08:30-08:45	1 - A2016 Picardy Manorway	1625	1625
	2 - Clydesdale Way	51	51
	3 - Yarnton Way	377	377
	4 - A2016 Eastern Way	720	720

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - A2016 Picardy Manorway	0.82	7.38	4.8	A
2 - Clydesdale Way	0.38	32.15	0.6	D
3 - Yarnton Way	0.34	3.77	0.6	A
4 - A2016 Eastern Way	0.59	5.47	1.6	A

Main Results for each time segment

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)	LOS
1 - A2016 Picardy Manorway	1625	88	2944	0.552	1620	1.3	2.978	A
2 - Clydesdale Way	51	1680	596	0.086	51	0.1	7.255	A
3 - Yarnton Way	377	1375	2152	0.175	376	0.2	2.228	A
4 - A2016 Eastern Way	720	702	1998	0.360	717	0.6	3.087	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)	LOS
1 - A2016 Picardy Manorway	1941	105	2931	0.662	1938	2.1	3.975	A
2 - Clydesdale Way	61	2010	429	0.143	61	0.2	10.750	B
3 - Yarnton Way	450	1645	1921	0.234	450	0.3	2.692	A
4 - A2016 Eastern Way	859	839	1905	0.451	858	0.9	3.781	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)	LOS
1 - A2016 Picardy Manorway	2377	129	2912	0.816	2367	4.7	7.130	A
2 - Clydesdale Way	75	2455	203	0.369	73	0.6	30.182	D
3 - Yarnton Way	552	2009	1609	0.343	551	0.6	3.739	A
4 - A2016 Eastern Way	1053	1026	1778	0.592	1050	1.6	5.417	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)	LOS
1 - A2016 Picardy Manorway	2377	129	2912	0.816	2377	4.8	7.382	A
2 - Clydesdale Way	75	2465	198	0.379	75	0.6	32.147	D
3 - Yarnton Way	552	2018	1601	0.345	552	0.6	3.773	A
4 - A2016 Eastern Way	1053	1029	1776	0.593	1053	1.6	5.474	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1941	105	2930	0.662	1951	2.2	4.086	A
2 - Clydesdale Way	61	2023	422	0.145	63	0.2	11.089	B
3 - Yarnton Way	450	1658	1910	0.236	451	0.3	2.718	A
4 - A2016 Eastern Way	859	845	1901	0.452	862	0.9	3.820	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1625	88	2944	0.552	1629	1.4	3.017	A
2 - Clydesdale Way	51	1689	592	0.087	52	0.1	7.333	A
3 - Yarnton Way	377	1383	2146	0.176	378	0.2	2.241	A
4 - A2016 Eastern Way	720	705	1996	0.361	721	0.6	3.108	A

2022 DS AM - 152% Construction Traffic, 0730 - 0830

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Junction 1	Standard Roundabout	1, 2, 3, 4	14.98	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2022 DS AM - 152% Construction Traffic	0730 - 0830	ONE HOUR	07:15	08:45	15

Default vehicle mix	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 - A2016 Picardy Manorway		✓	2382	100.000
2 - Clydesdale Way		✓	68	100.000
3 - Yarnton Way		✓	501	100.000
4 - A2016 Eastern Way		✓	1032	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A2016 Picardy Manorway	2 - Clydesdale Way	3 - Yarnton Way	4 - A2016 Eastern Way
From	1 - A2016 Picardy Manorway	716	18	401	1247
	2 - Clydesdale Way	33	0	19	16
	3 - Yarnton Way	381	7	17	96
	4 - A2016 Eastern Way	939	12	37	44

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A2016 Picardy Manorway	2 - Clydesdale Way	3 - Yarnton Way	4 - A2016 Eastern Way
From	1 - A2016 Picardy Manorway	10	10	10	10
	2 - Clydesdale Way	10	10	10	10
	3 - Yarnton Way	10	10	10	10
	4 - A2016 Eastern Way	10	10	10	10

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:15-07:30	1 - A2016 Picardy Manorway	1793	1793
	2 - Clydesdale Way	51	51
	3 - Yarnton Way	377	377
	4 - A2016 Eastern Way	777	777
07:30-07:45	1 - A2016 Picardy Manorway	2141	2141
	2 - Clydesdale Way	61	61
	3 - Yarnton Way	450	450
	4 - A2016 Eastern Way	928	928
07:45-08:00	1 - A2016 Picardy Manorway	2623	2623
	2 - Clydesdale Way	75	75
	3 - Yarnton Way	552	552
	4 - A2016 Eastern Way	1136	1136
08:00-08:15	1 - A2016 Picardy Manorway	2623	2623
	2 - Clydesdale Way	75	75
	3 - Yarnton Way	552	552
	4 - A2016 Eastern Way	1136	1136
08:15-08:30	1 - A2016 Picardy Manorway	2141	2141
	2 - Clydesdale Way	61	61
	3 - Yarnton Way	450	450
	4 - A2016 Eastern Way	928	928
08:30-08:45	1 - A2016 Picardy Manorway	1793	1793
	2 - Clydesdale Way	51	51
	3 - Yarnton Way	377	377
	4 - A2016 Eastern Way	777	777

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - A2016 Picardy Manorway	0.90	13.35	9.3	B
2 - Clydesdale Way	1.02	250.28	5.4	F
3 - Yarnton Way	0.39	4.68	0.7	A
4 - A2016 Eastern Way	0.70	8.25	2.6	A

Main Results for each time segment

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)	LOS
1 - A2016 Picardy Manorway	1793	88	2944	0.609	1787	1.7	3.401	A
2 - Clydesdale Way	51	1847	512	0.100	51	0.1	8.581	A
3 - Yarnton Way	377	1542	2009	0.188	376	0.3	2.423	A
4 - A2016 Eastern Way	777	866	1887	0.412	774	0.8	3.550	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)	LOS
1 - A2016 Picardy Manorway	2141	105	2931	0.731	2136	2.9	4.954	A
2 - Clydesdale Way	61	2208	328	0.186	61	0.2	14.785	B
3 - Yarnton Way	450	1844	1750	0.257	450	0.4	3.046	A
4 - A2016 Eastern Way	928	1035	1772	0.524	926	1.2	4.673	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)	LOS
1 - A2016 Picardy Manorway	2623	128	2912	0.901	2599	8.8	11.847	B
2 - Clydesdale Way	75	2687	85	0.883	63	3.1	147.421	F
3 - Yarnton Way	552	2236	1414	0.390	550	0.7	4.581	A
4 - A2016 Eastern Way	1136	1257	1621	0.701	1131	2.5	7.992	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)	LOS
1 - A2016 Picardy Manorway	2623	129	2912	0.901	2621	9.3	13.347	B
2 - Clydesdale Way	75	2709	74	1.015	66	5.4	250.275	F
3 - Yarnton Way	552	2255	1397	0.395	552	0.7	4.684	A
4 - A2016 Eastern Way	1136	1265	1616	0.703	1136	2.6	8.247	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	2141	106	2930	0.731	2166	3.0	5.347	A
2 - Clydesdale Way	61	2239	313	0.196	82	0.3	18.674	C
3 - Yarnton Way	450	1884	1716	0.263	452	0.4	3.135	A
4 - A2016 Eastern Way	928	1056	1758	0.528	933	1.2	4.831	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1793	88	2944	0.609	1799	1.7	3.471	A
2 - Clydesdale Way	51	1859	505	0.101	52	0.1	8.740	A
3 - Yarnton Way	377	1553	2000	0.189	378	0.3	2.441	A
4 - A2016 Eastern Way	777	871	1883	0.413	779	0.8	3.591	A

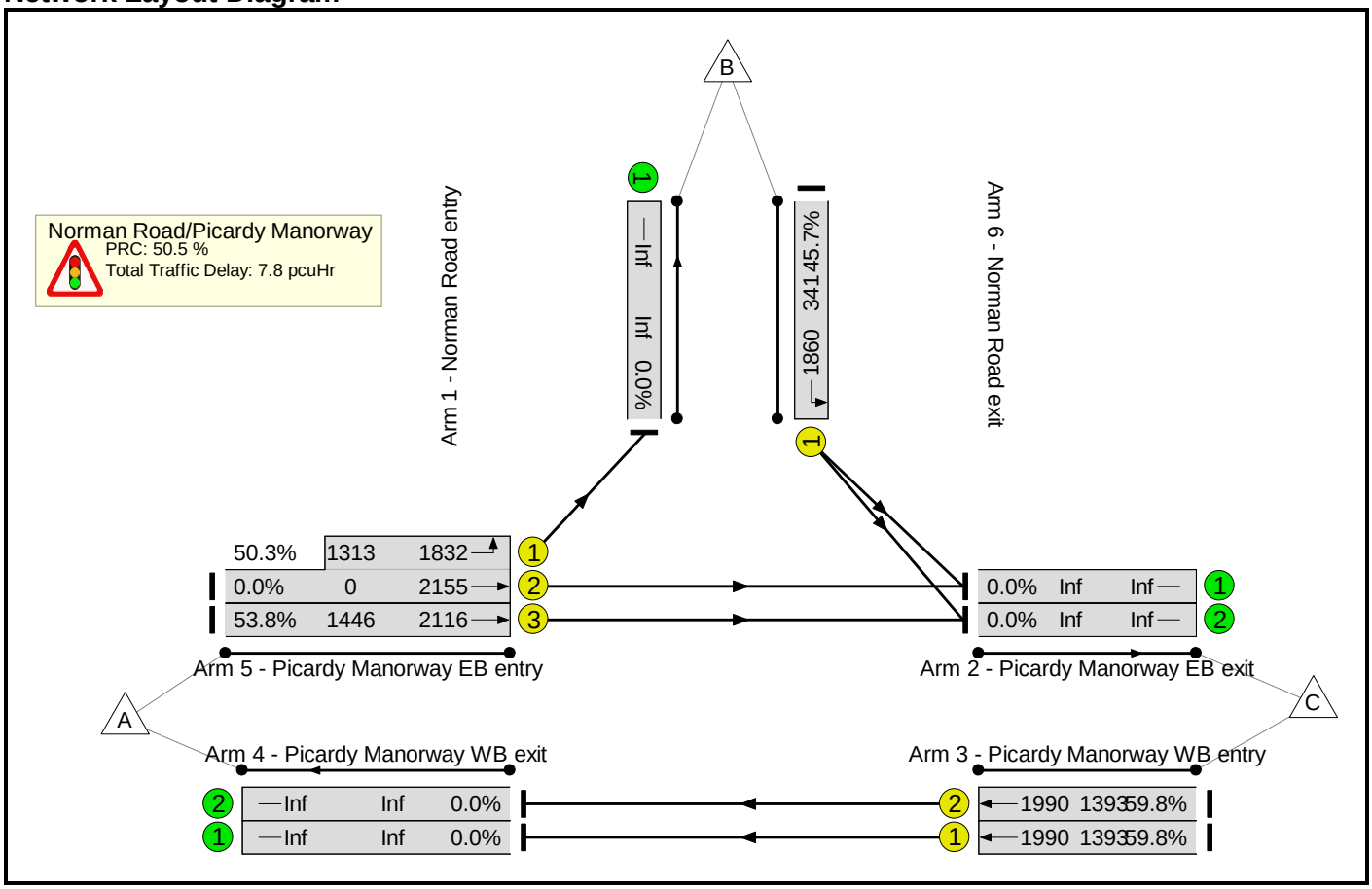
Basic Results Summary

User and Project Details

Project:	**Riverside Energy Park**
Title:	
Location:	
File name:	Junction 2_Failure Test_225.lsg3x
Author:	jdymock
Company:	PBA
Address:	
Notes:	Sensitivity Test

Scenario 1: '2022 DS AM (100% Rd) - 0600-0700' (FG2: '2022 DS AM (100% Rd)', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

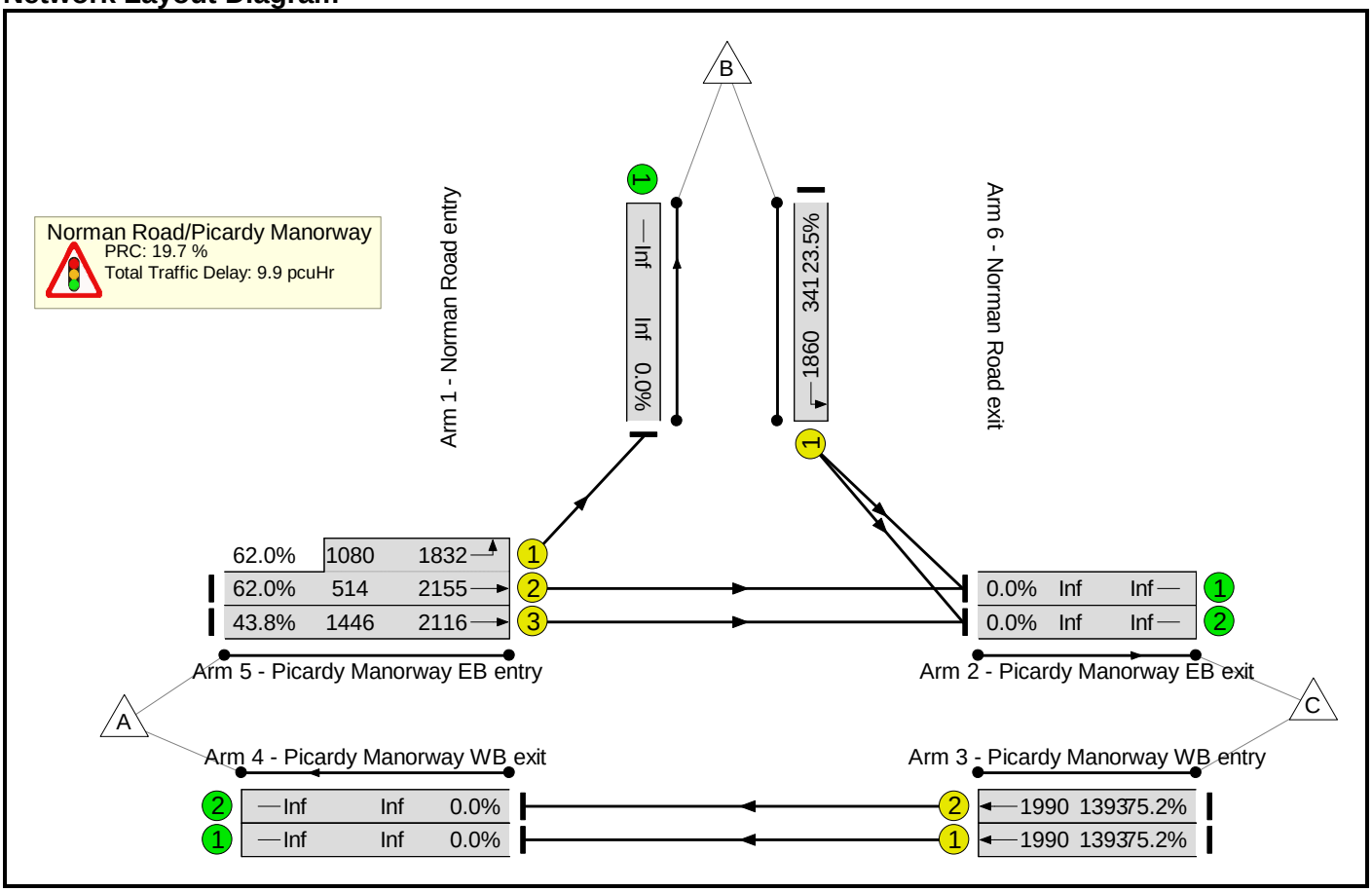
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.8%**	**0**	**0**	**0**	**7.8**	**-**	**-**
Norman Road/Picardy Manorway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.8%**	**0**	**0**	**0**	**7.8**	**-**	**-**
1/1	Norman Road entry Left	U	B		1	10	-	156	1860	341	45.7%	-	-	-	1.4	31.5	2.7
3/1	Picardy Manorway WB entry Ahead	U	G		1	41	-	833	1990	1393	59.8%	-	-	-	1.8	7.9	7.7
3/2	Picardy Manorway WB entry Ahead	U	G		1	41	-	833	1990	1393	59.8%	-	-	-	1.8	7.9	7.7
5/2+5/1	Picardy Manorway EB entry Ahead Left	U	A E		1	40:42	-	661	2155:1832	0+1313	0.0 : 50.3%	-	-	-	1.2	6.5	5.3
5/3	Picardy Manorway EB entry Ahead	U	A		1	40	-	778	2116	1446	53.8%	-	-	-	1.6	7.4	7.1

C1	Stream: 1 PRC for Signalled Lanes (%):	67.3	Total Delay for Signalled Lanes (pcuHr):	4.18	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	60
C1	Stream: 3 PRC for Signalled Lanes (%):	50.5	Total Delay for Signalled Lanes (pcuHr):	3.63	Cycle Time (s):	60
	PRC Over All Lanes (%):	50.5	Total Delay Over All Lanes(pcuHr):	7.81		

Basic Results Summary

Scenario 2: '2022 DS AM (100% Rd) - 0700-0800' (FG5: '2022 DS AM (100% Rd)', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

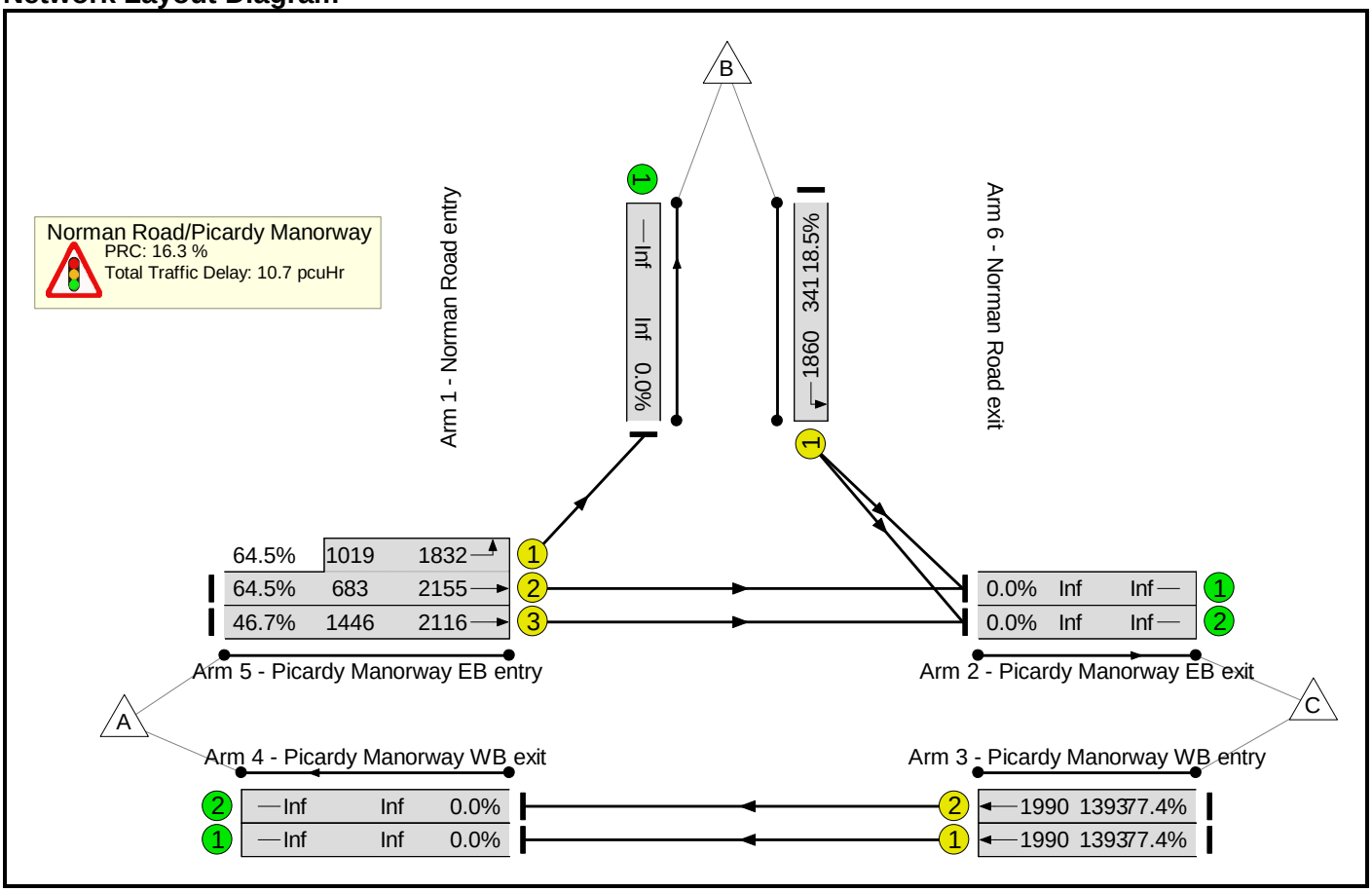
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.2%**	**0**	**0**	**0**	**9.9**	**-**	**-**
Norman Road/Picardy Manorway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.2%**	**0**	**0**	**0**	**9.9**	**-**	**-**
1/1	Norman Road entry Left	U	B		1	10	-	80	1860	341	23.5%	-	-	-	0.6	27.8	1.3
3/1	Picardy Manorway WB entry Ahead	U	G		1	41	-	1047	1990	1393	75.2%	-	-	-	3.2	10.9	12.3
3/2	Picardy Manorway WB entry Ahead	U	G		1	41	-	1047	1990	1393	75.2%	-	-	-	3.2	10.9	12.3
5/2+5/1	Picardy Manorway EB entry Ahead Left	U	A E		1	40:42	-	989	2155:1832	514+1080	62.0 : 62.0%	-	-	-	1.8	6.7	5.7
5/3	Picardy Manorway EB entry Ahead	U	A		1	40	-	633	2116	1446	43.8%	-	-	-	1.1	6.5	5.1

C1	Stream: 1 PRC for Signalled Lanes (%):	45.0	Total Delay for Signalled Lanes (pcuHr):	3.60	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	60
C1	Stream: 3 PRC for Signalled Lanes (%):	19.7	Total Delay for Signalled Lanes (pcuHr):	6.31	Cycle Time (s):	60
	PRC Over All Lanes (%):	19.7	Total Delay Over All Lanes(pcuHr):	9.91		

Basic Results Summary

Scenario 3: '2022 DS AM (100% Rd) - 0730-0830' (FG8: '2022 DS AM (100% Rd)', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

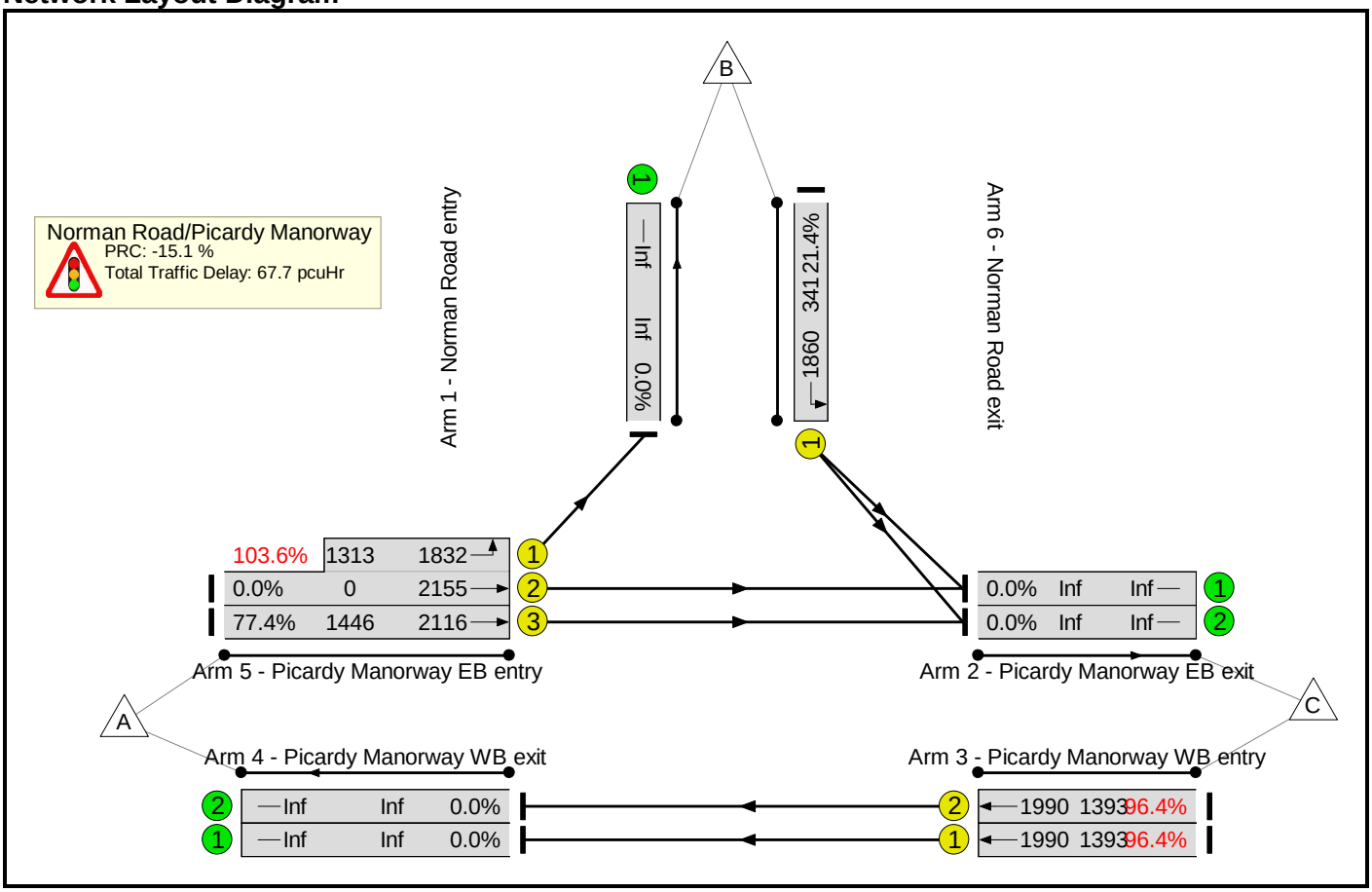
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.4%**	**0**	**0**	**0**	**10.7**	**-**	**-**
Norman Road/Picardy Manorway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.4%**	**0**	**0**	**0**	**10.7**	**-**	**-**
1/1	Norman Road entry Left	U	B		1	10	-	63	1860	341	18.5%	-	-	-	0.5	27.2	1.0
3/1	Picardy Manorway WB entry Ahead	U	G		1	41	-	1078	1990	1393	77.4%	-	-	-	3.5	11.5	13.4
3/2	Picardy Manorway WB entry Ahead	U	G		1	41	-	1078	1990	1393	77.4%	-	-	-	3.5	11.5	13.4
5/2+5/1	Picardy Manorway EB entry Ahead Left	U	A E		1	40:42	-	1097	2155:1832	683+1019	64.5 : 64.5%	-	-	-	2.1	6.7	5.6
5/3	Picardy Manorway EB entry Ahead	U	A		1	40	-	675	2116	1446	46.7%	-	-	-	1.3	6.8	5.5

C1	Stream: 1 PRC for Signalled Lanes (%):	39.6	Total Delay for Signalled Lanes (pcuHr):	3.80	Cycle Time (s): 60
C1	Stream: 2 PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s): 60
C1	Stream: 3 PRC for Signalled Lanes (%):	16.3	Total Delay for Signalled Lanes (pcuHr):	6.91	Cycle Time (s): 60
	PRC Over All Lanes (%):	16.3	Total Delay Over All Lanes(pcuHr):	10.71	

Basic Results Summary

Scenario 4: '2022 DS AM (225% Rd) - 0730-0830' (FG9: '2022 DS AM (225% Rd)', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**103.6%**	**0**	**0**	**0**	**67.7**	-	-
Norman Road/Picardy Manorway	-	-	-		-	-	-	-	-	-	**103.6%**	**0**	**0**	**0**	**67.7**	-	-
1/1	Norman Road entry Left	U	B		1	10	-	73	1860	341	21.4%	-	-	-	0.6	27.5	1.2
3/1	Picardy Manorway WB entry Ahead	U	G		1	41	-	1343	1990	1393	96.4%	-	-	-	12.8	34.3	30.2
3/2	Picardy Manorway WB entry Ahead	U	G		1	41	-	1343	1990	1393	96.4%	-	-	-	12.8	34.3	30.2
5/2+5/1	Picardy Manorway EB entry Ahead Left	U	A E		1	40:42	-	1360	2155:1832	0+1313	0.0 : 103.6%	-	-	-	37.9	100.2	58.6
5/3	Picardy Manorway EB entry Ahead	U	A		1	40	-	1119	2116	1446	77.4%	-	-	-	3.7	11.8	14.1

C1	Stream: 1 PRC for Signalled Lanes (%):	-15.1	Total Delay for Signalled Lanes (pcuHr):	42.10	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	60
C1	Stream: 3 PRC for Signalled Lanes (%):	-7.1	Total Delay for Signalled Lanes (pcuHr):	25.56	Cycle Time (s):	60
	PRC Over All Lanes (%):	-15.1	Total Delay Over All Lanes(pcuHr):	67.65		

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Junction 3_Failure Test_160.j9
Path: \\pba.int\cbh\Projects\42166 Riverside 2\Transport\5. Drawings & Models\Traffic Modelling\Failure Tests\AM Peak
Report generation date: 24/01/2019 11:23:27

»2022 DS AM - 100% Construction traffic, 0600 - 0700
»2022 DS AM - 100% Construction Traffic, 0700 - 0800
»2022 DS AM - 100% Construction Traffic, 0730 - 0830
»2022 DS AM - 160% Construction Traffic, 0730 - 0830

Summary of junction performance

	0600 - 0700				0700 - 0800				0730 - 0830			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2022 DS AM - 100% Construction traffic											
1 - A2016 Picardy Manorway	0.8	2.82	0.42	A								
2 - Anderson Way	0.2	1.97	0.14	A								
3 - A2016 Bronze Age Way	2.4	4.92	0.69	A								
4 - B253 Picardy Manorway	0.7	5.32	0.38	A								
	2022 DS AM - 100% Construction Traffic											
1 - A2016 Picardy Manorway					1.0	3.17	0.48	A	1.3	3.71	0.55	A
2 - Anderson Way					0.2	2.13	0.17	A	0.3	2.37	0.20	A
3 - A2016 Bronze Age Way					4.7	8.57	0.81	A	5.2	9.71	0.83	A
4 - B253 Picardy Manorway					2.5	12.81	0.70	B	4.3	18.98	0.80	C
	2022 DS AM - 160% Construction Traffic											
1 - A2016 Picardy Manorway									1.4	3.71	0.55	A
2 - Anderson Way									0.3	2.37	0.20	A
3 - A2016 Bronze Age Way									9.4	16.45	0.90	C
4 - B253 Picardy Manorway									28.3	101.15	1.03	F

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

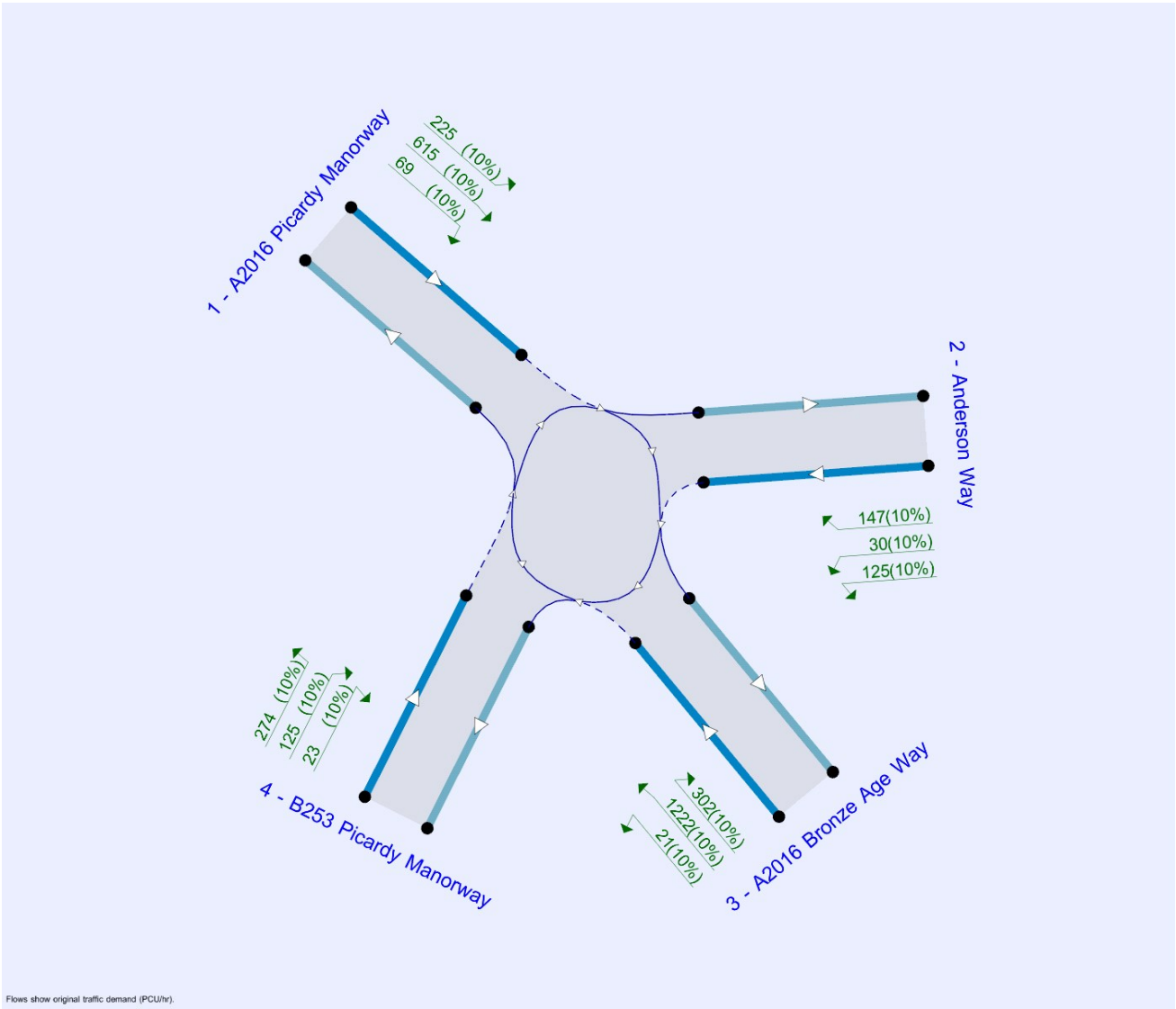
File summary

File Description

Title	Junction 3 - Senstivity Test
Location	Picardy Manorway
Site number	
Date	09/07/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	PBA\jtsmith
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)
D2	2022 DS AM - 100% Construction traffic	0600 - 0700	ONE HOUR	05:45	07:15	15
D4	2022 DS AM - 100% Construction Traffic	0700 - 0800	ONE HOUR	06:45	08:15	15
D6	2022 DS AM - 100% Construction Traffic	0730 - 0830	ONE HOUR	07:15	08:45	15
D7	2022 DS AM - 160% Construction Traffic	0730 - 0830	ONE HOUR	07:15	08:45	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2022 DS AM - 100% Construction traffic, 0600 - 0700

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3, 4	4.10	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A2016 Picardy Manorway	
2	Anderson Way	
3	A2016 Bronze Age Way	
4	B253 Picardy Manorway	

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)	Exit only
1 - A2016 Picardy Manorway	7.70	10.50	4.9	35.0	62.0	11.5	
2 - Anderson Way	7.50	16.00	8.9	29.0	62.0	24.0	
3 - A2016 Bronze Age Way	7.50	10.50	6.7	35.0	62.0	20.5	
4 - B253 Picardy Manorway	4.50	10.30	30.0	28.6	62.0	20.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A2016 Picardy Manorway	0.764	2857
2 - Anderson Way	0.778	3012
3 - A2016 Bronze Age Way	0.745	2789
4 - B253 Picardy Manorway	0.706	2570

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)
D2	2022 DS AM - 100% Construction traffic	0600 - 0700	ONE HOUR	05:45	07:15	15

Default vehicle mix	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 - A2016 Picardy Manorway		✓	932	100.000
2 - Anderson Way		✓	302	100.000
3 - A2016 Bronze Age Way		✓	1602	100.000
4 - B253 Picardy Manorway		✓	422	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A2016 Picardy Manorway	2 - Anderson Way	3 - A2016 Bronze Age Way	4 - B253 Picardy Manorway
From	1 - A2016 Picardy Manorway	23	225	615	69
	2 - Anderson Way	147	0	125	30
	3 - A2016 Bronze Age Way	1222	302	57	21
	4 - B253 Picardy Manorway	274	125	23	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A2016 Picardy Manorway	2 - Anderson Way	3 - A2016 Bronze Age Way	4 - B253 Picardy Manorway
From	1 - A2016 Picardy Manorway	10	10	10	10
	2 - Anderson Way	10	10	10	10
	3 - A2016 Bronze Age Way	10	10	10	10
	4 - B253 Picardy Manorway	10	10	10	10

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
05:45-06:00	1 - A2016 Picardy Manorway	702	702
	2 - Anderson Way	227	227
	3 - A2016 Bronze Age Way	1206	1206
	4 - B253 Picardy Manorway	318	318
06:00-06:15	1 - A2016 Picardy Manorway	838	838
	2 - Anderson Way	271	271
	3 - A2016 Bronze Age Way	1440	1440
	4 - B253 Picardy Manorway	379	379
06:15-06:30	1 - A2016 Picardy Manorway	1026	1026
	2 - Anderson Way	333	333
	3 - A2016 Bronze Age Way	1764	1764
	4 - B253 Picardy Manorway	465	465
06:30-06:45	1 - A2016 Picardy Manorway	1026	1026
	2 - Anderson Way	333	333
	3 - A2016 Bronze Age Way	1764	1764
	4 - B253 Picardy Manorway	465	465
06:45-07:00	1 - A2016 Picardy Manorway	838	838
	2 - Anderson Way	271	271
	3 - A2016 Bronze Age Way	1440	1440
	4 - B253 Picardy Manorway	379	379
07:00-07:15	1 - A2016 Picardy Manorway	702	702
	2 - Anderson Way	227	227
	3 - A2016 Bronze Age Way	1206	1206
	4 - B253 Picardy Manorway	318	318

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - A2016 Picardy Manorway	0.42	2.82	0.8	A
2 - Anderson Way	0.14	1.97	0.2	A
3 - A2016 Bronze Age Way	0.69	4.92	2.4	A
4 - B253 Picardy Manorway	0.38	5.32	0.7	A

Main Results for each time segment

05:45 - 06:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	702	381	2566	0.273	700	0.4	2.119	A
2 - Anderson Way	227	591	2552	0.089	227	0.1	1.702	A
3 - A2016 Bronze Age Way	1206	202	2638	0.457	1202	0.9	2.751	A
4 - B253 Picardy Manorway	318	1314	1642	0.194	317	0.3	2.984	A

06:00 - 06:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	838	455	2509	0.334	837	0.5	2.368	A
2 - Anderson Way	271	707	2462	0.110	271	0.1	1.806	A
3 - A2016 Bronze Age Way	1440	242	2609	0.552	1438	1.3	3.379	A
4 - B253 Picardy Manorway	379	1572	1459	0.260	379	0.4	3.662	A

06:15 - 06:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1026	557	2432	0.422	1025	0.8	2.814	A
2 - Anderson Way	333	866	2339	0.142	332	0.2	1.973	A
3 - A2016 Bronze Age Way	1764	296	2568	0.687	1760	2.4	4.874	A
4 - B253 Picardy Manorway	465	1924	1211	0.384	463	0.7	5.286	A

06:30 - 06:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1026	558	2431	0.422	1026	0.8	2.819	A
2 - Anderson Way	333	866	2338	0.142	333	0.2	1.974	A
3 - A2016 Bronze Age Way	1764	296	2568	0.687	1764	2.4	4.920	A
4 - B253 Picardy Manorway	465	1928	1208	0.385	465	0.7	5.324	A

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)	LOS
1 - A2016 Picardy Manorway	838	457	2508	0.334	839	0.6	2.373	A
2 - Anderson Way	271	708	2461	0.110	272	0.1	1.808	A
3 - A2016 Bronze Age Way	1440	242	2609	0.552	1444	1.4	3.412	A
4 - B253 Picardy Manorway	379	1578	1455	0.261	381	0.4	3.690	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)	LOS
1 - A2016 Picardy Manorway	702	382	2565	0.274	702	0.4	2.127	A
2 - Anderson Way	227	593	2551	0.089	227	0.1	1.703	A
3 - A2016 Bronze Age Way	1206	203	2638	0.457	1208	0.9	2.771	A
4 - B253 Picardy Manorway	318	1320	1638	0.194	318	0.3	3.003	A

2022 DS AM - 100% Construction Traffic, 0700 - 0800

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3, 4	7.25	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2022 DS AM - 100% Construction Traffic	0700 - 0800	ONE HOUR	06:45	08:15	15

Default vehicle mix	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 - A2016 Picardy Manorway		✓	1045	100.000
2 - Anderson Way		✓	351	100.000
3 - A2016 Bronze Age Way		✓	1828	100.000
4 - B253 Picardy Manorway		✓	657	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A2016 Picardy Manorway	2 - Anderson Way	3 - A2016 Bronze Age Way	4 - B253 Picardy Manorway
From	1 - A2016 Picardy Manorway	13	244	644	144
	2 - Anderson Way	181	0	125	45
	3 - A2016 Bronze Age Way	1454	284	47	43
	4 - B253 Picardy Manorway	446	159	50	2

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A2016 Picardy Manorway	2 - Anderson Way	3 - A2016 Bronze Age Way	4 - B253 Picardy Manorway
From	1 - A2016 Picardy Manorway	10	10	10	10
	2 - Anderson Way	10	10	10	10
	3 - A2016 Bronze Age Way	10	10	10	10
	4 - B253 Picardy Manorway	10	10	10	10

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
06:45-07:00	1 - A2016 Picardy Manorway	787	787
	2 - Anderson Way	264	264
	3 - A2016 Bronze Age Way	1376	1376
	4 - B253 Picardy Manorway	495	495
07:00-07:15	1 - A2016 Picardy Manorway	939	939
	2 - Anderson Way	316	316
	3 - A2016 Bronze Age Way	1643	1643
	4 - B253 Picardy Manorway	591	591
07:15-07:30	1 - A2016 Picardy Manorway	1151	1151
	2 - Anderson Way	386	386
	3 - A2016 Bronze Age Way	2013	2013
	4 - B253 Picardy Manorway	723	723
07:30-07:45	1 - A2016 Picardy Manorway	1151	1151
	2 - Anderson Way	386	386
	3 - A2016 Bronze Age Way	2013	2013
	4 - B253 Picardy Manorway	723	723
07:45-08:00	1 - A2016 Picardy Manorway	939	939
	2 - Anderson Way	316	316
	3 - A2016 Bronze Age Way	1643	1643
	4 - B253 Picardy Manorway	591	591
08:00-08:15	1 - A2016 Picardy Manorway	787	787
	2 - Anderson Way	264	264
	3 - A2016 Bronze Age Way	1376	1376
	4 - B253 Picardy Manorway	495	495

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - A2016 Picardy Manorway	0.48	3.17	1.0	A
2 - Anderson Way	0.17	2.13	0.2	A
3 - A2016 Bronze Age Way	0.81	8.57	4.7	A
4 - B253 Picardy Manorway	0.70	12.81	2.5	B

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)	LOS
1 - A2016 Picardy Manorway	787	406	2547	0.309	785	0.5	2.246	A
2 - Anderson Way	264	676	2486	0.106	264	0.1	1.781	A
3 - A2016 Bronze Age Way	1376	289	2573	0.535	1371	1.3	3.281	A
4 - B253 Picardy Manorway	495	1485	1521	0.325	493	0.5	3.841	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)	LOS
1 - A2016 Picardy Manorway	939	486	2486	0.378	939	0.7	2.558	A
2 - Anderson Way	316	808	2383	0.132	315	0.2	1.914	A
3 - A2016 Bronze Age Way	1643	346	2531	0.649	1640	2.0	4.430	A
4 - B253 Picardy Manorway	591	1776	1316	0.449	589	0.9	5.440	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)	LOS
1 - A2016 Picardy Manorway	1151	593	2404	0.479	1149	1.0	3.153	A
2 - Anderson Way	386	989	2243	0.172	386	0.2	2.133	A
3 - A2016 Bronze Age Way	2013	424	2473	0.814	2002	4.6	8.231	A
4 - B253 Picardy Manorway	723	2169	1038	0.697	717	2.4	12.117	B

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)	LOS
1 - A2016 Picardy Manorway	1151	597	2401	0.479	1151	1.0	3.165	A
2 - Anderson Way	386	991	2241	0.172	386	0.2	2.134	A
3 - A2016 Bronze Age Way	2013	424	2473	0.814	2012	4.7	8.569	A
4 - B253 Picardy Manorway	723	2178	1031	0.701	723	2.5	12.813	B

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)	LOS
1 - A2016 Picardy Manorway	939	491	2482	0.379	941	0.7	2.571	A
2 - Anderson Way	316	811	2381	0.133	316	0.2	1.919	A
3 - A2016 Bronze Age Way	1643	346	2531	0.649	1654	2.1	4.568	A
4 - B253 Picardy Manorway	591	1789	1306	0.452	597	0.9	5.635	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)	LOS
1 - A2016 Picardy Manorway	787	409	2545	0.309	787	0.5	2.254	A
2 - Anderson Way	264	678	2484	0.106	264	0.1	1.785	A
3 - A2016 Bronze Age Way	1376	290	2573	0.535	1379	1.3	3.326	A
4 - B253 Picardy Manorway	495	1493	1515	0.326	496	0.5	3.892	A

2022 DS AM - 100% Construction Traffic, 0730 - 0830

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3, 4	9.04	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2022 DS AM - 100% Construction Traffic	0730 - 0830	ONE HOUR	07:15	08:45	15

Default vehicle mix	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 - A2016 Picardy Manorway		✓	1192	100.000
2 - Anderson Way		✓	372	100.000
3 - A2016 Bronze Age Way		✓	1805	100.000
4 - B253 Picardy Manorway		✓	766	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A2016 Picardy Manorway	2 - Anderson Way	3 - A2016 Bronze Age Way	4 - B253 Picardy Manorway
From	1 - A2016 Picardy Manorway	12	235	714	231
	2 - Anderson Way	186	0	135	51
	3 - A2016 Bronze Age Way	1427	274	58	46
	4 - B253 Picardy Manorway	530	166	67	3

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A2016 Picardy Manorway	2 - Anderson Way	3 - A2016 Bronze Age Way	4 - B253 Picardy Manorway
From	1 - A2016 Picardy Manorway	10	10	10	10
	2 - Anderson Way	10	10	10	10
	3 - A2016 Bronze Age Way	10	10	10	10
	4 - B253 Picardy Manorway	10	10	10	10

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:15-07:30	1 - A2016 Picardy Manorway	897	897
	2 - Anderson Way	280	280
	3 - A2016 Bronze Age Way	1359	1359
	4 - B253 Picardy Manorway	577	577
07:30-07:45	1 - A2016 Picardy Manorway	1072	1072
	2 - Anderson Way	334	334
	3 - A2016 Bronze Age Way	1623	1623
	4 - B253 Picardy Manorway	689	689
07:45-08:00	1 - A2016 Picardy Manorway	1312	1312
	2 - Anderson Way	410	410
	3 - A2016 Bronze Age Way	1987	1987
	4 - B253 Picardy Manorway	843	843
08:00-08:15	1 - A2016 Picardy Manorway	1312	1312
	2 - Anderson Way	410	410
	3 - A2016 Bronze Age Way	1987	1987
	4 - B253 Picardy Manorway	843	843
08:15-08:30	1 - A2016 Picardy Manorway	1072	1072
	2 - Anderson Way	334	334
	3 - A2016 Bronze Age Way	1623	1623
	4 - B253 Picardy Manorway	689	689
08:30-08:45	1 - A2016 Picardy Manorway	897	897
	2 - Anderson Way	280	280
	3 - A2016 Bronze Age Way	1359	1359
	4 - B253 Picardy Manorway	577	577

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - A2016 Picardy Manorway	0.55	3.71	1.3	A
2 - Anderson Way	0.20	2.37	0.3	A
3 - A2016 Bronze Age Way	0.83	9.71	5.2	A
4 - B253 Picardy Manorway	0.80	18.98	4.3	C

Main Results for each time segment

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)	LOS
1 - A2016 Picardy Manorway	897	426	2532	0.354	895	0.6	2.416	A
2 - Anderson Way	280	815	2378	0.118	279	0.1	1.886	A
3 - A2016 Bronze Age Way	1359	363	2519	0.540	1354	1.3	3.384	A
4 - B253 Picardy Manorway	577	1468	1533	0.376	574	0.7	4.118	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)	LOS
1 - A2016 Picardy Manorway	1072	509	2468	0.434	1071	0.8	2.833	A
2 - Anderson Way	334	974	2254	0.148	334	0.2	2.062	A
3 - A2016 Bronze Age Way	1623	434	2466	0.658	1619	2.1	4.662	A
4 - B253 Picardy Manorway	689	1756	1330	0.518	687	1.2	6.137	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)	LOS
1 - A2016 Picardy Manorway	1312	620	2384	0.551	1310	1.3	3.684	A
2 - Anderson Way	410	1192	2085	0.196	409	0.3	2.363	A
3 - A2016 Bronze Age Way	1987	531	2393	0.830	1975	5.1	9.221	A
4 - B253 Picardy Manorway	843	2143	1056	0.798	832	4.0	16.881	C

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)	LOS
1 - A2016 Picardy Manorway	1312	625	2380	0.552	1312	1.3	3.709	A
2 - Anderson Way	410	1194	2083	0.197	410	0.3	2.366	A
3 - A2016 Bronze Age Way	1987	532	2393	0.831	1987	5.2	9.714	A
4 - B253 Picardy Manorway	843	2154	1048	0.804	842	4.3	18.978	C

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1072	517	2462	0.435	1074	0.9	2.857	A
2 - Anderson Way	334	978	2251	0.149	335	0.2	2.066	A
3 - A2016 Bronze Age Way	1623	435	2465	0.658	1635	2.2	4.839	A
4 - B253 Picardy Manorway	689	1771	1319	0.522	701	1.2	6.532	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	897	429	2529	0.355	898	0.6	2.428	A
2 - Anderson Way	280	818	2376	0.118	280	0.1	1.891	A
3 - A2016 Bronze Age Way	1359	364	2518	0.540	1362	1.3	3.436	A
4 - B253 Picardy Manorway	577	1477	1527	0.378	579	0.7	4.185	A

2022 DS AM - 160% Construction Traffic, 0730 - 0830

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3, 4	28.47	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2022 DS AM - 160% Construction Traffic	0730 - 0830	ONE HOUR	07:15	08:45	15

Default vehicle mix	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 - A2016 Picardy Manorway		✓	1198	100.000
2 - Anderson Way		✓	372	100.000
3 - A2016 Bronze Age Way		✓	1961	100.000
4 - B253 Picardy Manorway		✓	866	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A2016 Picardy Manorway	2 - Anderson Way	3 - A2016 Bronze Age Way	4 - B253 Picardy Manorway
From	1 - A2016 Picardy Manorway	14	235	718	231
	2 - Anderson Way	186	0	135	51
	3 - A2016 Bronze Age Way	1583	274	58	46
	4 - B253 Picardy Manorway	627	166	70	3

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A2016 Picardy Manorway	2 - Anderson Way	3 - A2016 Bronze Age Way	4 - B253 Picardy Manorway
From	1 - A2016 Picardy Manorway	10	10	10	10
	2 - Anderson Way	10	10	10	10
	3 - A2016 Bronze Age Way	10	10	10	10
	4 - B253 Picardy Manorway	10	10	10	10

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:15-07:30	1 - A2016 Picardy Manorway	902	902
	2 - Anderson Way	280	280
	3 - A2016 Bronze Age Way	1476	1476
	4 - B253 Picardy Manorway	652	652
07:30-07:45	1 - A2016 Picardy Manorway	1077	1077
	2 - Anderson Way	334	334
	3 - A2016 Bronze Age Way	1763	1763
	4 - B253 Picardy Manorway	779	779
07:45-08:00	1 - A2016 Picardy Manorway	1319	1319
	2 - Anderson Way	410	410
	3 - A2016 Bronze Age Way	2159	2159
	4 - B253 Picardy Manorway	953	953
08:00-08:15	1 - A2016 Picardy Manorway	1319	1319
	2 - Anderson Way	410	410
	3 - A2016 Bronze Age Way	2159	2159
	4 - B253 Picardy Manorway	953	953
08:15-08:30	1 - A2016 Picardy Manorway	1077	1077
	2 - Anderson Way	334	334
	3 - A2016 Bronze Age Way	1763	1763
	4 - B253 Picardy Manorway	779	779
08:30-08:45	1 - A2016 Picardy Manorway	902	902
	2 - Anderson Way	280	280
	3 - A2016 Bronze Age Way	1476	1476
	4 - B253 Picardy Manorway	652	652

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - A2016 Picardy Manorway	0.55	3.71	1.4	A
2 - Anderson Way	0.20	2.37	0.3	A
3 - A2016 Bronze Age Way	0.90	16.45	9.4	C
4 - B253 Picardy Manorway	1.03	101.15	28.3	F

Main Results for each time segment

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)	LOS
1 - A2016 Picardy Manorway	902	428	2530	0.356	899	0.6	2.425	A
2 - Anderson Way	280	821	2373	0.118	279	0.1	1.890	A
3 - A2016 Bronze Age Way	1476	364	2518	0.586	1470	1.5	3.760	A
4 - B253 Picardy Manorway	652	1586	1450	0.450	648	0.9	4.919	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)	LOS
1 - A2016 Picardy Manorway	1077	511	2466	0.437	1076	0.8	2.847	A
2 - Anderson Way	334	982	2248	0.149	334	0.2	2.069	A
3 - A2016 Bronze Age Way	1763	436	2464	0.715	1758	2.7	5.571	A
4 - B253 Picardy Manorway	779	1897	1230	0.633	775	1.8	8.618	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)	LOS
1 - A2016 Picardy Manorway	1319	608	2393	0.551	1317	1.3	3.675	A
2 - Anderson Way	410	1197	2081	0.197	409	0.3	2.369	A
3 - A2016 Bronze Age Way	2159	533	2392	0.903	2135	8.8	14.248	B
4 - B253 Picardy Manorway	953	2305	942	1.012	892	17.3	52.712	F

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)	LOS
1 - A2016 Picardy Manorway	1319	616	2386	0.553	1319	1.4	3.709	A
2 - Anderson Way	410	1201	2078	0.197	410	0.3	2.373	A
3 - A2016 Bronze Age Way	2159	534	2391	0.903	2157	9.4	16.451	C
4 - B253 Picardy Manorway	953	2326	927	1.029	910	28.3	101.146	F

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	1077	547	2439	0.442	1079	0.9	2.914	A
2 - Anderson Way	334	995	2238	0.149	335	0.2	2.081	A
3 - A2016 Bronze Age Way	1763	437	2463	0.716	1789	2.8	6.094	A
4 - B253 Picardy Manorway	779	1927	1209	0.644	883	2.1	16.514	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - A2016 Picardy Manorway	902	432	2527	0.357	903	0.6	2.439	A
2 - Anderson Way	280	825	2370	0.118	280	0.1	1.893	A
3 - A2016 Bronze Age Way	1476	365	2517	0.587	1481	1.6	3.844	A
4 - B253 Picardy Manorway	652	1597	1442	0.452	657	0.9	5.073	A