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IERRT ISH2 Hearing – Response to Action Item 17

1. Introduction

Following the recent Issue Specific Hearing (ISH2) associated with the Immingham Eastern Ro Ro Terminal (IERRT) project, the Inspectors identified a number of actions for ABP (the Applicant) or Interested Parties to respond to[1]. Action Point 17 as published on the PINS website related to the landside review of the application and requested that DFDS '*Share as soon as possible with Applicant modelling and assessment for the five public highway junctions that DFDS contends would be operating above capacity by 2032*'.

This note provides the necessary information to respond to the request of the Examining Authority.

The opinions, conclusions and any recommendations in this note are based on conditions encountered and information reviewed at the date of preparation of the note.

The Applicant and their consultants are not to rely on, or utilise, the following information. The purpose of this information is to present a high-level review of the Applicant's landside assessment and to provide some indications of potential methods for determining and refining the application details. It is the responsibility of the Applicant and their consultants to acquire the appropriate baseline data and undertake their own assessments and calculations to facilitate the provision of the DCO application.

2. Background

The Applicant has undertaken a Transport Assessment[2] that has considered the influence of the IERRT project on the port, local and strategic road network. The assessment conducted by the Applicant was based on a number of assumptions, and found that there were no requirements for controls on the road network, nor any influence to capacity of intersections.

GHD's review of the assumptions made by the applicant identified a number of discrepancies between what was utilised by the applicant, and what would be expected, including:

– The assumed split between accompanied and unaccompanied vehicles[3];
– The assumed additional volume of tractor-only movements[4];
– Split of vehicles between the East and West gate[5];
– The baseline traffic flows[6]; and
– Implications of seasonal demand on trade volumes influencing the peak traffic volumes used within the assessment[7].

[1] **EV3-012** TR030007-000570-Action Points ISH2 ES.pdf (planninginspectorate.gov.uk)
[2] **AS-008** TR030007-000427-8.4.17(a)_IERRT ES_Vol3_Appendix 17.1 Transport Assessment_Redacted)
[3] IERRT ISH2 Hearing – DFDS Response to Action Point 14
[4] IERRT ISH2 Hearing – DFDS Response to Action Point 12
[5] IERRT ISH2 Hearing – DFDS Response to Action Point 15
[6] IERRT ISH2 Hearing – DFDS Response to Action Point 11
[7] Note: during a discussion held on 10th August 2023 between the Applicant, DFDS, CLdN and their respective representatives, the applicant agreed to include a further control within the DCO application that daily peak volumes will be limited (to 1,800 freight units per day subject to DTA confirming the appropriateness of 1,800 freight units per day). With this control, the requirement to include

3. Assessment of External Highway Conditions

Due to the variations between the input parameters used by the applicant within their Transport Assessment, and those expected by GHD, an assessment of the external highway conditions was undertaken by GHD. This assessment was undertaken to better understand the existing and future junctions' performance and to determine the impact of the Applicant's proposed IERRT development flows on the local highway network. However, this assessment only modified the baseline traffic flows as discussed in DFDS response to Action Point 11. Further modifications will also be required by the Applicant to account for variations to do with the other three issues set out above, i.e. seasonal peak volumes, split between accompanied and unaccompanied vehicles, increase in tractor-only movements, and scenarios associated with the East versus West Gate distribution.

Three scenarios were assessed as follows:

– **Scenario 1:** 2019 Base Year
– **Scenario 2:** 2032 Future Year + Committed Developments
– **Scenario 3:** 2032 Future Year + Committed Developments + ABP Development flows

2019 counts from the North Killingholme Power Project (NKPP) Transport Assessment (for a non-material change to the DCO granted in 2014)[8] were used as the Base Year flows. 2032 flows were then forecasted by applying background growth factors to the 2019 flows. Committed developments in North Lincolnshire and North East Lincolnshire were also reviewed to determine developments' flows.

The detailed methodology of GHD's approach to the highway capacity assessment, along with assumptions, limitations, review of committed developments and modelling results can be found in Attachment 1.

3.1 Link Assessments

To quantify the uplift in traffic volumes associated with the Applicant's development flows, the Base Year and Future Base Year flows were compared to the ABP forecasted flows. This was undertaken for all vehicles as show in Table 1 and for HGVs as show in Table 2.

It is worth noting that the counts along the A1173 were taken at a point west of the Kiln Lane / A1173 roundabout, counts along the A160 were taken at a point east of Habrough Road / A160 roundabout while counts along Queens Road were taken at a point east of Kings Road / A1173 roundabout.

A comparison between Future Base flows and ABP flows on the port's gates was not undertaken due to the unavailability of future flows generated from the port.

As shown in Table 1, and in line with ABP's proposed distribution between the two gates, the total volumes of all vehicles increase between 23% (AM) and 27% (PM) on the East Gate, compared to only 3% in each peak hour along the West Gate.

Similarly, the total volume of all vehicles along Queens Road and the A1173 increase between 8% and 30% compared to a maximum increase of 2% along the A160.

Road	Base Flows		ABP Flows		% Increase		Future Base Flows		ABP Flows		% Increase	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
West Gate	572	611	18	20	3%	3%	-	-	-	-	-	-
East Gate	436	427	100	114	23%	27%	-	-	-	-	-	-

seasonal fluctuations would be suitably mitigated from DFDS perspective, assuming that the applicant can evidence suitable controls to achieving this constraint (i.e. controls that prevent the daily maximum number being exceeded).

[8] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010038/EN010038-001985-Environmental%20Report%20Appendix%208.1%20-%20Transport%20Statement.pdf

Queens Road	451	486	134	147	30%	30%	720	773	134	147	19%	19%
A1173	1,546	1,402	127	141	8%	10%	2,375	2,182	127	141	5%	6%
A160	1,927	1,493	24	26	1%	2%	2,780	2,331	24	26	1%	1%

Table 1 Percentage Increase of All Vehicles

The increase in the HGVs volumes follows a similar trend to that of all vehicles above. It is estimated that ABP's development will bring about a 125% (AM) and 119% (PM) increase in HGV flows on the East Gate. This only compares to 4% across each peak on the West Gate based on ABPs East versus West Gate distribution values. On the highway network, HGVs flows expected to raise between 69% (AM) and 106% (PM) along Queens Road and between 46% (AM) and 61% (PM) along the A1173.

A minor increase of 3% (AM) and 4% (PM) is forecasted along the A160. This is mainly due to ABP's traffic distribution that is assigning the majority of the development traffic into the A1173.

Table 2 Percentage Increase of HGVs

Road	Base Flows		ABP Flows		% Increase		Future Base Flows		ABP Flows		% Increase	
	AM	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
West Gate	406	452	18	20	4%	4%	-	-	-	-	-	-
East Gate	80	96	100	114	125%	119%	-	-	-	-	-	-
Queens Road	145	107	100	113	69%	106%	160	117	100	113	62%	96%
A1173	217	185	100	113	46%	61%	361	283	100	113	28%	40%
A160	651	567	18	20	3%	4%	738	657	18	20	2%	3%

3.2 Highway Capacity Assessments

The junctions modelled as part of this highway conditions assessment (as shown in Figure 1) include Habrough Roundabout, Humber Road / Eastfield Road Signalised Junction, Manby Roundabout, A1173 / Kings Road Roundabout, A1173 / Kiln Lane Roundabout, A1173 / New Site Access Roundabout and A180 / A1173 Roundabout. These junctions have been modelled using local junction assessment software, Junctions 10 and LinSig.

The Ratio of Flow to Capacity (RFC); also known as Degree of Saturation (DoS) for signalised junctions was used in analysing the performance of the junctions. The RFC / DoS provides a basis for judging the acceptability of a junction's performance, and typically an RFC of less than 0.85 (85%) is considered to indicate satisfactory traffic conditions. Where modelled RFC / DoS values exceed 1.00, junctions are deemed to operate over their capacity. This is usually coupled with high delays and queues.

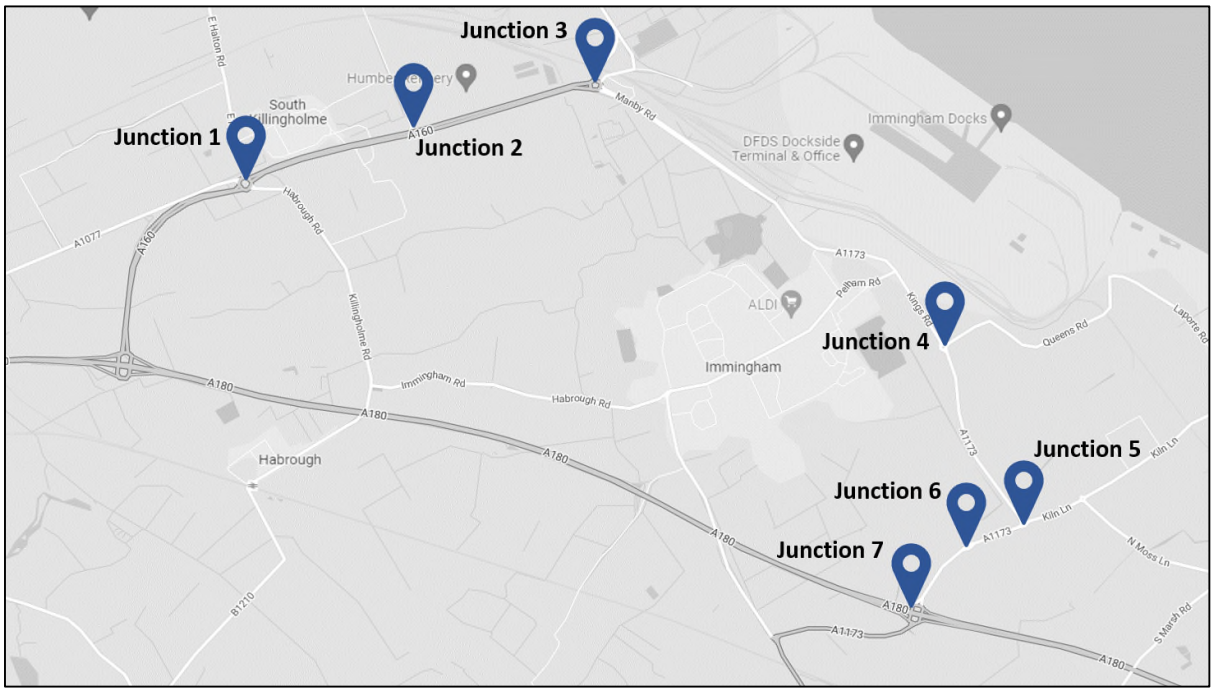

Figure 1 *Modelled Junctions Location*

Table 3 *Highway Capacity Assessment Summary*

No.	Junction	Sc.1: 2019		Sc.2: 2032 + Committed		Sc.3: 2032 + Committed +ABP	
1	A160/Ulceby Road/East Halton Road Roundabout (Habrough Roundabout)						
2	A160 Humber Road/Eastfield Road Signalised Junction						
3	A160 Humber Road/A1173 Manby Road Roundabout (Manby Roundabout)						
4	A1173/Kings Road Roundabout						
5	A1173 / Kiln Lane Roundabout						
6	A1173 / New Site Access Roundabout						
7	A180/A1173 Roundabout						

Green: RFC < 0.85 - **Amber**: 0.85 < RFC < 1.0 - **Red**: RFC > 1.0

Local modelling outputs summarised in Table 3 shows that the modelled junctions are all operating within their capacity in both peaks in the Base Year scenario. The only exception to this is A160 Humber Road / Eastfield Road junction in the AM peak and A1173 / Stallingborough Interchange Access Roundabout in the PM peak. Both have at least one arm with RFC between 0.85 and 1.0.

Three junctions are expected to operate over their capacity in Scenario 2: 2032 + committed developments. These are A160 Humber Road / Eastfield Road Junction, A1173 / New Site Access Roundabout and A180 / A1173 Roundabout.

Once the Applicant's development flows are considered alongside the committed developments in Scenario 3, five junctions are forecasted to operate over their capacity in 2032. These are:

– A160 Humber Road/Eastfield Road Junction;
– A160 Humber Road / A1173 Manby Road Roundabout;
– A1173 / New Site Access Roundabout;
– A1173 / Kiln Lane Roundabout; and

– A180 / A1173 Roundabout.

Those five junctions will require mitigations to address their capacity. Mitigations could be in the form of signal optimisation and/or changing the stage sequence at the A160 Humber Road / Eastfield Road signalised junction. The four other junctions that are expected to operate over capacity are roundabouts. Mitigations at those locations could include extending flare length, widening the approach onto the roundabout etc. If those are insufficient, then more significant improvements should be considered.

4. Conclusion

Section 7.4.2 of the DTA Transport Assessment within the Applicant's IERRT Environmental Statement (Volume 3, Appendix 17.1: Transport Assessment, Document Reference 8.4.17(a), March 2023 Version 2) states that "*there are no specific highway capacity mitigation measures required to ensure the proposals are acceptable in highway terms*".

The modelling results detailed above show that without appropriate mitigations, five junctions will operate over capacity in 2032. GHD would expect the forthcoming IERRT planning application to justify not introducing highway capacity mitigations and to detail how the Applicant is planning on addressing the junctions' capacity issues.

It is worth noting that adjusting the Applicant's 85%/15% distribution split between the East and West Gate, tractor-only volumes, accompanied versus unaccompanied freight unit volumes, and inclusion of seasonal peaks will have an impact on the results shown above and ultimately on the type and level of mitigations required.

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Attachment 1

GHD Highway Capacity Assessment

Report

11 August 2023

To	Andrew Bryne	**Contact No.**	+44(0)7436 810309
Copy to		**Email**	Matthew.East@ghd.com
From	Matt East, Gavin Wickens	**Project No.**	12578580
Project Name	DFDS Traffic Impact Study - Immingham		
Subject	Highway Capacity Assessment		

1. Introduction

Associated British Ports (ABP) are looking to expand RoRo operations at Immingham via undertaking the Immingham Eastern Ro-Ro Terminal (IERRT) project. The IERRT would likely facilitate Stena, who are aiming to shift sailings from Killingholme to Immingham, which requires a major upgrade to the Immingham Port. DFDS would like to test the level of effort, assumptions and conclusions being advised by ABP and the effects this may have on the existing operations at the port.

GHD have assessed the inputs that would normally be considered for a planning application against those within the applicants Transport Assessment. The GHD derived inputs have been compared against those included within ABP's initial planning submission for the project, resulting in GHD identifying several gaps and concerns with the ABP submission. As such, GHD has completed an independent assessment of the IERRT project.

The intent of this assessment is not to provide a detailed analysis, rather a summary of the issues and likely mitigations that would normally be considered within a detailed planning application for a project of this type.

1.1 Purpose of this report

This report provides a summary of the junction modelling outputs and results which was undertaken as part of highway capacity assessments for the key road network connecting with the Port of Immingham.

1.2 Limitations and Assumptions

1.2.1 Limitations

This report: has been prepared by GHD for DFDS Seaways PLC and may only be used and relied on by DFDS Seaways PLC for the purpose agreed between GHD and DFDS Seaways PLC as set out in this report.

GHD otherwise disclaims responsibility to any person other than DFDS Seaways PLC arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring after the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report based on information provided by DFDS Seaways PLC and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The Applicant and their consultants are not to rely on, or utilise, the following information. The purpose of this information is to present a high-level review of the Applicant's landside assessment and to provide some indications of potential methods for determining / refining the application details. It is the responsibility of the Applicant and their consultants to acquire the appropriate baseline data and undertake their own assessments and calculations to facilitate the provision of the planning application.

1.2.2 Assumptions

The following assumptions have been made during the assessment:

– Some junctions' geometric parameters have been extracted from publicly available Transport Assessments of other developments in the area that recently undertook traffic modelling.
– Others have been measured by GHD using Ordnance Survey Maps.
– Values were validated and adjusted using Google Maps and Google Earth aerial images.
– Modelling outputs could vary once parameters are validated through topographical surveys. However, the outputs should give an indication of any junctions / arms that are operating over capacity.
– ABP's development flows have been re-calculated on a pro-rata basis following the proposed reduction in the number of berths from four to three.
– No amendments have been made to the assumed distributions for East versus West Gate, tractor-only units and demand profiles as described within the applicants Transport Assessment[1].

GHDs review of the assumptions made by the applicant identified several discrepancies between what was utilised by the applicant, and what would be expected, including:

– The assumed split between accompanied and unaccompanied vehicles[2];
– The assumed additional volume of tractor-only movements[3];
– Split of vehicles between the East and West gate[4]; and
– The baseline traffic flows[5].

2. Highway Capacity Assessment

The junctions modelled as part of this highway capacity assessment include Harborough Roundabout, Humber Road / Eastfield Road Signalised Junction, Manby Roundabout, A1173 / Kings Road Roundabout, A1173 / Kiln Lane Roundabout, A1173 / New Site Access Roundabout and A180 / A1173 Roundabout. These junctions have been modelled using local junction assessment software, Junctions 10 (ARCADY) and LinSig.

The ratio of Flow to Capacity (RFC); also known as Degree of Saturation (DoS) for signalised junctions was used in analysing the performance of the junctions. The RFC / DoS provides a basis for judging the acceptability of a junction's performance, and typically an RFC of less than 0.85 (85%) is considered to indicate satisfactory traffic conditions. Where modelled RFC / DoS values exceed 1.00, junctions are deemed to operate over their capacity. This is usually coupled with high delays and queues.

[1] TR030007-000427-8.4.17(a)_IERRT ES_Vol3_Appendix 17.1 Transport Assessment_Redacted)
[2] IERRT ISH2 Hearing – DFDS Response to Action Point 14
[3] IERRT ISH2 Hearing – DFDS Response to Action Point 12
[4] IERRT ISH2 Hearing – DFDS Response to Action Point 15
[5] IERRT ISH2 Hearing – DFDS Response to Action Point 11

This highway capacity assessment will investigate the junctions / roundabouts' performance using the North Killingholme Power Project (NKPP) 2019 counts. Two additional scenarios were also modelled. These are the 2032 and 2032 + ABP flows.

All traffic model output reports are collated in Appendix A.

2.1 Existing Conditions

The existing traffic conditions (2019) were derived from the NKPP 2019 traffic counts for all the junctions. Those flows were used to assess the existing junctions' capacity.

2.1.1 Harborough Roundabout (J1)

Results from the ARCADY model show that Harborough Roundabout is operating with spare capacity on all approaches in both AM and PM peaks. The highest RFC in the AM peak is 0.63 on the A160 West approach. During the PM peak, the highest RFC is 0.56 at the A160 East approach. Queues are low on all approaches in both peaks ranging from 0.1 to 1.7 vehicles. Similarly, average delays are low with the highest being 7.03 seconds.

Table 1 Summary of 2019 Junction Performance - Harborough Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 1: Base Model 2019						
1. A160 East	0.4	0.6	4.2	0.6	1.3	4.1
2. Habrough Road	0.3	0.5	4.6	0.2	0.2	4.0
3. A160 West	0.6	1.7	4.8	0.4	0.7	3.7
4. Ulceby Road	0.2	0.3	7.0	0.1	0.1	4.2
5. East Halton Road	0.1	0.1	5.6	0.1	0.1	3.00

2.1.2 Humber Road / Eastfield Road Roundabout (J2)

The modelling results show that the roundabout is operating with spare capacity in the AM peak with the highest Degree of Saturation (DoS) of 78.9% on the Eastfield Road (N) approach. In the PM peak, DoS on the same approach is 107.4%, exceeding the available capacity the junction can accommodate. This is coupled with a queue length of 68.2 PCU and delays of 228.1 seconds. Queues and delays in the AM peak are low with the highest queue of 12.2 PCU on the A160 Humber Road (W) approach and the highest delays of 47.4 seconds on Eastfield Road (N) approach.

Table 2 Summary of 2019 Junction Performance - A160 Humber Road / Eastfield Road Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	DoS (%)	Queue Length (PCU)	Ave. Delay (s)	DoS (%)	Queue Length (PCU)	Ave. Delay (s)
Scenario 1: Base Model 2019						
1. A160 Humber Road (E)	43.7	6.0	28.6	53.3	9.3	41.4
2. Eastfield Road (S)	50.4	4.6	41.9	48.9	4.8	46.0
3. A160 Humber Road (W)	75.0	12.2	14.7	47.7	6.8	16.1
4. Eastfield Road (N)	78.9	9.7	47.4	107.4	68.2	228.1

2.1.3 Manby Roundabout (J3)

ARCADY modelling results show that Manby Roundabout is currently operating with spare capacity in both peaks. The highest recorded RFCs are 0.48 and 0.46 in the AM and PM peaks respectively. The highest recorded queues are 0.9 vehicle, and the highest recorded delay is 4.31 seconds in both peaks.

Table 3 Summary of 2019 Junction Performance – Manby Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 1: Base Model 2019						
1. A1173 Manby Road	0.3	0.5	2.9	0.2	0.3	2.6
2. A160 Humber Road	0.5	0.9	4.3	0.3	0.4	3.2
3. Conoco	0.0	0.0	0.0	0.0	0.0	0.0
4. Humber Road	0.3	0.4	3.2	0.5	0.8	4.0

2.1.4 A1173 / Kings Road Roundabout (J4)

Base modelling shows that the roundabout is operating with significant spare capacity in both peak hours. The highest RFC in both peaks is 0.49. This was recorded along the A1173 South approach. The availability of spare capacity is also reflected in low queues and delays on all approaches in the AM and PM peaks.

Table 4 Summary of 2019 Junction Performance – Kings Road Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 1: Base Model 2019						
1. A1173 (N)	0.3	0.4	4.2	0.3	0.5	3.6
2. Kings Road	0.1	0.1	4.3	0.4	0.5	4.6
3. A1173 (S)	0.5	1.0	4.7	0.3	0.4	3.5

2.1.5 A1173 / Kiln Lane Roundabout (J5)

Modelling results demonstrate that the junction is operating with spare capacity in both peaks. The highest RFC of 0.72 is modelled in the AM peak along the A1173 West approach. This spare capacity is coupled with low queues and delays on all approaches during both peak hours. The highest queue is 2.6 vehicles while the highest delay is 6.98 seconds.

Table 5 Summary of 2019 Junction Performance – A1173 / Kiln Lane Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 1: Base Model 2019						
1. Kiln Lane	0.1	0.1	2.8	0.4	0.7	3.6
2. Farm Access	0.0	0.0	0.00	0.0	0.0	0.0
3. A1173 (W)	0.7	2.6	7.00	0.2	0.3	3.1
4. A1173 (N)	0.3	0.4	4.9	0.5	0.9	4.6

2.1.6 A1173 / New Site Access Roundabout (J6)

The 2019 base model results provided by ARCADY show that the junction is operating at capacity in the AM peak with an RFC of 0.95 along the A1173 West. This links with a queue length of 13.2 vehicles and an average delay of ~38s. There is spare capacity in the PM peak with the highest recorded RFC being 0.56.

Table 6 Summary of 2019 Junction Performance – A1173 / New Site Access Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 1: Base Model 2019						
1. Site Access South	0.0	0.0	0.0	0.0	0.0	0.0
2. A1173 West	1.0	13.2	37.8	0.3	0.5	4.4
3. Site Access North	0.0	0.0	0.0	0.0	0.0	0.0
4. A1173 East	0.2	0.3	2.9	0.6	1.3	4.0

2.1.7 A180 / A1173 Roundabout (J7)

The Junctions 10 base model shows that the A180 / A1173 Roundabout is currently operating with spare capacity on all approaches in both AM and PM peaks. The highest RFCs are 0.48 and 0.66 in the AM and PM peaks respectively. The spare capacity is coupled with low queue lengths and delays on all approaches during both peaks.

Table 7 Summary of 2019 Junction Performance – A180 / A1173 Roundabout (J11)

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 1: Base Model 2019						
1. A180 (W)	0.2	0.3	3.0	0.1	0.1	2.4
2. A1173	0.3	0.4	3.7	0.7	1.9	6.0
3. A180 (E)	0.5	0.9	3.1	0.2	0.3	2.3
4. Matthew Ford Way	0.3	0.4	3.2	0.1	0.1	2.2

2.2 Traffic Forecasting

2.2.1 Methodology

Forecasts are used to establish the efficacy of a junction or local network in future years assessments. The following section will describe the methodology used in forecasting the future flows.

The growth factors have been estimated using Trip End Model Presentation Program (TEMPro) version 7.2. Traffic was assessed for the forecast year of 2032. Growth Factors for two different areas covering the junctions' locations were found for both peak hours. The average of both locations was then found to define the AM and PM growth factors that were used to determine 2032 flows.

The TEMPro growth factors used for the forecast year are shown in Table 8.

Table 8 TEMPro Factors for Forecast Year (2032)

Location	Peak	Origin	Destination	Average
North East Lincolnshire 001	AM	1.0859	1.0788	1.08235
	PM	1.0772	1.0813	1.07925
North Lincolnshire 004	AM	1.102	1.1134	1.1077
	PM	1.1076	1.0989	1.10325
Average	**AM**	**-**	**-**	**1.095025**
	PM	**-**	**-**	**1.09125**

2.2.2 Committed Developments Traffic

In order to consider committed developments in North Lincolnshire and North East Lincolnshire, both councils' planning portals as well as the Government's Planning Inspectorate were reviewed to identify committed developments and their location in relation to the port. The list of committed developments was then reviewed to determine which of the developments will have a direct impact on the local network under consideration and those that will not due to their location or size.

Table 9 shows a summary of the reviewed committed developments.

Table 9 Committed Developments Summary Table

No.	Committed Developments	Application Reference Number	Status	Include in Assessment?
1	Stallingborough Interchange	DM/0105/18/FUL	Approved with Conditions	Yes
2	Able Marine Energy Park (AMEP), AMEP Material Change 2	TR030001 & TR030006	An application for a Material Change has been submitted (Order 2014) for the Able Marine Energy Park Development Consent -16 July 2021). The Able Marine Energy Park Material Change 2 proposed changes have been authorised by the Secretary of State for Transport.	Yes
3	Petrol Fillings Station	PA/2019/1789	Full Planning Permission with conditions	Yes
4	North Killingholme Power Project	EN010038	Development consent on 11 September 2014	Yes
5	North Beck Energy Centre	DM/0026/18/FUL	Approved Conditions and signing of S106	Yes
6	VPI Immingham OCGT	EN010097	Development consent - 7 August 2020	Yes
7	Queens Road Estate, Immingham	DM/1027/13/OUT	Approved with Conditions	Yes
8	South Humber Bank Energy Centre	DM/1070/18/FUL	Approved with Conditions	Yes
9	Peter Ward Homes Residential	DM/1175/17/FUL	Approved Conditions and signing of S106	Yes
10	Highfield Residential	DM/0728/18/OUT	Approved Conditions and signing of S106	Yes
11	Station Road Habrough Residential	DM/0950/15/OUT - DM/0211/20/REM	Approved Conditions and signing of S106 - 02 Sep 2021	Yes
12	Altalto Jet Fuel	DM/0664/19/FUL	Approved Conditions and signing of S106 – 12 June 2020	Yes
13	The North Lincolnshire Green Energy Park scheme at Flixborough Wharf	EN010116	Application has been withdrawn on 08/04/2022. Resubmitted on 31 May 2022. Application accepted for examination.	No – Application has only been accepted for

No.	Committed Developments	Application Reference Number	Status	Include in Assessment?
				examination – Also not close to study area
14	Keadby 3 – Low Carbon Gas Power Station Project	EN010114	Pending - The Examination closed at 23:59 on 7 June 2022.	No – not close to study area
15	Skeffling Managed Realignment Site	19/00786/STPLFE	Approved - 09 Aug 2019	No – not close to study area
16	Humber Low Carbon Pipelines	EN070006	The application is expected to be submitted to the Planning Inspectorate Q3 2022.	No – Application not yet submitted
17	V Net Zero pipeline	EN070008	The application is expected to be submitted to the Planning Inspectorate Q1 2023.	No – Application not yet submitted
18	Little Crow Solar Park DCO	EN010101	Approved 05/04/2022	No – not close to study area

2.3 Future Year Assessment

The 2032 flows were determined by multiplying the base flows with the growth factors which are then added to the committed development counts (Scenario 2). To determine if there is significant change to the junctions' capacity, ABP IERRT counts are also added to the 2032 + Committed flows as a separate scenario (Scenario 3). Similar to the 2019 base flows, the traffic counts at the junctions were modelled using ARCADY and LinSig to determine the junction's capacity, queues and delays.

2.3.1 Harborough Roundabout (J1)

The modelling results for Scenario 2 show that the Harborough Roundabout will be operating at capacity in 2032 with background growth and committed developments. The highest RFC in the AM peak is 0.96 along the A160 (W) approach whereas in the PM peak, the highest RFC is 0.9 along the A160 (E) approach. Both are coupled with high queues and delays. The remaining approaches however will operate with spare capacity, low delays, and queues.

With the addition of the ABP development flows, the roundabout remains operating at capacity levels however nearing full capacity. The highest RFCs increases by 1% to 0.97 in the AM peak and 0.91 in the PM peak. Queue lengths and delays also slightly increase with the addition of the ABP counts.

Table 10 Summary of Future Year Junction Performance – Harborough Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 2: 2032 + Committed						
1. A160 East	0.48	0.9	4.7	0.90	8.3	16.8
2. Habrough Road	0.45	0.8	6.0	0.30	0.4	7.0
3. A160 West	0.96	17.4	32.3	0.51	1.0	4.3
4. Ulceby Road	0.45	0.8	17.4	0.14	0.2	4.7
5. East Halton Road	0.20	0.3	10.8	0.08	0.1	3.3
Scenario 3: 2032 + Committed + ABP						
1. A160 East	0.48	0.9	4.8	0.91	9.1	18.1
2. Habrough Road	0.45	0.8	6.1	0.30	0.4	7.1
3. A160 West	0.97	20.6	37.5	0.52	1.1	4.4

4. Ulceby Road	0.46	0.8	18.0	0.14	0.2	4.8
5. East Halton Road	0.21	0.3	11.1	0.08	0.1	3.3

2.3.2 Humber Road / Eastfield Road Roundabout (J2)

Results from LinSig show that the Humber Road / Eastfield Road Roundabout will be operating over capacity in the 2032 + Committed scenario. The highest DoS in the AM period is 102.1% along the A160 Humber Road (W) approach. This follows with high queues of 50.4 PCU and delays of 81.5 seconds. In the PM period, both the A160 Humber Road (E) and Eastfield Road (N) approaches will be operating over capacity with the highest DoS of 117.2 along Eastfield Road (N). This similarly couples with high queues and delays. All other approaches on both peak periods will operate with spare capacity.

With the addition of the ABP counts, the DoS of the A160 Humber Road (W) increases to 103.9% coupled with 63.8 PCU queue lengths and 108.4 seconds of delay in the AM peak. In the PM peak however, the DoS remains the same at 117.2% along Eastfield Road (N) with similar queues and delays.

Table 11 Summary of Future Year Junction Performance – Humber Road / Eastfield Road Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	DoS (%)	Queue Length (PCU)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 2: 2032 + Committed						
1. A160 Humber Road (E)	47.9	7.7	29.4	101.1	36.1	125.4
2. Eastfield Road (S)	66.4	6.6	47.5	70.8	7.8	54.9
3. A160 Humber Road (W)	102.1	50.4	81.5	59.9	8.9	18.8
4. Eastfield Road (N)	86.4	11.7	55.1	117.2	120.2	404.3
Scenario 3: 2032 + Committed + ABP						
1. A160 Humber Road (E)	48.9	7.9	29.5	103.2	45.3	155.2
2. Eastfield Road (S)	66.4	6.6	47.5	70.8	7.8	54.9
3. A160 Humber Road (W)	103.9	63.8	108.4	61.5	9.3	19.3
4. Eastfield Road (N)	86.4	11.7	55.1	117.2	120.2	404.3

2.3.3 Manby Roundabout (J3)

Scenario 2 modelling results show that Manby roundabout will operate with spare capacity in both peak hours with acceptable queues and delays. The highest RFC in the AM peak is 0.81 along the A160 Humber Road approach. The approach will have queues of 4.2 vehicles and delays of 12.48s. In the PM peak, the highest RFC is 0.85 along Humber Road. This is coupled with queues of 5.4 vehicles and delays of 13.09 seconds. All other approaches have relatively low delays and queues.

In Scenario 3, with the addition of the ABP development flows, the roundabout would still operate with spare capacity with the highest RFC of 0.83 along the A160 Humber Road approach in the AM peak and 0.87 along Humber Road in the PM peak.

Table 12 Summary of Future Year Junction Performance – Manby Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 2: 2032 + Committed						
1. A1173 Manby Road	0.54	1.2	4.3	0.33	0.5	3.4
2. A160 Humber Road	0.81	4.2	12.5	0.39	0.7	3.6
3. Conoco	0.00	0.0	0.0	0.00	0.0	0.0
4. Humber Road	0.35	0.5	3.5	0.85	5.4	13.1
Scenario 3: 2032 + Committed + ABP						
1. A1173 Manby Road	0.55	1.2	4.4	0.33	0.5	3.5
2. A160 Humber Road	0.83	4.7	13.9	0.41	0.7	3.7
3. Conoco	0.00	0.0	0.0	0.00	0.0	0.0
4. Humber Road	0.36	0.6	3.6	0.87	6.1	14.7

2.3.4 A1173 / Kings Road Roundabout (J4)

The ARCADY model results show that the roundabout will operate with spare capacity on all approach at both peak hours in both scenarios. The highest RFC in Scenario 1 AM peak is along the A1173 (S) approach with a value of 0.78. This increases to 0.87 with the addition of the ABP flows in Scenario 2.

In the PM peak, the highest RFC in Scenario 2 is 0.6 along Kings Road approach. This increase to 0.73 in Scenario 3. All remaining approaches have relatively low queues and delays in both peak across both scenarios.

Table 13 Summary of Future Year Junction Performance - A1173 / Kings Road Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 2: 2032 + Committed						
1. A1173 (N)	0.46	0.9	5.7	0.55	1.2	5.4
2. Kings Road	0.14	0.2	4.1	0.60	1.5	8.3
3. A1173 (S)	0.78	3.4	10.2	0.41	0.7	4.3
Scenario 3: 2032 + Committed + ABP						
1. A1173 (N)	0.51	1.0	6.7	0.59	1.4	6.2
2. Kings Road	0.21	0.3	4.7	0.73	2.7	13.5
3. A1173 (S)	0.87	6.1	17.3	0.48	0.9	5.1

2.3.5 A1173 / Kiln Lane Roundabout (J5)

In the 2032 + Committed scenario (Scenario 2), the modelling results show that the roundabout will be operating over capacity in the AM peak. The highest RFC of 1.09 was modelled along A1173 (W) approach. This is coupled with queue length of 97.3 vehicles and average delay of 156.67s. The highest RFC in the PM peak is 0.81 along the A1173 (N) approach. All other approaches contain low RFC, queues and delays in peak periods.

The addition of ABP development flows (Scenario 3) cause an increase in RFC values. The Highest RFC in the AM period increased to 1.17 along the A1173 (W) with significantly high queues and delays. In the PM peak, the highest RFC increased to 0.92 along the A1173 (N) approach. All other approaches will operate with spare capacity.

Table 14 Summary of Future Year Junction Performance - A117 / Kiln Lane Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 2: 2032 + Committed						
1. Kiln Lane	0.21	0.3	3.6	0.60	1.5	7.0
2. Farm Access	0.03	0.0	6.4	0.18	0.2	20.4
3. A1173 (W)	1.09	97.3	156.7	0.42	0.7	4.0
4. A1173 (N)	0.49	0.9	6.9	0.81	4.2	13.5
Scenario 3: 2032 + Committed + ABP						
1. Kiln Lane	0.22	0.3	3.8	0.65	1.8	8.6
2. Farm Access	0.04	0.0	6.8	0.28	0.4	34.7
3. A1173 (W)	1.17	166.9	321.8	0.49	0.9	4.7
4. A1173 (N)	0.55	1.2	7.9	0.92	9.3	29.0

2.3.6 A1173 / New Site Access Roundabout (J6)

Scenario 2 modelling shows that the roundabout will be operating over capacity in the AM peak and will operate at capacity levels in the PM peak. The highest RFC in the AM period is along the A1173 (W) approach with an RFC value of 1.04 coupled with high queues and delays of 57.1 vehicles and 88.56 seconds respectively. The highest RFC in the PM period is 0.89 along the A1173 (E) approach.

With the addition of ABP counts, RFC along the A1173 (W) increases to 1.11 coupled with high queues (119.5 vehicles) and delays (176.64 seconds). In the PM peak, the roundabout nears full capacity with and RFC of 0.96 along the A1173 (E) approach. All other approaches on the roundabout will operate with spare capacity linked with low queues and delays.

Table 15 Summary of Future Year Junction Performance - A1173 / New Site Access Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 2: 2032 + Committed						
1. Site Access South	0.08	0.1	3.7	0.31	0.5	9.3
2. A1173 West	1.04	57.1	88.6	0.41	0.7	3.4
3. Site Access North	0.07	0.1	14.4	0.03	0.0	3.5
4. A1173 East	0.40	0.7	3.8	0.89	7.5	16.2
Scenario 3: 2032 + Committed + ABP						
1. Site Access South	0.09	0.1	3.9	0.37	0.6	12.1
2. A1173 West	1.11	119.5	176.6	0.46	0.9	3.9
3. Site Access North	0.07	0.1	14.8	0.03	0.0	3.8
4. A1173 East	0.44	0.8	4.2	0.96	17.2	35.8

2.3.7 A180 / A1173 Roundabout (J7)

Modelling results from Scenario 2 show that the A180 / A1173 Roundabout will operate with spare capacity in the AM peak but over capacity in the PM peak. In the AM peak, the highest RFC is 0.78 along the A180 (E) approach. The availability of spare capacity is also reflected on the low queues in all approaches in the AM period. In the PM period however, the highest RFC is 1.11 along the A1173 approach with high queue length and delays.

The roundabout's capacity remains the same with the addition of the ABP counts however with an increase in RFC values. In the AM period, the highest RFC is 0.81 along the A180 (E) approach. This is coupled with a queue length of 4.1 vehicles and a delay of 9.07s. In the PM peak, the highest RFC is 1.2 along the A1173 approach with high queue lengths (176.8 vehicles) and delays (364.8 seconds).

Table 16 Summary of Future Year Junction Performance - A180 / A1173 Roundabout

Traffic Movement	AM Peak (0700-0800)			PM Peak (1600-1700)		
	RFC	Queue Length (veh)	Ave. Delay (s)	RFC	Queue Length (veh)	Ave. Delay (s)
Scenario 2: 2032 + Committed						
1. A180 (W)	0.45	0.8	6.0	0.22	0.3	3.0
2. A1173	0.51	1.0	5.5	1.11	105.4	179.0
3. A180 (E)	0.78	3.6	8.0	0.41	0.7	3.1
4. Matthew Ford Way	0.54	1.2	6.8	0.19	0.2	2.6
Scenario 3: 2032 + Committed + ABP						
1. A180 (W)	0.56	1.3	8.1	0.27	0.4	3.4
2. A1173	0.56	1.3	6.3	1.20	176.8	364.8
3. A180 (E)	0.81	4.1	9.1	0.42	0.7	3.3
4. Matthew Ford Way	0.57	1.3	7.5	0.20	0.2	2.8

3. Assessment Summary

The junctions modelled as part of this highway conditions assessment (as shown in Figure 1) include Harborough Roundabout, Humber Road / Eastfield Road Signalised Junction, Manby Roundabout, A1173 / Kings Road Roundabout, A1173 / Kiln Lane Roundabout, A1173 / New Site Access Roundabout and A180 / A1173 Roundabout. These junctions have been modelled using local junction assessment software, Junctions 10 and LinSig.

The ratio of Flow to Capacity (RFC); also known as Degree of Saturation (DoS) for signalised junctions was used in analysing the performance of the junctions. The RFC / DoS provides a basis for judging the acceptability of a junction's performance, and typically an RFC of less than 0.85 (85%) is considered to indicate satisfactory traffic conditions. Where modelled RFC / DoS values exceed 1.00, junctions are deemed to operate over their capacity. This is usually coupled with high delays and queues.

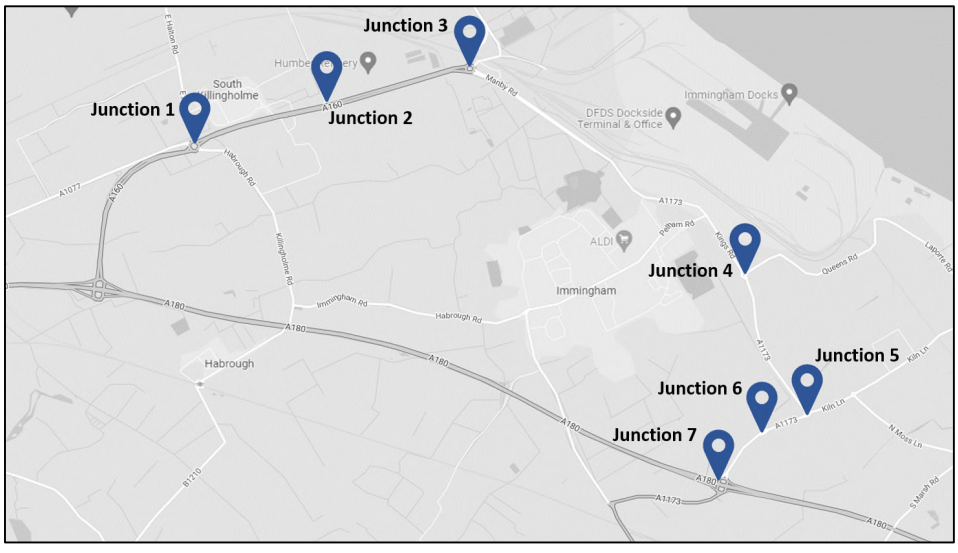

Figure 1 Modelled Junctions Location

Table 17 Highway Capacity Assessment Summary

No.	Junction	Sc.1: 2019		Sc.2: 2032 + Committed		Sc.3: 2032 + Committed +ABP	
1	A160/Ulceby Road/East Halton Road Roundabout (Habrough Roundabout)						
2	A160 Humber Road/Eastfield Road Signalised Junction						
3	A160 Humber Road/A1173 Manby Road Roundabout (Manby Roundabout)						
4	A1173/Kings Road Roundabout						
5	A1173 / Kiln Lane Roundabout						
6	A1173 / New Site Access Roundabout						
7	A180/A1173 Roundabout						

Green: RFC < 0.85 - **Amber**: 0.85 < RFC < 1.0 - **Red**: RFC > 1.0

Local modelling outputs summarised in Table 17 shows that the modelled junctions are all operating within their capacity in both peaks in the Base Year scenario. The only exception to this is A160 Humber Road / Eastfield Road junction in the AM peak and A1173 / Stallinborough Interchange Access Roundabout in the PM peak. Both have at least one arm with RFC between 0.85 and 1.0.

Three junctions are expected to operate over their capacity in Scenario 2: 2032 + committed developments. These are A160 Humber Road / Eastfield Road Junction, A1173 / New Site Access Roundabout and A180 / A1173 Roundabout.

Once the ABP development flows are considered alongside the committed developments in Scenario 3, five junctions are forecasted to operate over their capacity in 2032. These are:

– A160 Humber Road/Eastfield Road Junction;
– A160 Humber Road / A1173 Manby Road Roundabout;
– A1173 / New Site Access Roundabout;
– A1173 / Kiln Lane Roundabout; and
– A180 / A1173 Roundabout.

Those five junctions will require mitigations to address their capacity. Mitigations could be in the form of signal optimisation and/or changing the stage sequence at the A160 Humber Road / Eastfield Road signalised junction. The four other junctions that are expected to operate over capacity are roundabouts. Mitigations at those locations could include extending flare length, widening the approach onto the roundabout etc.

4. Conclusion

Section 7.4.2 of the DTA Transport Assessment within the ABP's IERRT Environmental Statement (Volume 3, Appendix 17.1: Transport Assessment, Document Reference 8.4.17(a), March 2023 Version 2) states that "*there are no specific highway capacity mitigation measures required to ensure the proposals are acceptable in highway terms*".

The modelling results detailed above show that without appropriate mitigations, five junctions will operate over capacity in 2032. GHD would expect the forthcoming IERRT planning application to justify not introducing highway capacity mitigations and to detail how ABP is planning on addressing the junctions' capacity issues.

It is worth noting that adjusting ABP's 85%/15% distribution split between the East and West Gate, tactor-only volumes, accompanied versus unaccompanied volumes, and inclusion of seasonal peaks will have an impact on the results shown above and ultimately on the type and level of mitigations required.

Appendix A

Traffic Model Output Reports

Project name		DFDS Traffic Impact Study - Immingham					
Document title		Report | Highway Capacity Assessment					
Project number		12578580					
File name		IERRT ISH2 Hearing - Response to Action Point 17 - Attachment 1.docx					
Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
			Name	**Signature**	**Name**	**Signature**	**Date**
S2	A	M. Maktabi	G. Wickens	*G. Wickens*	M. East	*M. East*	15/08/2023

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[Compliance statement]

Appendix A

Traffic Model Output Reports

Project name		DFDS Traffic Impact Study - Immingham					
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Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
			Name	**Signature**	**Name**	**Signature**	**Date**
S2	A	M. Maktabi	G. Wickens	*G. Wickens*	M. East	*M. East*	15/08/2023

Commented [MG6]: Confirm approvals, date, S2 for Information, and Draft status

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[Compliance statement]

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Model.j10
Path: \\ghdnet\GHD\UK\London MSL\Projects\4091\12579754\12578580\Tech\Modelling\Junction 2 - Harbrough Roundabout
Report generation date: 10/08/2023 22:29:05

Summary of junction performance

	AM					PM					AM + committed					PM + committed					AM + committed + ABP					PM + committed + ABP				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
2019																														
1 - A160 East		0.6	4.18	0.39	A		1.3	4.07	0.56	A		0.8	4.36	0.44	A		5.2	10.90	0.84	B										
2 - Habrough Road		0.5	4.59	0.34	A		0.2	4.03	0.17	A		0.7	5.28	0.40	A		0.3	6.21	0.26	A										
3 - A160 West	D1	1.7	4.78	0.63	A	D2	0.7	3.72	0.41	A	D3	7.7	14.99	0.89	B	D4	0.9	3.93	0.47	A										
4 - Ulceby Road		0.3	7.03	0.22	A		0.1	4.16	0.11	A		0.5	12.80	0.36	B		0.1	4.44	0.12	A										
5 - East Halton Road		0.1	5.61	0.10	A		0.1	2.96	0.05	A		0.2	8.79	0.16	A		0.1	3.14	0.07	A										
2032																														
1 - A160 East												0.9	4.72	0.48	A		8.3	16.77	0.90	C		0.9	4.78	0.48	A		9.1	18.14	0.91	C
2 - Habrough Road												0.8	6.01	0.45	A		0.4	6.97	0.30	A		0.8	6.09	0.45	A		0.4	7.10	0.30	A
3 - A160 West											D5	17.4	32.28	0.96	D	D6	1.0	4.29	0.51	A	D7	20.6	37.51	0.97	E	D8	1.1	4.40	0.52	A
4 - Ulceby Road												0.8	17.38	0.45	C		0.2	4.74	0.14	A		0.8	18.04	0.46	C		0.2	4.81	0.14	A
5 - East Halton Road												0.3	10.78	0.20	B		0.1	3.28	0.08	A		0.3	11.06	0.21	B		0.1	3.31	0.08	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	29/06/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	GHDNET\mmaktabi
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	mph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2019	AM	ONE HOUR	06:45	08:15	15
D2	2019	PM	ONE HOUR	15:45	17:15	15
D3	2019	AM + committed	ONE HOUR	06:45	08:15	15
D4	2019	PM + committed	ONE HOUR	15:45	17:15	15
D5	2032	AM + committed	ONE HOUR	06:45	08:15	15
D6	2032	PM + committed	ONE HOUR	15:45	17:15	15
D7	2032	AM + committed + ABP	ONE HOUR	06:45	08:15	15
D8	2032	PM + committed + ABP	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2019, 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	untitled	Standard Roundabout		1, 2, 3, 4, 5	4.73	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.73	A

Arms

Arms

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

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 - A160 East	7.37	9.23	5.7	49.9	100.4	20.5		
2 - Habrough Road	3.80	7.00	14.5	18.7	100.4	41.0		
3 - A160 West	7.76	9.16	16.9	35.2	100.4	31.5		
4 - Ulceby Road	3.92	6.92	11.1	32.6	100.4	21.0		
5 - East Halton Road	3.71	7.60	17.9	27.7	100.4	27.5		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A160 East	0.598	2665
2 - Habrough Road	0.433	1648
3 - A160 West	0.597	2729
4 - Ulceby Road	0.468	1759
5 - East Halton Road	0.477	1860

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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - A160 East		✓	490	100.000
2 - Habrough Road		✓	370	100.000
3 - A160 West		✓	1185	100.000
4 - Ulceby Road		✓	128	100.000
5 - East Halton Road		✓	64	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	50	421	17	2
	2 - Habrough Road	312	0	51	6	1
	3 - A160 West	1054	25	0	25	81
	4 - Ulceby Road	64	3	58	0	3
	5 - East Halton Road	7	9	41	7	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	65	85	55	58
	2 - Habrough Road	0	0	0	10	4
	3 - A160 West	22	0	0	57	11
	4 - Ulceby Road	29	0	42	0	24
	5 - East Halton Road	54	6	27	50	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A160 East	0.39	4.18	0.6	A

2 - Habrough Road	0.34	4.59	0.5	A
3 - A160 West	0.63	4.78	1.7	A
4 - Ulceby Road	0.22	7.03	0.3	A
5 - East Halton Road	0.10	5.61	0.1	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	369	107	1421	0.260	368	0.3	3.411	A
2 - Habrough Road	279	409	1336	0.208	278	0.3	3.397	A
3 - A160 West	892	259	2120	0.421	889	0.7	2.920	A
4 - Ulceby Road	96	1107	863	0.112	96	0.1	4.690	A
5 - East Halton Road	48	1137	942	0.051	48	0.1	4.024	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	440	128	1413	0.312	440	0.5	3.699	A
2 - Habrough Road	333	490	1275	0.261	332	0.4	3.819	A
3 - A160 West	1065	310	2093	0.509	1064	1.0	3.492	A
4 - Ulceby Road	115	1324	775	0.149	115	0.2	5.455	A
5 - East Halton Road	57	1361	845	0.068	57	0.1	4.568	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	539	157	1401	0.385	539	0.6	4.173	A
2 - Habrough Road	407	600	1192	0.342	407	0.5	4.580	A
3 - A160 West	1305	379	2058	0.634	1302	1.7	4.746	A
4 - Ulceby Road	141	1621	654	0.215	141	0.3	7.001	A
5 - East Halton Road	70	1666	713	0.098	70	0.1	5.594	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	539	157	1400	0.385	539	0.6	4.181	A
2 - Habrough Road	407	601	1191	0.342	407	0.5	4.591	A
3 - A160 West	1305	380	2057	0.634	1305	1.7	4.782	A
4 - Ulceby Road	141	1624	653	0.216	141	0.3	7.027	A
5 - East Halton Road	70	1669	712	0.098	70	0.1	5.609	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	440	128	1412	0.312	441	0.5	3.708	A
2 - Habrough Road	333	492	1274	0.261	333	0.4	3.831	A
3 - A160 West	1065	311	2093	0.509	1068	1.0	3.520	A
4 - Ulceby Road	115	1329	773	0.149	115	0.2	5.482	A
5 - East Halton Road	57	1366	843	0.068	57	0.1	4.585	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	369	107	1421	0.260	369	0.4	3.423	A
2 - Habrough Road	279	412	1334	0.209	279	0.3	3.413	A
3 - A160 West	892	260	2119	0.421	893	0.7	2.939	A
4 - Ulceby Road	96	1112	861	0.112	97	0.1	4.713	A
5 - East Halton Road	48	1143	940	0.051	48	0.1	4.037	A

2019, 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	untitled	Standard Roundabout		1, 2, 3, 4, 5	3.91	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.91	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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - A160 East		✓	1015	100.000
2 - Habrough Road		✓	161	100.000
3 - A160 West		✓	618	100.000
4 - Ulceby Road		✓	102	100.000
5 - East Halton Road		✓	63	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	229	699	77	10
	2 - Habrough Road	72	0	39	27	23
	3 - A160 West	377	84	0	36	121
	4 - Ulceby Road	29	37	29	0	7
	5 - East Halton Road	0	23	36	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	2	33	31	45
	2 - Habrough Road	7	0	0	0	6
	3 - A160 West	76	2	0	25	39
	4 - Ulceby Road	50	0	31	0	36
	5 - East Halton Road	21	1	9	12	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A160 East	0.56	4.07	1.3	A
2 - Habrough Road	0.17	4.03	0.2	A
3 - A160 West	0.41	3.72	0.7	A
4 - Ulceby Road	0.11	4.16	0.1	A
5 - East Halton Road	0.05	2.96	0.1	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	764	160	2040	0.375	762	0.6	2.812	A
2 - Habrough Road	121	642	1235	0.098	121	0.1	3.231	A
3 - A160 West	465	160	1680	0.277	464	0.4	2.955	A
4 - Ulceby Road	77	515	1113	0.069	76	0.1	3.473	A
5 - East Halton Road	47	471	1433	0.033	47	0.0	2.597	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	912	191	2024	0.451	912	0.8	3.232	A
2 - Habrough Road	145	768	1166	0.124	145	0.1	3.525	A
3 - A160 West	556	191	1666	0.333	555	0.5	3.238	A
4 - Ulceby Road	92	617	1056	0.087	92	0.1	3.732	A
5 - East Halton Road	57	564	1370	0.041	57	0.0	2.740	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service

1 - A160 East	1118	234	2002	0.558	1116	1.3	4.052	A
2 - Habrough Road	177	940	1071	0.165	177	0.2	4.024	A
3 - A160 West	680	234	1647	0.413	680	0.7	3.717	A
4 - Ulceby Road	112	755	978	0.115	112	0.1	4.157	A
5 - East Halton Road	69	691	1285	0.054	69	0.1	2.961	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1118	235	2002	0.558	1118	1.3	4.069	A
2 - Habrough Road	177	941	1071	0.166	177	0.2	4.029	A
3 - A160 West	680	235	1647	0.413	680	0.7	3.723	A
4 - Ulceby Road	112	756	978	0.115	112	0.1	4.159	A
5 - East Halton Road	69	691	1284	0.054	69	0.1	2.962	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	912	192	2024	0.451	914	0.8	3.251	A
2 - Habrough Road	145	770	1165	0.124	145	0.1	3.533	A
3 - A160 West	556	192	1666	0.333	556	0.5	3.245	A
4 - Ulceby Road	92	618	1055	0.087	92	0.1	3.739	A
5 - East Halton Road	57	565	1369	0.041	57	0.0	2.742	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	764	161	2040	0.375	765	0.6	2.827	A
2 - Habrough Road	121	644	1233	0.098	121	0.1	3.236	A
3 - A160 West	465	161	1680	0.277	466	0.4	2.967	A
4 - Ulceby Road	77	518	1112	0.069	77	0.1	3.480	A
5 - East Halton Road	47	473	1432	0.033	47	0.0	2.602	A

2019, AM + committed

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	10.75	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	10.75	B

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	2019	AM + committed	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 (Veh/hr)	Scaling Factor (%)
1 - A160 East		✓	586	100.000
2 - Habrough Road		✓	412	100.000
3 - A160 West		✓	1754	100.000
4 - Ulceby Road		✓	141	100.000
5 - East Halton Road		✓	72	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	50	514	20	2
	2 - Habrough Road	312	0	72	6	22
	3 - A160 West	1615	33	0	25	81
	4 - Ulceby Road	77	3	58	0	3
	5 - East Halton Road	7	17	41	7	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	65	74	46	58
	2 - Habrough Road	0	0	0	10	0
	3 - A160 West	14	0	0	57	11
	4 - Ulceby Road	24	0	42	0	24
	5 - East Halton Road	54	3	27	50	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A160 East	0.44	4.36	0.8	A
2 - Habrough Road	0.40	5.28	0.7	A
3 - A160 West	0.89	14.99	7.7	B
4 - Ulceby Road	0.36	12.80	0.5	B
5 - East Halton Road	0.16	8.79	0.2	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	441	119	1495	0.295	440	0.4	3.399	A
2 - Habrough Road	310	481	1298	0.239	309	0.3	3.635	A
3 - A160 West	1321	277	2235	0.591	1315	1.4	3.887	A
4 - Ulceby Road	106	1548	725	0.146	105	0.2	5.801	A
5 - East Halton Road	54	1573	803	0.068	54	0.1	4.807	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	527	143	1485	0.355	526	0.5	3.752	A
2 - Habrough Road	370	576	1229	0.301	370	0.4	4.189	A
3 - A160 West	1577	331	2206	0.715	1573	2.5	5.649	A
4 - Ulceby Road	127	1852	604	0.210	126	0.3	7.525	A
5 - East Halton Road	65	1881	671	0.096	65	0.1	5.935	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service

1 - A160 East	645	174	1472	0.438	644	0.8	4.347	A
2 - Habrough Road	454	705	1136	0.399	453	0.7	5.264	A
3 - A160 West	1931	405	2166	0.892	1912	7.2	13.297	B
4 - Ulceby Road	155	2254	444	0.350	154	0.5	12.392	B
5 - East Halton Road	79	2290	497	0.160	79	0.2	8.605	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	645	175	1471	0.439	645	0.8	4.358	A
2 - Habrough Road	454	707	1135	0.400	454	0.7	5.284	A
3 - A160 West	1931	406	2165	0.892	1929	7.7	14.994	B
4 - Ulceby Road	155	2272	436	0.356	155	0.5	12.796	B
5 - East Halton Road	79	2308	489	0.162	79	0.2	8.788	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	527	144	1484	0.355	528	0.6	3.765	A
2 - Habrough Road	370	579	1228	0.302	371	0.4	4.210	A
3 - A160 West	1577	333	2205	0.715	1597	2.6	6.116	A
4 - Ulceby Road	127	1877	594	0.213	128	0.3	7.745	A
5 - East Halton Road	65	1907	660	0.098	65	0.1	6.054	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	441	120	1495	0.295	442	0.4	3.419	A
2 - Habrough Road	310	484	1296	0.239	311	0.3	3.655	A
3 - A160 West	1321	278	2235	0.591	1325	1.5	3.976	A
4 - Ulceby Road	106	1559	721	0.147	107	0.2	5.864	A
5 - East Halton Road	54	1584	798	0.068	54	0.1	4.843	A

2019, PM + committed

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	7.96	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.96	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	2019	PM + committed	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 (Veh/hr)	Scaling Factor (%)
1 - A160 East		✓	1615	100.000
2 - Habrough Road		✓	185	100.000
3 - A160 West		✓	739	100.000
4 - Ulceby Road		✓	104	100.000
5 - East Halton Road		✓	83	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	229	1286	90	10
	2 - Habrough Road	72	0	51	27	35
	3 - A160 West	477	105	0	36	121
	4 - Ulceby Road	31	37	29	0	7
	5 - East Halton Road	0	43	36	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	2	20	27	45
	2 - Habrough Road	7	0	0	0	4
	3 - A160 West	61	1	0	25	39
	4 - Ulceby Road	47	0	31	0	36
	5 - East Halton Road	0	0	9	12	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A160 East	0.84	10.90	5.2	B
2 - Habrough Road	0.26	6.21	0.3	A
3 - A160 West	0.47	3.93	0.9	A
4 - Ulceby Road	0.12	4.44	0.1	A
5 - East Halton Road	0.07	3.14	0.1	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1216	191	2154	0.565	1211	1.3	3.799	A
2 - Habrough Road	139	1091	1042	0.134	139	0.2	3.981	A
3 - A160 West	556	178	1769	0.314	555	0.5	2.960	A
4 - Ulceby Road	78	615	1079	0.073	78	0.1	3.598	A
5 - East Halton Road	62	563	1410	0.044	62	0.0	2.671	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1452	228	2134	0.680	1449	2.1	5.231	A
2 - Habrough Road	166	1305	934	0.178	166	0.2	4.688	A
3 - A160 West	664	214	1753	0.379	664	0.6	3.303	A
4 - Ulceby Road	93	736	1014	0.092	93	0.1	3.912	A
5 - East Halton Road	75	674	1337	0.056	75	0.1	2.850	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service

1 - A160 East	1778	279	2106	0.844	1766	5.1	10.249	B
2 - Habrough Road	204	1592	789	0.258	203	0.3	6.144	A
3 - A160 West	814	261	1731	0.470	813	0.9	3.915	A
4 - Ulceby Road	115	901	925	0.124	114	0.1	4.438	A
5 - East Halton Road	91	826	1239	0.074	91	0.1	3.135	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1778	280	2106	0.844	1777	5.2	10.896	B
2 - Habrough Road	204	1601	784	0.260	204	0.3	6.206	A
3 - A160 West	814	262	1730	0.470	814	0.9	3.926	A
4 - Ulceby Road	115	903	925	0.124	115	0.1	4.444	A
5 - East Halton Road	91	827	1238	0.074	91	0.1	3.137	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1452	229	2133	0.681	1464	2.2	5.476	A
2 - Habrough Road	166	1319	927	0.179	167	0.2	4.739	A
3 - A160 West	664	215	1752	0.379	665	0.6	3.315	A
4 - Ulceby Road	93	739	1013	0.092	94	0.1	3.919	A
5 - East Halton Road	75	676	1336	0.056	75	0.1	2.855	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1216	191	2153	0.565	1219	1.3	3.868	A
2 - Habrough Road	139	1098	1038	0.134	140	0.2	4.007	A
3 - A160 West	556	180	1769	0.315	557	0.5	2.971	A
4 - Ulceby Road	78	618	1077	0.073	78	0.1	3.607	A
5 - East Halton Road	62	566	1408	0.044	63	0.0	2.675	A

2032, AM + committed

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	20.47	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	20.47	C

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	2032	AM + committed	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 (Veh/hr)	Scaling Factor (%)
1 - A160 East		✓	633	100.000
2 - Habrough Road		✓	447	100.000
3 - A160 West		✓	1866	100.000
4 - Ulceby Road		✓	153	100.000
5 - East Halton Road		✓	78	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	55	554	22	2
	2 - Habrough Road	342	0	76	7	22
	3 - A160 West	1715	35	0	27	89
	4 - Ulceby Road	83	3	64	0	3
	5 - East Halton Road	8	17	45	8	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	65	75	47	58
	2 - Habrough Road	0	0	0	10	0
	3 - A160 West	15	0	0	57	11
	4 - Ulceby Road	25	0	42	0	24
	5 - East Halton Road	54	3	27	50	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A160 East	0.48	4.72	0.9	A
2 - Habrough Road	0.45	6.01	0.8	A
3 - A160 West	0.96	32.28	17.4	D
4 - Ulceby Road	0.45	17.38	0.8	C
5 - East Halton Road	0.20	10.78	0.3	B

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	477	129	1485	0.321	475	0.5	3.558	A
2 - Habrough Road	337	521	1268	0.265	335	0.4	3.854	A
3 - A160 West	1405	302	2213	0.635	1398	1.7	4.381	A
4 - Ulceby Road	115	1652	680	0.169	114	0.2	6.354	A
5 - East Halton Road	59	1680	751	0.078	58	0.1	5.198	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	569	154	1474	0.386	568	0.6	3.973	A
2 - Habrough Road	402	624	1193	0.337	401	0.5	4.543	A
3 - A160 West	1677	362	2181	0.769	1671	3.2	6.987	A
4 - Ulceby Road	138	1976	551	0.250	137	0.3	8.689	A
5 - East Halton Road	70	2009	610	0.115	70	0.1	6.659	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service

1 - A160 East	697	187	1459	0.478	696	0.9	4.707	A
2 - Habrough Road	492	763	1092	0.451	491	0.8	5.976	A
3 - A160 West	2054	443	2137	0.961	2010	14.4	22.892	C
4 - Ulceby Road	168	2383	389	0.433	167	0.7	16.105	C
5 - East Halton Road	86	2424	434	0.198	85	0.2	10.314	B

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	697	189	1459	0.478	697	0.9	4.724	A
2 - Habrough Road	492	765	1091	0.451	492	0.8	6.012	A
3 - A160 West	2054	444	2136	0.962	2043	17.4	32.277	D
4 - Ulceby Road	168	2416	375	0.449	168	0.8	17.376	C
5 - East Halton Road	86	2457	420	0.205	86	0.3	10.783	B

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	569	157	1473	0.386	570	0.6	3.992	A
2 - Habrough Road	402	627	1191	0.337	403	0.5	4.576	A
3 - A160 West	1677	363	2180	0.770	1733	3.5	9.025	A
4 - Ulceby Road	138	2038	526	0.262	139	0.4	9.363	A
5 - East Halton Road	70	2070	584	0.120	71	0.1	7.020	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	477	130	1484	0.321	477	0.5	3.578	A
2 - Habrough Road	337	524	1265	0.266	337	0.4	3.881	A
3 - A160 West	1405	304	2212	0.635	1412	1.8	4.535	A
4 - Ulceby Road	115	1667	674	0.171	116	0.2	6.457	A
5 - East Halton Road	59	1695	744	0.079	59	0.1	5.259	A

2032, PM + committed

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	11.38	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	11.38	B

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	2032	PM + committed	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 (Veh/hr)	Scaling Factor (%)
1 - A160 East		✓	1708	100.000
2 - Habrough Road		✓	200	100.000
3 - A160 West		✓	794	100.000
4 - Ulceby Road		✓	114	100.000
5 - East Halton Road		✓	88	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	250	1350	97	11
	2 - Habrough Road	79	0	55	29	37
	3 - A160 West	511	112	0	39	132
	4 - Ulceby Road	34	40	32	0	8
	5 - East Halton Road	0	45	39	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	2	21	27	45
	2 - Habrough Road	7	0	0	0	4
	3 - A160 West	62	2	0	25	39
	4 - Ulceby Road	47	0	31	0	36
	5 - East Halton Road	0	0	9	12	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A160 East	0.90	16.77	8.3	C
2 - Habrough Road	0.30	6.97	0.4	A
3 - A160 West	0.51	4.29	1.0	A
4 - Ulceby Road	0.14	4.74	0.2	A
5 - East Halton Road	0.08	3.28	0.1	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1286	204	2139	0.601	1280	1.5	4.165	A
2 - Habrough Road	151	1149	1010	0.149	150	0.2	4.183	A
3 - A160 West	598	193	1755	0.341	596	0.5	3.101	A
4 - Ulceby Road	86	662	1050	0.082	85	0.1	3.731	A
5 - East Halton Road	66	606	1379	0.048	66	0.1	2.740	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1535	244	2117	0.725	1531	2.6	6.100	A
2 - Habrough Road	180	1374	895	0.201	179	0.2	5.029	A
3 - A160 West	714	231	1737	0.411	713	0.7	3.514	A
4 - Ulceby Road	102	792	980	0.105	102	0.1	4.100	A
5 - East Halton Road	79	726	1301	0.061	79	0.1	2.944	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service

1 - A160 East	1881	299	2088	0.901	1860	7.8	14.605	B
2 - Habrough Road	220	1670	745	0.296	220	0.4	6.848	A
3 - A160 West	874	281	1714	0.510	873	1.0	4.275	A
4 - Ulceby Road	126	969	885	0.142	125	0.2	4.737	A
5 - East Halton Road	97	888	1195	0.081	97	0.1	3.276	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1881	299	2088	0.901	1878	8.3	16.771	C
2 - Habrough Road	220	1686	736	0.299	220	0.4	6.972	A
3 - A160 West	874	283	1713	0.510	874	1.0	4.292	A
4 - Ulceby Road	126	971	884	0.142	126	0.2	4.744	A
5 - East Halton Road	97	890	1194	0.081	97	0.1	3.279	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1535	245	2117	0.725	1558	2.7	6.692	A
2 - Habrough Road	180	1397	883	0.204	180	0.3	5.127	A
3 - A160 West	714	233	1736	0.411	715	0.7	3.533	A
4 - Ulceby Road	102	795	979	0.105	103	0.1	4.110	A
5 - East Halton Road	79	728	1300	0.061	79	0.1	2.950	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1286	205	2138	0.601	1291	1.5	4.271	A
2 - Habrough Road	151	1158	1005	0.150	151	0.2	4.216	A
3 - A160 West	598	194	1754	0.341	598	0.5	3.119	A
4 - Ulceby Road	86	665	1049	0.082	86	0.1	3.739	A
5 - East Halton Road	66	609	1378	0.048	66	0.1	2.745	A

2032, AM + committed + ABP

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	23.37	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	23.37	C

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	2032	AM + committed + ABP	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 (Veh/hr)	Scaling Factor (%)
1 - A160 East		✓	642	100.000
2 - Habrough Road		✓	447	100.000
3 - A160 West		✓	1880	100.000
4 - Ulceby Road		✓	153	100.000
5 - East Halton Road		✓	78	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	55	563	22	2
	2 - Habrough Road	342	0	76	7	22
	3 - A160 West	1729	35	0	27	89
	4 - Ulceby Road	83	3	64	0	3
	5 - East Halton Road	8	17	45	8	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	65	75	47	58
	2 - Habrough Road	0	0	0	10	0
	3 - A160 West	15	0	0	57	11
	4 - Ulceby Road	25	0	42	0	24
	5 - East Halton Road	54	3	27	50	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A160 East	0.48	4.78	0.9	A
2 - Habrough Road	0.45	6.09	0.8	A
3 - A160 West	0.97	37.51	20.6	E
4 - Ulceby Road	0.46	18.04	0.8	C
5 - East Halton Road	0.21	11.06	0.3	B

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	483	129	1485	0.325	481	0.5	3.580	A
2 - Habrough Road	337	528	1263	0.266	335	0.4	3.875	A
3 - A160 West	1415	302	2204	0.642	1408	1.8	4.485	A
4 - Ulceby Road	115	1662	674	0.171	114	0.2	6.429	A
5 - East Halton Road	59	1690	744	0.079	58	0.1	5.251	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	577	154	1474	0.391	577	0.6	4.007	A
2 - Habrough Road	402	632	1187	0.338	401	0.5	4.577	A
3 - A160 West	1690	362	2172	0.778	1684	3.4	7.274	A
4 - Ulceby Road	138	1988	543	0.253	137	0.3	8.853	A
5 - East Halton Road	70	2021	602	0.116	70	0.1	6.761	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service

1 - A160 East	707	187	1460	0.484	706	0.9	4.766	A
2 - Habrough Road	492	773	1085	0.454	491	0.8	6.048	A
3 - A160 West	2070	443	2128	0.973	2018	16.4	25.227	D
4 - Ulceby Road	168	2391	382	0.441	167	0.8	16.591	C
5 - East Halton Road	86	2432	427	0.201	85	0.2	10.528	B

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	707	189	1459	0.484	707	0.9	4.783	A
2 - Habrough Road	492	775	1084	0.454	492	0.8	6.085	A
3 - A160 West	2070	444	2128	0.973	2053	20.6	37.508	E
4 - Ulceby Road	168	2427	367	0.459	168	0.8	18.044	C
5 - East Halton Road	86	2468	411	0.209	86	0.3	11.055	B

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	577	157	1473	0.392	578	0.6	4.027	A
2 - Habrough Road	402	635	1185	0.339	403	0.5	4.611	A
3 - A160 West	1690	363	2171	0.778	1758	3.7	10.086	B
4 - Ulceby Road	138	2063	513	0.268	139	0.4	9.690	A
5 - East Halton Road	70	2094	571	0.123	71	0.1	7.208	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	483	130	1485	0.326	484	0.5	3.598	A
2 - Habrough Road	337	531	1261	0.267	337	0.4	3.902	A
3 - A160 West	1415	304	2203	0.642	1423	1.8	4.655	A
4 - Ulceby Road	115	1678	667	0.173	116	0.2	6.539	A
5 - East Halton Road	59	1706	737	0.080	59	0.1	5.313	A

2032, PM + committed + ABP

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	12.16	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	12.16	B

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	2032	PM + committed + ABP	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 (Veh/hr)	Scaling Factor (%)
1 - A160 East		✓	1722	100.000
2 - Habrough Road		✓	200	100.000
3 - A160 West		✓	806	100.000
4 - Ulceby Road		✓	114	100.000
5 - East Halton Road		✓	88	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	250	1364	97	11
	2 - Habrough Road	79	0	55	29	37
	3 - A160 West	523	112	0	39	132
	4 - Ulceby Road	34	40	32	0	8
	5 - East Halton Road	0	45	39	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A160 East	2 - Habrough Road	3 - A160 West	4 - Ulceby Road	5 - East Halton Road
From	1 - A160 East	0	2	21	27	45
	2 - Habrough Road	7	0	0	0	4
	3 - A160 West	63	1	0	25	39
	4 - Ulceby Road	47	0	31	0	36
	5 - East Halton Road	0	0	9	12	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A160 East	0.91	18.14	9.1	C
2 - Habrough Road	0.30	7.10	0.4	A
3 - A160 West	0.52	4.40	1.1	A
4 - Ulceby Road	0.14	4.81	0.2	A
5 - East Halton Road	0.08	3.31	0.1	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1296	204	2136	0.607	1290	1.5	4.226	A
2 - Habrough Road	151	1159	1003	0.150	150	0.2	4.216	A
3 - A160 West	607	193	1748	0.347	605	0.5	3.145	A
4 - Ulceby Road	86	671	1043	0.082	85	0.1	3.759	A
5 - East Halton Road	66	615	1372	0.048	66	0.1	2.755	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1548	244	2115	0.732	1543	2.7	6.252	A
2 - Habrough Road	180	1387	887	0.203	179	0.3	5.084	A
3 - A160 West	725	231	1730	0.419	724	0.7	3.576	A
4 - Ulceby Road	102	803	972	0.105	102	0.1	4.139	A
5 - East Halton Road	79	736	1293	0.061	79	0.1	2.965	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service

1 - A160 East	1896	299	2086	0.909	1873	8.4	15.503	C
2 - Habrough Road	220	1684	736	0.299	220	0.4	6.958	A
3 - A160 West	887	281	1707	0.520	886	1.1	4.379	A
4 - Ulceby Road	126	982	875	0.143	125	0.2	4.799	A
5 - East Halton Road	97	901	1185	0.082	97	0.1	3.308	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1896	299	2085	0.909	1893	9.1	18.141	C
2 - Habrough Road	220	1701	727	0.303	220	0.4	7.096	A
3 - A160 West	887	283	1706	0.520	887	1.1	4.398	A
4 - Ulceby Road	126	984	874	0.144	126	0.2	4.807	A
5 - East Halton Road	97	903	1184	0.082	97	0.1	3.311	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1548	245	2114	0.732	1573	2.8	6.942	A
2 - Habrough Road	180	1412	874	0.206	180	0.3	5.193	A
3 - A160 West	725	233	1729	0.419	726	0.7	3.594	A
4 - Ulceby Road	102	806	971	0.106	103	0.1	4.150	A
5 - East Halton Road	79	739	1291	0.061	79	0.1	2.969	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A160 East	1296	205	2136	0.607	1301	1.6	4.342	A
2 - Habrough Road	151	1169	998	0.151	151	0.2	4.251	A
3 - A160 West	607	194	1747	0.347	608	0.5	3.163	A
4 - Ulceby Road	86	674	1041	0.082	86	0.1	3.767	A
5 - East Halton Road	66	618	1370	0.048	66	0.1	2.762	A

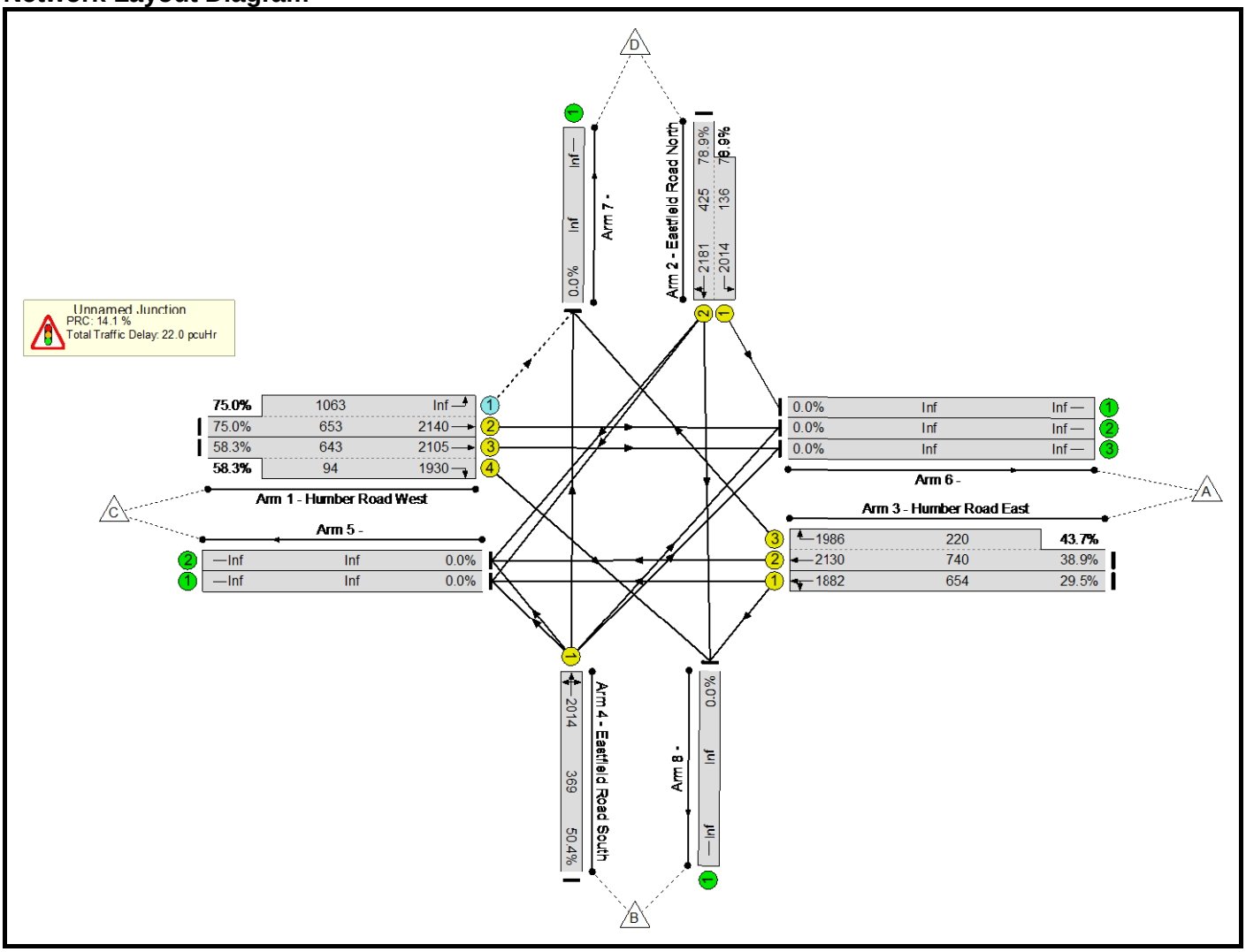
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	LinSig Model.lsg3x
Author:	
Company:	
Address:	

Scenario 1: '2019 AM' (FG1: '2019 AM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

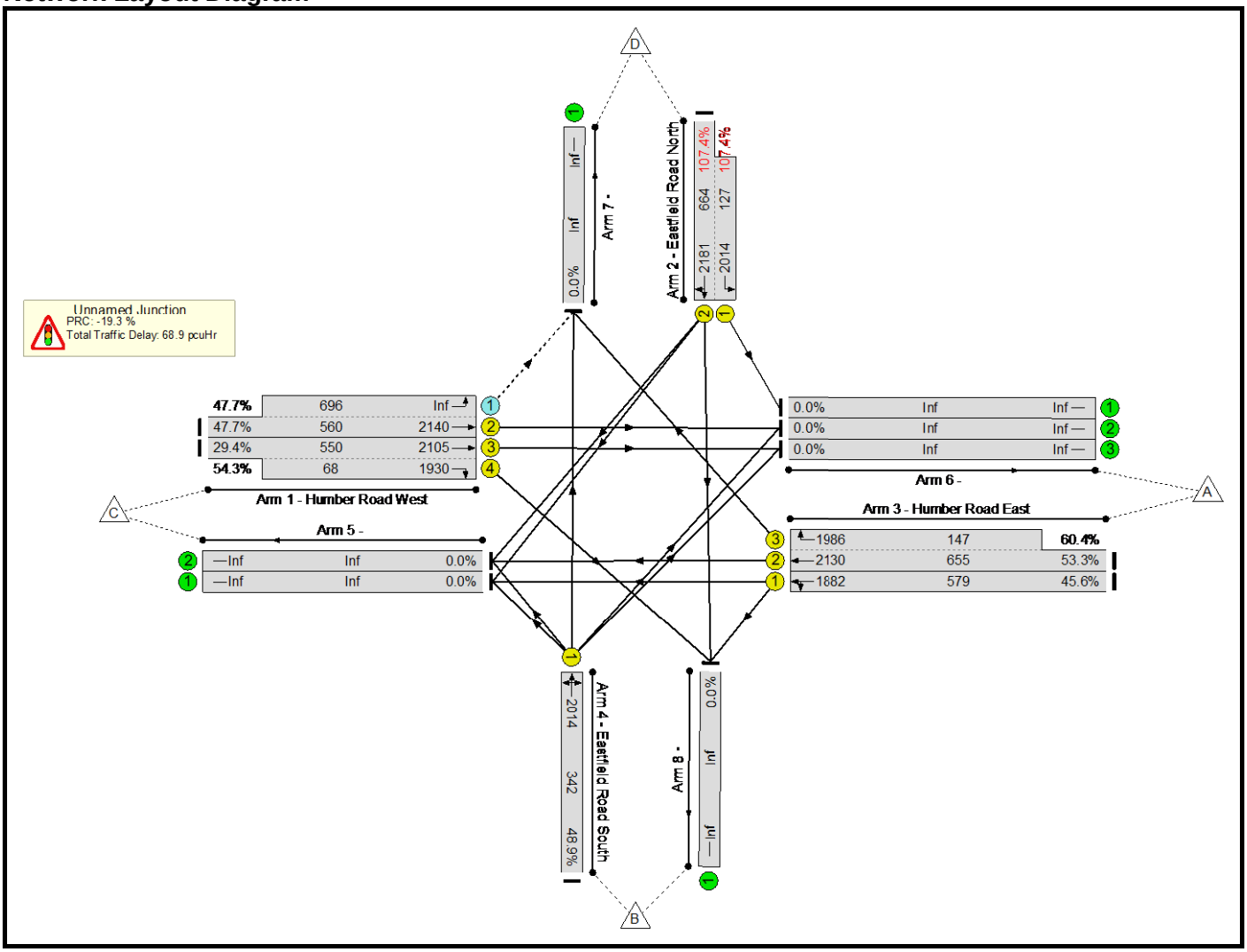
Item	Lane Description	Lane Type	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**78.9%**	-	-
Unnamed Junction	-	-	**78.9%**	-	-
1/2+1/1	Humber Road West Ahead Left	U+O	75.0 : 75.0%	14.7	12.2
1/3+1/4	Humber Road West Ahead Right	U	58.3 : 58.3%	36.6	8.4
2/2+2/1	Eastfield Road North Right Left Ahead	U	78.9 : 78.9%	47.4	9.7
3/1	Humber Road East Ahead Left	U	29.5%	25.0	3.9
3/2+3/3	Humber Road East Ahead Right	U	38.9 : 43.7%	28.6	6.0
4/1	Eastfield Road South Left Right Ahead	U	50.4%	41.9	4.6

C1 PRC for Signalled Lanes (%): 14.1 Total Delay for Signalled Lanes (pcuHr): 22.00 Cycle Time (s): 262
PRC Over All Lanes (%): 14.1 Total Delay Over All Lanes(pcuHr): 22.00

Basic Results Summary

Scenario 2: '2019 PM' (FG2: '2019 PM', Plan 2: 'PM')

Network Layout Diagram



Basic Results Summary

Network Results

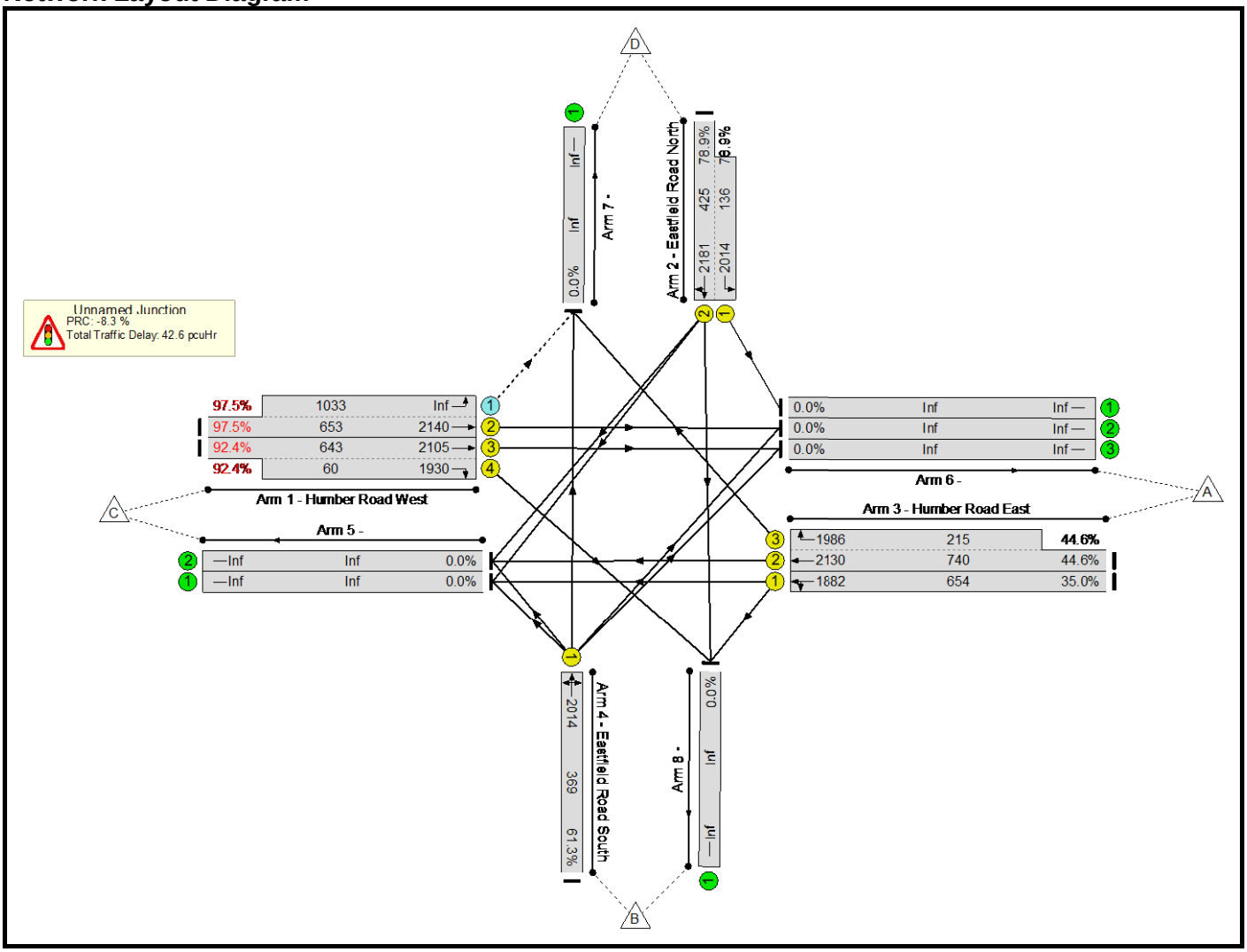
Item	Lane Description	Lane Type	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**107.4%**	-	-
Unnamed Junction	-	-	**107.4%**	-	-
1/2+1/1	Humber Road West Ahead Left	U+O	47.7 : 47.7%	16.1	6.8
1/3+1/4	Humber Road West Ahead Right	U	29.4 : 54.3%	52.2	3.9
2/2+2/1	Eastfield Road North Right Left Ahead	U	107.4 : 107.4%	228.1	68.2
3/1	Humber Road East Ahead Left	U	45.6%	32.4	6.9
3/2+3/3	Humber Road East Ahead Right	U	53.3 : 60.4%	41.4	9.3
4/1	Eastfield Road South Left Right Ahead	U	48.9%	46.0	4.8

C1 PRC for Signalled Lanes (%): -19.3 Total Delay for Signalled Lanes (pcuHr): 68.89 Cycle Time (s): 283
PRC Over All Lanes (%): -19.3 Total Delay Over All Lanes(pcuHr): 68.89

Basic Results Summary

Scenario 3: '2019 + committed AM' (FG3: '2019 + committed AM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

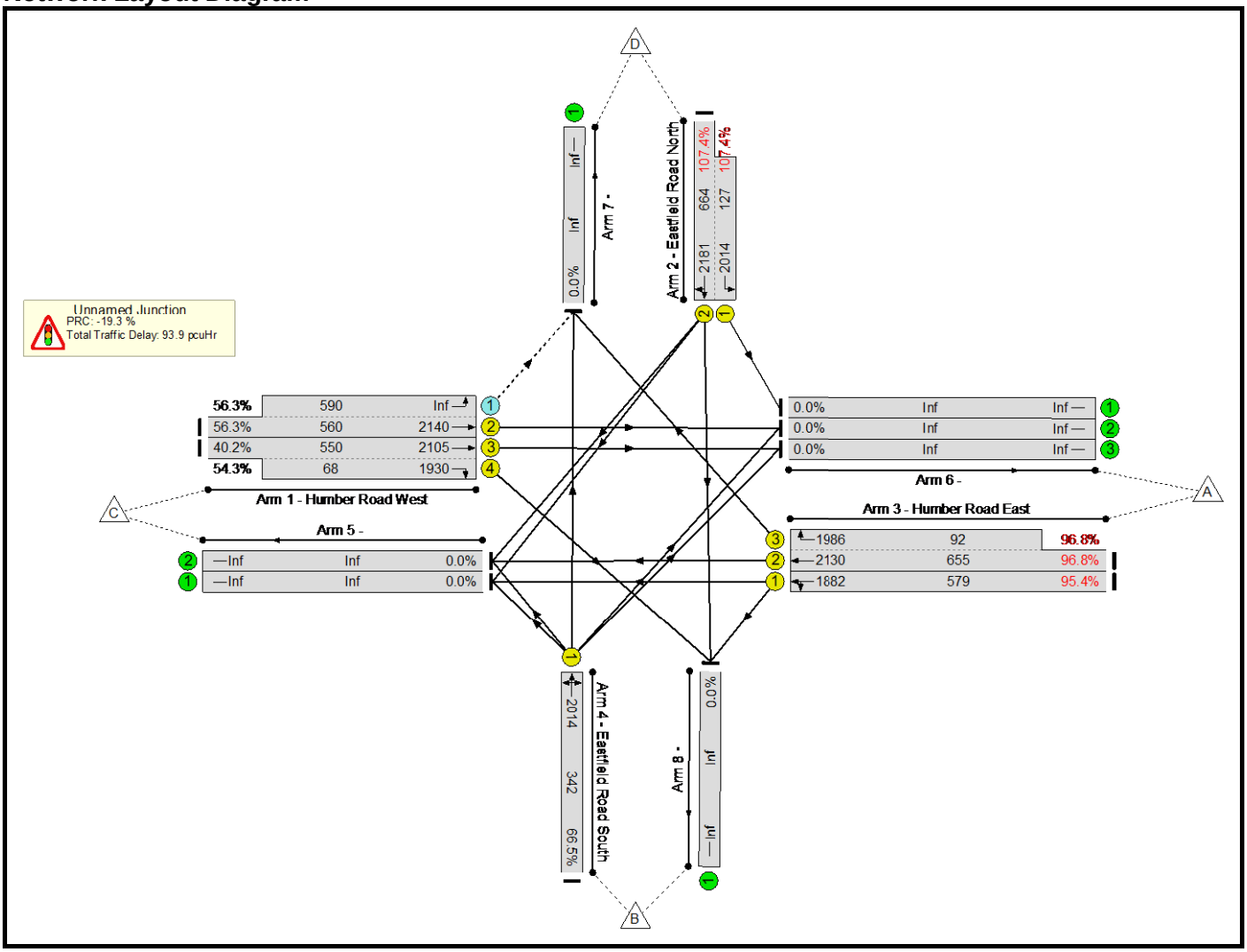
Item	Lane Description	Lane Type	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**97.5%**	-	-
Unnamed Junction	-	-	**97.5%**	-	-
1/2+1/1	Humber Road West Ahead Left	U+O	97.5 : 97.5%	39.2	28.4
1/3+1/4	Humber Road West Ahead Right	U	92.4 : 92.4%	60.8	19.0
2/2+2/1	Eastfield Road North Right Left Ahead	U	78.9 : 78.9%	47.4	9.7
3/1	Humber Road East Ahead Left	U	35.0%	25.7	4.7
3/2+3/3	Humber Road East Ahead Right	U	44.6 : 44.6%	28.9	7.1
4/1	Eastfield Road South Left Right Ahead	U	61.3%	45.3	5.9

	C1	PRC for Signalled Lanes (%):	-8.3	Total Delay for Signalled Lanes (pcuHr):	42.56	Cycle Time (s):	262
		PRC Over All Lanes (%):	-8.3	Total Delay Over All Lanes(pcuHr):	42.56		

Basic Results Summary

Scenario 4: '2019 + committed PM' (FG4: '2019 + committed PM', Plan 2: 'PM')

Network Layout Diagram



Basic Results Summary

Network Results

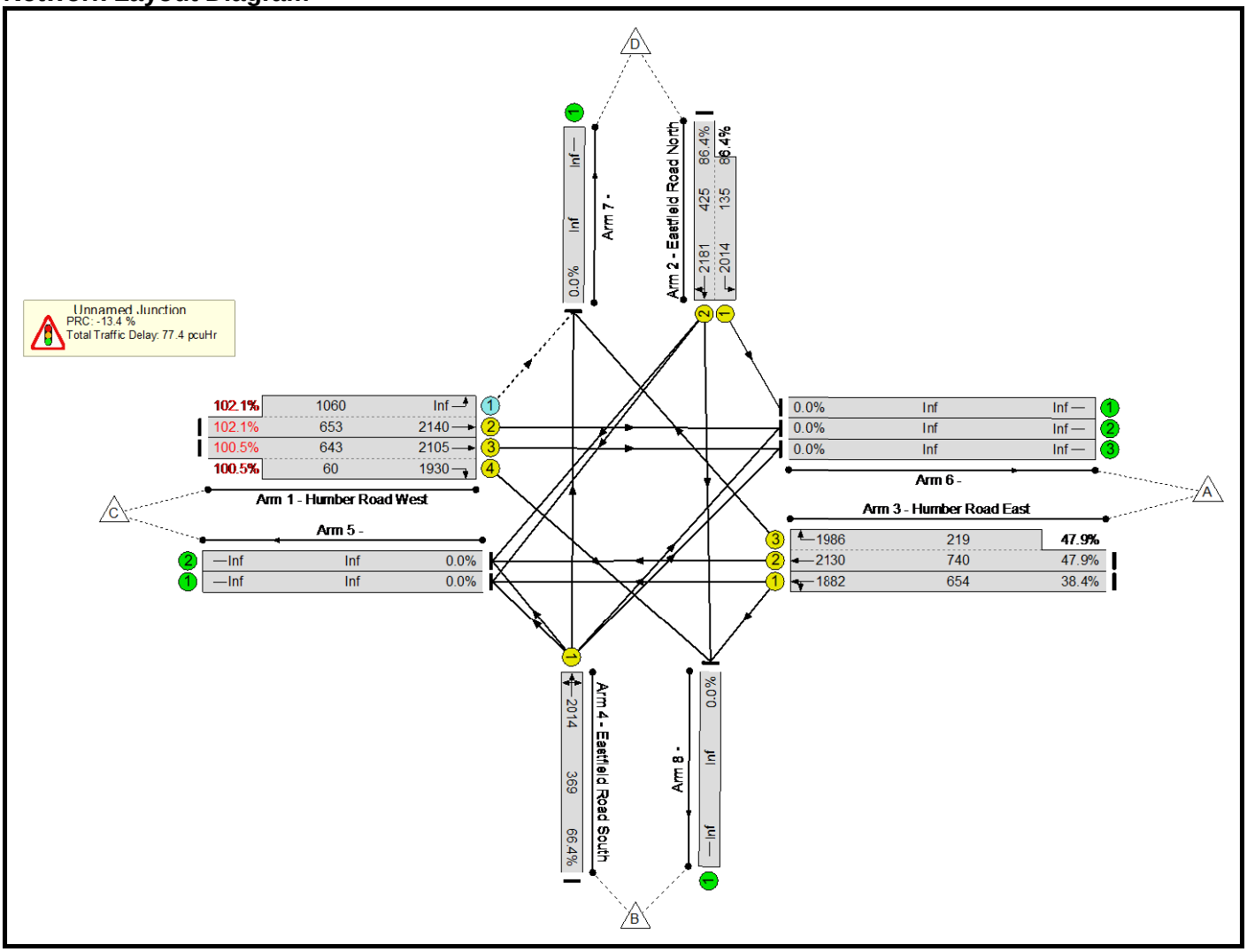
Item	Lane Description	Lane Type	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**107.4%**	-	-
Unnamed Junction	-	-	**107.4%**	-	-
1/2+1/1	Humber Road West Ahead Left	U+O	56.3 : 56.3%	18.5	8.3
1/3+1/4	Humber Road West Ahead Right	U	40.2 : 54.3%	49.1	5.5
2/2+2/1	Eastfield Road North Right Left Ahead	U	107.4 : 107.4%	228.1	68.2
3/1	Humber Road East Ahead Left	U	95.4%	82.2	22.6
3/2+3/3	Humber Road East Ahead Right	U	96.8 : 96.8%	86.6	26.9
4/1	Eastfield Road South Left Right Ahead	U	66.5%	52.4	7.2

C1	PRC for Signalled Lanes (%):	-19.3	Total Delay for Signalled Lanes (pcuHr):	93.93	Cycle Time (s):	283
	PRC Over All Lanes (%):	-19.3	Total Delay Over All Lanes(pcuHr):	93.93		

Basic Results Summary

Scenario 5: '2032 + committed AM' (FG5: '2032 + committed AM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

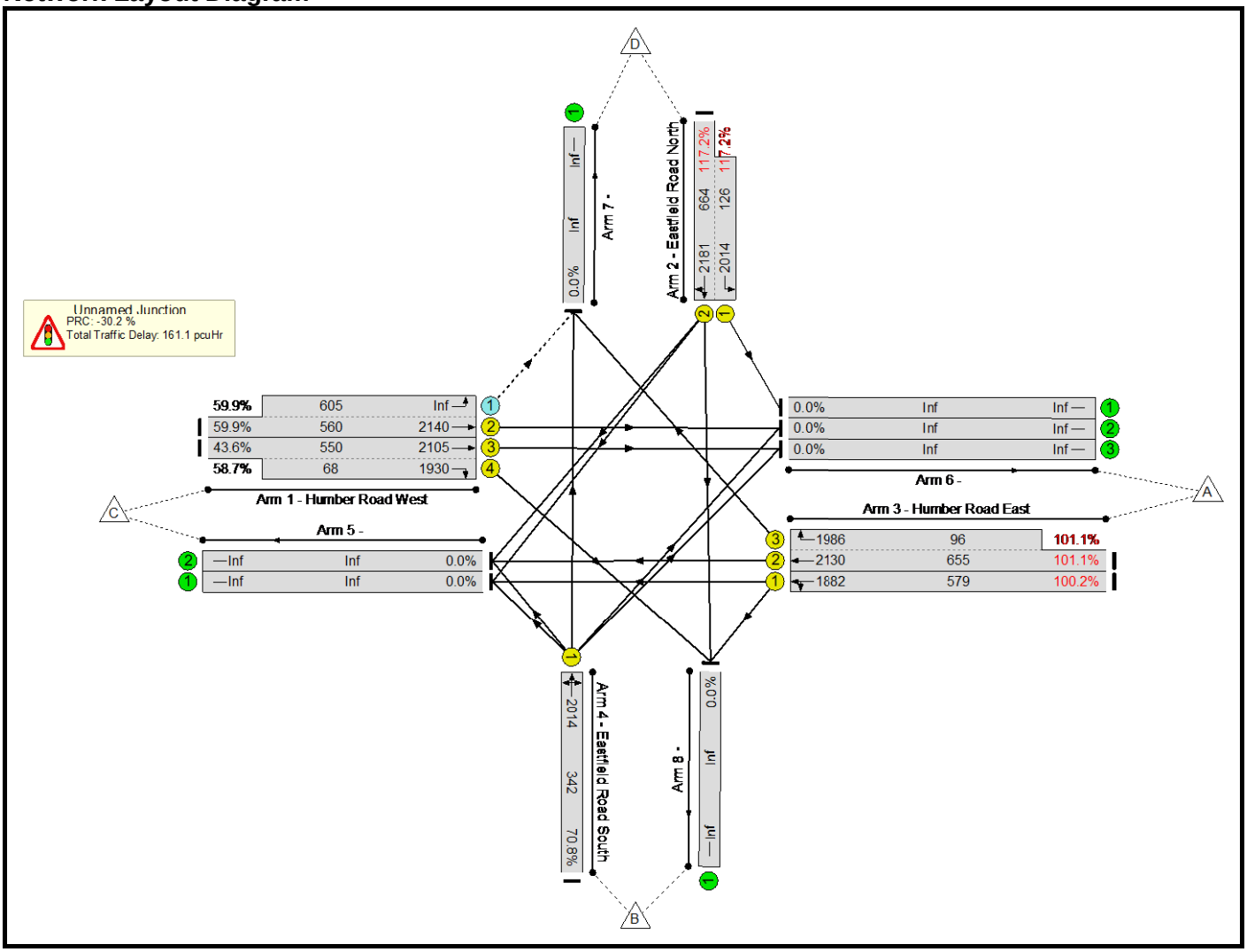
Item	Lane Description	Lane Type	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**102.1%**	-	-
Unnamed Junction	-	-	**102.1%**	-	-
1/2+1/1	Humber Road West Ahead Left	U+O	102.1 : 102.1%	81.5	50.4
1/3+1/4	Humber Road West Ahead Right	U	100.5 : 100.5%	110.3	31.5
2/2+2/1	Eastfield Road North Right Left Ahead	U	86.4 : 86.4%	55.1	11.7
3/1	Humber Road East Ahead Left	U	38.4%	26.3	5.3
3/2+3/3	Humber Road East Ahead Right	U	47.9 : 47.9%	29.4	7.7
4/1	Eastfield Road South Left Right Ahead	U	66.4%	47.5	6.6

	C1	PRC for Signalled Lanes (%):	-13.4	Total Delay for Signalled Lanes (pcuHr):	77.44	Cycle Time (s):	262
		PRC Over All Lanes (%):	-13.4	Total Delay Over All Lanes(pcuHr):	77.44		

Basic Results Summary

Scenario 6: '2032 + committed PM' (FG6: '2032 + committed PM', Plan 2: 'PM')

Network Layout Diagram



Basic Results Summary

Network Results

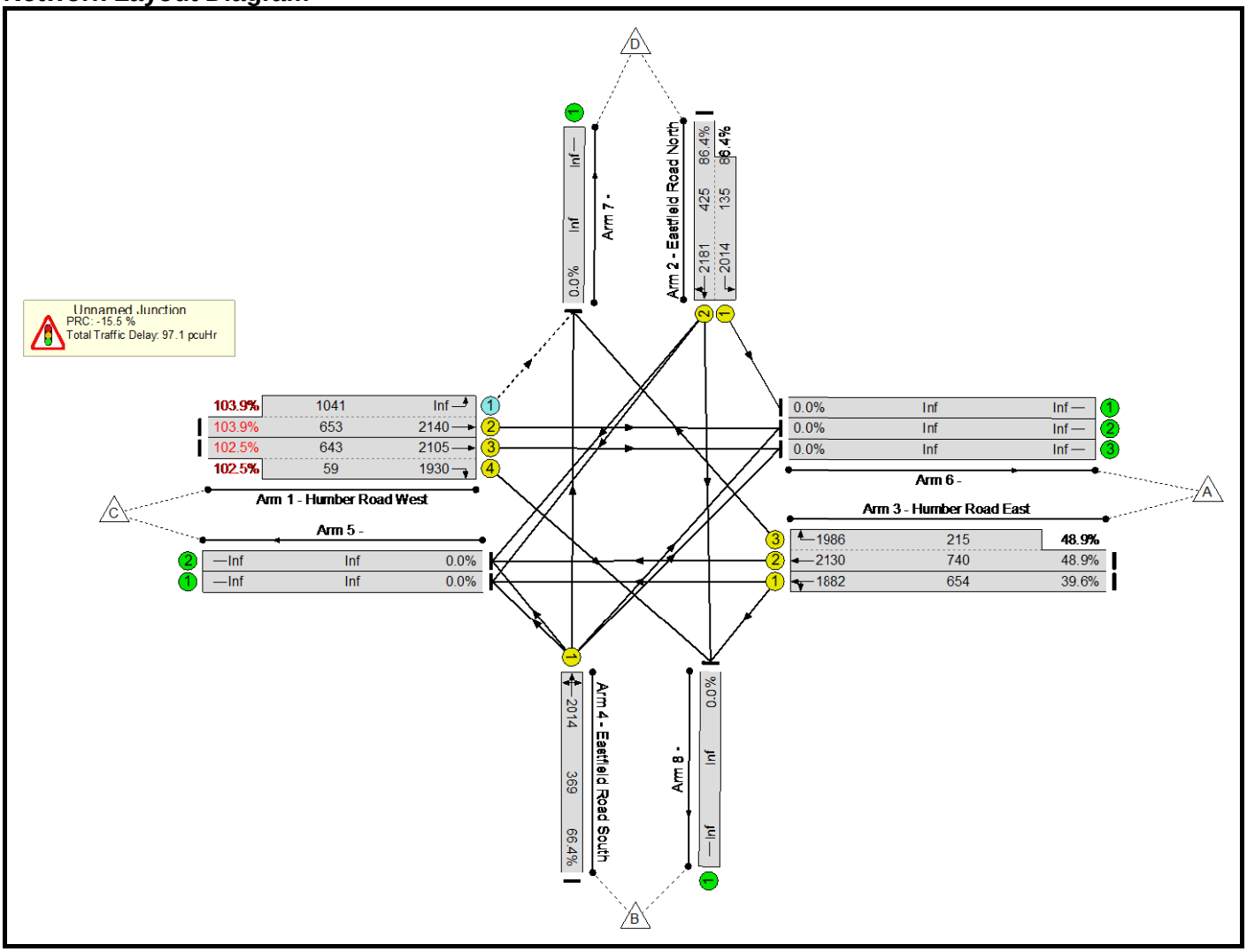
Item	Lane Description	Lane Type	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**117.2%**	-	-
Unnamed Junction	-	-	**117.2%**	-	-
1/2+1/1	Humber Road West Ahead Left	U+O	59.9 : 59.9%	18.8	8.9
1/3+1/4	Humber Road West Ahead Right	U	43.6 : 58.7%	49.6	6.0
2/2+2/1	Eastfield Road North Right Left Ahead	U	117.2 : 117.2%	404.3	120.2
3/1	Humber Road East Ahead Left	U	100.2%	120.8	29.9
3/2+3/3	Humber Road East Ahead Right	U	101.1 : 101.1%	125.4	36.1
4/1	Eastfield Road South Left Right Ahead	U	70.8%	54.9	7.8

C1	PRC for Signalled Lanes (%):	-30.2	Total Delay for Signalled Lanes (pcuHr):	161.09	Cycle Time (s):	283
	PRC Over All Lanes (%):	-30.2	Total Delay Over All Lanes(pcuHr):	161.09		

Basic Results Summary

Scenario 7: '2032 + committed + ABP AM' (FG7: '2032 + committed + ABP AM', Plan 1: 'AM')

Network Layout Diagram



Basic Results Summary

Network Results

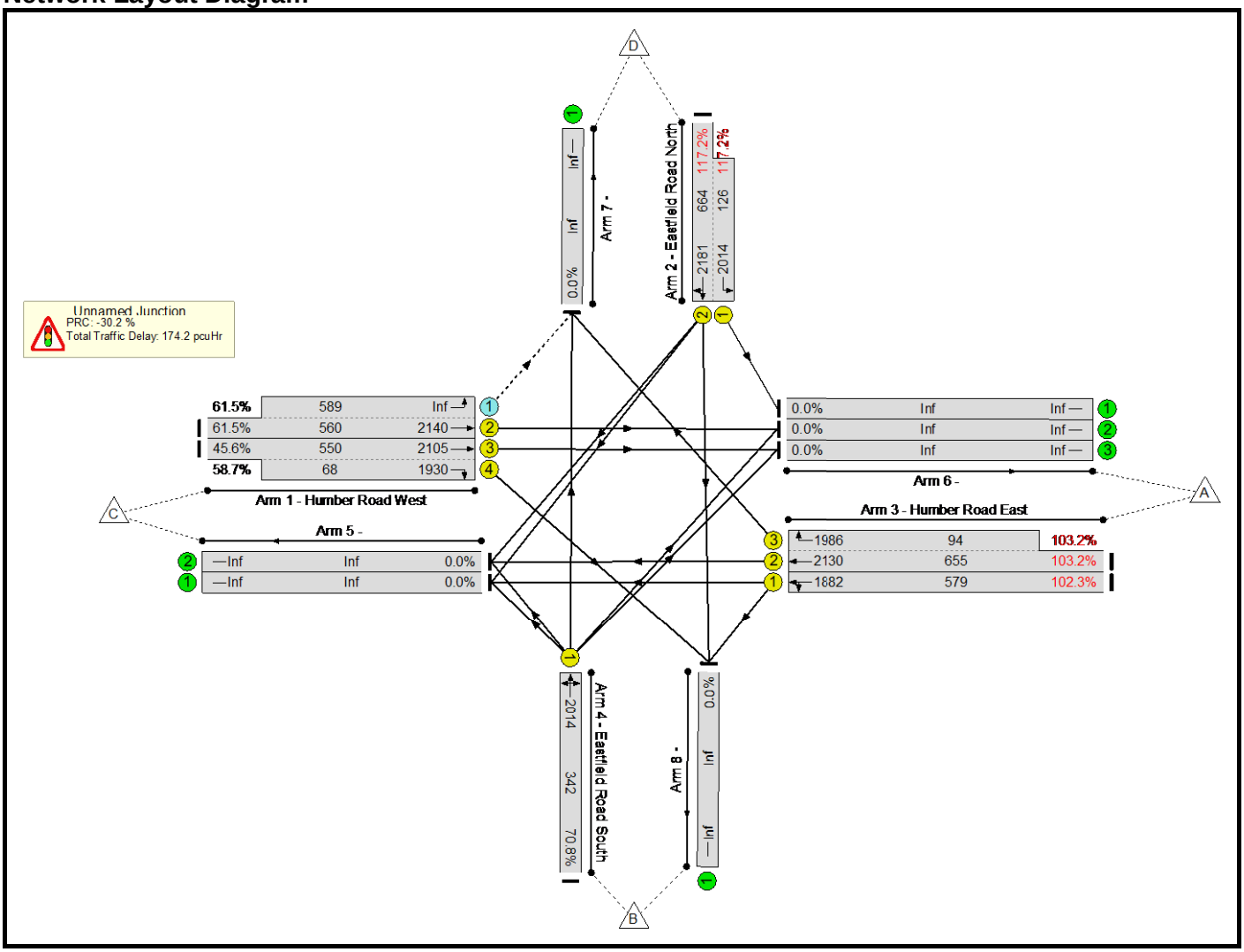
Item	Lane Description	Lane Type	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**103.9%**	-	-
Unnamed Junction	-	-	**103.9%**	-	-
1/2+1/1	Humber Road West Ahead Left	U+O	103.9 : 103.9%	108.4	63.8
1/3+1/4	Humber Road West Ahead Right	U	102.5 : 102.5%	138.6	37.4
2/2+2/1	Eastfield Road North Right Left Ahead	U	86.4 : 86.4%	55.1	11.7
3/1	Humber Road East Ahead Left	U	39.6%	26.5	5.4
3/2+3/3	Humber Road East Ahead Right	U	48.9 : 48.9%	29.5	7.9
4/1	Eastfield Road South Left Right Ahead	U	66.4%	47.5	6.6

C1	PRC for Signalled Lanes (%):	-15.5	Total Delay for Signalled Lanes (pcuHr):	97.08	Cycle Time (s):	262
	PRC Over All Lanes (%):	-15.5	Total Delay Over All Lanes(pcuHr):	97.08		

Basic Results Summary

Scenario 8: '2032 + committed + ABP PM' (FG8: '2032 + committed + ABP PM', Plan 2: 'PM')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**117.2%**	-	-
Unnamed Junction	-	-	**117.2%**	-	-
1/2+1/1	Humber Road West Ahead Left	U+O	61.5 : 61.5%	19.3	9.3
1/3+1/4	Humber Road West Ahead Right	U	45.6 : 58.7%	49.4	6.4
2/2+2/1	Eastfield Road North Right Left Ahead	U	117.2 : 117.2%	404.3	120.2
3/1	Humber Road East Ahead Left	U	102.3%	154.4	35.9
3/2+3/3	Humber Road East Ahead Right	U	103.2 : 103.2%	155.2	45.3
4/1	Eastfield Road South Left Right Ahead	U	70.8%	54.9	7.8

C1	PRC for Signalled Lanes (%):	-30.2	Total Delay for Signalled Lanes (pcuHr):	174.16	Cycle Time (s):	283
	PRC Over All Lanes (%):	-30.2	Total Delay Over All Lanes(pcuHr):	174.16		

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.2.1574

Filename: Model.j10
Path: \\ghdnet\GHD\UK\London MSL\Projects\4091\12579754\12578580\Tech\Modelling\Junction 4 - Manby Roundabout
Report generation date: 10/08/2023 16:37:41

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
	2019									
1 - A1173 Manby Road	D1	0.5	2.90	0.31	A	D2	0.3	2.63	0.22	A
2 - A160 Humber Road		0.9	4.31	0.48	A		0.4	3.21	0.31	A
3 - Conoco		0.0	0.00	0.00	A		0.0	0.00	0.00	A
4 - Humber Road		0.4	3.21	0.26	A		0.8	4.02	0.46	A
	2019 + committed									
1 - A1173 Manby Road	D3	1.0	3.94	0.51	A	D4	0.4	3.24	0.30	A
2 - A160 Humber Road		3.0	9.38	0.75	A		0.6	3.44	0.37	A
3 - Conoco		0.0	0.00	0.00	A		0.0	0.00	0.00	A
4 - Humber Road		0.5	3.30	0.32	A		4.0	9.88	0.80	A
	2032 + committed									
1 - A1173 Manby Road	D5	1.2	4.32	0.54	A	D6	0.5	3.44	0.33	A
2 - A160 Humber Road		4.2	12.48	0.81	B		0.7	3.62	0.39	A
3 - Conoco		0.0	0.00	0.00	A		0.0	0.00	0.00	A
4 - Humber Road		0.5	3.48	0.35	A		5.4	13.09	0.85	B
	2032 + committed + ABP									
1 - A1173 Manby Road	D7	1.2	4.39	0.55	A	D8	0.5	3.50	0.33	A
2 - A160 Humber Road		4.7	13.85	0.83	B		0.7	3.72	0.41	A
3 - Conoco		0.0	0.00	0.00	A		0.0	0.00	0.00	A
4 - Humber Road		0.6	3.55	0.36	A		6.1	14.66	0.87	B

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

File summary

File Description

Title	
Location	
Site number	

Date	30/06/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	GHDNET\mmaktabi
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	mph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2019	AM	ONE HOUR	06:45	08:15	15
D2	2019	PM	ONE HOUR	15:45	17:15	15
D3	2019 + committed	AM	ONE HOUR	06:45	08:15	15
D4	2019 + committed	PM	ONE HOUR	15:45	17:15	15
D5	2032 + committed	AM	ONE HOUR	06:45	08:15	15
D6	2032 + committed	PM	ONE HOUR	15:45	17:15	15
D7	2032 + committed + ABP	AM	ONE HOUR	06:45	08:15	15
D8	2032 + committed + ABP	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2019, 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	untitled	Standard Roundabout		1, 2, 3, 4	3.60	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.60	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A1173 Manby Road		
2	A160 Humber Road		
3	Conoco		
4	Humber 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 - A1173 Manby Road	6.59	7.67	12.9	40.2	85.0	33.0		
2 - A160 Humber Road	6.69	8.70	2.9	20.7	85.0	32.0		
3 - Conoco	8.15	8.15	0.0	9.5	85.0	29.5		
4 - Humber Road	6.95	6.95	0.0	33.2	85.0	16.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A1173 Manby Road	0.550	2287
2 - A160 Humber Road	0.534	2205
3 - Conoco	0.543	2340
4 - Humber Road	0.556	2249

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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - A1173 Manby Road		✓	517	100.000
2 - A160 Humber Road		✓	694	100.000
3 - Conoco		✓	0	100.000
4 - Humber Road		✓	364	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A1173 Manby Road	2 - A160 Humber Road	3 - Conoco	4 - Humber Road
From	1 - A1173 Manby Road	0	173	0	344
	2 - A160 Humber Road	195	0	0	499
	3 - Conoco	0	0	0	0
	4 - Humber Road	81	282	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A1173 Manby Road	2 - A160 Humber Road	3 - Conoco	4 - Humber Road
From	1 - A1173 Manby Road	0	16	0	11
	2 - A160 Humber Road	8	0	0	30
	3 - Conoco	0	0	0	0
	4 - Humber Road	12	47	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 Manby Road	0.31	2.90	0.5	A
2 - A160 Humber Road	0.48	4.31	0.9	A
3 - Conoco	0.00	0.00	0.0	A
4 - Humber Road	0.26	3.21	0.4	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	389	212	1880	0.207	388	0.3	2.412	A
2 - A160 Humber Road	522	259	1658	0.315	521	0.5	3.160	A
3 - Conoco	0	779	1835	0.000	0	0.0	0.000	A
4 - Humber Road	274	146	1551	0.177	273	0.2	2.815	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	465	254	1850	0.251	464	0.3	2.598	A
2 - A160 Humber Road	624	310	1633	0.382	623	0.6	3.562	A
3 - Conoco	0	932	1735	0.000	0	0.0	0.000	A
4 - Humber Road	327	175	1539	0.213	327	0.3	2.970	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	569	311	1809	0.315	569	0.5	2.900	A
2 - A160 Humber Road	764	380	1600	0.477	763	0.9	4.293	A
3 - Conoco	0	1141	1600	0.000	0	0.0	0.000	A
4 - Humber Road	401	214	1522	0.263	400	0.4	3.210	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	569	312	1809	0.315	569	0.5	2.903	A
2 - A160 Humber Road	764	380	1600	0.478	764	0.9	4.305	A
3 - Conoco	0	1143	1599	0.000	0	0.0	0.000	A
4 - Humber Road	401	215	1522	0.263	401	0.4	3.210	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	465	255	1850	0.251	465	0.3	2.600	A
2 - A160 Humber Road	624	310	1633	0.382	625	0.6	3.573	A
3 - Conoco	0	935	1734	0.000	0	0.0	0.000	A
4 - Humber Road	327	176	1539	0.213	328	0.3	2.975	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	389	213	1880	0.207	390	0.3	2.417	A
2 - A160 Humber Road	522	260	1657	0.315	523	0.5	3.174	A
3 - Conoco	0	782	1833	0.000	0	0.0	0.000	A
4 - Humber Road	274	147	1551	0.177	274	0.2	2.821	A

2019, 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	untitled	Standard Roundabout		1, 2, 3, 4	3.48	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.48	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)
D2	2019	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 (Veh/hr)	Scaling Factor (%)
1 - A1173 Manby Road		✓	341	100.000
2 - A160 Humber Road		✓	447	100.000
3 - Conoco		✓	0	100.000
4 - Humber Road		✓	694	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A1173 Manby Road	**2 - A160 Humber Road**	**3 - Conoco**	**4 - Humber Road**
From	**1 - A1173 Manby Road**	0	231	1	109
	2 - A160 Humber Road	201	0	0	246
	3 - Conoco	0	0	0	0
	4 - Humber Road	270	423	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A1173 Manby Road	**2 - A160 Humber Road**	**3 - Conoco**	**4 - Humber Road**
From	**1 - A1173 Manby Road**	0	12	0	8
	2 - A160 Humber Road	12	0	0	49
	3 - Conoco	0	0	0	0
	4 - Humber Road	10	38	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 Manby Road	0.22	2.63	0.3	A
2 - A160 Humber Road	0.31	3.21	0.4	A
3 - Conoco	0.00	0.00	0.0	A
4 - Humber Road	0.46	4.02	0.8	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	257	318	1846	0.139	256	0.2	2.262	A
2 - A160 Humber Road	337	83	1629	0.207	335	0.3	2.780	A
3 - Conoco	0	417	2051	0.000	0	0.0	0.000	A
4 - Humber Road	522	151	1695	0.308	521	0.4	3.062	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	307	381	1803	0.170	306	0.2	2.404	A
2 - A160 Humber Road	402	100	1622	0.248	402	0.3	2.950	A
3 - Conoco	0	500	1994	0.000	0	0.0	0.000	A
4 - Humber Road	624	181	1680	0.371	623	0.6	3.404	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	375	466	1745	0.215	375	0.3	2.629	A
2 - A160 Humber Road	492	122	1612	0.305	492	0.4	3.211	A
3 - Conoco	0	612	1916	0.000	0	0.0	0.000	A
4 - Humber Road	764	221	1660	0.460	763	0.8	4.008	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	375	467	1744	0.215	375	0.3	2.629	A
2 - A160 Humber Road	492	122	1612	0.305	492	0.4	3.214	A
3 - Conoco	0	612	1916	0.000	0	0.0	0.000	A
4 - Humber Road	764	221	1660	0.460	764	0.8	4.016	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	307	382	1802	0.170	307	0.2	2.408	A
2 - A160 Humber Road	402	100	1622	0.248	402	0.3	2.952	A
3 - Conoco	0	500	1993	0.000	0	0.0	0.000	A
4 - Humber Road	624	181	1680	0.371	625	0.6	3.416	A

17:00 - 17:15

	Total					End		Unsignalised

Arm	Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	queue (Veh)	Delay (s)	level of service
1 - A1173 Manby Road	257	320	1845	0.139	257	0.2	2.268	A
2 - A160 Humber Road	337	84	1629	0.207	337	0.3	2.788	A
3 - Conoco	0	419	2050	0.000	0	0.0	0.000	A
4 - Humber Road	522	151	1695	0.308	523	0.4	3.073	A

2019 + 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	untitled	Standard Roundabout		1, 2, 3, 4	6.22	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.22	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	2019 + 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 (Veh/hr)	Scaling Factor (%)
1 - A1173 Manby Road		✓	853	100.000
2 - A160 Humber Road		✓	1058	100.000
3 - Conoco		✓	0	100.000
4 - Humber Road		✓	471	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A1173 Manby Road	**2 - A160 Humber Road**	**3 - Conoco**	**4 - Humber Road**
From	**1 - A1173 Manby Road**	0	189	0	664
	2 - A160 Humber Road	232	0	0	826
	3 - Conoco	0	0	0	0
	4 - Humber Road	129	341	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A1173 Manby Road	**2 - A160 Humber Road**	**3 - Conoco**	**4 - Humber Road**
From	**1 - A1173 Manby Road**	0	16	0	6
	2 - A160 Humber Road	7	0	0	18
	3 - Conoco	0	0	0	0
	4 - Humber Road	7	39	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 Manby Road	0.51	3.94	1.0	A
2 - A160 Humber Road	0.75	9.38	3.0	A
3 - Conoco	0.00	0.00	0.0	A
4 - Humber Road	0.32	3.30	0.5	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	642	257	1937	0.332	640	0.5	2.773	A
2 - A160 Humber Road	797	499	1661	0.480	793	0.9	4.129	A
3 - Conoco	0	1291	1556	0.000	0	0.0	0.000	A
4 - Humber Road	355	174	1645	0.216	353	0.3	2.784	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	767	307	1901	0.403	766	0.7	3.170	A
2 - A160 Humber Road	951	597	1613	0.590	949	1.4	5.403	A
3 - Conoco	0	1545	1401	0.000	0	0.0	0.000	A
4 - Humber Road	423	208	1629	0.260	423	0.3	2.984	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	939	376	1852	0.507	938	1.0	3.931	A
2 - A160 Humber Road	1165	731	1548	0.752	1159	2.9	9.107	A
3 - Conoco	0	1889	1193	0.000	0	0.0	0.000	A
4 - Humber Road	519	254	1608	0.322	518	0.5	3.299	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	939	377	1852	0.507	939	1.0	3.943	A
2 - A160 Humber Road	1165	732	1548	0.753	1165	3.0	9.384	A
3 - Conoco	0	1896	1188	0.000	0	0.0	0.000	A
4 - Humber Road	519	255	1608	0.323	519	0.5	3.304	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	767	308	1901	0.403	768	0.7	3.184	A
2 - A160 Humber Road	951	599	1613	0.590	957	1.5	5.544	A
3 - Conoco	0	1555	1395	0.000	0	0.0	0.000	A
4 - Humber Road	423	210	1629	0.260	424	0.4	2.991	A

08:00 - 08:15

	Total					End		Unsignalised

Arm	Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	queue (Veh)	Delay (s)	level of service
1 - A1173 Manby Road	642	258	1936	0.332	643	0.5	2.786	A
2 - A160 Humber Road	797	501	1660	0.480	799	0.9	4.188	A
3 - Conoco	0	1299	1551	0.000	0	0.0	0.000	A
4 - Humber Road	355	175	1645	0.216	355	0.3	2.791	A

2019 + 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	untitled	Standard Roundabout		1, 2, 3, 4	7.05	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.05	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	2019 + 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 (Veh/hr)	Scaling Factor (%)
1 - A1173 Manby Road		✓	436	100.000
2 - A160 Humber Road		✓	549	100.000
3 - Conoco		✓	0	100.000
4 - Humber Road		✓	1337	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A1173 Manby Road	**2 - A160 Humber Road**	**3 - Conoco**	**4 - Humber Road**
From	**1 - A1173 Manby Road**	0	271	1	164
	2 - A160 Humber Road	225	0	0	324
	3 - Conoco	0	0	0	0
	4 - Humber Road	586	750	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A1173 Manby Road	**2 - A160 Humber Road**	**3 - Conoco**	**4 - Humber Road**
From	**1 - A1173 Manby Road**	0	11	0	5
	2 - A160 Humber Road	13	0	0	37
	3 - Conoco	0	0	0	0
	4 - Humber Road	4	22	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 Manby Road	0.30	3.24	0.4	A
2 - A160 Humber Road	0.37	3.44	0.6	A
3 - Conoco	0.00	0.00	0.0	A
4 - Humber Road	0.80	9.88	4.0	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	328	563	1751	0.187	327	0.2	2.527	A
2 - A160 Humber Road	413	125	1677	0.247	412	0.3	2.844	A
3 - Conoco	0	535	1985	0.000	0	0.0	0.000	A
4 - Humber Road	1007	169	1878	0.536	1002	1.1	4.087	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	392	674	1683	0.233	392	0.3	2.787	A
2 - A160 Humber Road	494	149	1666	0.296	493	0.4	3.070	A
3 - Conoco	0	640	1915	0.000	0	0.0	0.000	A
4 - Humber Road	1202	202	1860	0.646	1199	1.8	5.427	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	480	822	1592	0.302	480	0.4	3.234	A
2 - A160 Humber Road	604	183	1651	0.366	604	0.6	3.436	A
3 - Conoco	0	784	1819	0.000	0	0.0	0.000	A
4 - Humber Road	1472	247	1835	0.802	1464	3.9	9.492	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	480	827	1589	0.302	480	0.4	3.244	A
2 - A160 Humber Road	604	183	1651	0.366	604	0.6	3.439	A
3 - Conoco	0	785	1819	0.000	0	0.0	0.000	A
4 - Humber Road	1472	248	1835	0.802	1472	4.0	9.883	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	392	680	1679	0.233	392	0.3	2.798	A
2 - A160 Humber Road	494	149	1666	0.296	494	0.4	3.074	A
3 - Conoco	0	642	1914	0.000	0	0.0	0.000	A
4 - Humber Road	1202	203	1860	0.646	1210	1.9	5.611	A

17:00 - 17:15

	Total					End		Unsignalised

Arm	Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	queue (Veh)	Delay (s)	level of service
1 - A1173 Manby Road	328	567	1749	0.188	329	0.2	2.535	A
2 - A160 Humber Road	413	125	1676	0.247	414	0.3	2.853	A
3 - Conoco	0	537	1983	0.000	0	0.0	0.000	A
4 - Humber Road	1007	170	1878	0.536	1009	1.2	4.158	A

2032 + 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	untitled	Standard Roundabout		1, 2, 3, 4	7.75	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.75	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	2032 + 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 (Veh/hr)	Scaling Factor (%)
1 - A1173 Manby Road		✓	901	100.000
2 - A160 Humber Road		✓	1124	100.000
3 - Conoco		✓	0	100.000
4 - Humber Road		✓	506	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A1173 Manby Road	**2 - A160 Humber Road**	**3 - Conoco**	**4 - Humber Road**
From	**1 - A1173 Manby Road**	0	205	0	696
	2 - A160 Humber Road	251	0	0	873
	3 - Conoco	0	0	0	0
	4 - Humber Road	137	368	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A1173 Manby Road	**2 - A160 Humber Road**	**3 - Conoco**	**4 - Humber Road**
From	**1 - A1173 Manby Road**	0	16	0	6
	2 - A160 Humber Road	7	0	0	19
	3 - Conoco	0	0	0	0
	4 - Humber Road	8	40	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 Manby Road	0.54	4.32	1.2	A
2 - A160 Humber Road	0.81	12.48	4.2	B
3 - Conoco	0.00	0.00	0.0	A
4 - Humber Road	0.35	3.48	0.5	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	678	277	1917	0.354	676	0.5	2.896	A
2 - A160 Humber Road	846	523	1643	0.515	842	1.1	4.472	A
3 - Conoco	0	1364	1508	0.000	0	0.0	0.000	A
4 - Humber Road	381	188	1631	0.234	380	0.3	2.875	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	810	331	1878	0.431	809	0.8	3.362	A
2 - A160 Humber Road	1010	626	1593	0.634	1008	1.7	6.127	A
3 - Conoco	0	1633	1345	0.000	0	0.0	0.000	A
4 - Humber Road	455	225	1614	0.282	455	0.4	3.105	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	992	406	1825	0.543	990	1.2	4.302	A
2 - A160 Humber Road	1238	766	1525	0.812	1228	4.0	11.787	B
3 - Conoco	0	1993	1125	0.000	0	0.0	0.000	A
4 - Humber Road	557	274	1592	0.350	557	0.5	3.476	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	992	406	1825	0.544	992	1.2	4.320	A
2 - A160 Humber Road	1238	767	1524	0.812	1237	4.2	12.478	B
3 - Conoco	0	2003	1119	0.000	0	0.0	0.000	A
4 - Humber Road	557	276	1591	0.350	557	0.5	3.482	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	810	332	1878	0.431	812	0.8	3.381	A
2 - A160 Humber Road	1010	628	1592	0.635	1020	1.8	6.399	A
3 - Conoco	0	1647	1336	0.000	0	0.0	0.000	A
4 - Humber Road	455	228	1613	0.282	455	0.4	3.111	A

08:00 - 08:15

	Total					End		Unsignalised

Arm	Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	queue (Veh)	Delay (s)	level of service
1 - A1173 Manby Road	678	278	1916	0.354	679	0.6	2.913	A
2 - A160 Humber Road	846	525	1642	0.515	849	1.1	4.556	A
3 - Conoco	0	1374	1503	0.000	0	0.0	0.000	A
4 - Humber Road	381	190	1630	0.234	381	0.3	2.885	A

2032 + 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	untitled	Standard Roundabout		1, 2, 3, 4	8.89	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.89	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	2032 + 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 (Veh/hr)	Scaling Factor (%)
1 - A1173 Manby Road		✓	466	100.000
2 - A160 Humber Road		✓	589	100.000
3 - Conoco		✓	0	100.000
4 - Humber Road		✓	1401	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A1173 Manby Road	**2 - A160 Humber Road**	**3 - Conoco**	**4 - Humber Road**
From	**1 - A1173 Manby Road**	0	292	1	173
	2 - A160 Humber Road	243	0	0	346
	3 - Conoco	0	0	0	0
	4 - Humber Road	611	789	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A1173 Manby Road	**2 - A160 Humber Road**	**3 - Conoco**	**4 - Humber Road**
From	**1 - A1173 Manby Road**	0	11	0	6
	2 - A160 Humber Road	13	0	0	38
	3 - Conoco	0	0	0	0
	4 - Humber Road	5	23	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 Manby Road	0.33	3.44	0.5	A
2 - A160 Humber Road	0.39	3.62	0.7	A
3 - Conoco	0.00	0.00	0.0	A
4 - Humber Road	0.85	13.09	5.4	B

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	351	592	1729	0.203	350	0.3	2.609	A
2 - A160 Humber Road	443	131	1669	0.266	442	0.4	2.932	A
3 - Conoco	0	572	1959	0.000	0	0.0	0.000	A
4 - Humber Road	1055	182	1861	0.567	1050	1.3	4.407	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	419	708	1657	0.253	419	0.3	2.906	A
2 - A160 Humber Road	530	157	1658	0.319	529	0.5	3.190	A
3 - Conoco	0	684	1884	0.000	0	0.0	0.000	A
4 - Humber Road	1259	218	1841	0.684	1256	2.1	6.114	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	513	863	1562	0.328	512	0.5	3.428	A
2 - A160 Humber Road	649	192	1642	0.395	648	0.6	3.619	A
3 - Conoco	0	838	1782	0.000	0	0.0	0.000	A
4 - Humber Road	1543	267	1815	0.850	1530	5.2	12.156	B

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	513	869	1558	0.329	513	0.5	3.444	A
2 - A160 Humber Road	649	193	1642	0.395	648	0.7	3.623	A
3 - Conoco	0	839	1781	0.000	0	0.0	0.000	A
4 - Humber Road	1543	268	1814	0.850	1542	5.4	13.089	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	419	717	1652	0.254	420	0.3	2.924	A
2 - A160 Humber Road	530	158	1657	0.319	530	0.5	3.197	A
3 - Conoco	0	686	1883	0.000	0	0.0	0.000	A
4 - Humber Road	1259	219	1841	0.684	1272	2.2	6.466	A

17:00 - 17:15

	Total					End		Unsignalised

Arm	Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	queue (Veh)	Delay (s)	level of service
1 - A1173 Manby Road	351	597	1726	0.203	351	0.3	2.620	A
2 - A160 Humber Road	443	132	1669	0.266	444	0.4	2.941	A
3 - Conoco	0	574	1958	0.000	0	0.0	0.000	A
4 - Humber Road	1055	183	1861	0.567	1058	1.3	4.507	A

2032 + committed + ABP, 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	untitled	Standard Roundabout		1, 2, 3, 4	8.41	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.41	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)
D7	2032 + committed + ABP	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 (Veh/hr)	Scaling Factor (%)
1 - A1173 Manby Road		✓	905	100.000
2 - A160 Humber Road		✓	1139	100.000
3 - Conoco		✓	0	100.000
4 - Humber Road		✓	520	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A1173 Manby Road	2 - A160 Humber Road	3 - Conoco	4 - Humber Road
From	1 - A1173 Manby Road	0	205	0	700
	2 - A160 Humber Road	251	0	0	888
	3 - Conoco	0	0	0	0
	4 - Humber Road	142	377	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A1173 Manby Road	2 - A160 Humber Road	3 - Conoco	4 - Humber Road
From	1 - A1173 Manby Road	0	16	0	6
	2 - A160 Humber Road	7	0	0	20
	3 - Conoco	0	0	0	0
	4 - Humber Road	7	41	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 Manby Road	0.55	4.39	1.2	A
2 - A160 Humber Road	0.83	13.85	4.7	B
3 - Conoco	0.00	0.00	0.0	A
4 - Humber Road	0.36	3.55	0.6	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	681	284	1911	0.356	679	0.6	2.916	A
2 - A160 Humber Road	858	526	1630	0.526	853	1.1	4.608	A
3 - Conoco	0	1378	1496	0.000	0	0.0	0.000	A
4 - Humber Road	391	188	1627	0.241	390	0.3	2.909	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	814	340	1872	0.435	813	0.8	3.396	A
2 - A160 Humber Road	1024	630	1580	0.648	1021	1.8	6.407	A
3 - Conoco	0	1650	1330	0.000	0	0.0	0.000	A
4 - Humber Road	467	225	1610	0.290	467	0.4	3.150	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	996	416	1817	0.548	995	1.2	4.368	A
2 - A160 Humber Road	1254	770	1512	0.829	1243	4.5	12.910	B
3 - Conoco	0	2013	1108	0.000	0	0.0	0.000	A
4 - Humber Road	573	274	1587	0.361	572	0.6	3.543	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	996	416	1817	0.548	996	1.2	4.387	A
2 - A160 Humber Road	1254	772	1511	0.830	1253	4.7	13.852	B
3 - Conoco	0	2024	1100	0.000	0	0.0	0.000	A
4 - Humber Road	573	276	1586	0.361	573	0.6	3.549	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	814	340	1871	0.435	815	0.8	3.417	A
2 - A160 Humber Road	1024	632	1579	0.648	1035	1.9	6.750	A
3 - Conoco	0	1666	1320	0.000	0	0.0	0.000	A
4 - Humber Road	467	228	1608	0.291	468	0.4	3.160	A

08:00 - 08:15

	Total					End		Unsignalised

Arm	Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	queue (Veh)	Delay (s)	level of service
1 - A1173 Manby Road	681	285	1911	0.357	682	0.6	2.932	A
2 - A160 Humber Road	858	528	1629	0.526	861	1.1	4.705	A
3 - Conoco	0	1388	1490	0.000	0	0.0	0.000	A
4 - Humber Road	391	190	1626	0.241	392	0.3	2.917	A

2032 + committed + ABP, 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	untitled	Standard Roundabout		1, 2, 3, 4	9.81	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.81	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)
D8	2032 + committed + ABP	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 (Veh/hr)	Scaling Factor (%)
1 - A1173 Manby Road		✓	470	100.000
2 - A160 Humber Road		✓	601	100.000
3 - Conoco		✓	0	100.000
4 - Humber Road		✓	1420	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A1173 Manby Road	2 - A160 Humber Road	3 - Conoco	4 - Humber Road
From	1 - A1173 Manby Road	0	292	1	177
	2 - A160 Humber Road	243	0	0	358
	3 - Conoco	0	0	0	0
	4 - Humber Road	616	803	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A1173 Manby Road	2 - A160 Humber Road	3 - Conoco	4 - Humber Road
From	1 - A1173 Manby Road	0	11	0	5
	2 - A160 Humber Road	13	0	0	39
	3 - Conoco	0	0	0	0
	4 - Humber Road	5	24	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 Manby Road	0.33	3.50	0.5	A
2 - A160 Humber Road	0.41	3.72	0.7	A
3 - Conoco	0.00	0.00	0.0	A
4 - Humber Road	0.87	14.66	6.1	B

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	354	602	1721	0.206	353	0.3	2.630	A
2 - A160 Humber Road	452	134	1656	0.273	451	0.4	2.984	A
3 - Conoco	0	584	1949	0.000	0	0.0	0.000	A
4 - Humber Road	1069	182	1851	0.577	1064	1.4	4.540	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	423	721	1647	0.257	422	0.3	2.939	A
2 - A160 Humber Road	540	161	1644	0.329	540	0.5	3.257	A
3 - Conoco	0	699	1872	0.000	0	0.0	0.000	A
4 - Humber Road	1277	218	1832	0.697	1273	2.2	6.399	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	517	877	1550	0.334	517	0.5	3.483	A
2 - A160 Humber Road	662	197	1628	0.406	661	0.7	3.717	A
3 - Conoco	0	856	1767	0.000	0	0.0	0.000	A
4 - Humber Road	1563	267	1805	0.866	1549	5.8	13.372	B

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	517	885	1545	0.335	517	0.5	3.502	A
2 - A160 Humber Road	662	197	1628	0.406	662	0.7	3.723	A
3 - Conoco	0	857	1766	0.000	0	0.0	0.000	A
4 - Humber Road	1563	268	1805	0.866	1562	6.1	14.660	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 Manby Road	423	731	1641	0.258	423	0.3	2.960	A
2 - A160 Humber Road	540	161	1644	0.329	541	0.5	3.265	A
3 - Conoco	0	700	1871	0.000	0	0.0	0.000	A
4 - Humber Road	1277	219	1831	0.697	1292	2.4	6.845	A

17:00 - 17:15

	Total					End		Unsignalised

Arm	Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	queue (Veh)	Delay (s)	level of service
1 - A1173 Manby Road	354	607	1718	0.206	354	0.3	2.640	A
2 - A160 Humber Road	452	135	1655	0.273	453	0.4	2.996	A
3 - Conoco	0	586	1947	0.000	0	0.0	0.000	A
4 - Humber Road	1069	183	1851	0.578	1073	1.4	4.649	A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Model.j10
Path: \\ghdnet\GHD\UK\London MSL\Projects\4091\12579754\12578580\Tech\Modelling\Junction 8 - Kings Road Roundabout
Report generation date: 10/08/2023 22:30:59

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
	2019									
1 - A1173 (N)	D1	0.4	4.15	0.30	A	D2	0.5	3.63	0.32	A
2 - Kings Road		0.1	4.31	0.08	A		0.5	4.55	0.35	A
3 - A1173 (S)		1.0	4.72	0.49	A		0.4	3.54	0.27	A
	2019 + committed									
1 - A1173 (N)	D3	0.7	5.21	0.43	A	D4	1.1	5.03	0.52	A
2 - Kings Road		0.2	3.92	0.13	A		1.2	7.25	0.55	A
3 - A1173 (S)		2.7	8.34	0.73	A		0.6	4.02	0.38	A
	2032 + committed									
1 - A1173 (N)	D5	0.9	5.69	0.46	A	D6	1.2	5.40	0.55	A
2 - Kings Road		0.2	4.06	0.14	A		1.5	8.33	0.60	A
3 - A1173 (S)		3.4	10.23	0.78	B		0.7	4.25	0.41	A
	2032 + committed + ABP									
1 - A1173 (N)	D7	1.0	6.71	0.51	A	D8	1.4	6.15	0.59	A
2 - Kings Road		0.3	4.69	0.21	A		2.7	13.46	0.73	B
3 - A1173 (S)		6.1	17.31	0.87	C		0.9	5.11	0.48	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	30/06/2022
Version	
Status	(new file)
Identifier	

Client	
Jobnumber	
Enumerator	GHDNET\mmaktabi
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	mph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2019	AM	ONE HOUR	06:45	08:15	15
D2	2019	PM	ONE HOUR	15:45	17:15	15
D3	2019 + committed	AM	ONE HOUR	06:45	08:15	15
D4	2019 + committed	PM	ONE HOUR	15:45	17:15	15
D5	2032 + committed	AM	ONE HOUR	06:45	08:15	15
D6	2032 + committed	PM	ONE HOUR	15:45	17:15	15
D7	2032 + committed + ABP	AM	ONE HOUR	06:45	08:15	15
D8	2032 + committed + ABP	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2019, 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	untitled	Standard Roundabout		1, 2, 3	4.52	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.52	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A1173 (N)		
2	Kings Road		
3	A1173 (S)		

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 - A1173 (N)	3.65	7.01	11.3	30.5	45.1	15.5		
2 - Kings Road	3.57	7.01	10.3	33.6	45.1	13.0		
3 - A1173 (S)	3.78	7.80	12.8	40.6	45.1	16.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A1173 (N)	0.655	1737
2 - Kings Road	0.653	1710
3 - A1173 (S)	0.685	1881

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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - A1173 (N)			330	100.000

		✓		
2 - Kings Road		✓	69	100.000
3 - A1173 (S)		✓	679	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	103	227
	2 - Kings Road	27	0	42
	3 - A1173 (S)	400	279	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	18	21
	2 - Kings Road	51	0	76
	3 - A1173 (S)	18	29	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 (N)	0.30	4.15	0.4	A
2 - Kings Road	0.08	4.31	0.1	A
3 - A1173 (S)	0.49	4.72	1.0	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	248	209	1300	0.191	247	0.2	3.418	A
2 - Kings Road	52	170	948	0.055	52	0.1	4.015	A
3 - A1173 (S)	511	20	1519	0.337	509	0.5	3.558	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	297	251	1270	0.234	296	0.3	3.695	A
2 - Kings Road	62	204	932	0.067	62	0.1	4.136	A
3 - A1173 (S)	610	24	1515	0.403	610	0.7	3.973	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	363	307	1231	0.295	363	0.4	4.145	A
2 - Kings Road	76	250	910	0.083	76	0.1	4.313	A
3 - A1173 (S)	748	30	1511	0.495	746	1.0	4.702	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	363	307	1231	0.295	363	0.4	4.150	A
2 - Kings Road	76	250	910	0.083	76	0.1	4.314	A
3 - A1173 (S)	748	30	1511	0.495	748	1.0	4.717	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	297	251	1270	0.234	297	0.3	3.704	A
2 - Kings Road	62	204	932	0.067	62	0.1	4.138	A
3 - A1173 (S)	610	24	1515	0.403	612	0.7	3.989	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	248	210	1299	0.191	249	0.2	3.428	A
2 - Kings Road	52	171	948	0.055	52	0.1	4.020	A
3 - A1173 (S)	511	20	1518	0.337	512	0.5	3.577	A

2019, 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	untitled	Standard Roundabout		1, 2, 3	3.90	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.90	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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - A1173 (N)		✓	420	100.000
2 - Kings Road		✓	385	100.000
3 - A1173 (S)		✓	342	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	63	357
	2 - Kings Road	141	0	244
	3 - A1173 (S)	304	38	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	31	14
	2 - Kings Road	16	0	17
	3 - A1173 (S)	22	61	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 (N)	0.32	3.63	0.5	A
2 - Kings Road	0.35	4.55	0.5	A
3 - A1173 (S)	0.27	3.54	0.4	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	316	29	1465	0.216	315	0.3	3.129	A
2 - Kings Road	290	268	1296	0.224	289	0.3	3.572	A
3 - A1173 (S)	257	106	1423	0.181	257	0.2	3.086	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	378	34	1459	0.259	377	0.3	3.326	A
2 - Kings Road	346	321	1262	0.274	346	0.4	3.926	A
3 - A1173 (S)	307	127	1410	0.218	307	0.3	3.265	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	462	42	1452	0.318	462	0.5	3.632	A
2 - Kings Road	424	393	1216	0.349	423	0.5	4.537	A
3 - A1173 (S)	377	155	1392	0.271	376	0.4	3.544	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	462	42	1452	0.318	462	0.5	3.635	A
2 - Kings Road	424	393	1216	0.349	424	0.5	4.546	A
3 - A1173 (S)	377	155	1392	0.271	377	0.4	3.545	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	378	34	1459	0.259	378	0.4	3.329	A
2 - Kings Road	346	321	1261	0.274	347	0.4	3.939	A
3 - A1173 (S)	307	127	1409	0.218	308	0.3	3.270	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	316	29	1464	0.216	316	0.3	3.136	A
2 - Kings Road	290	269	1295	0.224	290	0.3	3.583	A
3 - A1173 (S)	257	106	1423	0.181	258	0.2	3.093	A

2019 + 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	untitled	Standard Roundabout		1, 2, 3	7.07	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.07	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	2019 + 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 (Veh/hr)	Scaling Factor (%)
1 - A1173 (N)		✓	466	100.000
2 - Kings Road		✓	128	100.000
3 - A1173 (S)		✓	1061	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	137	329
	2 - Kings Road	39	0	89
	3 - A1173 (S)	649	412	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	14	15
	2 - Kings Road	35	0	36
	3 - A1173 (S)	12	20	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 (N)	0.43	5.21	0.7	A
2 - Kings Road	0.13	3.92	0.2	A
3 - A1173 (S)	0.73	8.34	2.7	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	351	309	1304	0.269	349	0.4	3.768	A
2 - Kings Road	96	247	1124	0.086	96	0.1	3.502	A
3 - A1173 (S)	799	29	1610	0.496	795	1.0	4.394	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	419	370	1262	0.332	418	0.5	4.264	A
2 - Kings Road	115	295	1097	0.105	115	0.1	3.665	A
3 - A1173 (S)	954	35	1606	0.594	952	1.4	5.492	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	513	452	1206	0.426	512	0.7	5.182	A
2 - Kings Road	141	362	1060	0.133	141	0.2	3.915	A
3 - A1173 (S)	1168	43	1599	0.730	1163	2.6	8.171	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	513	454	1205	0.426	513	0.7	5.205	A
2 - Kings Road	141	362	1060	0.133	141	0.2	3.917	A
3 - A1173 (S)	1168	43	1599	0.730	1168	2.7	8.340	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	419	372	1260	0.332	420	0.5	4.288	A
2 - Kings Road	115	296	1096	0.105	115	0.1	3.671	A
3 - A1173 (S)	954	35	1606	0.594	959	1.5	5.603	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	351	311	1302	0.269	351	0.4	3.787	A
2 - Kings Road	96	248	1123	0.086	96	0.1	3.506	A
3 - A1173 (S)	799	29	1610	0.496	801	1.0	4.460	A

2019 + 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	untitled	Standard Roundabout		1, 2, 3	5.41	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.41	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	2019 + 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 (Veh/hr)	Scaling Factor (%)
1 - A1173 (N)		✓	701	100.000
2 - Kings Road		✓	545	100.000
3 - A1173 (S)		✓	507	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	81	620
	2 - Kings Road	178	0	367
	3 - A1173 (S)	404	103	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	24	9
	2 - Kings Road	13	0	11
	3 - A1173 (S)	18	23	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 (N)	0.52	5.03	1.1	A
2 - Kings Road	0.55	7.25	1.2	A
3 - A1173 (S)	0.38	4.02	0.6	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	528	77	1513	0.349	526	0.5	3.637	A
2 - Kings Road	410	465	1235	0.332	408	0.5	4.344	A
3 - A1173 (S)	382	133	1494	0.256	380	0.3	3.229	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	630	93	1502	0.419	629	0.7	4.121	A
2 - Kings Road	490	557	1177	0.416	489	0.7	5.230	A
3 - A1173 (S)	456	160	1476	0.309	455	0.4	3.523	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	772	113	1487	0.519	770	1.1	5.012	A
2 - Kings Road	600	681	1097	0.547	598	1.2	7.185	A
3 - A1173 (S)	558	195	1453	0.384	558	0.6	4.015	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	772	113	1487	0.519	772	1.1	5.033	A
2 - Kings Road	600	683	1097	0.547	600	1.2	7.250	A
3 - A1173 (S)	558	196	1453	0.384	558	0.6	4.023	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	630	93	1502	0.420	632	0.7	4.141	A
2 - Kings Road	490	559	1175	0.417	492	0.7	5.282	A
3 - A1173 (S)	456	161	1476	0.309	456	0.4	3.533	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	528	78	1513	0.349	529	0.5	3.660	A
2 - Kings Road	410	467	1233	0.333	411	0.5	4.384	A
3 - A1173 (S)	382	134	1493	0.256	382	0.3	3.241	A

2032 + 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	untitled	Standard Roundabout		1, 2, 3	8.41	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.41	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	2032 + 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 (Veh/hr)	Scaling Factor (%)
1 - A1173 (N)		✓	497	100.000
2 - Kings Road		✓	135	100.000
3 - A1173 (S)		✓	1126	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	147	350
	2 - Kings Road	42	0	93
	3 - A1173 (S)	687	439	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	14	16
	2 - Kings Road	36	0	38
	3 - A1173 (S)	13	20	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 (N)	0.46	5.69	0.9	A
2 - Kings Road	0.14	4.06	0.2	A
3 - A1173 (S)	0.78	10.23	3.4	B

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	374	329	1285	0.291	373	0.4	3.937	A
2 - Kings Road	102	262	1103	0.092	101	0.1	3.592	A
3 - A1173 (S)	848	31	1602	0.529	843	1.1	4.715	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	447	394	1241	0.360	446	0.6	4.529	A
2 - Kings Road	121	314	1074	0.113	121	0.1	3.777	A
3 - A1173 (S)	1012	38	1597	0.634	1010	1.7	6.103	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	547	481	1181	0.463	546	0.9	5.659	A
2 - Kings Road	149	385	1035	0.144	148	0.2	4.059	A
3 - A1173 (S)	1240	46	1591	0.779	1233	3.4	9.886	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	547	483	1179	0.464	547	0.9	5.695	A
2 - Kings Road	149	385	1035	0.144	149	0.2	4.061	A
3 - A1173 (S)	1240	46	1591	0.779	1239	3.4	10.227	B

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	447	397	1238	0.361	448	0.6	4.562	A
2 - Kings Road	121	315	1073	0.113	122	0.1	3.784	A
3 - A1173 (S)	1012	38	1597	0.634	1019	1.8	6.296	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	374	331	1283	0.292	375	0.4	3.966	A
2 - Kings Road	102	264	1102	0.092	102	0.1	3.599	A
3 - A1173 (S)	848	32	1602	0.529	850	1.1	4.803	A

2032 + 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	untitled	Standard Roundabout		1, 2, 3	5.95	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.95	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	2032 + 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 (Veh/hr)	Scaling Factor (%)
1 - A1173 (N)		✓	739	100.000
2 - Kings Road		✓	580	100.000
3 - A1173 (S)		✓	538	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	87	652
	2 - Kings Road	191	0	389
	3 - A1173 (S)	432	106	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A1173 (N)	**2 - Kings Road**	**3 - A1173 (S)**
From	**1 - A1173 (N)**	0	25	9
	2 - Kings Road	13	0	12
	3 - A1173 (S)	18	25	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 (N)	0.55	5.40	1.2	A
2 - Kings Road	0.60	8.33	1.5	A
3 - A1173 (S)	0.41	4.25	0.7	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	556	80	1507	0.369	554	0.6	3.766	A
2 - Kings Road	437	489	1216	0.359	434	0.6	4.593	A
3 - A1173 (S)	405	143	1483	0.273	404	0.4	3.330	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	664	95	1496	0.444	663	0.8	4.320	A
2 - Kings Road	521	585	1155	0.452	520	0.8	5.666	A
3 - A1173 (S)	484	171	1465	0.330	483	0.5	3.665	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	814	117	1480	0.550	812	1.2	5.375	A
2 - Kings Road	639	716	1071	0.596	636	1.4	8.222	A
3 - A1173 (S)	592	209	1440	0.411	592	0.7	4.239	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	814	117	1480	0.550	814	1.2	5.402	A
2 - Kings Road	639	718	1070	0.597	639	1.5	8.330	A
3 - A1173 (S)	592	210	1440	0.411	592	0.7	4.248	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	664	95	1496	0.444	666	0.8	4.349	A
2 - Kings Road	521	588	1153	0.452	524	0.8	5.742	A
3 - A1173 (S)	484	173	1464	0.330	484	0.5	3.679	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	556	80	1507	0.369	557	0.6	3.795	A
2 - Kings Road	437	492	1214	0.360	438	0.6	4.641	A
3 - A1173 (S)	405	144	1482	0.273	406	0.4	3.346	A

2032 + committed + ABP, 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	untitled	Standard Roundabout		1, 2, 3	13.13	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	13.13	B

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	2032 + committed + ABP	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 (Veh/hr)	Scaling Factor (%)
1 - A1173 (N)		✓	508	100.000
2 - Kings Road		✓	187	100.000
3 - A1173 (S)		✓	1204	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - A1173 (N)	2 - Kings Road	3 - A1173 (S)
From	1 - A1173 (N)	0	154	354
	2 - Kings Road	49	0	138
	3 - A1173 (S)	691	513	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A1173 (N)	2 - Kings Road	3 - A1173 (S)
From	1 - A1173 (N)	0	13	15
	2 - Kings Road	31	0	51
	3 - A1173 (S)	12	30	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 (N)	0.51	6.71	1.0	A
2 - Kings Road	0.21	4.69	0.3	A
3 - A1173 (S)	0.87	17.31	6.1	C

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	382	384	1230	0.311	381	0.4	4.230	A
2 - Kings Road	141	265	1037	0.136	140	0.2	4.011	A
3 - A1173 (S)	906	37	1542	0.588	901	1.4	5.570	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	457	460	1174	0.389	456	0.6	5.010	A
2 - Kings Road	168	318	1010	0.166	168	0.2	4.274	A
3 - A1173 (S)	1082	44	1536	0.704	1079	2.3	7.801	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	559	559	1100	0.508	558	1.0	6.620	A
2 - Kings Road	206	389	973	0.212	206	0.3	4.688	A
3 - A1173 (S)	1326	54	1529	0.867	1312	5.8	15.650	C

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	559	564	1096	0.510	559	1.0	6.706	A
2 - Kings Road	206	390	973	0.212	206	0.3	4.694	A
3 - A1173 (S)	1326	54	1529	0.867	1324	6.1	17.311	C

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	457	467	1168	0.391	458	0.6	5.084	A
2 - Kings Road	168	319	1009	0.167	168	0.2	4.282	A
3 - A1173 (S)	1082	44	1536	0.705	1097	2.5	8.450	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	382	388	1227	0.312	383	0.5	4.270	A
2 - Kings Road	141	267	1036	0.136	141	0.2	4.022	A
3 - A1173 (S)	906	37	1542	0.588	910	1.4	5.738	A

2032 + committed + ABP, 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	untitled	Standard Roundabout		1, 2, 3	8.26	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.26	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)
D8	2032 + committed + ABP	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 (Veh/hr)	Scaling Factor (%)
1 - A1173 (N)		✓	750	100.000
2 - Kings Road		✓	661	100.000
3 - A1173 (S)		✓	601	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		1 - A1173 (N)	2 - Kings Road	3 - A1173 (S)
From	1 - A1173 (N)	0	94	656
	2 - Kings Road	198	0	463
	3 - A1173 (S)	436	165	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A1173 (N)	2 - Kings Road	3 - A1173 (S)
From	1 - A1173 (N)	0	23	9
	2 - Kings Road	12	0	24
	3 - A1173 (S)	18	46	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A1173 (N)	0.59	6.15	1.4	A
2 - Kings Road	0.73	13.46	2.7	B
3 - A1173 (S)	0.48	5.11	0.9	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	565	124	1461	0.386	562	0.6	3.992	A
2 - Kings Road	498	492	1131	0.440	495	0.8	5.633	A
3 - A1173 (S)	452	148	1409	0.321	451	0.5	3.752	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	674	148	1440	0.468	673	0.9	4.688	A
2 - Kings Road	594	589	1073	0.554	592	1.2	7.464	A
3 - A1173 (S)	540	177	1391	0.389	540	0.6	4.228	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	826	181	1412	0.585	824	1.4	6.100	A
2 - Kings Road	728	720	995	0.731	722	2.6	12.939	B
3 - A1173 (S)	662	216	1367	0.484	661	0.9	5.089	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	826	182	1411	0.585	826	1.4	6.146	A
2 - Kings Road	728	722	994	0.732	727	2.7	13.462	B
3 - A1173 (S)	662	218	1366	0.484	662	0.9	5.112	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	674	149	1440	0.468	676	0.9	4.728	A
2 - Kings Road	594	592	1072	0.555	600	1.3	7.720	A
3 - A1173 (S)	540	180	1389	0.389	541	0.6	4.253	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A1173 (N)	565	124	1461	0.387	566	0.6	4.028	A
2 - Kings Road	498	495	1129	0.441	500	0.8	5.737	A
3 - A1173 (S)	452	150	1408	0.321	453	0.5	3.772	A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Model.j10
Path: \\ghdnet\GHD\UK\London MSL\Projects\4091\12579754\12578580\Tech\Modelling\Junction 9 - A1173 Kiln Lane Roundbaout
Report generation date: 10/08/2023 22:22:47

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
	2019									
1 - Kiln Lane	D1	0.1	2.84	0.13	A	D2	0.7	3.60	0.40	A
2 - Farm Access		0.0	0.00	0.00	A		0.0	0.00	0.00	A
3 - A1173 (W)		2.6	6.98	0.72	A		0.3	3.11	0.25	A
4 - A1173 (N)		0.4	4.86	0.29	A		0.9	4.61	0.46	A
	2019 + committed									
1 - Kiln Lane	D3	0.2	3.51	0.20	A	D4	1.2	5.92	0.54	A
2 - Farm Access		0.0	6.20	0.03	A		0.2	15.38	0.14	C
3 - A1173 (W)		42.5	77.95	1.02	F		0.7	3.81	0.40	A
4 - A1173 (N)		0.8	6.37	0.45	A		3.1	10.60	0.76	B
	2032 + committed									
1 - Kiln Lane	D5	0.3	3.60	0.21	A	D6	1.5	6.98	0.60	A
2 - Farm Access		0.0	6.41	0.03	A		0.2	20.44	0.18	C
3 - A1173 (W)		97.3	156.67	1.09	F		0.7	3.99	0.42	A
4 - A1173 (N)		0.9	6.85	0.49	A		4.2	13.50	0.81	B
	2032 + committed +ABP									
1 - Kiln Lane	D7	0.3	3.76	0.22	A	D8	1.8	8.62	0.65	A
2 - Farm Access		0.0	6.83	0.04	A		0.4	34.68	0.28	D
3 - A1173 (W)		166.9	321.82	1.17	F		0.9	4.67	0.49	A
4 - A1173 (N)		1.2	7.90	0.55	A		9.3	29.04	0.92	D

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	29/06/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	GHDNET\mmaktabi
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	mph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2019	AM	ONE HOUR	06:45	08:15	15
D2	2019	PM	ONE HOUR	15:45	17:15	15
D3	2019 + committed	AM	ONE HOUR	06:45	08:15	15
D4	2019 + committed	PM	ONE HOUR	15:45	17:15	15
D5	2032 + committed	AM	ONE HOUR	06:45	08:15	15
D6	2032 + committed	PM	ONE HOUR	15:45	17:15	15
D7	2032 + committed +ABP	AM	ONE HOUR	06:45	08:15	15
D8	2032 + committed +ABP	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2019, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Kiln Lane - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	6.06	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.06	A

Arms

Arms

Arm	Name	Description	No give-way line
1	Kiln Lane		
2	Farm Access		
3	A1173 (W)		
4	A1173 (N)		

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 - Kiln Lane	3.97	8.14	64.8	19.9	49.2	17.5		
2 - Farm Access	3.65	4.50	12.6	21.0	49.2	10.8		
3 - A1173 (W)	3.70	8.24	19.0	40.0	49.2	16.4		
4 - A1173 (N)	3.25	7.99	12.3	31.0	49.2	14.8		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Kiln Lane	0.748	2348
2 - Farm Access	0.576	1409
3 - A1173 (W)	0.697	2037
4 - A1173 (N)	0.640	1742

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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - Kiln Lane		✓	168	100.000
2 - Farm Access		✓	0	100.000
3 - A1173 (W)		✓	1220	100.000
4 - A1173 (N)		✓	281	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	0	137	31
	2 - Farm Access	0	0	0	0
	3 - A1173 (W)	572	0	0	648
	4 - A1173 (N)	92	0	189	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	0	49	43
	2 - Farm Access	0	0	0	0
	3 - A1173 (W)	9	0	0	6
	4 - A1173 (N)	13	0	30	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Kiln Lane	0.13	2.84	0.1	A
2 - Farm Access	0.00	0.00	0.0	A
3 - A1173 (W)	0.72	6.98	2.6	A
4 - A1173 (N)	0.29	4.86	0.4	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	126	142	1495	0.085	126	0.1	2.629	A
2 - Farm Access	0	268	1195	0.000	0	0.0	0.000	A
3 - A1173 (W)	918	23	1869	0.492	915	1.0	3.758	A
4 - A1173 (N)	212	429	1163	0.182	211	0.2	3.775	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service

1 - Kiln Lane	151	170	1477	0.102	151	0.1	2.714	A
2 - Farm Access	0	321	1153	0.000	0	0.0	0.000	A
3 - A1173 (W)	1097	28	1864	0.588	1095	1.4	4.667	A
4 - A1173 (N)	253	513	1116	0.226	252	0.3	4.168	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	185	208	1452	0.127	185	0.1	2.840	A
2 - Farm Access	0	393	1096	0.000	0	0.0	0.000	A
3 - A1173 (W)	1343	34	1859	0.723	1339	2.5	6.864	A
4 - A1173 (N)	309	628	1051	0.294	309	0.4	4.846	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	185	208	1452	0.127	185	0.1	2.841	A
2 - Farm Access	0	393	1096	0.000	0	0.0	0.000	A
3 - A1173 (W)	1343	34	1859	0.723	1343	2.6	6.979	A
4 - A1173 (N)	309	630	1050	0.295	309	0.4	4.860	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	151	170	1477	0.102	151	0.1	2.717	A
2 - Farm Access	0	321	1153	0.000	0	0.0	0.000	A
3 - A1173 (W)	1097	28	1864	0.588	1101	1.4	4.744	A
4 - A1173 (N)	253	516	1114	0.227	253	0.3	4.185	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	126	142	1495	0.085	127	0.1	2.630	A
2 - Farm Access	0	269	1194	0.000	0	0.0	0.000	A
3 - A1173 (W)	918	23	1869	0.492	920	1.0	3.803	A
4 - A1173 (N)	212	432	1162	0.182	212	0.2	3.792	A

2019, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Kiln Lane - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.85	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.85	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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - Kiln Lane		✓	610	100.000
2 - Farm Access		✓	3	100.000
3 - A1173 (W)		✓	352	100.000
4 - A1173 (N)		✓	606	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	0	522	88
	2 - Farm Access	0	0	2	1
	3 - A1173 (W)	146	0	0	206
	4 - A1173 (N)	80	0	526	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	0	12	21
	2 - Farm Access	0	0	0	0

	3 - A1173 (W)	44	0	0	14
	4 - A1173 (N)	37	0	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Kiln Lane	0.40	3.60	0.7	A
2 - Farm Access	0.00	0.00	0.0	A
3 - A1173 (W)	0.25	3.11	0.3	A
4 - A1173 (N)	0.46	4.61	0.9	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	459	394	1800	0.255	458	0.3	2.680	A
2 - Farm Access	0	852	869	0.000	0	0.0	0.000	A
3 - A1173 (W)	265	66	1566	0.169	264	0.2	2.764	A
4 - A1173 (N)	456	110	1491	0.306	454	0.4	3.468	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	548	472	1745	0.314	548	0.5	3.006	A
2 - Farm Access	0	1020	763	0.000	0	0.0	0.000	A
3 - A1173 (W)	316	79	1558	0.203	316	0.3	2.900	A
4 - A1173 (N)	545	131	1473	0.370	544	0.6	3.875	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	672	578	1671	0.402	671	0.7	3.594	A
2 - Farm Access	0	1249	618	0.000	0	0.0	0.000	A
3 - A1173 (W)	388	97	1546	0.251	387	0.3	3.107	A
4 - A1173 (N)	667	161	1448	0.461	666	0.8	4.600	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	672	579	1671	0.402	672	0.7	3.602	A
2 - Farm Access	0	1251	617	0.000	0	0.0	0.000	A
3 - A1173 (W)	388	97	1546	0.251	388	0.3	3.107	A
4 - A1173 (N)	667	161	1448	0.461	667	0.9	4.612	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	548	474	1744	0.314	549	0.5	3.013	A
2 - Farm Access	0	1023	761	0.000	0	0.0	0.000	A
3 - A1173 (W)	316	79	1557	0.203	317	0.3	2.901	A
4 - A1173 (N)	545	131	1472	0.370	546	0.6	3.891	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	459	397	1799	0.255	460	0.3	2.691	A
2 - Farm Access	0	856	867	0.000	0	0.0	0.000	A
3 - A1173 (W)	265	66	1566	0.169	265	0.2	2.767	A
4 - A1173 (N)	456	110	1490	0.306	457	0.4	3.487	A

2019 + committed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Kiln Lane - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	54.43	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	54.43	F

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	2019 + 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 (Veh/hr)	Scaling Factor (%)
1 - Kiln Lane		✓	228	100.000
2 - Farm Access		✓	18	100.000
3 - A1173 (W)		✓	1690	100.000
4 - A1173 (N)		✓	428	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	1	192	35
	2 - Farm Access	2	0	13	3
	3 - A1173 (W)	648	20	0	1022
	4 - A1173 (N)	92	2	334	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	100	60	38
	2 - Farm Access	100	0	46	67

	3 - A1173 (W)	17	20	0	5
	4 - A1173 (N)	13	50	17	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Kiln Lane	0.20	3.51	0.2	A
2 - Farm Access	0.03	6.20	0.0	A
3 - A1173 (W)	1.02	77.95	42.5	F
4 - A1173 (N)	0.45	6.37	0.8	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	172	267	1345	0.128	171	0.1	3.065	A
2 - Farm Access	14	421	698	0.019	13	0.0	5.261	A
3 - A1173 (W)	1272	30	1833	0.694	1263	2.2	6.232	A
4 - A1173 (N)	322	501	1173	0.275	321	0.4	4.216	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	205	319	1315	0.156	205	0.2	3.242	A
2 - Farm Access	16	504	657	0.025	16	0.0	5.620	A
3 - A1173 (W)	1519	36	1827	0.832	1510	4.6	11.014	B
4 - A1173 (N)	385	599	1110	0.347	384	0.5	4.952	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	251	390	1276	0.197	251	0.2	3.512	A
2 - Farm Access	20	617	601	0.033	20	0.0	6.194	A
3 - A1173 (W)	1861	44	1820	1.023	1769	27.5	42.282	E
4 - A1173 (N)	471	701	1044	0.451	470	0.8	6.259	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	251	391	1275	0.197	251	0.2	3.514	A
2 - Farm Access	20	618	600	0.033	20	0.0	6.200	A
3 - A1173 (W)	1861	44	1820	1.023	1801	42.5	77.950	F
4 - A1173 (N)	471	714	1036	0.455	471	0.8	6.374	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	205	323	1313	0.156	205	0.2	3.248	A
2 - Farm Access	16	505	656	0.025	16	0.0	5.627	A
3 - A1173 (W)	1519	36	1827	0.832	1667	5.5	35.101	E
4 - A1173 (N)	385	661	1070	0.359	386	0.6	5.267	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	172	269	1344	0.128	172	0.1	3.072	A
2 - Farm Access	14	423	697	0.019	14	0.0	5.270	A
3 - A1173 (W)	1272	30	1832	0.694	1285	2.3	6.727	A
4 - A1173 (N)	322	509	1168	0.276	323	0.4	4.264	A

2019 + committed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Kiln Lane - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	7.43	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.43	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	2019 + 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 (Veh/hr)	Scaling Factor (%)
1 - Kiln Lane		✓	647	100.000
2 - Farm Access		✓	36	100.000
3 - A1173 (W)		✓	567	100.000
4 - A1173 (N)		✓	990	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	3	555	89
	2 - Farm Access	3	0	28	5
	3 - A1173 (W)	181	21	0	365
	4 - A1173 (N)	82	3	905	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	33	16	21
	2 - Farm Access	33	0	18	40

	3 - A1173 (W)	51	52	0	9
	4 - A1173 (N)	36	33	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Kiln Lane	0.54	5.92	1.2	A
2 - Farm Access	0.14	15.38	0.2	C
3 - A1173 (W)	0.40	3.81	0.7	A
4 - A1173 (N)	0.76	10.60	3.1	B

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	487	696	1540	0.316	485	0.5	3.406	A
2 - Farm Access	27	1161	554	0.049	27	0.1	6.826	A
3 - A1173 (W)	427	73	1592	0.268	425	0.4	3.080	A
4 - A1173 (N)	745	154	1494	0.499	741	1.0	4.760	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	582	833	1448	0.402	581	0.7	4.148	A
2 - Farm Access	32	1390	436	0.074	32	0.1	8.909	A
3 - A1173 (W)	510	87	1583	0.322	509	0.5	3.351	A
4 - A1173 (N)	890	184	1466	0.607	888	1.5	6.199	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	712	1017	1324	0.538	710	1.1	5.844	A
2 - Farm Access	40	1698	277	0.143	39	0.2	15.099	C
3 - A1173 (W)	624	106	1569	0.398	624	0.7	3.800	A
4 - A1173 (N)	1090	225	1429	0.763	1084	3.1	10.250	B

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	712	1023	1321	0.539	712	1.2	5.916	A
2 - Farm Access	40	1705	274	0.145	40	0.2	15.379	C
3 - A1173 (W)	624	107	1569	0.398	624	0.7	3.809	A
4 - A1173 (N)	1090	226	1429	0.763	1090	3.1	10.598	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	582	841	1443	0.403	584	0.7	4.198	A
2 - Farm Access	32	1400	431	0.075	33	0.1	9.046	A
3 - A1173 (W)	510	88	1582	0.322	510	0.5	3.362	A
4 - A1173 (N)	890	185	1466	0.607	896	1.6	6.389	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	487	701	1537	0.317	488	0.5	3.437	A
2 - Farm Access	27	1169	550	0.049	27	0.1	6.889	A
3 - A1173 (W)	427	73	1592	0.268	427	0.4	3.093	A
4 - A1173 (N)	745	155	1493	0.499	748	1.0	4.842	A

2032 + committed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Kiln Lane - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	107.92	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	107.92	F

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	2032 + 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 (Veh/hr)	Scaling Factor (%)
1 - Kiln Lane		✓	244	100.000
2 - Farm Access		✓	18	100.000
3 - A1173 (W)		✓	1806	100.000
4 - A1173 (N)		✓	454	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	1	205	38
	2 - Farm Access	2	0	13	3
	3 - A1173 (W)	702	20	0	1084
	4 - A1173 (N)	101	2	351	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	100	60	39
	2 - Farm Access	100	0	46	67

	3 - A1173 (W)	16	20	0	5
	4 - A1173 (N)	13	50	18	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Kiln Lane	0.21	3.60	0.3	A
2 - Farm Access	0.03	6.41	0.0	A
3 - A1173 (W)	1.09	156.67	97.3	F
4 - A1173 (N)	0.49	6.85	0.9	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	184	279	1342	0.137	183	0.2	3.103	A
2 - Farm Access	14	445	685	0.020	13	0.0	5.361	A
3 - A1173 (W)	1360	32	1833	0.742	1349	2.8	7.279	A
4 - A1173 (N)	342	541	1145	0.298	340	0.4	4.461	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	219	335	1311	0.167	219	0.2	3.296	A
2 - Farm Access	16	533	641	0.025	16	0.0	5.757	A
3 - A1173 (W)	1624	39	1827	0.889	1607	6.9	15.306	C
4 - A1173 (N)	408	644	1079	0.378	407	0.6	5.353	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	269	408	1270	0.212	268	0.3	3.593	A
2 - Farm Access	20	653	582	0.034	20	0.0	6.400	A
3 - A1173 (W)	1988	47	1819	1.093	1800	54.1	70.312	F
4 - A1173 (N)	500	722	1030	0.485	499	0.9	6.762	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	269	409	1269	0.212	269	0.3	3.596	A
2 - Farm Access	20	654	582	0.034	20	0.0	6.407	A
3 - A1173 (W)	1988	47	1819	1.093	1816	97.3	156.669	F
4 - A1173 (N)	500	728	1025	0.487	500	0.9	6.848	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	219	338	1309	0.168	220	0.2	3.304	A
2 - Farm Access	16	535	640	0.025	16	0.0	5.766	A
3 - A1173 (W)	1624	39	1827	0.889	1808	51.1	149.512	F
4 - A1173 (N)	408	725	1028	0.397	409	0.7	5.829	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	184	284	1340	0.137	184	0.2	3.115	A
2 - Farm Access	14	448	684	0.020	14	0.0	5.374	A
3 - A1173 (W)	1360	32	1833	0.742	1552	3.0	23.637	C
4 - A1173 (N)	342	622	1094	0.313	343	0.5	4.800	A

2032 + committed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Kiln Lane - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	9.05	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.05	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	2032 + 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 (Veh/hr)	Scaling Factor (%)
1 - Kiln Lane		✓	703	100.000
2 - Farm Access		✓	36	100.000
3 - A1173 (W)		✓	599	100.000
4 - A1173 (N)		✓	1044	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	3	603	97
	2 - Farm Access	3	0	28	5
	3 - A1173 (W)	194	21	0	384
	4 - A1173 (N)	89	3	952	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	33	16	21
	2 - Farm Access	33	0	18	39

	3 - A1173 (W)	51	52	0	9
	4 - A1173 (N)	36	33	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Kiln Lane	0.60	6.98	1.5	A
2 - Farm Access	0.18	20.44	0.2	C
3 - A1173 (W)	0.42	3.99	0.7	A
4 - A1173 (N)	0.81	13.50	4.2	B

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	529	731	1521	0.348	527	0.5	3.614	A
2 - Farm Access	27	1238	516	0.053	27	0.1	7.363	A
3 - A1173 (W)	451	79	1587	0.284	449	0.4	3.160	A
4 - A1173 (N)	786	164	1483	0.530	782	1.1	5.100	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	632	875	1424	0.444	631	0.8	4.534	A
2 - Farm Access	32	1482	389	0.083	32	0.1	10.077	B
3 - A1173 (W)	538	94	1576	0.342	538	0.5	3.465	A
4 - A1173 (N)	939	196	1454	0.645	936	1.8	6.911	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	774	1066	1295	0.598	771	1.5	6.841	A
2 - Farm Access	40	1808	221	0.179	39	0.2	19.757	C
3 - A1173 (W)	660	115	1562	0.422	659	0.7	3.982	A
4 - A1173 (N)	1149	240	1414	0.813	1140	4.0	12.736	B

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	774	1074	1290	0.600	774	1.5	6.978	A
2 - Farm Access	40	1818	216	0.184	40	0.2	20.440	C
3 - A1173 (W)	660	116	1562	0.422	659	0.7	3.989	A
4 - A1173 (N)	1149	240	1414	0.813	1149	4.2	13.497	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	632	886	1417	0.446	635	0.8	4.619	A
2 - Farm Access	32	1496	382	0.085	33	0.1	10.322	B
3 - A1173 (W)	538	95	1576	0.342	539	0.5	3.474	A
4 - A1173 (N)	939	196	1454	0.646	948	1.9	7.245	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	529	737	1517	0.349	530	0.5	3.656	A
2 - Farm Access	27	1247	510	0.053	27	0.1	7.454	A
3 - A1173 (W)	451	79	1587	0.284	451	0.4	3.174	A
4 - A1173 (N)	786	164	1482	0.530	789	1.1	5.213	A

2032 + committed +ABP, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Kiln Lane - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	218.96	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	218.96	F

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	2032 + committed +ABP	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 (Veh/hr)	Scaling Factor (%)
1 - Kiln Lane		✓	244	100.000
2 - Farm Access		✓	18	100.000
3 - A1173 (W)		✓	1884	100.000
4 - A1173 (N)		✓	503	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	1	205	38
	2 - Farm Access	2	0	13	3
	3 - A1173 (W)	702	20	0	1162
	4 - A1173 (N)	101	2	400	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
	1 - Kiln Lane	0	100	60	39

From	2 - Farm Access	100	0	46	67
	3 - A1173 (W)	16	20	0	10
	4 - A1173 (N)	13	50	25	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Kiln Lane	0.22	3.76	0.3	A
2 - Farm Access	0.04	6.83	0.0	A
3 - A1173 (W)	1.17	321.82	166.9	F
4 - A1173 (N)	0.55	7.90	1.2	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	184	316	1312	0.140	183	0.2	3.186	A
2 - Farm Access	14	482	662	0.020	13	0.0	5.555	A
3 - A1173 (W)	1418	32	1783	0.796	1404	3.7	9.171	A
4 - A1173 (N)	379	539	1095	0.346	377	0.5	4.995	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	219	378	1275	0.172	219	0.2	3.408	A
2 - Farm Access	16	577	613	0.026	16	0.0	6.028	A
3 - A1173 (W)	1694	39	1777	0.953	1658	12.6	24.963	C
4 - A1173 (N)	452	637	1036	0.437	451	0.8	6.151	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	269	460	1227	0.219	268	0.3	3.757	A
2 - Farm Access	20	706	548	0.036	20	0.0	6.816	A
3 - A1173 (W)	2074	47	1769	1.172	1763	90.5	113.268	F
4 - A1173 (N)	554	678	1011	0.548	552	1.2	7.820	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	269	461	1226	0.219	269	0.3	3.760	A
2 - Farm Access	20	708	547	0.036	20	0.0	6.826	A
3 - A1173 (W)	2074	47	1769	1.172	1768	166.9	266.905	F
4 - A1173 (N)	554	680	1009	0.549	554	1.2	7.899	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	219	381	1273	0.172	220	0.2	3.419	A
2 - Farm Access	16	580	612	0.026	16	0.0	6.043	A
3 - A1173 (W)	1694	39	1777	0.953	1766	148.8	321.825	F

4 - A1173 (N)	452	679	1010	0.448	454	0.8	6.488	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	184	322	1309	0.140	184	0.2	3.202	A
2 - Farm Access	14	485	660	0.021	14	0.0	5.569	A
3 - A1173 (W)	1418	32	1782	0.796	1771	60.7	214.816	F
4 - A1173 (N)	379	680	1010	0.375	380	0.6	5.723	A

2032 + committed +ABP, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Kiln Lane - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	16.50	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	16.50	C

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	2032 + committed +ABP	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 (Veh/hr)	Scaling Factor (%)
1 - Kiln Lane		✓	703	100.000
2 - Farm Access		✓	36	100.000
3 - A1173 (W)		✓	662	100.000
4 - A1173 (N)		✓	1122	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
From	1 - Kiln Lane	0	3	603	97
	2 - Farm Access	3	0	28	5
	3 - A1173 (W)	194	21	0	447
	4 - A1173 (N)	89	3	1030	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Kiln Lane	2 - Farm Access	3 - A1173 (W)	4 - A1173 (N)
	1 - Kiln Lane	0	33	16	21

From	2 - Farm Access	33	0	18	39
	3 - A1173 (W)	51	52	0	19
	4 - A1173 (N)	36	33	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Kiln Lane	0.65	8.62	1.8	A
2 - Farm Access	0.28	34.68	0.4	D
3 - A1173 (W)	0.49	4.67	0.9	A
4 - A1173 (N)	0.92	29.04	9.3	D

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	529	788	1453	0.364	527	0.6	3.877	A
2 - Farm Access	27	1295	466	0.058	27	0.1	8.202	A
3 - A1173 (W)	498	79	1524	0.327	496	0.5	3.497	A
4 - A1173 (N)	845	163	1413	0.598	839	1.5	6.210	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	632	943	1343	0.471	631	0.9	5.046	A
2 - Farm Access	32	1550	330	0.098	32	0.1	12.087	B
3 - A1173 (W)	595	94	1514	0.393	594	0.6	3.913	A
4 - A1173 (N)	1009	196	1385	0.728	1004	2.6	9.336	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	774	1139	1203	0.643	771	1.8	8.250	A
2 - Farm Access	40	1880	154	0.258	39	0.3	31.023	D
3 - A1173 (W)	729	115	1500	0.486	728	0.9	4.653	A
4 - A1173 (N)	1235	240	1347	0.917	1212	8.3	23.435	C

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	774	1157	1191	0.650	774	1.8	8.618	A
2 - Farm Access	40	1901	143	0.277	39	0.4	34.680	D
3 - A1173 (W)	729	116	1500	0.486	729	0.9	4.668	A
4 - A1173 (N)	1235	240	1347	0.917	1231	9.3	29.045	D

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	632	972	1323	0.478	636	0.9	5.267	A
2 - Farm Access	32	1583	313	0.104	33	0.1	12.942	B
3 - A1173 (W)	595	95	1513	0.393	596	0.7	3.930	A

4 - A1173 (N)	1009	196	1385	0.728	1035	2.8	11.010	B

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Kiln Lane	529	798	1446	0.366	531	0.6	3.938	A
2 - Farm Access	27	1308	458	0.059	27	0.1	8.355	A
3 - A1173 (W)	498	79	1524	0.327	499	0.5	3.517	A
4 - A1173 (N)	845	164	1412	0.598	850	1.5	6.457	A

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Model.j10
Path: \\ghdnet\GHD\UK\London MSL\Projects\4091\12579754\12578580\Tech\Modelling\Junction 10 - A1173 New Roundabout
Report generation date: 10/08/2023 16:54:39

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
	2019									
1 - Site Access South	D1	0.0	0.00	0.00	A	D2	0.0	0.00	0.00	A
2 - A1173 West		1.8	4.78	0.64	A		0.3	2.56	0.22	A
3 - Site Access North		0.0	0.00	0.00	A		0.0	0.00	0.00	A
4 - A1173 East		0.3	2.87	0.22	A		1.3	3.97	0.56	A
	2019 + committed									
1 - Site Access South	D3	0.1	3.62	0.08	A	D4	0.4	7.81	0.28	A
2 - A1173 West		21.3	40.03	0.98	E		0.6	3.30	0.39	A
3 - Site Access North		0.1	12.83	0.06	B		0.0	3.41	0.03	A
4 - A1173 East		0.6	3.67	0.38	A		4.9	11.10	0.84	B
	2032 + committed									
1 - Site Access South	D5	0.1	3.71	0.08	A	D6	0.5	9.25	0.31	A
2 - A1173 West		57.1	88.56	1.04	F		0.7	3.41	0.41	A
3 - Site Access North		0.1	14.41	0.07	B		0.0	3.49	0.03	A
4 - A1173 East		0.7	3.80	0.40	A		7.5	16.15	0.89	C
	2032 + committed +ABP									
1 - Site Access South	D7	0.1	3.91	0.09	A					
2 - A1173 West		119.5	176.64	1.11	F					
3 - Site Access North		0.1	14.81	0.07	B					
4 - A1173 East		0.8	4.17	0.44	A					
	2032 + committed + ABP									
1 - Site Access South						D8	0.6	12.08	0.37	B
2 - A1173 West							0.9	3.89	0.46	A
3 - Site Access North							0.0	3.75	0.03	A
4 - A1173 East							17.2	35.81	0.96	E

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	29/06/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	GHDNET\mmaktabi
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	mph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2019	AM	ONE HOUR	06:45	08:15	15
D2	2019	PM	ONE HOUR	15:45	17:15	15
D3	2019 + committed	AM	ONE HOUR	06:45	08:15	15
D4	2019 + committed	PM	ONE HOUR	15:45	17:15	15
D5	2032 + committed	AM	ONE HOUR	06:45	08:15	15
D6	2032 + committed	PM	ONE HOUR	15:45	17:15	15
D7	2032 + committed +ABP	AM	ONE HOUR	06:45	08:15	15
D8	2032 + committed + ABP	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2019, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - A1173 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	4.29	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.29	A

Arms

Arms

Arm	Name	Description	No give-way line
1	Site Access South		
2	A1173 West		
3	Site Access North		
4	A1173 East		

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 - Site Access South	3.65	7.14	24.4	35.0	44.0	15.5		
2 - A1173 West	3.21	7.53	98.0	27.0	44.0	13.2		
3 - Site Access North	3.64	7.11	20.7	20.0	44.0	17.3		
4 - A1173 East	3.53	7.45	93.0	20.0	44.0	14.4		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Site Access South	0.704	1962
2 - A1173 West	0.764	2270
3 - Site Access North	0.677	1866
4 - A1173 East	0.751	2231

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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - Site Access South		✓	0	100.000
2 - A1173 West		✓	1220	100.000
3 - Site Access North		✓	0	100.000
4 - A1173 East		✓	326	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site Access South	**2 - A1173 West**	**3 - Site Access North**	**4 - A1173 East**
From	**1 - Site Access South**	0	0	0	0
	2 - A1173 West	0	0	0	1220
	3 - Site Access North	0	0	0	0
	4 - A1173 East	0	326	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site Access South	**2 - A1173 West**	**3 - Site Access North**	**4 - A1173 East**
From	**1 - Site Access South**	0	0	0	0
	2 - A1173 West	0	0	0	8
	3 - Site Access North	0	0	0	0
	4 - A1173 East	0	38	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Site Access South	0.00	0.00	0.0	A
2 - A1173 West	0.64	4.78	1.8	A
3 - Site Access North	0.00	0.00	0.0	A
4 - A1173 East	0.22	2.87	0.3	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	245	1724	0.000	0	0.0	0.000	A
2 - A1173 West	918	0	2096	0.438	915	0.8	3.041	A
3 - Site Access North	0	915	1195	0.000	0	0.0	0.000	A
4 - A1173 East	245	0	1614	0.152	245	0.2	2.627	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	293	1677	0.000	0	0.0	0.000	A
2 - A1173 West	1097	0	2096	0.523	1096	1.1	3.592	A
3 - Site Access North	0	1096	1063	0.000	0	0.0	0.000	A
4 - A1173 East	293	0	1614	0.182	293	0.2	2.724	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	359	1613	0.000	0	0.0	0.000	A
2 - A1173 West	1343	0	2096	0.641	1341	1.8	4.746	A
3 - Site Access North	0	1341	884	0.000	0	0.0	0.000	A
4 - A1173 East	359	0	1614	0.222	359	0.3	2.867	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	359	1613	0.000	0	0.0	0.000	A
2 - A1173 West	1343	0	2096	0.641	1343	1.8	4.780	A
3 - Site Access North	0	1343	882	0.000	0	0.0	0.000	A
4 - A1173 East	359	0	1614	0.222	359	0.3	2.867	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	293	1677	0.000	0	0.0	0.000	A
2 - A1173 West	1097	0	2096	0.523	1099	1.1	3.620	A
3 - Site Access North	0	1099	1060	0.000	0	0.0	0.000	A
4 - A1173 East	293	0	1614	0.182	293	0.2	2.727	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	246	1723	0.000	0	0.0	0.000	A
2 - A1173 West	918	0	2096	0.438	920	0.8	3.062	A
3 - Site Access North	0	920	1192	0.000	0	0.0	0.000	A
4 - A1173 East	245	0	1614	0.152	246	0.2	2.632	A

2019, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - A1173 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.58	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.58	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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - Site Access South		✓	0	100.000
2 - A1173 West		✓	352	100.000
3 - Site Access North		✓	0	100.000
4 - A1173 East		✓	1050	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East
From	1 - Site Access South	0	0	0	0
	2 - A1173 West	0	0	0	352
	3 - Site Access North	0	0	0	0
	4 - A1173 East	0	1050	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East

From	1 - Site Access South	0	0	0	0
	2 - A1173 West	0	0	0	27
	3 - Site Access North	0	0	0	0
	4 - A1173 East	0	8	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Site Access South	0.00	0.00	0.0	A
2 - A1173 West	0.22	2.56	0.3	A
3 - Site Access North	0.00	0.00	0.0	A
4 - A1173 East	0.56	3.97	1.3	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	788	1362	0.000	0	0.0	0.000	A
2 - A1173 West	265	0	1793	0.148	264	0.2	2.353	A
3 - Site Access North	0	264	1640	0.000	0	0.0	0.000	A
4 - A1173 East	790	0	2062	0.383	788	0.6	2.822	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	943	1244	0.000	0	0.0	0.000	A
2 - A1173 West	316	0	1793	0.176	316	0.2	2.437	A
3 - Site Access North	0	316	1595	0.000	0	0.0	0.000	A
4 - A1173 East	944	0	2062	0.458	943	0.8	3.214	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	1154	1083	0.000	0	0.0	0.000	A
2 - A1173 West	388	0	1793	0.216	387	0.3	2.560	A
3 - Site Access North	0	387	1534	0.000	0	0.0	0.000	A
4 - A1173 East	1156	0	2062	0.561	1154	1.3	3.960	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	1156	1082	0.000	0	0.0	0.000	A
2 - A1173 West	388	0	1793	0.216	388	0.3	2.560	A
3 - Site Access North	0	388	1534	0.000	0	0.0	0.000	A
4 - A1173 East	1156	0	2062	0.561	1156	1.3	3.974	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	946	1242	0.000	0	0.0	0.000	A
2 - A1173 West	316	0	1793	0.176	317	0.2	2.439	A

3 - Site Access North	0	317	1595	0.000	0	0.0	0.000	A
4 - A1173 East	944	0	2062	0.458	946	0.8	3.232	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	0	791	1359	0.000	0	0.0	0.000	A
2 - A1173 West	265	0	1793	0.148	265	0.2	2.357	A
3 - Site Access North	0	265	1639	0.000	0	0.0	0.000	A
4 - A1173 East	790	0	2062	0.383	791	0.6	2.837	A

2019 + committed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - A1173 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	29.25	D

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	29.25	D

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	2019 + 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 (Veh/hr)	Scaling Factor (%)
1 - Site Access South		✓	78	100.000
2 - A1173 West		✓	1819	100.000
3 - Site Access North		✓	16	100.000
4 - A1173 East		✓	539	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East
From	1 - Site Access South	0	60	0	18
	2 - A1173 West	128	0	41	1650
	3 - Site Access North	0	12	0	4
	4 - A1173 East	25	510	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East

From	1 - Site Access South	0	25	0	50
	2 - A1173 West	8	0	5	10
	3 - Site Access North	0	33	0	50
	4 - A1173 East	12	35	25	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Site Access South	0.08	3.62	0.1	A
2 - A1173 West	0.98	40.03	21.3	E
3 - Site Access North	0.06	12.83	0.1	B
4 - A1173 East	0.38	3.67	0.6	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	59	395	1214	0.048	59	0.1	3.115	A
2 - A1173 West	1369	17	2061	0.665	1362	1.9	5.095	A
3 - Site Access North	12	1344	631	0.019	12	0.0	5.818	A
4 - A1173 East	406	105	1603	0.253	404	0.3	3.000	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	70	472	1158	0.061	70	0.1	3.309	A
2 - A1173 West	1635	20	2057	0.795	1628	3.7	8.252	A
3 - Site Access North	14	1608	488	0.029	14	0.0	7.593	A
4 - A1173 East	485	125	1591	0.305	484	0.4	3.254	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	86	578	1081	0.079	86	0.1	3.617	A
2 - A1173 West	2003	24	2053	0.976	1950	16.8	26.762	D
3 - Site Access North	18	1926	316	0.056	18	0.1	12.044	B
4 - A1173 East	593	150	1575	0.377	593	0.6	3.663	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	86	579	1080	0.079	86	0.1	3.619	A
2 - A1173 West	2003	24	2053	0.976	1985	21.3	40.028	E
3 - Site Access North	18	1960	298	0.059	18	0.1	12.835	B
4 - A1173 East	593	153	1574	0.377	593	0.6	3.672	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	70	474	1157	0.061	70	0.1	3.314	A
2 - A1173 West	1635	20	2057	0.795	1704	4.1	12.056	B

3 - Site Access North	14	1682	448	0.032	14	0.0	8.298	A
4 - A1173 East	485	131	1587	0.305	485	0.4	3.267	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	59	396	1213	0.048	59	0.1	3.121	A
2 - A1173 West	1369	17	2061	0.665	1378	2.0	5.332	A
3 - Site Access North	12	1360	622	0.019	12	0.0	5.902	A
4 - A1173 East	406	106	1603	0.253	406	0.3	3.009	A

2019 + committed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - A1173 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	8.42	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.42	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	2019 + 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 (Veh/hr)	Scaling Factor (%)
1 - Site Access South		✓	162	100.000
2 - A1173 West		✓	626	100.000
3 - Site Access North		✓	30	100.000
4 - A1173 East		✓	1487	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East
From	1 - Site Access South	0	131	0	31
	2 - A1173 West	77	0	18	531
	3 - Site Access North	0	25	0	5
	4 - A1173 East	17	1467	3	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East

From	1 - Site Access South	0	9	0	19
	2 - A1173 West	32	0	33	24
	3 - Site Access North	0	12	0	40
	4 - A1173 East	35	8	67	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Site Access South	0.28	7.81	0.4	A
2 - A1173 West	0.39	3.30	0.6	A
3 - Site Access North	0.03	3.41	0.0	A
4 - A1173 East	0.84	11.10	4.9	B

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	122	1120	999	0.122	121	0.1	4.101	A
2 - A1173 West	471	25	1790	0.263	470	0.4	2.725	A
3 - Site Access North	23	480	1252	0.018	23	0.0	2.928	A
4 - A1173 East	1119	77	1991	0.562	1114	1.3	4.084	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	146	1341	848	0.172	145	0.2	5.127	A
2 - A1173 West	563	31	1786	0.315	562	0.5	2.942	A
3 - Site Access North	27	574	1183	0.023	27	0.0	3.112	A
4 - A1173 East	1337	92	1977	0.676	1334	2.0	5.565	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	178	1635	646	0.276	178	0.4	7.677	A
2 - A1173 West	689	37	1781	0.387	689	0.6	3.294	A
3 - Site Access North	33	703	1090	0.030	33	0.0	3.405	A
4 - A1173 East	1637	112	1959	0.836	1626	4.8	10.484	B

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	178	1645	639	0.279	178	0.4	7.814	A
2 - A1173 West	689	37	1781	0.387	689	0.6	3.297	A
3 - Site Access North	33	704	1089	0.030	33	0.0	3.407	A
4 - A1173 East	1637	112	1959	0.836	1637	4.9	11.101	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	146	1355	838	0.174	146	0.2	5.209	A
2 - A1173 West	563	31	1786	0.315	563	0.5	2.945	A

3 - Site Access North	27	575	1182	0.023	27	0.0	3.115	A
4 - A1173 East	1337	92	1977	0.676	1348	2.1	5.819	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	122	1129	993	0.123	122	0.1	4.137	A
2 - A1173 West	471	26	1790	0.263	472	0.4	2.733	A
3 - Site Access North	23	482	1250	0.018	23	0.0	2.931	A
4 - A1173 East	1119	77	1991	0.562	1123	1.3	4.165	A

2032 + committed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - A1173 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	63.59	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	63.59	F

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	2032 + 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 (Veh/hr)	Scaling Factor (%)
1 - Site Access South		✓	78	100.000
2 - A1173 West		✓	1935	100.000
3 - Site Access North		✓	16	100.000
4 - A1173 East		✓	569	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East
From	1 - Site Access South	0	60	0	18
	2 - A1173 West	128	0	41	1766
	3 - Site Access North	0	12	0	4
	4 - A1173 East	25	540	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East

From	1 - Site Access South	0	25	0	50
	2 - A1173 West	8	0	5	9
	3 - Site Access North	0	33	0	50
	4 - A1173 East	12	35	25	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Site Access South	0.08	3.71	0.1	A
2 - A1173 West	1.04	88.56	57.1	F
3 - Site Access North	0.07	14.41	0.1	B
4 - A1173 East	0.40	3.80	0.7	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	59	417	1197	0.049	59	0.1	3.161	A
2 - A1173 West	1457	17	2062	0.706	1447	2.4	5.771	A
3 - Site Access North	12	1430	585	0.021	12	0.0	6.280	A
4 - A1173 East	428	105	1600	0.268	427	0.4	3.064	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	70	499	1138	0.062	70	0.1	3.371	A
2 - A1173 West	1740	20	2059	0.845	1729	5.1	10.563	B
3 - Site Access North	14	1708	435	0.033	14	0.0	8.554	A
4 - A1173 East	512	125	1587	0.322	511	0.5	3.342	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	86	611	1056	0.081	86	0.1	3.709	A
2 - A1173 West	2130	24	2054	1.037	2011	34.9	44.886	E
3 - Site Access North	18	1988	284	0.062	17	0.1	13.514	B
4 - A1173 East	626	146	1574	0.398	626	0.7	3.789	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	86	612	1056	0.081	86	0.1	3.711	A
2 - A1173 West	2130	24	2054	1.037	2042	57.1	88.565	F
3 - Site Access North	18	2018	268	0.066	18	0.1	14.405	B
4 - A1173 East	626	148	1573	0.398	626	0.7	3.802	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	70	501	1137	0.062	70	0.1	3.375	A
2 - A1173 West	1740	20	2059	0.845	1943	6.4	48.157	E

3 - Site Access North	14	1918	322	0.045	14	0.0	11.691	B
4 - A1173 East	512	139	1579	0.324	512	0.5	3.376	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	59	419	1196	0.049	59	0.1	3.167	A
2 - A1173 West	1457	17	2062	0.706	1472	2.5	6.258	A
3 - Site Access North	12	1455	572	0.021	12	0.0	6.430	A
4 - A1173 East	428	107	1599	0.268	429	0.4	3.079	A

2032 + committed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - A1173 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	11.72	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	11.72	B

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	2032 + 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 (Veh/hr)	Scaling Factor (%)
1 - Site Access South		✓	162	100.000
2 - A1173 West		✓	658	100.000
3 - Site Access North		✓	30	100.000
4 - A1173 East		✓	1582	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East
From	1 - Site Access South	0	131	0	31
	2 - A1173 West	77	0	18	563
	3 - Site Access North	0	25	0	5
	4 - A1173 East	17	1562	3	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East

From	1 - Site Access South	0	9	0	19
	2 - A1173 West	33	0	33	24
	3 - Site Access North	0	12	0	40
	4 - A1173 East	35	8	67	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Site Access South	0.31	9.25	0.5	A
2 - A1173 West	0.41	3.41	0.7	A
3 - Site Access North	0.03	3.49	0.0	A
4 - A1173 East	0.89	16.15	7.5	C

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	122	1191	949	0.128	121	0.1	4.345	A
2 - A1173 West	495	25	1788	0.277	494	0.4	2.776	A
3 - Site Access North	23	504	1234	0.018	23	0.0	2.971	A
4 - A1173 East	1191	77	1990	0.598	1185	1.5	4.441	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	146	1425	789	0.185	145	0.2	5.590	A
2 - A1173 West	592	30	1785	0.331	591	0.5	3.016	A
3 - Site Access North	27	603	1162	0.023	27	0.0	3.170	A
4 - A1173 East	1422	92	1977	0.719	1418	2.5	6.395	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	178	1733	579	0.308	178	0.4	8.959	A
2 - A1173 West	724	37	1780	0.407	724	0.7	3.408	A
3 - Site Access North	33	738	1064	0.031	33	0.0	3.491	A
4 - A1173 East	1742	112	1959	0.889	1724	7.0	14.330	B

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	178	1749	567	0.314	178	0.5	9.251	A
2 - A1173 West	724	37	1779	0.407	724	0.7	3.411	A
3 - Site Access North	33	739	1063	0.031	33	0.0	3.493	A
4 - A1173 East	1742	112	1959	0.889	1740	7.5	16.152	C

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	146	1449	773	0.188	147	0.2	5.752	A
2 - A1173 West	592	31	1784	0.331	592	0.5	3.020	A

3 - Site Access North	27	604	1161	0.023	27	0.0	3.176	A
4 - A1173 East	1422	92	1977	0.719	1442	2.6	6.960	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	122	1201	942	0.129	122	0.1	4.393	A
2 - A1173 West	495	26	1788	0.277	496	0.4	2.787	A
3 - Site Access North	23	506	1233	0.018	23	0.0	2.974	A
4 - A1173 East	1191	77	1990	0.599	1195	1.5	4.558	A

2032 + committed +ABP, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - A1173 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	124.80	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	124.80	F

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	2032 + committed +ABP	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 (Veh/hr)	Scaling Factor (%)
1 - Site Access South		✓	78	100.000
2 - A1173 West		✓	2013	100.000
3 - Site Access North		✓	16	100.000
4 - A1173 East		✓	618	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East
From	1 - Site Access South	0	60	0	18
	2 - A1173 West	128	0	41	1844
	3 - Site Access North	0	12	0	4
	4 - A1173 East	25	589	4	0

Vehicle Mix

Heavy Vehicle Percentages

	To				

		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East
From	1 - Site Access South	0	25	0	50
	2 - A1173 West	8	0	5	13
	3 - Site Access North	0	33	0	50
	4 - A1173 East	12	38	25	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Site Access South	0.09	3.91	0.1	A
2 - A1173 West	1.11	176.64	119.5	F
3 - Site Access North	0.07	14.81	0.1	B
4 - A1173 East	0.44	4.17	0.8	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	59	454	1163	0.050	59	0.1	3.258	A
2 - A1173 West	1515	17	2010	0.754	1504	3.0	6.958	A
3 - Site Access North	12	1486	534	0.023	12	0.0	6.897	A
4 - A1173 East	465	105	1565	0.297	464	0.4	3.266	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	70	543	1097	0.064	70	0.1	3.505	A
2 - A1173 West	1810	20	2007	0.902	1790	7.8	15.412	C
3 - Site Access North	14	1770	377	0.038	14	0.0	9.929	A
4 - A1173 East	556	125	1553	0.358	555	0.6	3.607	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	86	665	1006	0.085	86	0.1	3.910	A
2 - A1173 West	2216	24	2002	1.107	1986	65.4	74.845	F
3 - Site Access North	18	1965	268	0.066	17	0.1	14.351	B
4 - A1173 East	680	139	1543	0.441	680	0.8	4.163	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	86	666	1006	0.085	86	0.1	3.913	A
2 - A1173 West	2216	24	2002	1.107	2000	119.5	172.243	F
3 - Site Access North	18	1979	261	0.068	18	0.1	14.811	B
4 - A1173 East	680	140	1543	0.441	680	0.8	4.174	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	70	545	1096	0.064	70	0.1	3.512	A

2 - A1173 West	1810	20	2007	0.902	1990	74.5	176.638	F
3 - Site Access North	14	1966	269	0.054	14	0.1	14.158	B
4 - A1173 East	556	137	1545	0.360	556	0.6	3.644	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	59	456	1162	0.051	59	0.1	3.263	A
2 - A1173 West	1515	17	2010	0.754	1800	3.3	43.192	E
3 - Site Access North	12	1777	373	0.032	12	0.0	9.970	A
4 - A1173 East	465	124	1553	0.300	466	0.4	3.311	A

2032 + committed + ABP, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - A1173 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	24.07	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	24.07	C

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	2032 + committed + ABP	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 (Veh/hr)	Scaling Factor (%)
1 - Site Access South		✓	162	100.000
2 - A1173 West		✓	721	100.000
3 - Site Access North		✓	30	100.000
4 - A1173 East		✓	1660	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East
From	1 - Site Access South	0	131	0	31
	2 - A1173 West	77	0	18	626
	3 - Site Access North	0	25	0	5
	4 - A1173 East	17	1640	3	0

Vehicle Mix

Heavy Vehicle Percentages

	To				

		1 - Site Access South	2 - A1173 West	3 - Site Access North	4 - A1173 East
From	1 - Site Access South	0	9	0	19
	2 - A1173 West	33	0	33	30
	3 - Site Access North	0	12	0	40
	4 - A1173 East	35	12	67	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Site Access South	0.37	12.08	0.6	B
2 - A1173 West	0.46	3.89	0.9	A
3 - Site Access North	0.03	3.75	0.0	A
4 - A1173 East	0.96	35.81	17.2	E

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	122	1249	883	0.138	121	0.2	4.722	A
2 - A1173 West	543	25	1727	0.314	541	0.5	3.033	A
3 - Site Access North	23	551	1186	0.019	23	0.0	3.094	A
4 - A1173 East	1250	77	1929	0.648	1243	1.8	5.191	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	146	1493	710	0.205	145	0.3	6.369	A
2 - A1173 West	648	30	1723	0.376	648	0.6	3.345	A
3 - Site Access North	27	659	1104	0.024	27	0.0	3.341	A
4 - A1173 East	1492	92	1916	0.779	1486	3.4	8.249	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	178	1794	498	0.358	177	0.5	11.192	B
2 - A1173 West	794	37	1718	0.462	793	0.9	3.886	A
3 - Site Access North	33	807	993	0.033	33	0.0	3.749	A
4 - A1173 East	1828	112	1898	0.963	1785	14.1	25.285	D

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	178	1824	476	0.375	178	0.6	12.079	B
2 - A1173 West	794	37	1718	0.462	794	0.9	3.895	A
3 - Site Access North	33	808	992	0.033	33	0.0	3.752	A
4 - A1173 East	1828	112	1898	0.963	1816	17.2	35.808	E

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	146	1553	668	0.218	147	0.3	6.924	A

2 - A1173 West	648	31	1723	0.376	649	0.6	3.355	A
3 - Site Access North	27	661	1103	0.024	27	0.0	3.346	A
4 - A1173 East	1492	92	1916	0.779	1546	3.7	11.069	B

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site Access South	122	1263	873	0.140	122	0.2	4.802	A
2 - A1173 West	543	26	1726	0.314	543	0.5	3.043	A
3 - Site Access North	23	553	1184	0.019	23	0.0	3.099	A
4 - A1173 East	1250	77	1929	0.648	1257	1.9	5.417	A

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.2.1574

Filename: Model.j10
Path: \\ghdnet\GHD\UK\London MSL\Projects\4091\12579754\12578580\Tech\Modelling\Junction 11 - A180 - A1173 Roundabout
Report generation date: 10/08/2023 16:57:02

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
	2019									
1 - A180 (W)	D1	0.3	2.99	0.21	A	D2	0.1	2.41	0.10	A
2 - A1173		0.4	3.72	0.27	A		1.9	5.98	0.66	A
3 - A180 (E)		0.9	3.12	0.48	A		0.3	2.31	0.24	A
4 - Matthew Ford Way		0.4	3.19	0.28	A		0.1	2.18	0.11	A
	2019 + committed									
1 - A180 (W)	D3	0.7	5.24	0.40	A	D4	0.3	2.93	0.20	A
2 - A1173		0.9	5.16	0.48	A		53.7	99.38	1.04	F
3 - A180 (E)		2.7	6.37	0.73	A		0.6	3.00	0.38	A
4 - Matthew Ford Way		0.9	5.64	0.48	A		0.2	2.56	0.18	A
	2032 + committed									
1 - A180 (W)	D5	0.8	6.03	0.45	A	D6	0.3	3.01	0.22	A
2 - A1173		1.0	5.54	0.51	A		105.4	179.00	1.11	F
3 - A180 (E)		3.6	7.99	0.78	A		0.7	3.13	0.41	A
4 - Matthew Ford Way		1.2	6.75	0.54	A		0.2	2.62	0.19	A
	2032 + committed + ABP									
1 - A180 (W)	D7	1.3	8.07	0.56	A	D8	0.4	3.38	0.27	A
2 - A1173		1.3	6.31	0.56	A		176.8	364.80	1.20	F
3 - A180 (E)		4.1	9.07	0.81	A		0.7	3.27	0.42	A
4 - Matthew Ford Way		1.3	7.54	0.57	A		0.2	2.75	0.20	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	05/07/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	GHDNET\mmaktabi
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	mph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2019	AM	ONE HOUR	06:45	08:15	15
D2	2019	PM	ONE HOUR	15:45	17:15	15
D3	2019 + committed	AM	ONE HOUR	06:45	08:15	15
D4	2019 + committed	PM	ONE HOUR	15:45	17:15	15
D5	2032 + committed	AM	ONE HOUR	06:45	08:15	15
D6	2032 + committed	PM	ONE HOUR	15:45	17:15	15
D7	2032 + committed + ABP	AM	ONE HOUR	06:45	08:15	15
D8	2032 + committed + ABP	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2019, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Junction 11	Standard Roundabout		1, 2, 3, 4	3.24	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.24	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A180 (W)		
2	A1173		
3	A180 (E)		
4	Matthew Ford 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)	Entry only	Exit only
1 - A180 (W)	7.72	8.46	2.7	24.2	100.0	10.0		
2 - A1173	4.34	6.42	31.2	33.8	100.0	8.5		
3 - A180 (E)	6.55	7.41	25.6	44.3	93.0	0.0		
4 - Matthew Ford Way	4.62	8.54	23.5	17.7	93.0	11.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A180 (W)	0.599	2650
2 - A1173	0.513	2008
3 - A180 (E)	0.596	2511
4 - Matthew Ford Way	0.551	2304

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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - A180 (W)		✓	284	100.000
2 - A1173		✓	326	100.000
3 - A180 (E)		✓	948	100.000
4 - Matthew Ford Way		✓	399	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	251	0	33
	2 - A1173	106	0	180	40
	3 - A180 (E)	0	884	0	64
	4 - Matthew Ford Way	84	85	230	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	21	0	14
	2 - A1173	73	0	19	45
	3 - A180 (E)	67	6	0	9
	4 - Matthew Ford Way	3	10	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A180 (W)	0.21	2.99	0.3	A
2 - A1173	0.27	3.72	0.4	A
3 - A180 (E)	0.48	3.12	0.9	A
4 - Matthew Ford Way	0.28	3.19	0.4	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	214	900	1738	0.123	213	0.1	2.361	A
2 - A1173	245	197	1362	0.180	245	0.2	3.220	A
3 - A180 (E)	714	134	2251	0.317	712	0.5	2.335	A
4 - Matthew Ford Way	300	743	1774	0.169	300	0.2	2.440	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service

1 - A180 (W)	255	1077	1645	0.155	255	0.2	2.590	A
2 - A1173	293	236	1348	0.217	293	0.3	3.412	A
3 - A180 (E)	852	161	2228	0.383	852	0.6	2.614	A
4 - Matthew Ford Way	359	889	1686	0.213	358	0.3	2.710	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	313	1319	1518	0.206	312	0.3	2.986	A
2 - A1173	359	289	1328	0.270	359	0.4	3.715	A
3 - A180 (E)	1044	197	2196	0.475	1043	0.9	3.117	A
4 - Matthew Ford Way	439	1089	1567	0.280	439	0.4	3.190	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	313	1320	1517	0.206	313	0.3	2.988	A
2 - A1173	359	290	1327	0.270	359	0.4	3.716	A
3 - A180 (E)	1044	197	2196	0.475	1044	0.9	3.123	A
4 - Matthew Ford Way	439	1090	1566	0.281	439	0.4	3.194	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	255	1079	1644	0.155	256	0.2	2.595	A
2 - A1173	293	237	1348	0.217	293	0.3	3.418	A
3 - A180 (E)	852	161	2228	0.383	853	0.6	2.623	A
4 - Matthew Ford Way	359	891	1685	0.213	359	0.3	2.714	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	214	903	1736	0.123	214	0.1	2.366	A
2 - A1173	245	198	1362	0.180	246	0.2	3.226	A
3 - A180 (E)	714	135	2251	0.317	714	0.5	2.343	A
4 - Matthew Ford Way	300	746	1773	0.169	301	0.2	2.447	A

2019, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Junction 11	Standard Roundabout		1, 2, 3, 4	4.36	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.36	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	2019	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 (Veh/hr)	Scaling Factor (%)
1 - A180 (W)		✓	155	100.000
2 - A1173		✓	1050	100.000
3 - A180 (E)		✓	444	100.000
4 - Matthew Ford Way		✓	192	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	87	0	68
	2 - A1173	228	0	655	167
	3 - A180 (E)	0	216	0	228
	4 - Matthew Ford Way	27	49	116	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	72	0	6
	2 - A1173	23	0	3	8

	3 - A180 (E)	100	11	0	1
	4 - Matthew Ford Way	8	21	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A180 (W)	0.10	2.41	0.1	A
2 - A1173	0.66	5.98	1.9	A
3 - A180 (E)	0.24	2.31	0.3	A
4 - Matthew Ford Way	0.11	2.18	0.1	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	117	286	1725	0.068	116	0.1	2.237	A
2 - A1173	790	138	1789	0.442	787	0.8	3.583	A
3 - A180 (E)	334	347	2156	0.155	334	0.2	1.974	A
4 - Matthew Ford Way	145	333	1953	0.074	144	0.1	1.990	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	139	342	1699	0.082	139	0.1	2.307	A
2 - A1173	944	165	1776	0.531	943	1.1	4.311	A
3 - A180 (E)	399	416	2111	0.189	399	0.2	2.102	A
4 - Matthew Ford Way	173	399	1914	0.090	173	0.1	2.067	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	171	419	1664	0.103	171	0.1	2.409	A
2 - A1173	1156	202	1758	0.658	1153	1.9	5.920	A
3 - A180 (E)	489	509	2051	0.238	489	0.3	2.304	A
4 - Matthew Ford Way	211	488	1860	0.114	211	0.1	2.183	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	171	419	1664	0.103	171	0.1	2.410	A
2 - A1173	1156	203	1758	0.658	1156	1.9	5.976	A
3 - A180 (E)	489	510	2050	0.238	489	0.3	2.305	A
4 - Matthew Ford Way	211	489	1859	0.114	211	0.1	2.184	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	139	343	1699	0.082	139	0.1	2.307	A
2 - A1173	944	166	1776	0.531	947	1.1	4.358	A
3 - A180 (E)	399	417	2110	0.189	399	0.2	2.104	A
4 - Matthew Ford Way	173	400	1913	0.090	173	0.1	2.070	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	117	287	1725	0.068	117	0.1	2.238	A
2 - A1173	790	139	1789	0.442	792	0.8	3.613	A
3 - A180 (E)	334	349	2154	0.155	334	0.2	1.977	A
4 - Matthew Ford Way	145	335	1952	0.074	145	0.1	1.991	A

2019 + committed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Junction 11	Standard Roundabout		1, 2, 3, 4	5.79	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.79	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	2019 + 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 (Veh/hr)	Scaling Factor (%)
1 - A180 (W)		✓	421	100.000
2 - A1173		✓	585	100.000
3 - A180 (E)		✓	1399	100.000
4 - Matthew Ford Way		✓	540	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	375	5	41
	2 - A1173	185	0	342	58
	3 - A180 (E)	0	1318	0	81
	4 - Matthew Ford Way	116	125	299	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	26	100	11
	2 - A1173	69	0	16	34

	3 - A180 (E)	0	6	0	7
	4 - Matthew Ford Way	2	7	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A180 (W)	0.40	5.24	0.7	A
2 - A1173	0.48	5.16	0.9	A
3 - A180 (E)	0.73	6.37	2.7	A
4 - Matthew Ford Way	0.48	5.64	0.9	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	317	1307	1456	0.218	316	0.3	3.154	A
2 - A1173	440	259	1389	0.317	439	0.5	3.782	A
3 - A180 (E)	1053	213	2191	0.481	1050	0.9	3.143	A
4 - Matthew Ford Way	407	1127	1553	0.262	405	0.4	3.132	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	378	1564	1327	0.285	378	0.4	3.789	A
2 - A1173	526	310	1369	0.384	525	0.6	4.265	A
3 - A180 (E)	1258	255	2155	0.584	1256	1.4	3.998	A
4 - Matthew Ford Way	485	1349	1418	0.342	485	0.5	3.855	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	464	1912	1153	0.402	462	0.7	5.199	A
2 - A1173	644	379	1341	0.480	643	0.9	5.145	A
3 - A180 (E)	1540	312	2105	0.732	1535	2.7	6.261	A
4 - Matthew Ford Way	595	1650	1235	0.481	593	0.9	5.590	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	464	1918	1150	0.403	464	0.7	5.245	A
2 - A1173	644	380	1341	0.480	644	0.9	5.164	A
3 - A180 (E)	1540	313	2105	0.732	1540	2.7	6.373	A
4 - Matthew Ford Way	595	1655	1232	0.482	595	0.9	5.643	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	378	1572	1323	0.286	380	0.4	3.818	A
2 - A1173	526	311	1368	0.384	527	0.6	4.286	A
3 - A180 (E)	1258	256	2154	0.584	1263	1.4	4.063	A
4 - Matthew Ford Way	485	1356	1414	0.343	487	0.5	3.892	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	317	1314	1453	0.218	317	0.3	3.171	A
2 - A1173	440	260	1389	0.317	441	0.5	3.801	A
3 - A180 (E)	1053	214	2190	0.481	1055	0.9	3.179	A
4 - Matthew Ford Way	407	1134	1549	0.262	407	0.4	3.153	A

2019 + committed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Junction 11	Standard Roundabout		1, 2, 3, 4	56.40	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	56.40	F

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	2019 + 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 (Veh/hr)	Scaling Factor (%)
1 - A180 (W)		✓	287	100.000
2 - A1173		✓	1623	100.000
3 - A180 (E)		✓	671	100.000
4 - Matthew Ford Way		✓	273	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	180	8	99
	2 - A1173	332	0	1082	209
	3 - A180 (E)	0	376	0	295
	4 - Matthew Ford Way	45	72	156	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	64	94	4
	2 - A1173	26	0	3	8

	3 - A180 (E)	0	9	0	0
	4 - Matthew Ford Way	5	20	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A180 (W)	0.20	2.93	0.3	A
2 - A1173	1.04	99.38	53.7	F
3 - A180 (E)	0.38	3.00	0.6	A
4 - Matthew Ford Way	0.18	2.56	0.2	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	216	454	1638	0.132	215	0.2	2.529	A
2 - A1173	1222	197	1759	0.695	1213	2.2	6.488	A
3 - A180 (E)	505	479	2070	0.244	504	0.3	2.297	A
4 - Matthew Ford Way	206	530	1844	0.111	205	0.1	2.196	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	258	543	1598	0.161	258	0.2	2.686	A
2 - A1173	1459	236	1740	0.839	1449	4.8	11.945	B
3 - A180 (E)	603	572	2008	0.300	603	0.4	2.561	A
4 - Matthew Ford Way	245	634	1781	0.138	245	0.2	2.343	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	316	664	1543	0.205	316	0.3	2.932	A
2 - A1173	1787	289	1714	1.043	1676	32.7	50.254	F
3 - A180 (E)	739	667	1945	0.380	738	0.6	2.980	A
4 - Matthew Ford Way	301	756	1708	0.176	300	0.2	2.557	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	316	665	1543	0.205	316	0.3	2.933	A
2 - A1173	1787	290	1714	1.043	1703	53.7	99.377	F
3 - A180 (E)	739	677	1939	0.381	739	0.6	2.998	A
4 - Matthew Ford Way	301	762	1704	0.176	301	0.2	2.564	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	258	544	1598	0.162	258	0.2	2.689	A
2 - A1173	1459	237	1740	0.839	1649	6.2	56.905	F
3 - A180 (E)	603	639	1963	0.307	604	0.4	2.649	A
4 - Matthew Ford Way	245	676	1754	0.140	246	0.2	2.386	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	216	455	1637	0.132	216	0.2	2.532	A
2 - A1173	1222	198	1759	0.695	1237	2.3	7.097	A
3 - A180 (E)	505	487	2064	0.245	506	0.3	2.310	A
4 - Matthew Ford Way	206	536	1840	0.112	206	0.1	2.203	A

2032 + committed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Junction 11	Standard Roundabout		1, 2, 3, 4	6.90	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.90	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	2032 + 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 (Veh/hr)	Scaling Factor (%)
1 - A180 (W)		✓	448	100.000
2 - A1173		✓	616	100.000
3 - A180 (E)		✓	1489	100.000
4 - Matthew Ford Way		✓	578	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	399	5	44
	2 - A1173	195	0	359	62
	3 - A180 (E)	0	1402	0	87
	4 - Matthew Ford Way	124	133	321	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	26	100	11
	2 - A1173	69	0	16	35

	3 - A180 (E)	0	6	0	7
	4 - Matthew Ford Way	2	8	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A180 (W)	0.45	6.03	0.8	A
2 - A1173	0.51	5.54	1.0	A
3 - A180 (E)	0.78	7.99	3.6	A
4 - Matthew Ford Way	0.54	6.75	1.2	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	337	1392	1417	0.238	336	0.3	3.327	A
2 - A1173	464	278	1379	0.336	462	0.5	3.916	A
3 - A180 (E)	1121	226	2180	0.514	1117	1.1	3.374	A
4 - Matthew Ford Way	435	1198	1510	0.288	434	0.4	3.342	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	403	1666	1280	0.315	402	0.5	4.099	A
2 - A1173	554	332	1357	0.408	553	0.7	4.471	A
3 - A180 (E)	1339	270	2142	0.625	1336	1.6	4.455	A
4 - Matthew Ford Way	520	1433	1367	0.380	519	0.6	4.241	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	493	2035	1094	0.451	492	0.8	5.962	A
2 - A1173	678	406	1328	0.511	677	1.0	5.514	A
3 - A180 (E)	1639	331	2089	0.785	1632	3.5	7.745	A
4 - Matthew Ford Way	636	1751	1174	0.542	634	1.2	6.643	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	493	2043	1090	0.453	493	0.8	6.032	A
2 - A1173	678	407	1328	0.511	678	1.0	5.542	A
3 - A180 (E)	1639	331	2089	0.785	1639	3.6	7.993	A
4 - Matthew Ford Way	636	1758	1170	0.544	636	1.2	6.748	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	403	1677	1274	0.316	404	0.5	4.147	A
2 - A1173	554	334	1357	0.408	555	0.7	4.500	A
3 - A180 (E)	1339	271	2141	0.625	1346	1.7	4.573	A
4 - Matthew Ford Way	520	1443	1361	0.382	522	0.6	4.304	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	337	1400	1413	0.239	338	0.3	3.349	A
2 - A1173	464	279	1378	0.336	464	0.5	3.943	A
3 - A180 (E)	1121	227	2179	0.514	1123	1.1	3.419	A
4 - Matthew Ford Way	435	1205	1505	0.289	436	0.4	3.368	A

2032 + committed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Junction 11	Standard Roundabout		1, 2, 3, 4	100.65	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	100.65	F

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	2032 + 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 (Veh/hr)	Scaling Factor (%)
1 - A180 (W)		✓	301	100.000
2 - A1173		✓	1718	100.000
3 - A180 (E)		✓	712	100.000
4 - Matthew Ford Way		✓	290	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	188	8	105
	2 - A1173	353	0	1141	224
	3 - A180 (E)	0	396	0	316
	4 - Matthew Ford Way	47	76	167	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	64	94	4
	2 - A1173	26	0	3	8

	3 - A180 (E)	0	9	0	1
	4 - Matthew Ford Way	5	20	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A180 (W)	0.22	3.01	0.3	A
2 - A1173	1.11	179.00	105.4	F
3 - A180 (E)	0.41	3.13	0.7	A
4 - Matthew Ford Way	0.19	2.62	0.2	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	227	480	1627	0.139	226	0.2	2.568	A
2 - A1173	1293	210	1752	0.738	1282	2.7	7.497	A
3 - A180 (E)	536	510	2049	0.262	535	0.4	2.374	A
4 - Matthew Ford Way	218	561	1826	0.120	218	0.1	2.239	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	271	574	1584	0.171	270	0.2	2.739	A
2 - A1173	1544	252	1732	0.892	1527	7.1	16.323	C
3 - A180 (E)	640	607	1985	0.322	640	0.5	2.676	A
4 - Matthew Ford Way	261	670	1760	0.148	261	0.2	2.401	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	331	703	1526	0.217	331	0.3	3.012	A
2 - A1173	1892	308	1704	1.110	1688	58.0	78.661	F
3 - A180 (E)	784	682	1936	0.405	783	0.7	3.121	A
4 - Matthew Ford Way	319	782	1693	0.189	319	0.2	2.620	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	331	704	1526	0.217	331	0.3	3.012	A
2 - A1173	1892	308	1704	1.110	1702	105.4	178.997	F
3 - A180 (E)	784	687	1933	0.406	784	0.7	3.132	A
4 - Matthew Ford Way	319	786	1691	0.189	319	0.2	2.624	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	271	575	1584	0.171	271	0.2	2.743	A
2 - A1173	1544	252	1732	0.892	1716	62.7	177.689	F
3 - A180 (E)	640	671	1942	0.330	641	0.5	2.769	A
4 - Matthew Ford Way	261	709	1734	0.150	261	0.2	2.445	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	227	481	1626	0.139	227	0.2	2.574	A
2 - A1173	1293	211	1752	0.738	1532	3.0	37.583	E
3 - A180 (E)	536	594	1993	0.269	537	0.4	2.474	A
4 - Matthew Ford Way	218	613	1791	0.122	218	0.1	2.290	A

2032 + committed + ABP, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Junction 11	Standard Roundabout		1, 2, 3, 4	7.98	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.98	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)
D7	2032 + committed + ABP	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 (Veh/hr)	Scaling Factor (%)
1 - A180 (W)		✓	519	100.000
2 - A1173		✓	664	100.000
3 - A180 (E)		✓	1493	100.000
4 - Matthew Ford Way		✓	581	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	470	5	44
	2 - A1173	238	0	362	64
	3 - A180 (E)	0	1406	0	87
	4 - Matthew Ford Way	124	136	321	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
	1 - A180 (W)	0	35	100	11

From	2 - A1173	71	0	16	36
	3 - A180 (E)	0	6	0	7
	4 - Matthew Ford Way	2	10	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A180 (W)	0.56	8.07	1.3	A
2 - A1173	0.56	6.31	1.3	A
3 - A180 (E)	0.81	9.07	4.1	A
4 - Matthew Ford Way	0.57	7.54	1.3	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	391	1397	1326	0.295	389	0.4	3.837	A
2 - A1173	500	277	1352	0.370	498	0.6	4.204	A
3 - A180 (E)	1124	259	2147	0.524	1120	1.1	3.492	A
4 - Matthew Ford Way	437	1233	1470	0.298	436	0.4	3.473	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	467	1672	1196	0.390	466	0.6	4.923	A
2 - A1173	597	332	1331	0.449	596	0.8	4.894	A
3 - A180 (E)	1342	311	2101	0.639	1340	1.7	4.710	A
4 - Matthew Ford Way	522	1475	1322	0.395	521	0.6	4.494	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	571	2041	1022	0.559	569	1.2	7.910	A
2 - A1173	731	406	1302	0.562	729	1.3	6.265	A
3 - A180 (E)	1644	380	2040	0.806	1635	4.0	8.703	A
4 - Matthew Ford Way	640	1801	1122	0.570	637	1.3	7.387	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	571	2051	1017	0.562	571	1.3	8.074	A
2 - A1173	731	407	1301	0.562	731	1.3	6.311	A
3 - A180 (E)	1644	381	2039	0.806	1643	4.1	9.074	A
4 - Matthew Ford Way	640	1810	1117	0.573	640	1.3	7.542	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	467	1685	1189	0.392	469	0.7	5.013	A
2 - A1173	597	334	1330	0.449	599	0.8	4.938	A
3 - A180 (E)	1342	312	2100	0.639	1351	1.8	4.863	A

4 - Matthew Ford Way	522	1487	1315	0.397	525	0.7	4.575	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	391	1406	1321	0.296	392	0.4	3.877	A
2 - A1173	500	279	1351	0.370	501	0.6	4.238	A
3 - A180 (E)	1124	261	2145	0.524	1127	1.1	3.543	A
4 - Matthew Ford Way	437	1241	1465	0.298	438	0.4	3.510	A

2032 + committed + ABP, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - A1173 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Junction 11	Standard Roundabout		1, 2, 3, 4	203.94	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	203.94	F

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	2032 + committed + ABP	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 (Veh/hr)	Scaling Factor (%)
1 - A180 (W)		✓	358	100.000
2 - A1173		✓	1797	100.000
3 - A180 (E)		✓	716	100.000
4 - Matthew Ford Way		✓	293	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
From	1 - A180 (W)	0	245	8	105
	2 - A1173	424	0	1145	228
	3 - A180 (E)	0	400	0	316
	4 - Matthew Ford Way	47	79	167	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A180 (W)	2 - A1173	3 - A180 (E)	4 - Matthew Ford Way
	1 - A180 (W)	0	68	94	4

From	2 - A1173	36	0	3	9
	3 - A180 (E)	0	9	0	1
	4 - Matthew Ford Way	5	22	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A180 (W)	0.27	3.38	0.4	A
2 - A1173	1.20	364.80	176.8	F
3 - A180 (E)	0.42	3.27	0.7	A
4 - Matthew Ford Way	0.20	2.75	0.2	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	270	485	1557	0.173	269	0.2	2.792	A
2 - A1173	1353	210	1702	0.795	1338	3.7	9.550	A
3 - A180 (E)	539	564	1992	0.271	538	0.4	2.473	A
4 - Matthew Ford Way	221	616	1761	0.125	220	0.1	2.336	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	322	580	1516	0.212	322	0.3	3.013	A
2 - A1173	1615	252	1682	0.961	1577	13.4	27.419	D
3 - A180 (E)	644	666	1921	0.335	643	0.5	2.816	A
4 - Matthew Ford Way	263	731	1688	0.156	263	0.2	2.526	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	394	711	1460	0.270	394	0.4	3.377	A
2 - A1173	1979	308	1655	1.196	1649	95.6	127.056	F
3 - A180 (E)	788	714	1889	0.417	787	0.7	3.266	A
4 - Matthew Ford Way	323	829	1631	0.198	322	0.2	2.750	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	394	711	1459	0.270	394	0.4	3.378	A
2 - A1173	1979	308	1654	1.196	1654	176.8	300.555	F
3 - A180 (E)	788	716	1888	0.418	788	0.7	3.272	A
4 - Matthew Ford Way	323	831	1630	0.198	323	0.2	2.752	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	322	581	1516	0.212	322	0.3	3.019	A
2 - A1173	1615	252	1682	0.961	1672	162.7	364.799	F
3 - A180 (E)	644	701	1896	0.340	644	0.5	2.880	A

4 - Matthew Ford Way	263	755	1672	0.158	264	0.2	2.557	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A180 (W)	270	487	1557	0.173	270	0.2	2.799	A
2 - A1173	1353	211	1701	0.795	1691	78.1	257.832	F
3 - A180 (E)	539	693	1900	0.284	540	0.4	2.646	A
4 - Matthew Ford Way	221	700	1702	0.130	221	0.1	2.430	A