

local transport projects 

traffic engineering and transport planning

North Lincolnshire Council

AI077 Corridor Improvements

Technical Note

May 2021

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AI077 Corridor Improvements Technical Note

May 2021

Client Commission

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LTP PROJECT TEAM

As part of our commitment to quality the following team of transport professionals was assembled specifically for the delivery of this project. Relevant qualifications are shown and CVs are available upon request to demonstrate our experience and credentials.

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AI077 CORRIDOR IMPROVEMENTS

TECHNICAL NOTE

CONTENTS

1.	INTRODUCTION	2
1.1	Background	2
2.	PROPOSED RESIDENTIAL ALLOCATIONS.....	3
2.1	Introduction	3
2.2	NLC Residential Land Allocations	3
2.3	Residential Allocation Sites Vehicle Trip Generation	3
3.	A1077 CORRIDOR ASSESSMENT	4
3.1	Introduction	4
3.2	Trip Distribution & Assignment.....	4
3.3	Assessment Scenarios.....	4
3.4	A1077/Holydyke/Hungate Mini-Roundabout - Existing Layout	5
3.5	A1077/Holydyke/Hungate Junction Improvement Scheme	6
3.6	Sensitivity Test	8
3.7	A1077/Falkland Way Junction (Existing Layout)	9
3.8	A1077/Falkland Way Junction Improvement Scheme	10
3.9	Summary.....	11
4.	REFERENCES	13

TABLES

Table 1: NLC Proposed Residential Land Allocations (Likely Build-Out)	3
Table 2: Residential Allocation Sites Vehicle Trip Generation	3
Table 3: A1077/Holydyke/Hungate Mini Roundabout Modelling Results.....	6
Table 4: Signalised Junction Modelling Results.....	8
Table 5: Sensitivity Test.....	8
Table 6: A1077/Falkland Way Junction Modelling Results	10
Table 7: A1077/Falkland Way Improvement Scheme Modelling Results	10

FIGURES

Figure 1: A1077/Holydyke/Hungate Mini-Roundabout.....	5
Figure 2: Potential Signalised Junction Option.....	7
Figure 3: A1077/Falkland Way Junction.....	9

I. INTRODUCTION

I.1 Background

- 1.1.1 Local Transport Projects Ltd has been commissioned by North Lincolnshire Council (NLC) to undertake assessment work and produce this Technical Note that considers potential corridor improvements on the A1077 to support proposed residential development aspirations. The work that has informed this Technical Note follows on from a number of previous commissions, including the Barton Link Road Technical Note (LTP, 2021), Barton Highways Masterplan (LTP, 2018), Barton Link Road Preliminary Design Layout Briefing Note (LTP, 2020a) and Barton Southern Access Road, North Lincolnshire Feasibility Design Assessment Summary Note (LTP, 2020b).
- 1.1.2 This Technical Note provides details of the proposed residential allocations to be promoted within an updated North Lincolnshire Local Plan and provides the results of the requested traffic assessments associated with the potential A1077 corridor improvements.

2. PROPOSED RESIDENTIAL ALLOCATIONS

2.1 Introduction

2.1.1 This section of the Technical Note provides details of the proposed residential allocations to be promoted within the refreshed North Lincolnshire Local Plan and the expected build-out period of the proposed sites.

2.2 NLC Residential Land Allocations

2.2.1 It is understood that NLC is in the process of refreshing the North Lincolnshire Local Plan and therefore the proposed residential sites to be put forward for allocation have been considered within this Technical Note. Full details of the proposed residential land allocations and the likely build-out period has been provided by NLC and is outlined in Table 1 below.

Table 1: NLC Proposed Residential Land Allocations (Likely Build-Out)

Emerging Local Plan Ref	Description	No. of Dwellings	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
H1C-29	Land to the rear of 13-19 Pasture Road	16	0	10	6	0	0	0	0	0	0	0	0
H1C-30	Coach and Horses Inn 86 - 88 High Street	18	0	0	8	10	0	0	0	0	0	0	0
H1C-31	7a, Marsh Lane	5	4	1	0	0	0	0	0	0	0	0	0
H1C-32	Bank House, 8 Holydyke	5	0	0	0	5	0	0	0	0	0	0	0
H1P-10	Pasture Road South	350	31	30	30	30	30	30	30	30	30	40	39
Total		394	35	41	44	45	30	30	30	30	30	40	39

2.2.2 Table 1 shows that a total of 394 dwellings are to be promoted within the refreshed North Lincolnshire Local Plan, with the proposed allocation sites expected to be fully built-out by 2030/2031.

2.3 Residential Allocation Sites Vehicle Trip Generation

2.3.1 The vehicle trip generation potential of the proposed residential sites to be promoted as part of the refreshed North Lincolnshire Local Plan is outlined in Table 2 which have been obtained from the industry-standard TRICS database.

Table 2: Residential Allocation Sites Vehicle Trip Generation

Residential Sites	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Land to the rear of 13-19 Pasture Road (16 dwellings)	3	7	10	5	3	8
Coach and Horses Inn 86 - 88 High Street (18 dwellings)	3	6	9	7	4	11
7a, Marsh Lane (5 dwellings)	1	2	3	2	1	3
Bank House, 8 Holydyke (5 dwellings)	1	2	3	2	1	3
Pasture Road South (350 dwellings)	45	125	170	119	56	175
Overall Development (394 dwellings)	53	142	195	135	65	200

2.3.2 Table 2 shows that the proposed residential site allocations could be expected to generate up to 195 two-way vehicle trips in the AM peak hour (08:00-09:00) and 200 in the PM peak hour (17:00-18:00).

3. A1077 CORRIDOR ASSESSMENT

3.1 Introduction

- 3.1.1 A future year assessment considering the future housing allocations within Barton has been undertaken, including potential highway improvements at the A1077/Holydyke/Hungate mini-roundabout. An assessment of a priority-controlled roundabout in the location of the existing A1077/Falkland Way junction has also been considered.

3.2 Trip Distribution & Assignment

- 3.2.1 The likely distribution of vehicle trips associated with the proposed residential sites to be promoted within the refreshed North Lincolnshire Local Plan has been predicted utilising a gravity model based upon commuting patterns of existing residents within the 'North Lincolnshire 001' Middle-Layer Super Output Area (MSOA). 'Location of usual residence and place of work by method of travel to work' data from the 2011 National Census (ONS, 2014) indicates the proportion of local residents travelling to each workplace destination (MSOAs and local authority districts) by mode of travel.
- 3.2.2 This trip distribution data has been combined with an assessment of route choice (traffic assignment) to determine the likely distribution of development traffic across the highway network. The predicted traffic assignment has been undertaken utilising journey planning tools to help determine the relative attractiveness of alternative routes, with consideration of influences such as the location and size of settlements and employment areas within each workplace destination and known existing traffic conditions on the relevant routes.

3.3 Assessment Scenarios

- 3.3.1 In order to establish the impact of the residential development sites on the A1077 corridor, including the operation of the existing A1077/Holydyke/Hungate mini-roundabout, a number of assessments have been undertaken. The junctions have been assessed against an assessment year of 2031 when the sites are expected to be fully built-out. The key A1077 corridor junctions have been tested against the following weekday AM and PM peak hour traffic flow scenarios:
- **2021 Base:** Traffic flows recorded and observed during the June 2019 traffic surveys, growthed to a base year of 2021 in order to provide a consistent baseline; and
 - **2031 With Residential Allocation Sites:** '2021 Base' traffic flows, growthed to 2031 with the addition of traffic associated with the Wren Kitchens extension and the traffic associated with the proposed residential sites to be promoted in the refreshed North Lincolnshire Local Plan.
- 3.3.2 The traffic flows at 2021 and 2031 have been predicted using the DfT's 'National Traffic Model' (NTM) and 'Road Traffic Forecasts' (RTFs). The growth factor obtained from the NTM has been adjusted to reflect local circumstances from the local Middle-Layer Super Output Area (MSOA) 'North Lincolnshire 001', using TEMPro (v7.2b) software (Ref: Yorkshire & Humber Dataset Version 7.2).

- 3.3.3 In accordance with the DfT's 'Transport Analysis Guidance' (TAG) (DfT, 2019), the underlying NTEM growth includes for households and jobs have also been adjusted to reflect the local development traffic that has been explicitly incorporated into the traffic projections of this Technical Note, in order to avoid double-counting the associated traffic flows.

3.4 A1077/Holydyke/Hungate Mini-Roundabout - Existing Layout

- 3.4.1 For consistency, a junction model that was previously utilised to inform the Barton Link Road Technical Note (LTP, 2021) has been used as part of this Technical Note. The junction capacity assessment has been undertaken using Junctions 9 modelling software (ARCADY module), which is a software package produced by Transport Research Laboratory (TRL) that provides an industry-standard method for assessing capacity, queuing and delay at priority junctions and roundabouts. An aerial image of the A1077/Holydyke/Hungate mini-roundabout can be seen in Figure 1.

Figure 1: A1077/Holydyke/Hungate Mini-Roundabout



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- 3.4.2 The geometric input parameters used to create the Junctions 9 model have been based on a combination of measurements obtained from scaled Ordnance Survey plans and scaled aerial imagery, verified on-site. The baseline and future peak hour traffic flows have been assessed against the existing junction layout, the results of which are summarised in Table 3 and the complete modelling output in Appendix 1.
- 3.4.3 The peak hour traffic flows have been assessed against the existing junction layout, the results of which are summarised in Table 3 and the complete modelling output in Appendix 1.

Table 3: A1077/Holydyke/Hungate Mini Roundabout Modelling Results

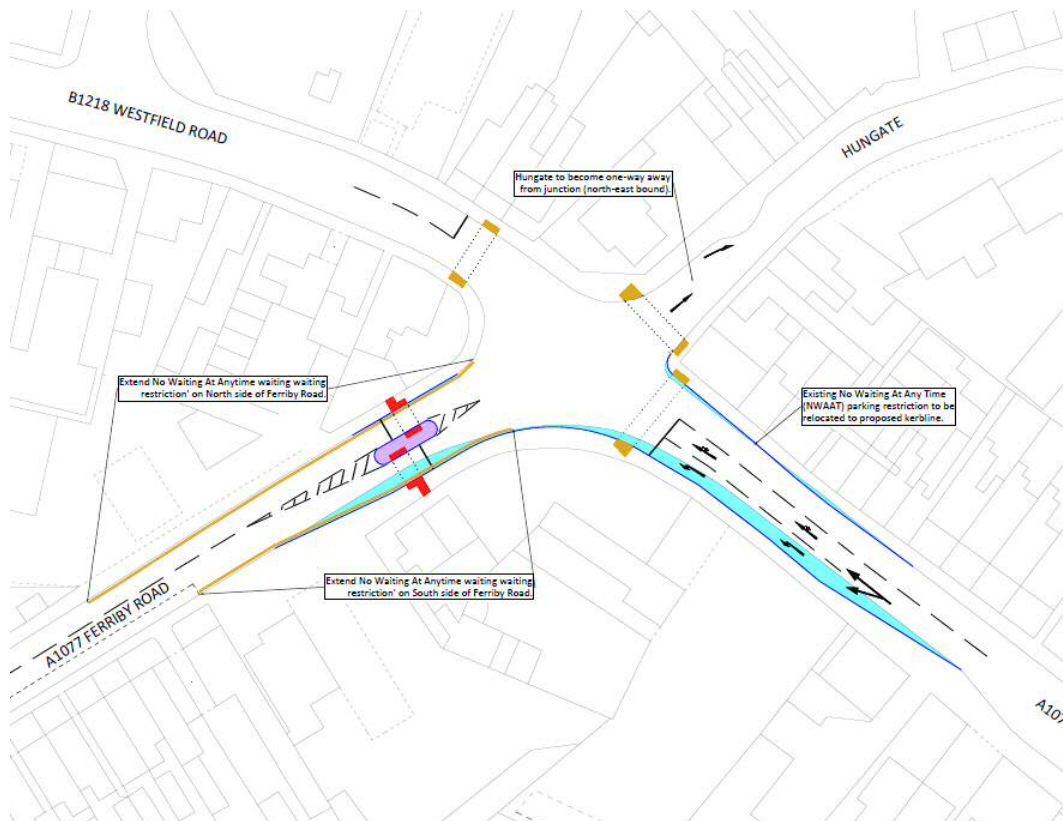
Arm	2021 Base		2031 With Residential Site Allocations	
	Max. RFC	Max End Q	Max. RFC	Max End Q
AM Peak (07:45-08:45)				
B1218 (Holydyke)	39.5%	0.7	43.0%	0.8
Hungate	31.1%	0.5	37.7%	0.6
A1077 (Holydyke)	61.6%	1.6	70.3%	2.4
A1077 (Ferriby Road)	71.2%	2.5	76.3%	3.2
OVERALL	71.2%	2.5	76.3%	3.2
PM Peak (17:00-18:00)				
B1218 (Holydyke)	47.7%	0.9	50.6%	1.0
Hungate	53.4%	1.1	61.9%	1.5
A1077 (Holydyke)	70.6%	2.4	76.1%	3.1
A1077 (Ferriby Road)	98.8%	18.6	108.0%	48.1
OVERALL	98.8%	18.6	108.0%	48.1

- 3.4.4 The capacity assessment results shown in Table 3 indicate that the existing mini-roundabout would be expected to operate considerably over capacity in the PM peak hour in 2031 with the proposed residential site allocations fully built-out and therefore it is likely that a highway improvement scheme would be required in order to accommodate the future traffic flows on the A1077 corridor.
- 3.4.5 The modelling results indicate that the maximum Ratio of Flow to Capacity (RFC) during the peak hours is likely to be 108% (PM peak), which is above the 100% RFC level of full capacity.
- 3.4.6 Furthermore, as part of the Wren Kitchens extension planning approval, a S106 contribution of £250,000 has been secured towards A1077 corridor improvements, including the potential for capacity improvements at the mini-roundabout which could include replacing the mini-roundabout with a traffic signal junction. It should also be noted as part of the planning application (ref: PA/2020/1628), which is yet to be determined for Phases 5 & 6 of residential development on land to the south of Pasture Road, NLC Highways has also requested a contribution of £100,000 towards highway improvements on the A1077 corridor.

3.5 A1077/Holydyke/Hungate Junction Improvement Scheme

- 3.5.1 A potential improvement scheme at the A1077/Holydyke/Hungate junction would see the introduction of a signalised junction. As part of the scheme, Hungate would form a one-way egress. Figure 2 provides an outline feasibility design for the proposed signalised junction with the drawing (ref: LTP/3628/P3/01.01) attached as Appendix 2.

Figure 2: Potential Signalised Junction Option



Source: LTP, 2021

- 3.5.2 In order to assess the ability of the proposed signalised junction option to accommodate the baseline and future year traffic flows, a junction capacity assessment has been undertaken using the industry-standard LinSig v3, a design and assessment tool for traffic signal junctions. The geometric input parameters for the model have been based on the feasibility drawing attached as Appendix 2.
- 3.5.3 A total of three stages will be in operation at the junction during the AM and PM peak hours and it has been assumed that all stages are called every cycle with an assumed cycle time of 120 seconds. The stages are as follows:
- Stage 1: A1077 (Ferriby Road) & A1077 (Holydyke);
 - Stage 2: A1077 (Holydyke) & Pedestrians across A1077 (Ferriby Road); and
 - Stage 3: Holydyke & Internal A1077 (Ferriby Road) Link.
- 3.5.4 The baseline and future peak hour traffic flows have been assessed against the proposed junction layout, the results of which are summarised in Table 4 and the complete modelling output is provided in Appendix 3.

Table 4: Signalised Junction Modelling Results

Movement From	2021 Base		2031 With Residential Site Allocations	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
AM PEAK				
A1077 (W)	62.6%	15.0	67.0%	16.7
Holydyke	62.9%	10.9	65.2%	11.4
A1077 (E)	61.4%	8.1	62.6%	11.1
A1077 (W) Internal	38.3%	2.2	45.4%	2.9
PRC	+43.2%		+34.3%	
PM PEAK				
A1077 (W)	80.3%	23.9	85.0%	27.4
Holydyke	77.8%	13.7	86.2%	15.7
A1077 (E)	75.7%	10.8	77.0%	11.5
A1077 (W) Internal	44.3%	2.7	47.4%	2.9
PRC	+12.1%		+4.4%	

3.5.5 The Degree of Saturation (DoS) quoted within Table 4 is a ratio of the demand to capacity on each approach to the junction, with a value of 100% meaning that demand and capacity are equal. The Mean Max Queue (MMQ) is a measurement of the average maximum queue likely to occur across all cycles of the modelled scenario.

3.5.6 The results of the capacity assessments presented in Table 4 indicate that the signalised junction would be expected to operate with levels of reserve capacity in both peak hours with the proposed residential site allocations coming forward by 2031 (397 dwellings).

3.6 Sensitivity Test

3.6.1 A sensitivity test has been undertaken to understand the level of additional dwellings that could potentially be delivered without the proposed signalised junction option operating above capacity with the results of which summarised in Table 5 and the complete modelling output is provided in Appendix 3.

Table 5: Sensitivity Test

Movement From	DoS (%)	MMQ (PCU)
AM PEAK		
A1077 (W)	70.6%	18.7
Holydyke	71.5%	12.4
A1077 (E)	69.6%	14.5
A1077 (W) Internal	52.0%	3.5
PRC	+25.9%	
PM PEAK		
A1077 (W)	89.6%	31.7
Holydyke	89.4%	16.7
A1077 (E)	79.9%	12.8
A1077 (W) Internal	50.0%	3.3
PRC	+0.5%	

- 3.6.2 Based on the results of the sensitivity test, a further 190 dwellings (587 dwellings in total) could be provided in Barton before the potential A1077/Holydyke/Hungate signalised junction operates at its theoretical capacity during the PM peak hour.

3.7 A1077/Falkland Way Junction (Existing Layout)

- 3.7.1 A junction capacity assessment of the existing A1077/Falkland Way junction has been undertaken using Junctions 9 modelling software (PICADY module). An aerial image of the existing A1077/Falkland Way priority T-junction can be seen in Figure 3.

Figure 3: A1077/Falkland Way Junction



Source Imagery: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

- 3.7.2 For consistency, the measurements have been based on those utilised within the junction model used as part of the Transport Assessment (BSP, 2020) submitted in support of the planning application (ref: PA/2020/1628 for Phases 5 & 6 of residential development on land to the south of Pasture Road, which is yet to be determined, although the model used for the planning application had non-blocking storage of 1 PCU and the model produced for this Technical Note has the non-blocking storage set at 0 PCU.
- 3.7.3 The baseline and future peak hour traffic flows have been assessed against the existing junction layout, the results of which are summarised in Table 6 and the complete modelling output in Appendix 4.

Table 6: A1077/Falkland Way Junction Modelling Results

Traffic Stream	2021 Base		2031 With Residential Site Allocations	
	Max. RFC	Max End Q	Max. RFC	Max End Q
AM Peak (07:45-08:45)				
Falkland Way Left Turn (B-C)	10.1%	0.1	21.0%	0.3
Falkland Way Right Turn (B-A)	34.1%	0.6	51.3%	1.2
A1077 (E) (C-AB)	33.0%	0.8	39.1%	1.0
OVERALL	34.1%	0.6	51.3%	1.2
PM Peak (17:00-18:00)				
Falkland Way Left Turn (B-C)	39.1%	0.6	96.6%	6.3
Falkland Way Right Turn (B-A)	76.9%	3.1	95.3%	9.2
A1077 (E) (C-AB)	22.2%	0.4	36.8%	0.9
OVERALL	76.9%	3.1	96.6%	6.3

- 3.7.4 The capacity assessment results shown in Table 6 indicate that the existing A1077/Falkland Way priority junction would be expected to operate over capacity in the PM peak hour in 2031 with the proposed residential site allocations fully built-out and therefore it is likely that a highway improvement scheme would be required in order to accommodate the future traffic flows on the A1077 corridor.
- 3.7.5 Furthermore, it is understood that NLC would like to introduce a new priority-controlled roundabout to replace the existing A1077/Falkland Way priority T-junction which would also allow the opportunity to create a fourth arm to unlock further development land to facilitate additional residential development.

3.8 A1077/Falkland Way Junction Improvement Scheme

- 3.8.1 A potential improvement scheme at the A1077/Falkland Way junction would see the introduction of a four-arm priority-controlled roundabout. The future year peak hour traffic flows have been assessed against the proposed junction layout, the results of which are summarised in Table 7 and the complete modelling output in Appendix 5.

Table 7: A1077/Falkland Way Improvement Scheme Modelling Results

Arm	2031 With Residential Site Allocations		Sensitivity Test	
	Max. RFC	Max End Q	Max. RFC	Max End Q
AM Peak (07:45-08:45)				
Falkland Way	17.9%	0.2	25.2%	0.4
A1077 (E)	32.6%	0.5	34.9%	0.6
Future Development Access	-	-	4.1%	0.0
A1077 (W)	39.9%	0.7	45.0%	0.9
OVERALL	39.9%	0.7	45.0%	0.9
PM Peak (17:00-18:00)				
Falkland Way	31.6%	0.5	32.7%	0.5
A1077 (E)	30.5%	0.5	34.5%	0.6
Future Development Access	-	-	1.9%	0.0

Arm	2031 With Residential Site Allocations		Sensitivity Test	
	Max. RFC	Max End Q	Max. RFC	Max End Q
A1077 (W)	42.9%	0.8	46.4%	0.9
OVERALL	42.9%	0.8	46.4%	0.9

- 3.8.2 The capacity assessment results shown in Table 7 indicate that the proposed roundabout would be expected to operate within capacity in 2031 with the proposed residential site allocations fully built-out. As mentioned previously, the sensitivity test considers a further 190 dwellings above the 394 dwellings proposed (584 dwellings in total) to be allocated within the refreshed local plan, with the additional dwellings served via the fourth arm of the roundabout and demonstrates that the roundabout would be expected to operate within capacity during both peak hours.

3.9 Summary

- 3.9.1 The assessments presented in this Technical Note demonstrate that the existing mini-roundabout would be expected to operate considerably over capacity during the PM peak in 2031 with the residential allocations fully built-out. A junction improvement option in the form of a signalised junction has been considered at the A1077/Holydyke/Hungate junction with the results indicating that the signalised junction would be expected to operate with levels of reserve capacity in both peak hours.
- 3.9.2 A sensitivity test has also been undertaken to understand the level of additional dwellings that could potentially be delivered without the proposed signalised junction option operating above capacity. Based on the results of the sensitivity test, a further 190 dwellings (587 dwellings in total) could be provided in Barton before the potential A1077/Holydyke/Hungate signalised junction operates at its theoretical capacity during the PM peak hour.
- 3.9.3 Furthermore, as part of the Wren Kitchens extension planning approval, a S106 contribution of £250,000 has been secured towards A1077 corridor improvements, including the potential for capacity improvements at the mini-roundabout which could include replacing the mini-roundabout with a traffic signal junction. It should also be noted as part of the planning application (ref: PA/2020/1628), which is yet to be determined for Phases 5 & 6 of residential development on land to the south of Pasture Road, NLC Highways has also requested a contribution of £100,000 towards highway improvements on the A1077 corridor.

-
- 3.9.4 The A1077/Falkland Way junction is also a key junction on the A1077 corridor. The capacity assessments undertaken in this Technical Note demonstrate that the existing priority T-junction would be expected to operate over capacity during the PM peak in 2031 with the residential allocations fully built-out. A junction improvement option in the form of a four-arm priority-controlled roundabout has been considered, with the results indicating that the roundabout would be expected to operate with levels of reserve capacity in both peak hours. A sensitivity test that considers a further 190 dwellings above the 394 dwellings proposed (584 dwellings in total) to be allocated within the refreshed local plan served via the fourth arm of the proposed junction improvement scheme demonstrates that the roundabout would be expected to operate within capacity during both peak hours.

4. REFERENCES

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Appendix I – Existing Junction Modelling

Junctions 9										
ARCADY 9 - Roundabout Module										
Version: 9.5.1.7462										
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Filename: A1077 Holydyke Hungate Mini-Roundabout Existing.j9
Path: Z:\Projects\3628 Barton Link Road\Data\Junction Capacity Modelling
Report generation date: 05/05/2021 16:53:13

- »Existing Layout - 2021 Base, AM
- »Existing Layout - 2021 Base, PM
- »Existing Layout - 2031 With Residential Site Allocations, AM
- »Existing Layout - 2031 With Residential Site Allocations, PM
- »Existing Layout - Sensitivity Test, AM
- »Existing Layout - Sensitivity Test, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Existing Layout - 2021 Base									
1 - B1218 (Holydyke)	D1	0.7	7.09	0.39	A	D2	0.9	8.77	0.48	A
2 - Hungate		0.5	16.79	0.31	C		1.1	31.01	0.53	D
3 - A1077 (Holydyke)		1.6	10.15	0.62	B		2.4	13.21	0.71	B
4 - A1077 (Ferriby Road)		2.5	13.99	0.71	B		18.6	76.02	0.99	F
	Existing Layout - 2031 With Residential Site Allocations									
1 - B1218 (Holydyke)	D3	0.8	7.75	0.43	A	D4	1.0	9.48	0.51	A
2 - Hungate		0.6	20.62	0.38	C		1.5	41.47	0.62	E
3 - A1077 (Holydyke)		2.4	13.29	0.70	B		3.1	16.37	0.76	C
4 - A1077 (Ferriby Road)		3.2	16.96	0.76	C		48.1	163.09	1.08	F
	Existing Layout - Sensitivity Test									
1 - B1218 (Holydyke)	D5	0.9	8.83	0.47	A	D6	1.1	9.82	0.52	A
2 - Hungate		0.9	29.61	0.48	D		1.8	50.70	0.67	F
3 - A1077 (Holydyke)		5.0	24.34	0.84	C		4.3	21.35	0.82	C
4 - A1077 (Ferriby Road)		5.1	24.96	0.84	C		83.4	303.28	1.16	F

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	A1077 Holydyke Hungate Mini-Roundabout
Location	Barton, North Lincolnshire
Site number	
Date	29/01/2021
Version	
Status	
Identifier	
Client	North Lincolnshire Council
Jobnumber	3628
Enumerator	LTP\MR
Description	

Units

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

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
JUNCTIONS 9	5.75				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)	Run automatically
D1	2021 Base	AM	ONE HOUR	07:30	09:00	15	✓
D2	2021 Base	PM	ONE HOUR	16:45	18:15	15	✓
D3	2031 With Residential Site Allocations	AM	ONE HOUR	07:30	09:00	15	✓
D4	2031 With Residential Site Allocations	PM	ONE HOUR	16:45	18:15	15	✓
D5	Sensitivity Test	AM	ONE HOUR	07:30	09:00	15	✓
D6	Sensitivity Test	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

Existing Layout - 2021 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 3 and 4 have 74% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1077 Holydyke Hungate	Mini-roundabout		1, 2, 3, 4	11.43	B

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Arm	Name	Description
1	B1218 (Holydyke)	
2	Hungate	
3	A1077 (Holydyke)	
4	A1077 (Ferriby Road)	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1 - B1218 (Holydyke)	4.20	3.90	6.50	4.1	13.20	8.70	0.0	
2 - Hungate	3.10	2.10	5.65	7.7	6.90	2.25	0.0	
3 - A1077 (Holydyke)	3.80	3.80	4.70	10.5	18.10	15.30	0.0	
4 - A1077 (Ferriby Road)	4.10	4.10	4.70	1.6	10.90	7.20	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B1218 (Holydyke)	0.658	1208
2 - Hungate	0.610	784
3 - A1077 (Holydyke)	0.676	1141
4 - A1077 (Ferriby Road)	0.643	996

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2021 Base	AM	ONE HOUR	07:30	09:00	15	✓

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

Demand overview (Traffic)

Am	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B1218 (Holydyke)		ONE HOUR	✓	306	100.000
2 - Hungate		ONE HOUR	✓	90	100.000
3 - A1077 (Holydyke)		ONE HOUR	✓	535	100.000
4 - A1077 (Ferriby Road)		ONE HOUR	✓	598	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
From	1 - B1218 (Holydyke)	0	10	119	177
	2 - Hungate	0	0	18	72
	3 - A1077 (Holydyke)	92	7	1	435
	4 - A1077 (Ferriby Road)	116	86	396	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
From	1 - B1218 (Holydyke)	0	0	3	1
	2 - Hungate	0	0	13	0
	3 - A1077 (Holydyke)	1	0	0	4
	4 - A1077 (Ferriby Road)	6	2	4	0

Results

Results Summary for whole modelled period

Am	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B1218 (Holydyke)	0.39	7.09	0.7	A	281	421
2 - Hungate	0.31	16.79	0.5	C	83	124
3 - A1077 (Holydyke)	0.62	10.15	1.6	B	491	736
4 - A1077 (Ferriby Road)	0.71	13.99	2.5	B	549	823

Main Results for each time segment

07:30 - 07:45

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	230	58	366	967	0.238	229	155	0.0	0.3	4.953	A
2 - Hungate	68	17	518	468	0.145	67	77	0.0	0.2	9.180	A
3 - A1077 (Holydyke)	403	101	186	1015	0.397	400	399	0.0	0.7	6.027	A
4 - A1077 (Ferriby Road)	450	113	75	948	0.475	446	511	0.0	0.9	7.417	A

07:45 - 08:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	275	69	439	919	0.299	275	186	0.3	0.4	5.679	A
2 - Hungate	81	20	621	405	0.200	81	92	0.2	0.3	11.356	B
3 - A1077 (Holydyke)	481	120	223	990	0.486	480	479	0.7	1.0	7.281	A
4 - A1077 (Ferriby Road)	538	134	90	938	0.573	536	613	0.9	1.4	9.264	A

08:00 - 08:15

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	337	84	536	855	0.394	336	228	0.4	0.7	7.040	A
2 - Hungate	99	25	759	321	0.309	98	113	0.3	0.4	16.528	C
3 - A1077 (Holydyke)	589	147	273	956	0.616	586	585	1.0	1.6	9.993	A
4 - A1077 (Ferriby Road)	658	165	110	926	0.711	654	750	1.4	2.4	13.579	B

08:15 - 08:30

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	337	84	539	853	0.395	337	229	0.7	0.7	7.092	A
2 - Hungate	99	25	763	318	0.311	99	113	0.4	0.5	16.794	C
3 - A1077 (Holydyke)	589	147	274	956	0.616	589	588	1.6	1.6	10.146	B
4 - A1077 (Ferriby Road)	658	165	110	925	0.712	658	753	2.4	2.5	13.989	B

08:30 - 08:45

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	275	69	444	916	0.300	276	188	0.7	0.4	5.732	A
2 - Hungate	81	20	627	401	0.202	82	93	0.5	0.3	11.548	B
3 - A1077 (Holydyke)	481	120	225	989	0.486	484	483	1.6	1.0	7.403	A
4 - A1077 (Ferriby Road)	538	134	90	938	0.573	542	618	2.5	1.4	9.558	A

08:45 - 09:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	230	58	370	964	0.239	231	157	0.4	0.3	4.998	A
2 - Hungate	68	17	523	464	0.146	68	78	0.3	0.2	9.305	A
3 - A1077 (Holydyke)	403	101	188	1014	0.397	404	404	1.0	0.7	6.116	A
4 - A1077 (Ferriby Road)	450	113	76	948	0.475	452	516	1.4	1.0	7.590	A

Existing Layout - 2021 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 3 and 4 have 75% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1077 Holydyke Hungate	Mini-roundabout		1, 2, 3, 4	40.91	E

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2021 Base	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B1218 (Holydyke)		ONE HOUR	✓	341	100.000
2 - Hungate		ONE HOUR	✓	120	100.000
3 - A1077 (Holydyke)		ONE HOUR	✓	602	100.000
4 - A1077 (Ferriby Road)		ONE HOUR	✓	821	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
From		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
	1 - B1218 (Holydyke)	0	4	166	171
	2 - Hungate	4	1	20	95
	3 - A1077 (Holydyke)	98	11	1	492
	4 - A1077 (Ferriby Road)	240	110	471	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
	1 - B1218 (Holydyke)	0	33	0	0
	2 - Hungate	0	0	0	0
	3 - A1077 (Holydyke)	0	10	0	2
	4 - A1077 (Ferriby Road)	0	0	1	0

Results

Results Summary for whole modelled period

Am	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B1218 (Holydyke)	0.48	8.77	0.9	A	313	469
2 - Hungate	0.53	31.01	1.1	D	110	165
3 - A1077 (Holydyke)	0.71	13.21	2.4	B	552	829
4 - A1077 (Ferriby Road)	0.99	76.02	18.6	F	753	1130

Main Results for each time segment

16:45 - 17:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	257	64	442	917	0.280	255	255	0.0	0.4	5.441	A
2 - Hungate	90	23	603	416	0.217	89	94	0.0	0.3	10.990	B
3 - A1077 (Holydyke)	453	113	202	1004	0.451	450	490	0.0	0.8	6.577	A
4 - A1077 (Ferriby Road)	618	155	86	941	0.657	611	566	0.0	1.9	10.738	B

17:00 - 17:15

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	307	77	529	860	0.357	306	305	0.4	0.5	6.509	A
2 - Hungate	108	27	723	343	0.315	107	112	0.3	0.4	15.230	C
3 - A1077 (Holydyke)	541	135	243	977	0.554	540	587	0.8	1.2	8.348	A
4 - A1077 (Ferriby Road)	738	185	103	930	0.794	731	679	1.9	3.6	17.635	C

17:15 - 17:30

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	375	94	625	797	0.471	374	364	0.5	0.9	8.515	A
2 - Hungate	132	33	866	255	0.517	130	133	0.4	1.0	28.196	D
3 - A1077 (Holydyke)	663	166	296	941	0.704	658	700	1.2	2.3	12.782	B
4 - A1077 (Ferriby Road)	904	226	126	915	0.988	863	829	3.6	13.7	48.810	E

17:30 - 17:45

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	375	94	640	787	0.477	375	371	0.9	0.9	8.770	A
2 - Hungate	132	33	879	247	0.534	132	136	1.0	1.1	31.014	D
3 - A1077 (Holydyke)	663	166	298	939	0.706	663	713	2.3	2.4	13.207	B
4 - A1077 (Ferriby Road)	904	226	127	915	0.988	884	834	13.7	18.6	76.023	F

17:45 - 18:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	307	77	574	830	0.369	308	325	0.9	0.6	6.928	A
2 - Hungate	108	27	761	319	0.338	110	121	1.1	0.5	17.386	C
3 - A1077 (Holydyke)	541	135	246	974	0.555	546	625	2.4	1.3	8.628	A
4 - A1077 (Ferriby Road)	738	185	104	929	0.794	795	687	18.6	4.3	34.429	D

18:00 - 18:15

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	257	64	454	909	0.282	258	261	0.6	0.4	5.544	A
2 - Hungate	90	23	615	408	0.221	91	96	0.5	0.3	11.381	B
3 - A1077 (Holydyke)	453	113	205	1002	0.452	455	501	1.3	0.9	6.718	A
4 - A1077 (Ferriby Road)	618	155	87	940	0.657	627	573	4.3	2.0	11.900	B

Existing Layout - 2031 With Residential Site Allocations, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 3 and 4 have 74% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1077 Holydyke Hungate	Mini-roundabout		1, 2, 3, 4	14.06	B

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2031 With Residential Site Allocations	AM	ONE HOUR	07:30	09:00	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B1218 (Holydyke)		ONE HOUR	✓	323	100.000
2 - Hungate		ONE HOUR	✓	98	100.000
3 - A1077 (Holydyke)		ONE HOUR	✓	600	100.000
4 - A1077 (Ferriby Road)		ONE HOUR	✓	640	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
From	1 - B1218 (Holydyke)	0	10	122	191
	2 - Hungate	0	0	19	79
	3 - A1077 (Holydyke)	94	7	1	498
	4 - A1077 (Ferriby Road)	123	90	427	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
	1 - B1218 (Holydyke)	0	0	3	1
	2 - Hungate	0	0	13	0
	3 - A1077 (Holydyke)	1	0	0	4
	4 - A1077 (Ferriby Road)	6	2	4	0

Results

Results Summary for whole modelled period

Am	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B1218 (Holydyke)	0.43	7.75	0.8	A	296	445
2 - Hungate	0.38	20.62	0.6	C	90	135
3 - A1077 (Holydyke)	0.70	13.29	2.4	B	551	826
4 - A1077 (Ferriby Road)	0.76	16.96	3.2	C	587	881

Main Results for each time segment

07:30 - 07:45

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	243	61	392	950	0.256	242	162	0.0	0.3	5.159	A
2 - Hungate	74	18	554	446	0.165	73	80	0.0	0.2	9.850	A
3 - A1077 (Holydyke)	452	113	202	1004	0.450	448	425	0.0	0.8	6.658	A
4 - A1077 (Ferriby Road)	482	120	76	947	0.509	478	574	0.0	1.1	7.911	A

07:45 - 08:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	290	73	470	899	0.323	290	194	0.3	0.5	6.009	A
2 - Hungate	88	22	664	379	0.233	88	96	0.2	0.3	12.639	B
3 - A1077 (Holydyke)	539	135	242	977	0.552	538	510	0.8	1.2	8.441	A
4 - A1077 (Ferriby Road)	575	144	91	937	0.614	573	688	1.1	1.6	10.225	B

08:00 - 08:15

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	356	89	573	831	0.428	355	237	0.5	0.8	7.668	A
2 - Hungate	108	27	811	289	0.373	107	117	0.3	0.6	20.069	C
3 - A1077 (Holydyke)	661	165	296	941	0.702	656	622	1.2	2.3	12.887	B
4 - A1077 (Ferriby Road)	705	176	112	924	0.762	699	840	1.6	3.1	16.170	C

08:15 - 08:30

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	356	89	578	828	0.430	356	239	0.8	0.8	7.750	A
2 - Hungate	108	27	816	286	0.377	108	118	0.6	0.6	20.624	C
3 - A1077 (Holydyke)	661	165	297	940	0.703	660	626	2.3	2.4	13.293	B
4 - A1077 (Ferriby Road)	705	176	112	924	0.763	704	845	3.1	3.2	16.963	C

08:30 - 08:45

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	290	73	477	894	0.325	291	197	0.8	0.5	6.084	A
2 - Hungate	88	22	671	374	0.235	89	97	0.6	0.3	12.969	B
3 - A1077 (Holydyke)	539	135	244	976	0.553	544	516	2.4	1.3	8.706	A
4 - A1077 (Ferriby Road)	575	144	92	937	0.614	581	696	3.2	1.7	10.719	B

08:45 - 09:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	243	61	397	947	0.257	244	164	0.5	0.4	5.214	A
2 - Hungate	74	18	560	442	0.167	74	81	0.3	0.2	10.019	B
3 - A1077 (Holydyke)	452	113	204	1003	0.450	453	430	1.3	0.9	6.799	A
4 - A1077 (Ferriby Road)	482	120	77	947	0.509	484	580	1.7	1.1	8.149	A

Existing Layout - 2031 With Residential Site Allocations, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 3 and 4 have 76% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1077 Holydyke Hungate	Mini-roundabout		1, 2, 3, 4	81.87	F

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2031 With Residential Site Allocations	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B1218 (Holydyke)		ONE HOUR	✓	354	100.000
2 - Hungate		ONE HOUR	✓	126	100.000
3 - A1077 (Holydyke)		ONE HOUR	✓	642	100.000
4 - A1077 (Ferriby Road)		ONE HOUR	✓	896	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
From	1 - B1218 (Holydyke)	0	4	170	180
	2 - Hungate	4	1	21	100
	3 - A1077 (Holydyke)	100	11	1	530
	4 - A1077 (Ferriby Road)	254	118	524	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
	1 - B1218 (Holydyke)	0	33	0	0
	2 - Hungate	0	0	0	0
	3 - A1077 (Holydyke)	0	10	0	2
	4 - A1077 (Ferriby Road)	0	0	1	0

Results

Results Summary for whole modelled period

Am	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B1218 (Holydyke)	0.51	9.48	1.0	A	325	487
2 - Hungate	0.62	41.47	1.5	E	116	173
3 - A1077 (Holydyke)	0.76	16.37	3.1	C	589	884
4 - A1077 (Ferriby Road)	1.08	163.09	48.1	F	822	1233

Main Results for each time segment

16:45 - 17:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	267	67	486	888	0.300	265	266	0.0	0.4	5.776	A
2 - Hungate	95	24	651	386	0.245	94	100	0.0	0.3	12.243	B
3 - A1077 (Holydyke)	483	121	213	997	0.485	480	532	0.0	0.9	7.031	A
4 - A1077 (Ferriby Road)	675	169	87	940	0.718	665	605	0.0	2.4	12.750	B

17:00 - 17:15

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	318	80	580	826	0.385	317	318	0.4	0.6	7.083	A
2 - Hungate	113	28	779	309	0.367	112	119	0.3	0.6	18.238	C
3 - A1077 (Holydyke)	577	144	255	969	0.596	575	636	0.9	1.5	9.265	A
4 - A1077 (Ferriby Road)	805	201	105	929	0.867	793	725	2.4	5.5	24.679	C

17:15 - 17:30

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	390	97	655	777	0.502	388	367	0.6	1.0	9.248	A
2 - Hungate	139	35	908	230	0.604	135	135	0.6	1.4	36.950	E
3 - A1077 (Holydyke)	707	177	310	931	0.759	701	733	1.5	3.0	15.499	C
4 - A1077 (Ferriby Road)	987	247	128	914	1.079	894	883	5.5	28.5	82.772	F

17:30 - 17:45

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	390	97	665	770	0.506	390	372	1.0	1.0	9.476	A
2 - Hungate	139	35	918	224	0.619	138	137	1.4	1.5	41.471	E
3 - A1077 (Holydyke)	707	177	313	929	0.761	706	742	3.0	3.1	16.370	C
4 - A1077 (Ferriby Road)	987	247	129	913	1.080	908	891	28.5	48.1	163.089	F

17:45 - 18:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	318	80	663	772	0.412	319	352	1.0	0.7	8.000	A
2 - Hungate	113	28	848	266	0.425	116	134	1.5	0.8	24.435	C
3 - A1077 (Holydyke)	577	144	259	966	0.598	583	705	3.1	1.6	9.741	A
4 - A1077 (Ferriby Road)	805	201	106	928	0.868	909	736	48.1	22.3	143.475	F

18:00 - 18:15

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	267	67	549	847	0.315	268	292	0.7	0.5	6.243	A
2 - Hungate	95	24	705	353	0.268	96	111	0.8	0.4	14.093	B
3 - A1077 (Holydyke)	483	121	216	995	0.486	486	586	1.6	1.0	7.231	A
4 - A1077 (Ferriby Road)	675	169	89	939	0.718	753	613	22.3	2.7	26.942	D

Existing Layout - Sensitivity Test, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 3 and 4 have 76% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1077 Holydyke Hungate	Mini-roundabout		1, 2, 3, 4	22.08	C

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	Sensitivity Test	AM	ONE HOUR	07:30	09:00	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B1218 (Holydyke)		ONE HOUR	✓	334	100.000
2 - Hungate		ONE HOUR	✓	104	100.000
3 - A1077 (Holydyke)		ONE HOUR	✓	712	100.000
4 - A1077 (Ferriby Road)		ONE HOUR	✓	707	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
From		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
	1 - B1218 (Holydyke)	0	10	128	196
	2 - Hungate	0	0	20	84
	3 - A1077 (Holydyke)	94	7	1	610
	4 - A1077 (Ferriby Road)	126	93	488	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
	1 - B1218 (Holydyke)	0	0	3	1
	2 - Hungate	0	0	13	0
	3 - A1077 (Holydyke)	1	0	0	4
	4 - A1077 (Ferriby Road)	6	2	4	0

Results

Results Summary for whole modelled period

Am	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B1218 (Holydyke)	0.47	8.83	0.9	A	306	460
2 - Hungate	0.48	29.61	0.9	D	95	143
3 - A1077 (Holydyke)	0.84	24.34	5.0	C	653	980
4 - A1077 (Ferriby Road)	0.84	24.96	5.1	C	649	973

Main Results for each time segment

07:30 - 07:45

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	251	63	439	919	0.274	250	164	0.0	0.4	5.460	A
2 - Hungate	78	20	607	414	0.189	77	82	0.0	0.2	10.921	B
3 - A1077 (Holydyke)	536	134	209	1000	0.536	531	475	0.0	1.2	7.889	A
4 - A1077 (Ferriby Road)	532	133	76	947	0.562	527	664	0.0	1.3	8.813	A

07:45 - 08:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	300	75	527	861	0.349	300	197	0.4	0.5	6.512	A
2 - Hungate	93	23	728	340	0.275	93	98	0.2	0.4	14.886	B
3 - A1077 (Holydyke)	640	160	251	971	0.659	637	570	1.2	1.9	11.049	B
4 - A1077 (Ferriby Road)	636	159	91	937	0.678	632	797	1.3	2.1	12.149	B

08:00 - 08:15

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	368	92	640	787	0.467	366	239	0.5	0.9	8.672	A
2 - Hungate	115	29	886	243	0.471	113	120	0.4	0.9	27.830	D
3 - A1077 (Holydyke)	784	196	306	934	0.839	773	693	1.9	4.7	21.736	C
4 - A1077 (Ferriby Road)	778	195	111	925	0.842	768	968	2.1	4.8	22.389	C

08:15 - 08:30

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	368	92	647	782	0.470	368	242	0.9	0.9	8.834	A
2 - Hungate	115	29	894	238	0.481	114	121	0.9	0.9	29.611	D
3 - A1077 (Holydyke)	784	196	308	933	0.841	783	700	4.7	5.0	24.343	C
4 - A1077 (Ferriby Road)	778	195	112	924	0.842	777	979	4.8	5.1	24.958	C

08:30 - 08:45

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	300	75	539	853	0.352	302	201	0.9	0.6	6.654	A
2 - Hungate	93	23	740	332	0.281	96	101	0.9	0.4	15.672	C
3 - A1077 (Holydyke)	640	160	254	969	0.660	652	581	5.0	2.1	12.158	B
4 - A1077 (Ferriby Road)	636	159	93	936	0.679	647	813	5.1	2.3	13.429	B

08:45 - 09:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	251	63	447	914	0.275	252	167	0.6	0.4	5.538	A
2 - Hungate	78	20	615	408	0.192	79	83	0.4	0.2	11.196	B
3 - A1077 (Holydyke)	536	134	212	998	0.537	539	483	2.1	1.2	8.193	A
4 - A1077 (Ferriby Road)	532	133	77	946	0.562	536	674	2.3	1.4	9.210	A

Existing Layout - Sensitivity Test, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 3 and 4 have 77% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1077 Holydyke Hungate	Mini-roundabout		1, 2, 3, 4	148.04	F

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Sensitivity Test	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B1218 (Holydyke)		ONE HOUR	✓	355	100.000
2 - Hungate		ONE HOUR	✓	126	100.000
3 - A1077 (Holydyke)		ONE HOUR	✓	691	100.000
4 - A1077 (Ferriby Road)		ONE HOUR	✓	959	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
From		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
	1 - B1218 (Holydyke)	0	4	171	180
	2 - Hungate	4	1	21	100
	3 - A1077 (Holydyke)	103	12	1	575
	4 - A1077 (Ferriby Road)	254	118	587	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - B1218 (Holydyke)	2 - Hungate	3 - A1077 (Holydyke)	4 - A1077 (Ferriby Road)
	1 - B1218 (Holydyke)	0	33	0	0
	2 - Hungate	0	0	0	0
	3 - A1077 (Holydyke)	0	10	0	2
	4 - A1077 (Ferriby Road)	0	0	1	0

Results

Results Summary for whole modelled period

Am	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B1218 (Holydyke)	0.52	9.82	1.1	A	326	489
2 - Hungate	0.67	50.70	1.8	F	116	173
3 - A1077 (Holydyke)	0.82	21.35	4.3	C	634	951
4 - A1077 (Ferriby Road)	1.16	303.28	83.4	F	880	1320

Main Results for each time segment

16:45 - 17:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	267	67	532	858	0.311	265	268	0.0	0.4	6.074	A
2 - Hungate	95	24	697	358	0.265	93	100	0.0	0.4	13.525	B
3 - A1077 (Holydyke)	520	130	212	997	0.522	516	578	0.0	1.1	7.548	A
4 - A1077 (Ferriby Road)	722	180	90	938	0.770	709	638	0.0	3.1	15.120	C

17:00 - 17:15

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	319	80	630	794	0.402	318	318	0.4	0.7	7.582	A
2 - Hungate	113	28	830	278	0.408	112	119	0.4	0.7	21.588	C
3 - A1077 (Holydyke)	621	155	255	969	0.641	618	687	1.1	1.8	10.385	B
4 - A1077 (Ferriby Road)	862	216	108	927	0.931	840	765	3.1	8.7	35.018	E

17:15 - 17:30

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	391	98	679	761	0.514	389	356	0.7	1.0	9.671	A
2 - Hungate	139	35	939	211	0.658	135	130	0.7	1.7	45.042	E
3 - A1077 (Holydyke)	761	190	310	932	0.817	752	764	1.8	4.1	19.426	C
4 - A1077 (Ferriby Road)	1056	264	132	912	1.158	903	930	8.7	46.8	123.838	F

17:30 - 17:45

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	391	98	684	758	0.516	391	358	1.0	1.1	9.822	A
2 - Hungate	139	35	944	208	0.668	138	131	1.7	1.8	50.702	F
3 - A1077 (Holydyke)	761	190	313	929	0.819	760	769	4.1	4.3	21.351	C
4 - A1077 (Ferriby Road)	1056	264	133	911	1.160	909	940	46.8	83.4	266.562	F

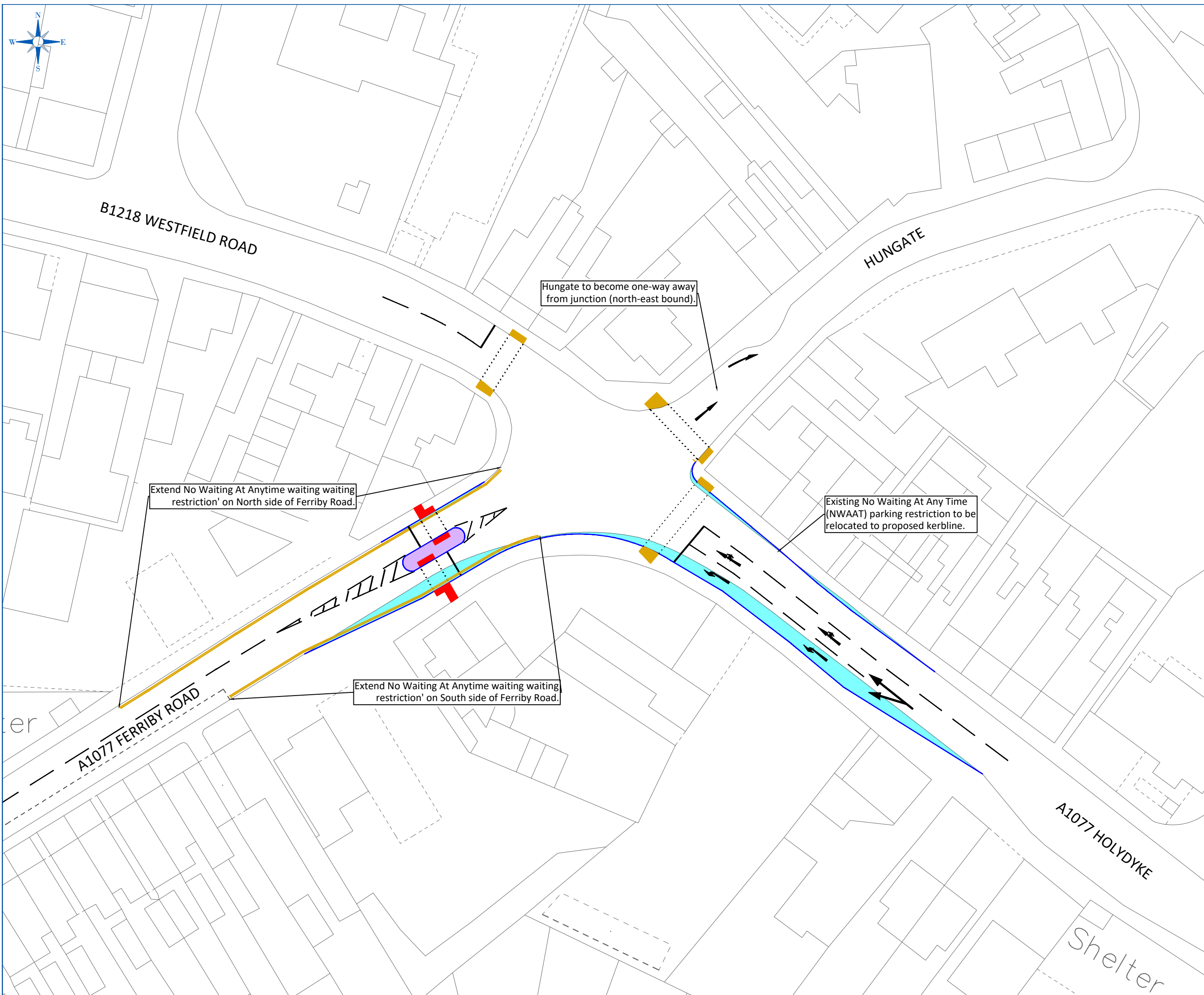
17:45 - 18:00

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	319	80	685	758	0.421	320	340	1.1	0.7	8.283	A
2 - Hungate	113	28	877	249	0.456	117	128	1.8	0.9	28.099	D
3 - A1077 (Holydyke)	621	155	260	965	0.644	631	734	4.3	1.9	11.265	B
4 - A1077 (Ferriby Road)	862	216	111	925	0.932	914	780	83.4	70.5	303.276	F

18:00 - 18:15

Am	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B1218 (Holydyke)	267	67	690	754	0.354	268	326	0.7	0.6	7.439	A
2 - Hungate	95	24	831	277	0.343	96	127	0.9	0.5	20.107	C
3 - A1077 (Holydyke)	520	130	216	995	0.523	523	711	1.9	1.1	7.824	A
4 - A1077 (Ferriby Road)	722	180	92	937	0.770	924	648	70.5	20.0	180.851	F

Appendix 2 – Improvement Scheme Drawing



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- i. This drawing is copyright and must not be copied in part or in whole unless agreed in writing by Local Transport Projects Ltd
- ii. Reference should be made to the project's drawing register to ensure the latest drawing is being referred to.
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- iv. All work shall be carried out in accordance with local authority, statutory authority and health & safety requirements & regulations
- v. Mapping supplied by Client

0	-	-	-	-
Rev.	Date	By	Chk	Description

Client
North Lincolnshire Council

Project

Barton Southern Access Road

Title

A1077 / B1218 Mini-Roundabout
Signalised Junction
Feasibility Design



local transport projects

traffico engineering and transport planning



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Drawn OA	Date 27 01 21
Scale 1 : 250	Checked NW

Status

DRAFT FEASIBILITY

Drawing number					
Project	Job	Drawing	Sheet	Revision	
LTP/3628	P3	01	.01	0	

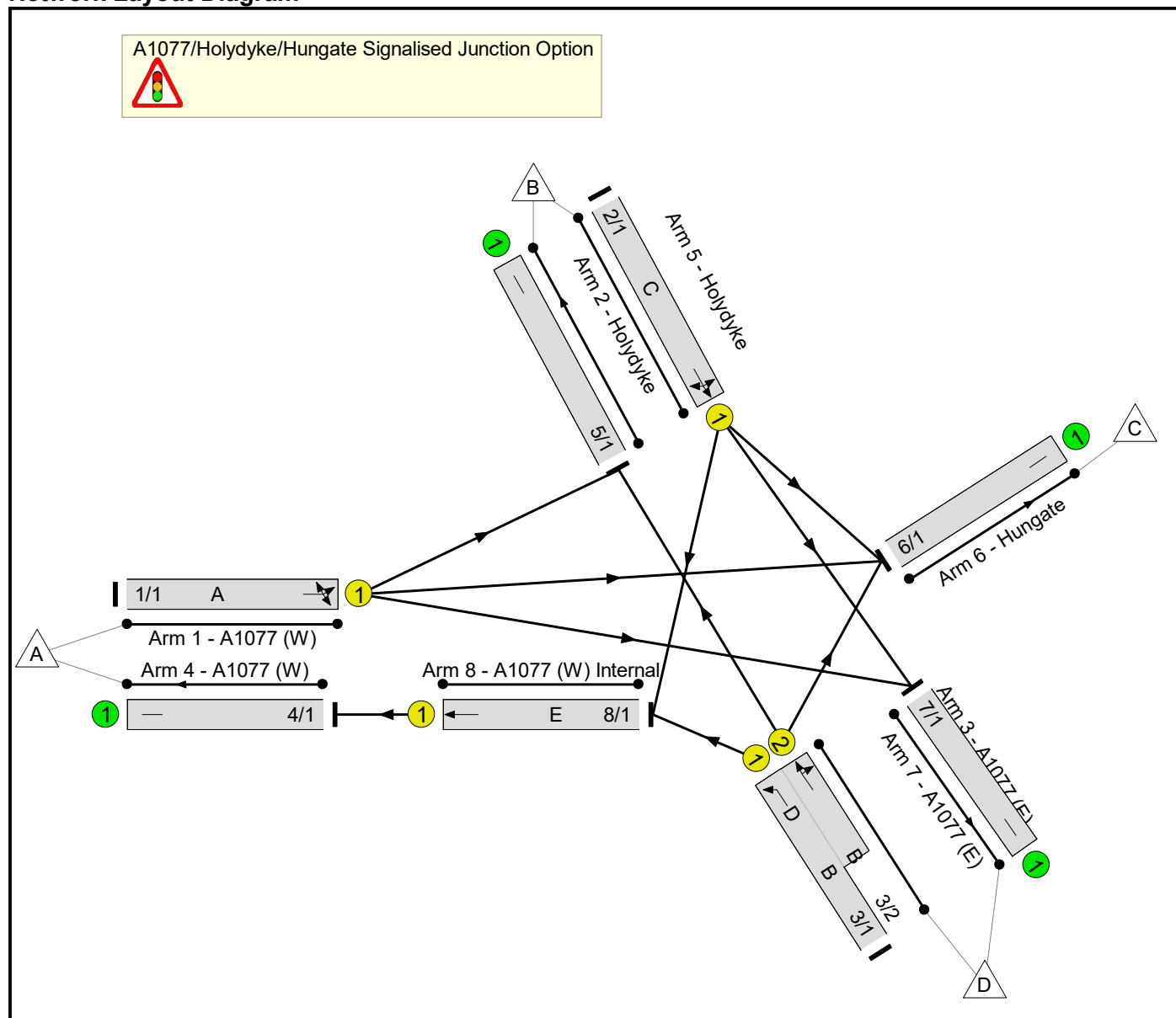
Appendix 3 – Improvement Scheme Modelling

LTP LinSig Output

User and Project Details

Project:	Barton Link Road
Title:	A1077/Holydyke/Hungate Signalised Junction Option
Location:	Barton upon Humber, North Lincolnshire
Client:	North Lincolnshire Council
Additional detail:	
File name:	A1077 Holydyke Hungate Signalised Junction Improvement Scheme.lsg3x
Author:	MR
Company:	LTP
Address:	

Network Layout Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Filter	B	4	0
E	Traffic		7	7
F	Pedestrian		6	6
G	Pedestrian		6	6

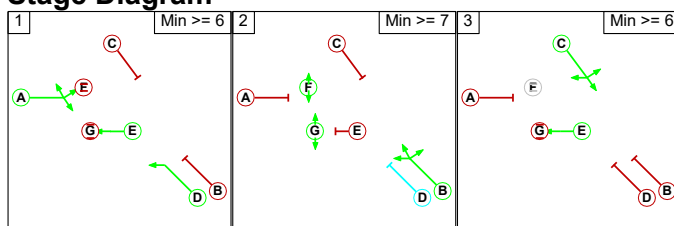
Phase Intergreens Matrix

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

Phases in Stage

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

Stage Diagram



Phase Delays

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

Prohibited Stage Change

	To Stage			
From Stage		1	2	3
	1			X
	2	6		6
	3	6	5	

Give-Way Lane Input Data

Junction: A1077/Holydyke/Hungate Signalised Junction Option

There are no Opposed Lanes in this Junction

Lane Input Data

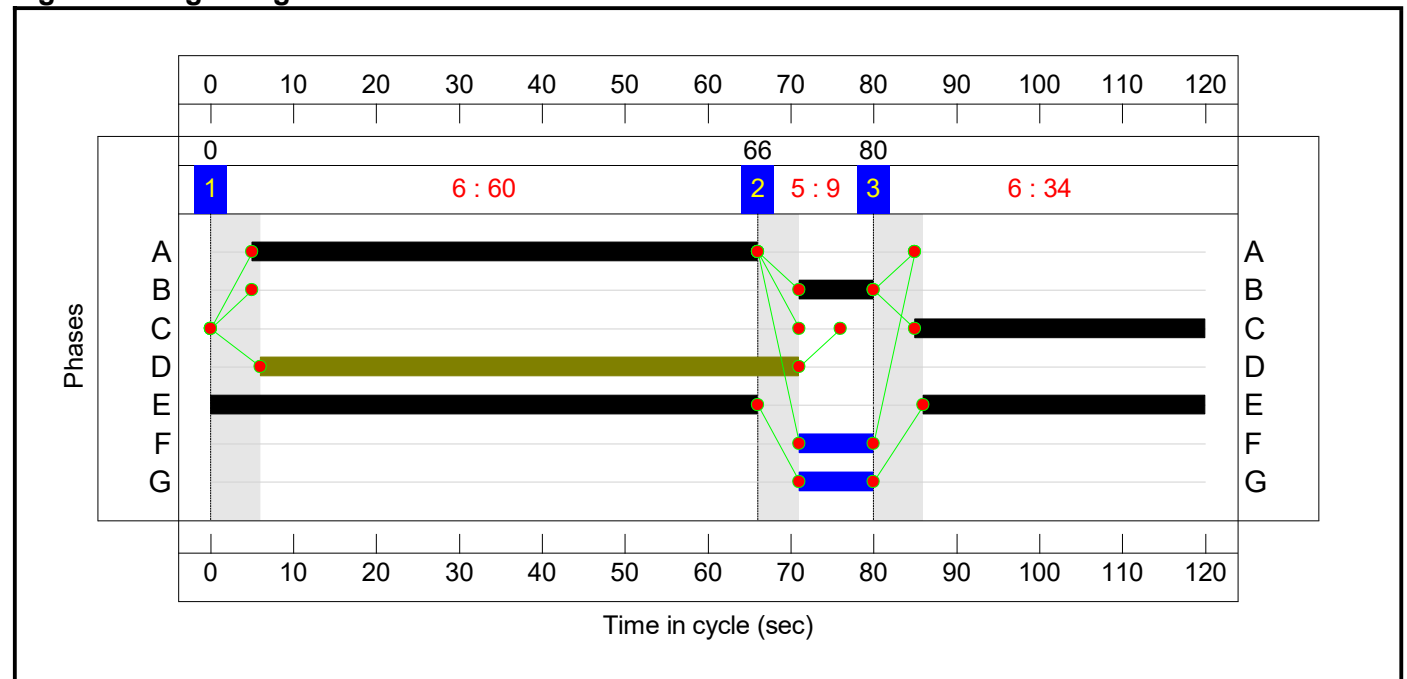
Junction: A1077/Holydyke/Hungate Signalised Junction Option

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A1077 (W))	U	A	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Left	10.41
											Arm 6 Ahead	Inf
											Arm 7 Right	28.00
2/1 (Holydyke)	U	C	2	3	60.0	Geom	-	3.85	0.00	Y	Arm 6 Left	12.00
											Arm 7 Ahead	Inf
											Arm 8 Right	12.90
3/1 (A1077 (E))	U	B D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 8 Left	27.15
3/2 (A1077 (E))	U	B	2	3	5.8	Geom	-	3.50	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	6.65
4/1 (A1077 (W))	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Holydyke)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Hungate)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (A1077 (E))	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (A1077 (W) Internal)	U	E	2	3	3.0	Geom	-	4.00	0.00	Y	Arm 4 Ahead	Inf

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 Base AM'	07:45	08:45	01:00	
2: '2021 Base PM'	17:00	18:00	01:00	
3: '2031 With Residential Site Allocations AM'	07:45	08:45	01:00	
4: '2031 With Residential Site Allocations PM'	17:00	18:00	01:00	
5: 'Sensitivity Test AM'	07:45	08:45	01:00	
6: 'Sensitivity Test PM'	17:00	18:00	01:00	

Scenario 1: '2021 Base AM' (FG1: '2021 Base AM', Plan 1: 'Network Control Plan 1')
Signal Timings Diagram



**Traffic Flows, Desired
Desired Flow :**

	Destination					
		A	B	C	D	Tot.
Origin	A	0	116	86	396	598
	B	214	0	10	127	351
	C	0	0	0	0	0
	D	436	92	7	0	535
	Tot.	650	208	103	523	1484

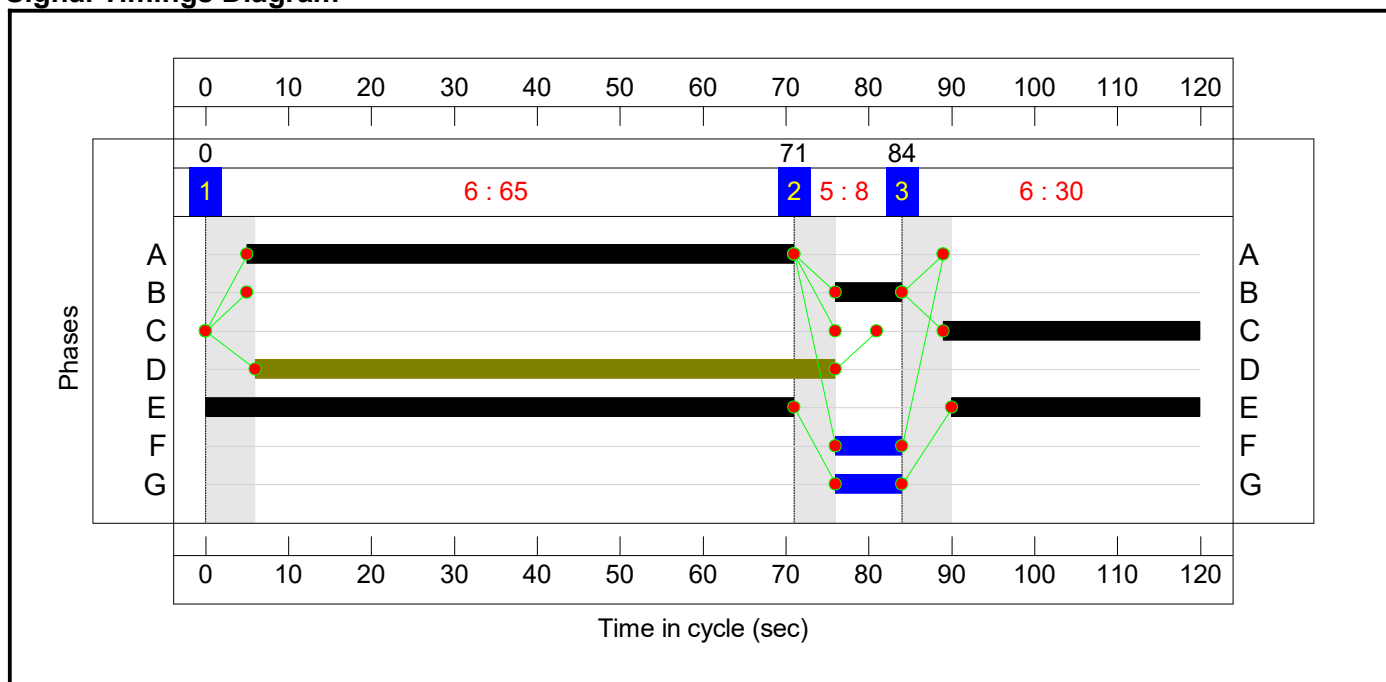
Lane Saturation Flows

Junction: A1077/Holydyke/Hungate Signalised Junction Option

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A1077 (W))	3.50	0.00	Y	Arm 5 Left	10.41	19.4 %	1848	1848
				Arm 6 Ahead	Inf	14.4 %		
				Arm 7 Right	28.00	66.2 %		
2/1 (Holydyke)	3.85	0.00	Y	Arm 6 Left	12.00	2.8 %	1861	1861
				Arm 7 Ahead	Inf	36.2 %		
				Arm 8 Right	12.90	61.0 %		
3/1 (A1077 (E))	3.50	0.00	Y	Arm 8 Left	27.15	100.0 %	1862	1862
3/2 (A1077 (E))	3.50	0.00	Y	Arm 5 Ahead	Inf	92.9 %	1934	1934
				Arm 6 Right	6.65	7.1 %		
4/1 (A1077 (W) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Holydyke Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Hungate Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A1077 (E) Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A1077 (W) Internal)	4.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	2015	2015

Scenario 2: '2021 Base PM' (FG2: '2021 Base PM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	240	110	471	821
	B	219	0	4	166	389
	C	0	0	0	0	0
	D	540	98	11	0	649
	Tot.	759	338	125	637	1859

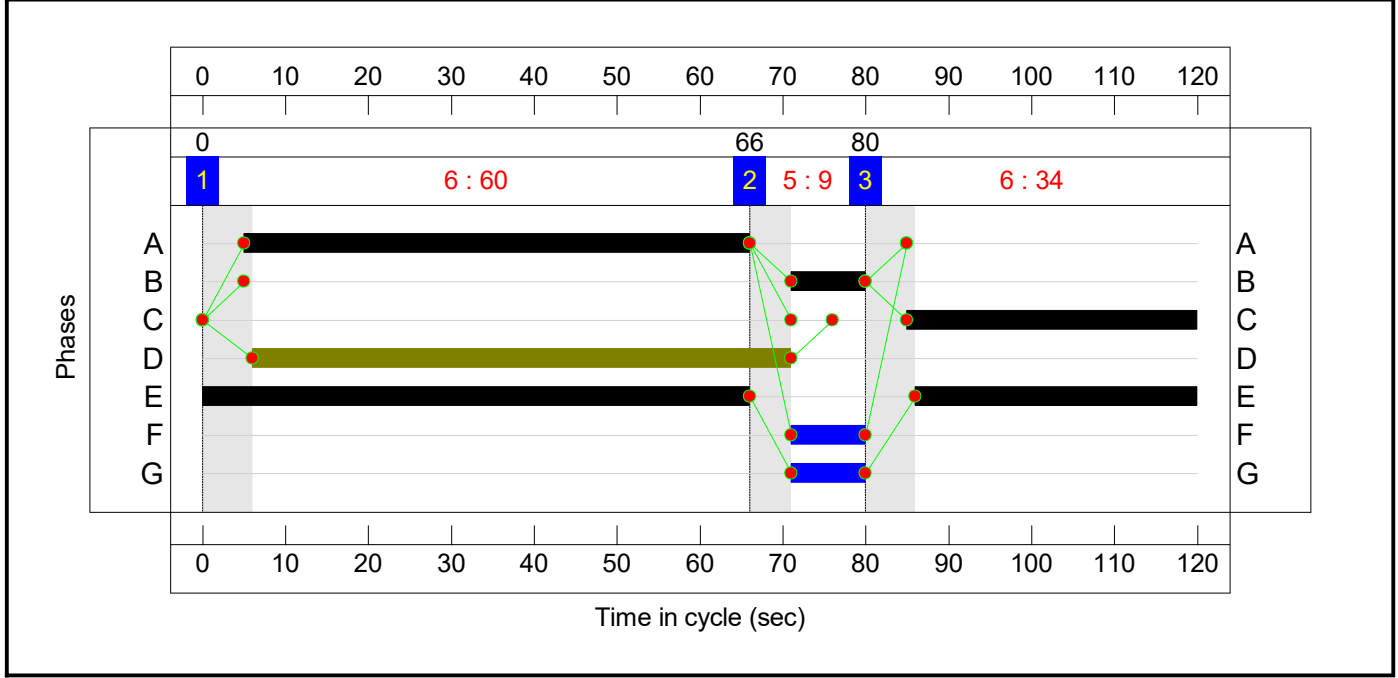
Lane Saturation Flows

Junction: A1077/Holydyke/Hungate Signalised Junction Option

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A1077 (W))	3.50	0.00	Y	Arm 5 Left	10.41	29.2 %	1832	1832
				Arm 6 Ahead	Inf	13.4 %		
				Arm 7 Right	28.00	57.4 %		
2/1 (Holydyke)	3.85	0.00	Y	Arm 6 Left	12.00	1.0 %	1875	1875
				Arm 7 Ahead	Inf	42.7 %		
				Arm 8 Right	12.90	56.3 %		
3/1 (A1077 (E))	3.50	0.00	Y	Arm 8 Left	27.15	100.0 %	1862	1862
3/2 (A1077 (E))	3.50	0.00	Y	Arm 5 Ahead	Inf	89.9 %	1921	1921
				Arm 6 Right	6.65	10.1 %		
4/1 (A1077 (W) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Holydyke Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Hungate Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A1077 (E) Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A1077 (W) Internal)	4.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	2015	2015

Scenario 3: '2031 With Residential Allocation Sites AM' (FG3: '2031 With Residential Site Allocations AM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	123	90	427	640
	B	231	0	10	122	363
	C	0	0	0	0	0
	D	539	94	7	0	640
	Tot.	770	217	107	549	1643

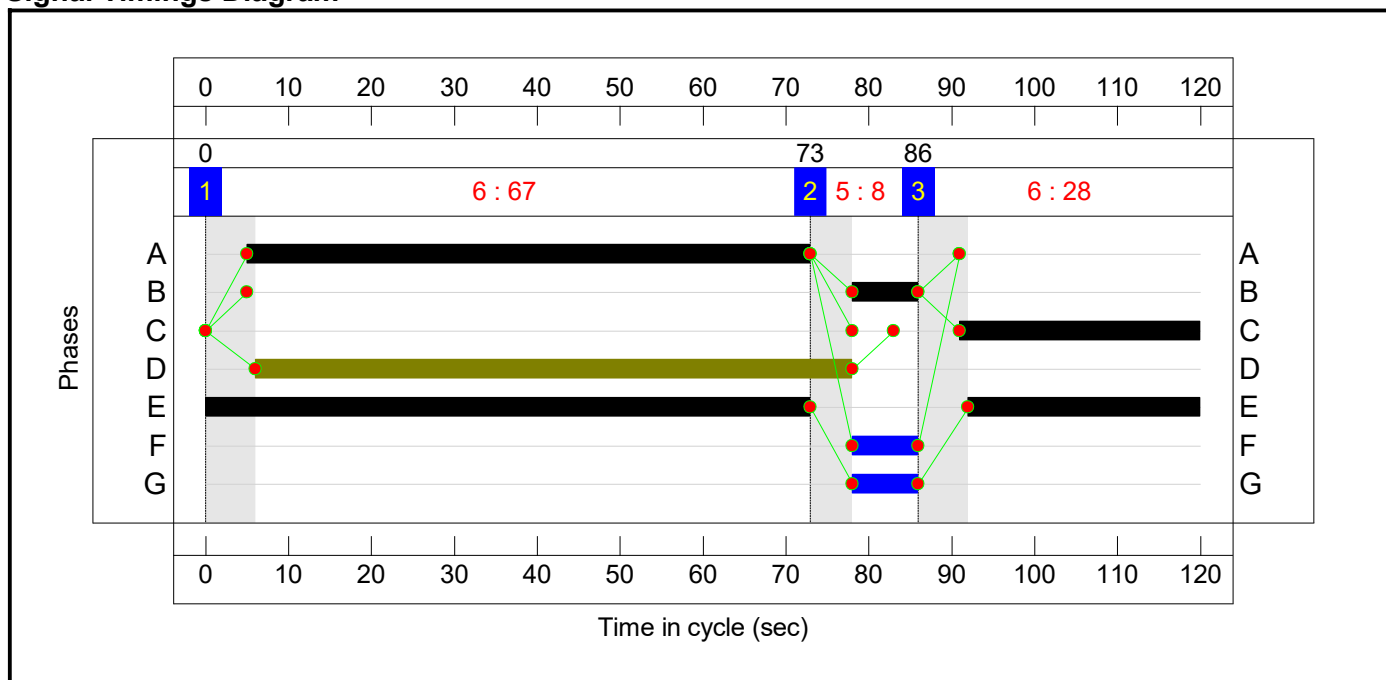
Lane Saturation Flows

Junction: A1077/Holydyke/Hungate Signalised Junction Option

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A1077 (W))	3.50	0.00	Y	Arm 5 Left	10.41	19.2 %	1848	1848
				Arm 6 Ahead	Inf	14.1 %		
				Arm 7 Right	28.00	66.7 %		
2/1 (Holydyke)	3.85	0.00	Y	Arm 6 Left	12.00	2.8 %	1856	1856
				Arm 7 Ahead	Inf	33.6 %		
				Arm 8 Right	12.90	63.6 %		
3/1 (A1077 (E))	3.50	0.00	Y	Arm 8 Left	27.15	100.0 %	1862	1862
3/2 (A1077 (E))	3.50	0.00	Y	Arm 5 Ahead	Inf	93.1 %	1935	1935
				Arm 6 Right	6.65	6.9 %		
4/1 (A1077 (W) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Holydyke Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Hungate Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A1077 (E) Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A1077 (W) Internal)	4.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	2015	2015

Scenario 4: '2031 With Residential Allocation Sites PM' (FG4: '2031 With Residential Site Allocations PM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	254	118	524	896
	B	230	0	4	170	404
	C	0	0	0	0	0
	D	581	100	11	0	692
	Tot.	811	354	133	694	1992

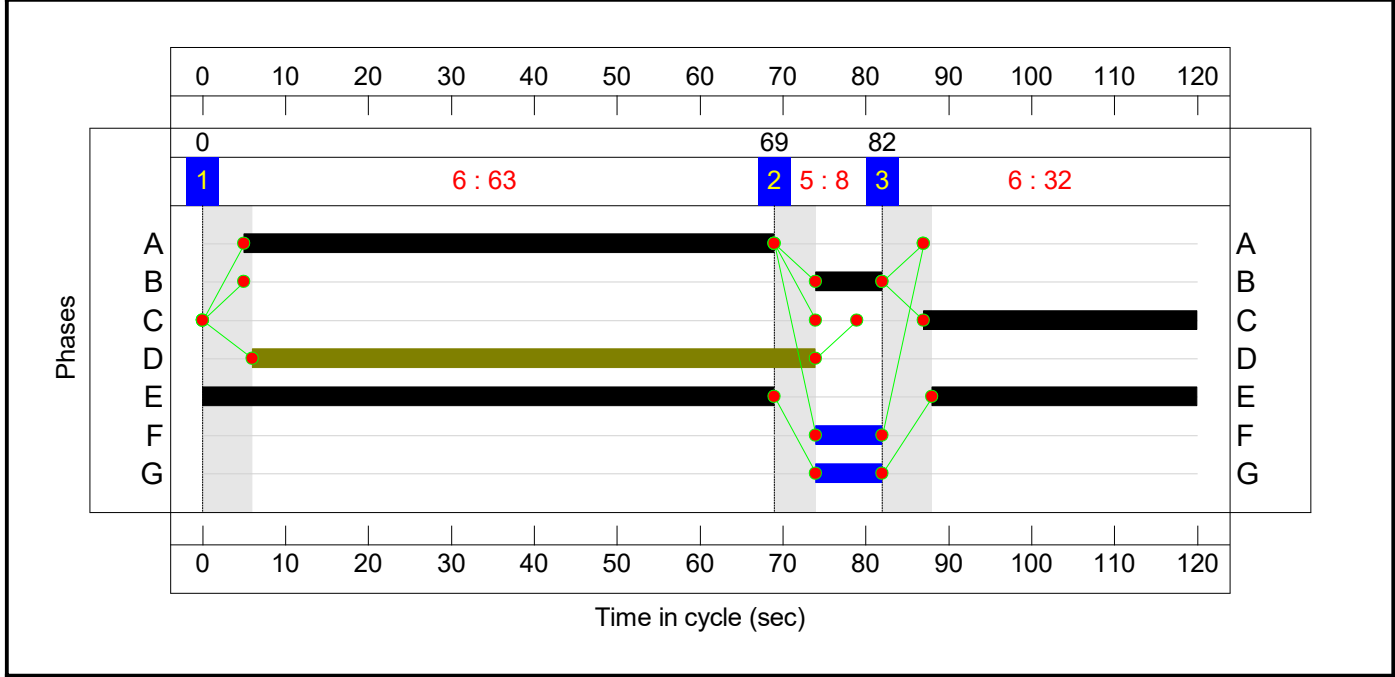
Lane Saturation Flows

Junction: A1077/Holydyke/Hungate Signalised Junction Option

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A1077 (W))	3.50	0.00	Y	Arm 5 Left	10.41	28.3 %	1833	1833
				Arm 6 Ahead	Inf	13.2 %		
				Arm 7 Right	28.00	58.5 %		
2/1 (Holydyke)	3.85	0.00	Y	Arm 6 Left	12.00	1.0 %	1874	1874
				Arm 7 Ahead	Inf	42.1 %		
				Arm 8 Right	12.90	56.9 %		
3/1 (A1077 (E))	3.50	0.00	Y	Arm 8 Left	27.15	100.0 %	1862	1862
3/2 (A1077 (E))	3.50	0.00	Y	Arm 5 Ahead	Inf	90.1 %	1922	1922
				Arm 6 Right	6.65	9.9 %		
4/1 (A1077 (W) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Holydyke Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Hungate Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A1077 (E) Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A1077 (W) Internal)	4.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	2015	2015

Scenario 5: 'Sensitivity Test AM' (FG5: 'Sensitivity Test AM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	126	93	488	707
	B	238	0	10	128	376
	C	0	0	0	0	0
	D	653	94	7	0	754
	Tot.	891	220	110	616	1837

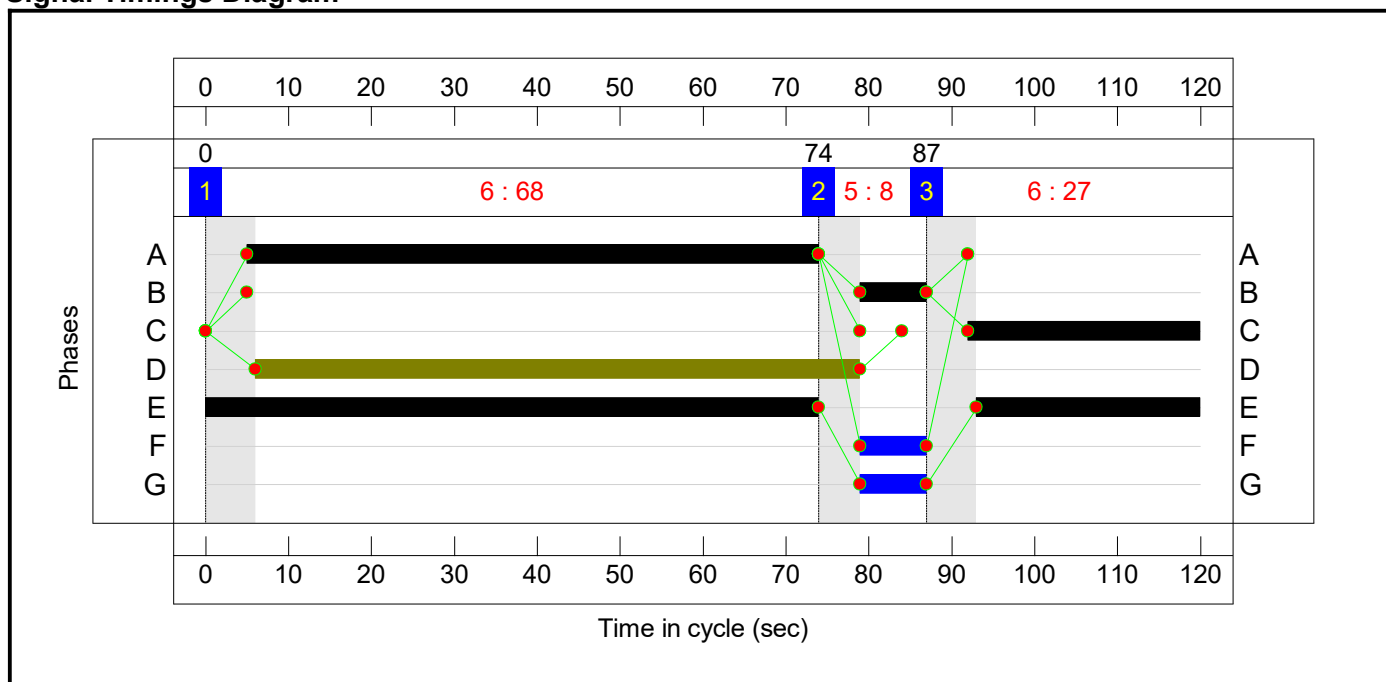
Lane Saturation Flows

Junction: A1077/Holydyke/Hungate Signalised Junction Option

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A1077 (W))	3.50	0.00	Y	Arm 5 Left	10.41	17.8 %	1849	1849
				Arm 6 Ahead	Inf	13.2 %		
				Arm 7 Right	28.00	69.0 %		
2/1 (Holydyke)	3.85	0.00	Y	Arm 6 Left	12.00	2.7 %	1857	1857
				Arm 7 Ahead	Inf	34.0 %		
				Arm 8 Right	12.90	63.3 %		
3/1 (A1077 (E))	3.50	0.00	Y	Arm 8 Left	27.15	100.0 %	1862	1862
3/2 (A1077 (E))	3.50	0.00	Y	Arm 5 Ahead	Inf	93.1 %	1935	1935
				Arm 6 Right	6.65	6.9 %		
4/1 (A1077 (W) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Holydyke Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Hungate Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A1077 (E) Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A1077 (W) Internal)	4.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	2015	2015

Scenario 6: 'Sensitivity Test PM' (FG6: 'Sensitivity Test PM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	254	118	587	959
	B	230	0	4	171	405
	C	0	0	0	0	0
	D	626	103	12	0	741
	Tot.	856	357	134	758	2105

Lane Saturation Flows

Junction: A1077/Holydyke/Hungate Signalised Junction Option

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A1077 (W))	3.50	0.00	Y	Arm 5 Left	10.41	26.5 %	1835	1835
				Arm 6 Ahead	Inf	12.3 %		
				Arm 7 Right	28.00	61.2 %		
2/1 (Holydyke)	3.85	0.00	Y	Arm 6 Left	12.00	1.0 %	1874	1874
				Arm 7 Ahead	Inf	42.2 %		
				Arm 8 Right	12.90	56.8 %		
3/1 (A1077 (E))	3.50	0.00	Y	Arm 8 Left	27.15	100.0 %	1862	1862
3/2 (A1077 (E))	3.50	0.00	Y	Arm 5 Ahead	Inf	89.6 %	1920	1920
				Arm 6 Right	6.65	10.4 %		
4/1 (A1077 (W) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Holydyke Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Hungate Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A1077 (E) Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A1077 (W) Internal)	4.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	2015	2015

Network Results

Scenario 1: '2021 Base AM' (FG1: '2021 Base AM', Plan 1: 'Network Control Plan 1')

[illegible]

Scenario 4: '2031 With Residential Allocation Sites PM' (FG4: '2031 With Residential Site Allocations PM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A1077/Holydyke/Hungate Signalised Junction Option	-	-	-		-	-	-	-	-	-	86.2%	-	-	0	0	0	21.2	-	-
A1077/Holydyke/Hungate Signalised Junction Option	-	-	-		-	-	-	-	-	-	86.2%	-	-	0	0	0	21.2	-	-
1/1	A1077 (W) Left Ahead Right	U	A		1	68	-	896	1833	1054	85.0%	896	896	-	-	-	8.0	32.2	27.4
2/1	Holydyke Left Ahead Right	U	C		1	29	-	404	1874	469	86.2%	404	404	-	-	-	7.7	68.7	15.7
3/1+3/2	A1077 (E) Ahead Right Left	U	B	D	1	80:8	72	692	1862:1922	755+144	77.0 : 77.0%	692	692	-	-	-	4.8	25.1	11.5
8/1	A1077 (W) Internal Ahead	U	E		1	101	-	811	2015	1713	47.4%	811	811	-	-	-	0.7	3.1	2.9
C1 PRC for Signalled Lanes (%): 4.4 Total Delay for Signalled Lanes (pcuHr): 21.24 Cycle Time (s): 120 PRC Over All Lanes (%): 4.4 Total Delay Over All Lanes(pcuHr): 21.24																			

Scenario 5: 'Sensitivity Test AM' (FG5: 'Sensitivity Test AM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A1077/Holydyke/Hungate Signalised Junction Option	-	-	-		-	-	-	-	-	-	71.5%	-	-	0	0	0	16.1	-	-
A1077/Holydyke/Hungate Signalised Junction Option	-	-	-		-	-	-	-	-	-	71.5%	-	-	0	0	0	16.1	-	-
1/1	A1077 (W) Left Ahead Right	U	A		1	64	-	707	1849	1002	70.6%	707	707	-	-	-	5.2	26.5	18.7
2/1	Holydyke Left Ahead Right	U	C		1	33	-	376	1857	526	71.5%	376	376	-	-	-	5.3	50.4	12.4
3/1+3/2	A1077 (E) Ahead Right Left	U	B	D	1	76:8	68	754	1862:1935	938+145	69.6 : 69.6%	754	754	-	-	-	4.8	23.1	14.5
8/1	A1077 (W) Internal Ahead	U	E		1	101	-	891	2015	1713	52.0%	891	891	-	-	-	0.8	3.4	3.5
C1 PRC for Signalled Lanes (%): 25.9 Total Delay for Signalled Lanes (pcuHr): 16.13 Cycle Time (s): 120 PRC Over All Lanes (%): 25.9 Total Delay Over All Lanes(pcuHr): 16.13																			

Scenario 6: 'Sensitivity Test PM' (FG6: 'Sensitivity Test PM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A1077/Holydyke/Hungate Signalised Junction Option	-	-	-		-	-	-	-	-	-	89.6%	-	-	0	0	0	24.5	-	-
A1077/Holydyke/Hungate Signalised Junction Option	-	-	-		-	-	-	-	-	-	89.6%	-	-	0	0	0	24.5	-	-
1/1	A1077 (W) Left Ahead Right	U	A		1	69	-	959	1835	1070	89.6%	959	959	-	-	-	9.8	36.9	31.7
2/1	Holydyke Left Ahead Right	U	C		1	28	-	405	1874	453	89.4%	405	405	-	-	-	8.6	76.6	16.7
3/1+3/2	A1077 (E) Ahead Right Left	U	B	D	1	81:8	73	741	1862:1920	784+144	79.9 : 79.9%	741	741	-	-	-	5.3	25.6	12.8
8/1	A1077 (W) Internal Ahead	U	E		1	101	-	856	2015	1713	50.0%	856	856	-	-	-	0.8	3.2	3.3
C1 PRC for Signalled Lanes (%): 0.5 Total Delay for Signalled Lanes (pcuHr): 24.49 Cycle Time (s): 120 PRC Over All Lanes (%): 0.5 Total Delay Over All Lanes(pcuHr): 24.49																			

Appendix 4 – Existing Junction Modelling

Junctions 9									
PICADY 9 - Priority Intersection Module									
Version: 9.5.1.7462 © Copyright TRL Limited, 2019									
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk									
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution									

Filename: A1077 Falkland Way Existing Junction.j9

Path: Z:\Projects\3628 Barton Link Road\Data\Junction Capacity Modelling

Report generation date: 06/05/2021 13:19:39

»Existing Layout - 2021 Base, AM

»Existing Layout - 2021 Base, PM

»Existing Layout - 2031 With Residential Site Allocations, AM

»Existing Layout - 2031 With Residential Site Allocations, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Existing Layout - 2021 Base									
Stream B-C	D1	0.1	7.11	0.10	A	D2	0.6	15.82	0.39	C
Stream B-A		0.6	16.92	0.34	C		3.1	41.54	0.77	E
Stream C-AB		0.8	7.04	0.33	A		0.4	6.19	0.22	A
	Existing Layout - 2031 With Residential Site Allocations									
Stream B-C	D3	0.3	8.67	0.21	A	D4	6.3	128.66	0.97	F
Stream B-A		1.2	24.01	0.51	C		9.2	108.80	0.95	F
Stream C-AB		1.0	7.76	0.39	A		0.9	7.69	0.37	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	A1077/Falkland Way Junction
Location	Barton upon Humber, North Lincolnshire
Site number	
Date	06/05/2021
Version	
Status	
Identifier	
Client	NLC
Jobnumber	3628
Enumerator	LTP\MR
Description	

Units

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

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	2021 Base	AM	ONE HOUR	07:30	09:00	15
D2	2021 Base	PM	ONE HOUR	16:45	18:15	15
D3	2031 With Residential Site Allocations	AM	ONE HOUR	07:30	09:00	15
D4	2031 With Residential Site Allocations	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Existing Layout	100.000

Existing Layout - 2021 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	A1077/Falkland Way	T-Junction	Two-way		3.46	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A1077 (W)		Major
B	Falkland Way		Minor
C	A1077 (E)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - A1077 (E)	6.50			180.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Falkland Way	One lane plus flare	10.00	10.00	6.50	4.00	3.40		3.00	38	71

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	597	0.106	0.269	0.169	0.384
B-C	736	0.110	0.279	-	-
C-B	678	0.257	0.257	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

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	2021 Base	AM	ONE HOUR	07:30	09:00	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A1077 (W)		✓	499	100.000
B - Falkland Way		✓	171	100.000
C - A1077 (E)		✓	456	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A - A1077 (W)	B - Falkland Way	C - A1077 (E)
From	A - A1077 (W)	0	265	234
	B - Falkland Way	118	0	53
	C - A1077 (E)	328	128	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - A1077 (W)	B - Falkland Way	C - A1077 (E)
From	A - A1077 (W)	0	5	11
	B - Falkland Way	18	0	2
	C - A1077 (E)	5	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.10	7.11	0.1	A
B-A	0.34	16.92	0.6	C
C-AB	0.33	7.04	0.8	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	40	632	0.063	40	0.1	6.198	A
B-A	89	450	0.197	88	0.3	11.695	B
C-AB	144	749	0.192	142	0.3	6.107	A
C-A	200			200			
A-B	200			200			
A-C	176			176			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	48	609	0.078	48	0.1	6.542	A
B-A	106	421	0.252	106	0.4	13.461	B
C-AB	188	766	0.245	187	0.5	6.416	A
C-A	222			222			
A-B	238			238			
A-C	210			210			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	58	575	0.101	58	0.1	7.103	A
B-A	130	381	0.341	129	0.6	16.799	C
C-AB	261	791	0.329	259	0.8	7.005	A
C-A	242			242			
A-B	292			292			
A-C	258			258			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	58	574	0.102	58	0.1	7.113	A
B-A	130	381	0.341	130	0.6	16.919	C
C-AB	261	791	0.330	261	0.8	7.044	A
C-A	241			241			
A-B	292			292			
A-C	258			258			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	48	608	0.078	48	0.1	6.553	A
B-A	106	420	0.252	107	0.4	13.578	B
C-AB	188	767	0.246	189	0.5	6.472	A
C-A	222			222			
A-B	238			238			
A-C	210			210			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	40	631	0.063	40	0.1	6.214	A
B-A	89	449	0.198	89	0.3	11.811	B
C-AB	144	749	0.193	145	0.4	6.157	A
C-A	199			199			
A-B	200			200			
A-C	176			176			

Existing Layout - 2021 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	A1077/Falkland Way	T-Junction	Two-way		10.73	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2021 Base	PM	ONE HOUR	16:45	18:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A1077 (W)		✓	521	100.000
B - Falkland Way		✓	396	100.000
C - A1077 (E)		✓	373	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A - A1077 (W)	B - Falkland Way	C - A1077 (E)
From	A - A1077 (W)	0	138	383
	B - Falkland Way	261	0	135
	C - A1077 (E)	285	88	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - A1077 (W)	B - Falkland Way	C - A1077 (E)
From	A - A1077 (W)	0	7	2
	B - Falkland Way	3	0	2
	C - A1077 (E)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.39	15.82	0.6	C
B-A	0.77	41.54	3.1	E
C-AB	0.22	6.19	0.4	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	102	570	0.178	101	0.2	7.815	A
B-A	196	445	0.441	193	0.8	14.551	B
C-AB	94	723	0.130	93	0.2	5.731	A
C-A	187			187			
A-B	104			104			
A-C	288			288			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	121	517	0.235	121	0.3	9.256	A
B-A	235	416	0.565	233	1.3	20.054	C
C-AB	122	735	0.166	121	0.3	5.894	A
C-A	214			214			
A-B	124			124			
A-C	344			344			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	149	394	0.377	147	0.6	14.832	B
B-A	287	374	0.769	281	2.9	37.395	E
C-AB	167	752	0.222	166	0.4	6.174	A
C-A	244			244			
A-B	152			152			
A-C	422			422			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	149	380	0.391	148	0.6	15.818	C
B-A	287	374	0.769	287	3.1	41.543	E
C-AB	167	753	0.222	167	0.4	6.186	A
C-A	244			244			
A-B	152			152			
A-C	422			422			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	121	509	0.239	123	0.3	9.544	A
B-A	235	416	0.565	242	1.4	22.076	C
C-AB	122	735	0.166	123	0.3	5.913	A
C-A	213			213			
A-B	124			124			
A-C	344			344			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	102	566	0.179	102	0.2	7.915	A
B-A	196	445	0.442	199	0.8	15.193	C
C-AB	95	723	0.131	95	0.2	5.753	A
C-A	186			186			
A-B	104			104			
A-C	288			288			

Existing Layout - 2031 With Residential Site Allocations, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	A1077/Falkland Way	T-Junction	Two-way		5.37	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2031 With Residential Site Allocations	AM	ONE HOUR	07:30	09:00	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A1077 (W)		✓	531	100.000
B - Falkland Way		✓	271	100.000
C - A1077 (E)		✓	485	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A - A1077 (W)	B - Falkland Way	C - A1077 (E)
From	A - A1077 (W)	0	290	241
	B - Falkland Way	169	0	102
	C - A1077 (E)	337	148	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - A1077 (W)	B - Falkland Way	C - A1077 (E)
From	A - A1077 (W)	0	5	11
	B - Falkland Way	18	0	2
	C - A1077 (E)	5	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.21	8.67	0.3	A
B-A	0.51	24.01	1.2	C
C-AB	0.39	7.76	1.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	77	620	0.124	76	0.1	6.744	A
B-A	127	436	0.292	125	0.5	13.587	B
C-AB	169	748	0.225	167	0.4	6.373	A
C-A	197			197			
A-B	218			218			
A-C	181			181			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	92	590	0.156	92	0.2	7.370	A
B-A	152	405	0.375	151	0.7	16.654	C
C-AB	221	765	0.289	220	0.6	6.816	A
C-A	215			215			
A-B	261			261			
A-C	217			217			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	112	538	0.209	112	0.3	8.620	A
B-A	186	363	0.513	184	1.2	23.497	C
C-AB	309	791	0.390	307	1.0	7.701	A
C-A	225			225			
A-B	319			319			
A-C	265			265			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	112	536	0.210	112	0.3	8.671	A
B-A	186	363	0.513	186	1.2	24.010	C
C-AB	309	791	0.391	309	1.0	7.761	A
C-A	225			225			
A-B	319			319			
A-C	265			265			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	92	588	0.156	92	0.2	7.415	A
B-A	152	405	0.375	154	0.7	17.055	C
C-AB	222	766	0.289	223	0.6	6.893	A
C-A	214			214			
A-B	261			261			
A-C	217			217			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	77	618	0.124	77	0.1	6.783	A
B-A	127	436	0.292	128	0.5	13.861	B
C-AB	169	749	0.226	170	0.4	6.439	A
C-A	196			196			
A-B	218			218			
A-C	181			181			

Existing Layout - 2031 With Residential Site Allocations, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	A1077/Falkland Way	T-Junction	Two-way		37.01	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2031 With Residential Site Allocations	PM	ONE HOUR	16:45	18:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A1077 (W)		✓	572	100.000
B - Falkland Way		✓	450	100.000
C - A1077 (E)		✓	433	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A - A1077 (W)	B - Falkland Way	C - A1077 (E)
From	A - A1077 (W)	0	180	392
	B - Falkland Way	292	0	158
	C - A1077 (E)	292	141	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - A1077 (W)	B - Falkland Way	C - A1077 (E)
From	A - A1077 (W)	0	7	2
	B - Falkland Way	3	0	2
	C - A1077 (E)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.97	128.66	6.3	F
B-A	0.95	108.80	9.2	F
C-AB	0.37	7.69	0.9	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	119	546	0.218	118	0.3	8.556	A
B-A	220	423	0.520	216	1.1	17.527	C
C-AB	153	718	0.213	152	0.4	6.367	A
C-A	173			173			
A-B	136			136			
A-C	295			295			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	142	466	0.305	141	0.4	11.301	B
B-A	263	389	0.675	259	2.0	27.773	D
C-AB	199	729	0.272	198	0.5	6.807	A
C-A	191			191			
A-B	162			162			
A-C	352			352			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	174	214	0.814	163	3.2	63.215	F
B-A	321	339	0.949	301	7.0	74.740	F
C-AB	274	746	0.367	273	0.8	7.647	A
C-A	203			203			
A-B	198			198			
A-C	432			432			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	174	180	0.966	161	6.3	128.662	F
B-A	321	337	0.953	313	9.2	108.800	F
C-AB	275	747	0.368	274	0.9	7.690	A
C-A	202			202			
A-B	198			198			
A-C	432			432			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	142	417	0.341	165	0.5	15.918	C
B-A	263	387	0.679	290	2.4	45.529	E
C-AB	199	730	0.273	201	0.5	6.862	A
C-A	190			190			
A-B	162			162			
A-C	352			352			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	119	538	0.221	120	0.3	8.801	A
B-A	220	423	0.520	225	1.2	19.181	C
C-AB	154	719	0.214	154	0.4	6.417	A
C-A	172			172			
A-B	136			136			
A-C	295			295			

Appendix 5 – Improvement Scheme Modelling

Junctions 9									
ARCADY 9 - Roundabout Module									
Version: 9.5.1.7462 © Copyright TRL Limited, 2019									
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Filename: A1077 Falkland Way Roundabout.j9
Path: Z:\Projects\3628 Barton Link Road\Data\Junction Capacity Modelling
Report generation date: 05/05/2021 17:30:17

- »Proposed Layout - 2021 Base, AM
- »Proposed Layout - 2021 Base, PM
- »Proposed Layout - 2031 With Residential Site Allocations, AM
- »Proposed Layout - 2031 With Residential Site Allocations, PM
- »Proposed Layout - Sensitivity Test, AM
- »Proposed Layout - Sensitivity Test, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Proposed Layout - 2021 Base									
1 - Falkland Way	D1	0.1	2.67	0.11	A	D2	0.4	3.48	0.28	A
2 - A1077 (E)		0.5	3.39	0.30	A		0.4	3.38	0.26	A
3 - Southern Access		0.0	0.00	0.00	A		0.0	0.00	0.00	A
4 - A1077 (W)		0.7	4.28	0.37	A		0.7	4.28	0.38	A
	Proposed Layout - 2031 With Residential Site Allocations									
1 - Falkland Way	D3	0.2	2.90	0.18	A	D4	0.5	3.69	0.32	A
2 - A1077 (E)		0.5	3.59	0.33	A		0.5	3.65	0.31	A
3 - Southern Access		0.0	0.00	0.00	A		0.0	0.00	0.00	A
4 - A1077 (W)		0.7	4.50	0.40	A		0.8	4.72	0.43	A
	Proposed Layout - Sensitivity Test									
1 - Falkland Way	D5	0.4	3.24	0.25	A	D6	0.5	3.82	0.33	A
2 - A1077 (E)		0.6	3.80	0.35	A		0.6	3.94	0.35	A
3 - Southern Access		0.0	2.85	0.04	A		0.0	2.84	0.02	A
4 - A1077 (W)		0.9	4.98	0.45	A		0.9	5.09	0.46	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	A1077/Falkland Way/Southern Access Road Roundabout
Location	Barton upon Humber, North Lincolnshire
Site number	
Date	19/02/2020
Version	
Status	
Identifier	
Client	NLC
Jobnumber	3928
Enumerator	LTP\MR
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				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)	Run automatically
D1	2021 Base	AM	ONE HOUR	07:45	09:15	15	✓
D2	2021 Base	PM	ONE HOUR	16:45	18:15	15	✓
D3	2031 With Residential Site Allocations	AM	ONE HOUR	07:45	09:15	15	✓
D4	2031 With Residential Site Allocations	PM	ONE HOUR	16:45	18:15	15	✓
D5	Sensitivity Test	AM	ONE HOUR	07:45	09:15	15	✓
D6	Sensitivity Test	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

Proposed Layout - 2021 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1077/Falkland Way Roundabout	Standard Roundabout		1, 2, 3, 4	3.68	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Falkland Way	
2	A1077 (E)	
3	Southern Access	
4	A1077 (W)	

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)	Exit only
1 - Falkland Way	3.56	7.29	26.2	23.0	60.0	38.0	
2 - A1077 (E)	3.15	7.28	28.6	20.0	60.0	41.0	
3 - Southern Access	3.87	7.35	27.9	30.4	60.0	36.0	
4 - A1077 (W)	3.40	6.42	16.1	20.7	60.0	40.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Falkland Way	0.571	1815
2 - A1077 (E)	0.554	1741
3 - Southern Access	0.594	1918
4 - A1077 (W)	0.522	1549

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2021 Base	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Falkland Way		ONE HOUR	✓	171	100.000
2 - A1077 (E)		ONE HOUR	✓	456	100.000
3 - Southern Access		ONE HOUR	✓	0	100.000
4 - A1077 (W)		ONE HOUR	✓	499	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	0	53	0	118
	2 - A1077 (E)	128	0	0	328
	3 - Southern Access	0	0	0	0
	4 - A1077 (W)	265	234	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	10	10	10	10
	2 - A1077 (E)	10	10	10	10
	3 - Southern Access	10	10	10	10
	4 - A1077 (W)	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Falkland Way	0.11	2.67	0.1	A	157	235
2 - A1077 (E)	0.30	3.39	0.5	A	418	628
3 - Southern Access	0.00	0.00	0.0	A	0	0
4 - A1077 (W)	0.37	4.28	0.7	A	458	687

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	129	32	175	1715	0.075	128	295	0.0	0.1	2.495	A
2 - A1077 (E)	343	86	89	1692	0.203	342	215	0.0	0.3	2.931	A
3 - Southern Access	0	0	431	1662	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	376	94	96	1499	0.251	374	335	0.0	0.4	3.517	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	154	38	210	1695	0.091	154	353	0.1	0.1	2.568	A
2 - A1077 (E)	410	102	106	1682	0.244	410	258	0.3	0.4	3.112	A
3 - Southern Access	0	0	516	1612	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	449	112	115	1489	0.301	448	401	0.4	0.5	3.803	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	188	47	257	1668	0.113	188	432	0.1	0.1	2.674	A
2 - A1077 (E)	502	126	130	1669	0.301	502	316	0.4	0.5	3.390	A
3 - Southern Access	0	0	631	1543	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	549	137	141	1475	0.372	549	491	0.5	0.6	4.271	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	188	47	258	1668	0.113	188	433	0.1	0.1	2.675	A
2 - A1077 (E)	502	126	130	1669	0.301	502	316	0.5	0.5	3.393	A
3 - Southern Access	0	0	632	1543	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	549	137	141	1475	0.372	549	491	0.6	0.7	4.277	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	154	38	211	1695	0.091	154	354	0.1	0.1	2.571	A
2 - A1077 (E)	410	102	106	1682	0.244	410	258	0.5	0.4	3.117	A
3 - Southern Access	0	0	517	1612	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	449	112	115	1489	0.301	449	401	0.7	0.5	3.811	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	129	32	176	1715	0.075	129	296	0.1	0.1	2.498	A
2 - A1077 (E)	343	86	89	1692	0.203	344	216	0.4	0.3	2.940	A
3 - Southern Access	0	0	432	1661	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	376	94	96	1498	0.251	376	336	0.5	0.4	3.531	A

Proposed Layout - 2021 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A1077/Falkland Way Roundabout	Standard Roundabout		1, 2, 3, 4	3.77	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2021 Base	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Falkland Way		ONE HOUR	✓	396	100.000
2 - A1077 (E)		ONE HOUR	✓	373	100.000
3 - Southern Access		ONE HOUR	✓	0	100.000
4 - A1077 (W)		ONE HOUR	✓	521	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	0	135	0	261
	2 - A1077 (E)	88	0	0	285
	3 - Southern Access	0	0	0	0
	4 - A1077 (W)	138	383	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	10	10	10	10
	2 - A1077 (E)	10	10	10	10
	3 - Southern Access	10	10	10	10
	4 - A1077 (W)	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Falkland Way	0.28	3.48	0.4	A	363	545
2 - A1077 (E)	0.26	3.38	0.4	A	342	513
3 - Southern Access	0.00	0.00	0.0	A	0	0
4 - A1077 (W)	0.38	4.28	0.7	A	478	717

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	298	75	287	1651	0.181	297	170	0.0	0.2	2.923	A
2 - A1077 (E)	281	70	196	1632	0.172	280	389	0.0	0.2	2.927	A
3 - Southern Access	0	0	476	1636	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	392	98	66	1514	0.259	391	410	0.0	0.4	3.520	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	356	89	344	1619	0.220	356	203	0.2	0.3	3.134	A
2 - A1077 (E)	335	84	234	1611	0.208	335	465	0.2	0.3	3.103	A
3 - Southern Access	0	0	570	1580	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	468	117	79	1508	0.311	468	490	0.4	0.5	3.806	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	436	109	421	1575	0.277	436	249	0.3	0.4	3.476	A
2 - A1077 (E)	411	103	287	1582	0.260	410	570	0.3	0.4	3.380	A
3 - Southern Access	0	0	697	1504	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	574	143	97	1498	0.383	573	601	0.5	0.7	4.275	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	436	109	422	1575	0.277	436	249	0.4	0.4	3.477	A
2 - A1077 (E)	411	103	287	1582	0.260	411	570	0.4	0.4	3.381	A
3 - Southern Access	0	0	698	1504	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	574	143	97	1498	0.383	574	601	0.7	0.7	4.282	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	356	89	345	1618	0.220	356	203	0.4	0.3	3.138	A
2 - A1077 (E)	335	84	235	1611	0.208	336	466	0.4	0.3	3.108	A
3 - Southern Access	0	0	571	1579	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	468	117	79	1507	0.311	469	491	0.7	0.5	3.818	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	298	75	289	1651	0.181	298	170	0.3	0.2	2.928	A
2 - A1077 (E)	281	70	197	1632	0.172	281	390	0.3	0.2	2.931	A
3 - Southern Access	0	0	478	1635	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	392	98	66	1514	0.259	393	411	0.5	0.4	3.531	A

Proposed Layout - 2031 With Residential Site Allocations, 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	A1077/Falkland Way Roundabout	Standard Roundabout		1, 2, 3, 4	3.82	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2031 With Residential Site Allocations	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Falkland Way		ONE HOUR	✓	271	100.000
2 - A1077 (E)		ONE HOUR	✓	485	100.000
3 - Southern Access		ONE HOUR	✓	0	100.000
4 - A1077 (W)		ONE HOUR	✓	531	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	0	102	0	169
	2 - A1077 (E)	148	0	0	337
	3 - Southern Access	0	0	0	0
	4 - A1077 (W)	290	241	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	10	10	10	10
	2 - A1077 (E)	10	10	10	10
	3 - Southern Access	10	10	10	10
	4 - A1077 (W)	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Falkland Way	0.18	2.90	0.2	A	249	373
2 - A1077 (E)	0.33	3.59	0.5	A	445	668
3 - Southern Access	0.00	0.00	0.0	A	0	0
4 - A1077 (W)	0.40	4.50	0.7	A	487	731

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	204	51	181	1712	0.119	203	328	0.0	0.1	2.623	A
2 - A1077 (E)	365	91	127	1670	0.219	364	257	0.0	0.3	3.028	A
3 - Southern Access	0	0	491	1627	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	400	100	111	1491	0.268	398	380	0.0	0.4	3.620	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	244	61	216	1692	0.144	243	393	0.1	0.2	2.733	A
2 - A1077 (E)	436	109	152	1657	0.263	436	308	0.3	0.4	3.243	A
3 - Southern Access	0	0	588	1569	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	477	119	133	1479	0.323	477	455	0.4	0.5	3.948	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	298	75	265	1664	0.179	298	482	0.2	0.2	2.899	A
2 - A1077 (E)	534	133	186	1638	0.326	533	377	0.4	0.5	3.584	A
3 - Southern Access	0	0	719	1491	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	585	146	163	1464	0.399	584	557	0.5	0.7	4.496	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	298	75	265	1664	0.179	298	482	0.2	0.2	2.899	A
2 - A1077 (E)	534	133	186	1638	0.326	534	378	0.5	0.5	3.587	A
3 - Southern Access	0	0	720	1491	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	585	146	163	1464	0.399	585	557	0.7	0.7	4.504	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	244	61	217	1691	0.144	244	394	0.2	0.2	2.737	A
2 - A1077 (E)	436	109	152	1657	0.263	437	309	0.5	0.4	3.249	A
3 - Southern Access	0	0	589	1569	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	477	119	133	1479	0.323	478	455	0.7	0.5	3.958	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	204	51	182	1712	0.119	204	330	0.2	0.1	2.628	A
2 - A1077 (E)	365	91	127	1670	0.219	365	259	0.4	0.3	3.037	A
3 - Southern Access	0	0	493	1626	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	400	100	112	1491	0.268	400	381	0.5	0.4	3.632	A

Proposed Layout - 2031 With Residential Site Allocations, 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	A1077/Falkland Way Roundabout	Standard Roundabout		1, 2, 3, 4	4.08	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2031 With Residential Site Allocations	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Falkland Way		ONE HOUR	✓	450	100.000
2 - A1077 (E)		ONE HOUR	✓	433	100.000
3 - Southern Access		ONE HOUR	✓	0	100.000
4 - A1077 (W)		ONE HOUR	✓	572	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	0	158	0	292
	2 - A1077 (E)	141	0	0	292
	3 - Southern Access	0	0	0	0
	4 - A1077 (W)	180	392	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	10	10	10	10
	2 - A1077 (E)	10	10	10	10
	3 - Southern Access	10	10	10	10
	4 - A1077 (W)	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Falkland Way	0.32	3.69	0.5	A	413	619
2 - A1077 (E)	0.31	3.65	0.5	A	397	596
3 - Southern Access	0.00	0.00	0.0	A	0	0
4 - A1077 (W)	0.43	4.72	0.8	A	525	787

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	339	85	294	1648	0.206	338	241	0.0	0.3	3.020	A
2 - A1077 (E)	326	81	219	1619	0.201	325	412	0.0	0.3	3.056	A
3 - Southern Access	0	0	544	1595	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	431	108	106	1494	0.288	429	438	0.0	0.4	3.712	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	405	101	352	1614	0.251	404	288	0.3	0.4	3.272	A
2 - A1077 (E)	389	97	262	1595	0.244	389	494	0.3	0.4	3.282	A
3 - Southern Access	0	0	651	1532	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	514	129	127	1483	0.347	514	525	0.4	0.6	4.085	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	495	124	431	1569	0.316	495	353	0.4	0.5	3.684	A
2 - A1077 (E)	477	119	321	1563	0.305	476	605	0.4	0.5	3.642	A
3 - Southern Access	0	0	797	1445	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	630	157	155	1468	0.429	629	642	0.6	0.8	4.715	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	495	124	432	1569	0.316	495	353	0.5	0.5	3.688	A
2 - A1077 (E)	477	119	321	1563	0.305	477	606	0.5	0.5	3.645	A
3 - Southern Access	0	0	798	1444	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	630	157	155	1468	0.429	630	643	0.8	0.8	4.725	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	405	101	353	1614	0.251	405	289	0.5	0.4	3.277	A
2 - A1077 (E)	389	97	263	1595	0.244	390	495	0.5	0.4	3.288	A
3 - Southern Access	0	0	653	1531	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	514	129	127	1483	0.347	515	526	0.8	0.6	4.098	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	339	85	296	1647	0.206	339	242	0.4	0.3	3.028	A
2 - A1077 (E)	326	81	220	1619	0.201	326	415	0.4	0.3	3.066	A
3 - Southern Access	0	0	546	1594	0.000	0	0	0.0	0.0	0.000	A
4 - A1077 (W)	431	108	106	1493	0.288	431	440	0.6	0.4	3.732	A

Proposed Layout - Sensitivity Test, 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	A1077/Falkland Way Roundabout	Standard Roundabout		1, 2, 3, 4	4.09	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	Sensitivity Test	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Falkland Way		ONE HOUR	✓	373	100.000
2 - A1077 (E)		ONE HOUR	✓	507	100.000
3 - Southern Access		ONE HOUR	✓	54	100.000
4 - A1077 (W)		ONE HOUR	✓	590	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	0	154	3	216
	2 - A1077 (E)	166	0	2	339
	3 - Southern Access	7	9	0	38
	4 - A1077 (W)	308	268	14	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	10	10	10	10
	2 - A1077 (E)	10	10	10	10
	3 - Southern Access	10	10	10	10
	4 - A1077 (W)	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Falkland Way	0.25	3.24	0.4	A	342	513
2 - A1077 (E)	0.35	3.80	0.6	A	465	698
3 - Southern Access	0.04	2.85	0.0	A	50	74
4 - A1077 (W)	0.45	4.98	0.9	A	541	812

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	281	70	218	1691	0.166	280	361	0.0	0.2	2.805	A
2 - A1077 (E)	382	95	175	1644	0.232	380	323	0.0	0.3	3.131	A
3 - Southern Access	41	10	541	1597	0.025	41	14	0.0	0.0	2.543	A
4 - A1077 (W)	444	111	137	1477	0.301	442	445	0.0	0.5	3.819	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	335	84	261	1666	0.201	335	432	0.2	0.3	2.974	A
2 - A1077 (E)	456	114	209	1625	0.281	455	387	0.3	0.4	3.386	A
3 - Southern Access	49	12	648	1534	0.032	49	17	0.0	0.0	2.665	A
4 - A1077 (W)	530	133	163	1463	0.362	530	533	0.5	0.6	4.238	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	411	103	320	1633	0.252	410	529	0.3	0.4	3.239	A
2 - A1077 (E)	558	140	256	1599	0.349	558	474	0.4	0.6	3.801	A
3 - Southern Access	59	15	793	1447	0.041	59	21	0.0	0.0	2.852	A
4 - A1077 (W)	650	162	200	1444	0.450	649	652	0.6	0.9	4.969	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	411	103	320	1632	0.252	411	530	0.4	0.4	3.240	A
2 - A1077 (E)	558	140	257	1599	0.349	558	475	0.6	0.6	3.805	A
3 - Southern Access	59	15	794	1447	0.041	59	21	0.0	0.0	2.853	A
4 - A1077 (W)	650	162	200	1444	0.450	650	653	0.9	0.9	4.983	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	335	84	262	1666	0.201	336	433	0.4	0.3	2.979	A
2 - A1077 (E)	456	114	210	1625	0.281	456	388	0.6	0.4	3.393	A
3 - Southern Access	49	12	649	1533	0.032	49	17	0.0	0.0	2.669	A
4 - A1077 (W)	530	133	164	1463	0.362	531	534	0.9	0.6	4.256	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	281	70	219	1690	0.166	281	363	0.3	0.2	2.812	A
2 - A1077 (E)	382	95	176	1643	0.232	382	325	0.4	0.3	3.139	A
3 - Southern Access	41	10	543	1596	0.025	41	14	0.0	0.0	2.546	A
4 - A1077 (W)	444	111	137	1477	0.301	445	447	0.6	0.5	3.837	A

Proposed Layout - Sensitivity Test, 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	A1077/Falkland Way Roundabout	Standard Roundabout		1, 2, 3, 4	4.33	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Sensitivity Test	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Falkland Way		ONE HOUR	✓	458	100.000
2 - A1077 (E)		ONE HOUR	✓	482	100.000
3 - Southern Access		ONE HOUR	✓	24	100.000
4 - A1077 (W)		ONE HOUR	✓	612	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	0	159	7	292
	2 - A1077 (E)	161	0	9	312
	3 - Southern Access	3	4	0	17
	4 - A1077 (W)	180	396	36	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
From		1 - Falkland Way	2 - A1077 (E)	3 - Southern Access	4 - A1077 (W)
	1 - Falkland Way	10	10	10	10
	2 - A1077 (E)	10	10	10	10
	3 - Southern Access	10	10	10	10
	4 - A1077 (W)	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Falkland Way	0.33	3.82	0.5	A	420	630
2 - A1077 (E)	0.35	3.94	0.6	A	442	663
3 - Southern Access	0.02	2.84	0.0	A	22	33
4 - A1077 (W)	0.46	5.09	0.9	A	562	842

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	345	86	327	1629	0.212	344	258	0.0	0.3	3.078	A
2 - A1077 (E)	363	91	251	1602	0.227	362	419	0.0	0.3	3.191	A
3 - Southern Access	18	5	574	1577	0.011	18	39	0.0	0.0	2.538	A
4 - A1077 (W)	461	115	126	1483	0.311	459	466	0.0	0.5	3.859	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	412	103	392	1592	0.259	411	309	0.3	0.4	3.355	A
2 - A1077 (E)	433	108	301	1574	0.275	433	502	0.3	0.4	3.470	A
3 - Southern Access	22	5	687	1510	0.014	22	47	0.0	0.0	2.659	A
4 - A1077 (W)	550	138	151	1470	0.374	550	558	0.5	0.7	4.299	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	504	126	479	1542	0.327	504	378	0.4	0.5	3.813	A
2 - A1077 (E)	531	133	368	1537	0.345	530	615	0.4	0.6	3.931	A
3 - Southern Access	26	7	841	1419	0.019	26	57	0.0	0.0	2.843	A
4 - A1077 (W)	674	168	185	1452	0.464	673	683	0.7	0.9	5.072	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	504	126	480	1541	0.327	504	379	0.5	0.5	3.818	A
2 - A1077 (E)	531	133	369	1536	0.345	531	615	0.6	0.6	3.937	A
3 - Southern Access	26	7	842	1418	0.019	26	57	0.0	0.0	2.844	A
4 - A1077 (W)	674	168	185	1452	0.464	674	684	0.9	0.9	5.086	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	412	103	393	1591	0.259	412	310	0.5	0.4	3.363	A
2 - A1077 (E)	433	108	302	1574	0.275	434	503	0.6	0.4	3.478	A
3 - Southern Access	22	5	689	1509	0.014	22	47	0.0	0.0	2.663	A
4 - A1077 (W)	550	138	151	1470	0.374	551	559	0.9	0.7	4.318	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Falkland Way	345	86	329	1628	0.212	345	259	0.4	0.3	3.090	A
2 - A1077 (E)	363	91	252	1601	0.227	363	421	0.4	0.3	3.199	A
3 - Southern Access	18	5	577	1576	0.011	18	39	0.0	0.0	2.541	A
4 - A1077 (W)	461	115	127	1483	0.311	461	468	0.7	0.5	3.879	A