Rebuttal Proof of Evidence

Land North of Possingham Farmhouse, Ashford, Great Chart, Kent

Outline application for development of up to 655 residential dwellings (including 30% affordable dwellings) to consider access only (excluding internal circulation routes), with all other matters reserved.

LPA Ref: 22/00571/AS

Appeal Ref: APP/E2205/W/24/3345454

Hodson Development Ltd

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SLR Project No.: 425.001542.00001

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Appendices

1.0 Introduction

1.1 This rebuttal evidence has been prepared to respond to the evidence of Mr Hogben prepared on behalf of Kent County Council acting as the local highway authority.

1.2 I rely on the introduction to my Proof of Evidence and do not repeat this again.

1.3 The topics that I will cover are:

- Section 2 – Sustainable Location of the Appeal Site
- Section 3 – Site Accesses
- Section 4 – Highway Assessment Methodology
- Section 5 – A28 Junctions
- Section 6 – Suggested Conditions
- Section 7 - Summary and Conclusions

2.0 Sustainable Location of the Appeal Site

2.1 In this Section of my rebuttal evidence, I undertake a comparison of what Mr Hogben has stated would be needed to ensure that the Appeal Site is in a sustainable location accessible by all modes of transport and what is being offered in association with the Appeal Scheme.

2.2 In some areas, the Appellant has considered what Mr Hogben has stated is required and is prepared to provide this.

2.3 In paragraph 4.1 of his evidence Mr Hogben lists the following as local facilities to be provided:

- Primary School
- Secondary School
- Local Shop
- Public House
- Bus Services
- Village Hall
- Doctors Surgery

2.4 He goes on to state that the following infrastructure needs to be in place to ensure the existing facilities available are accessible:

- Access Roundabout C
- Avenue from Access A Roundabout to Chilmington Green Road
- Formal pedestrian crossing across Chilmington Green Road
- Active Travel route between the formal pedestrian crossing across Chilmington Green Road and Secondary School
- Footway and cycleways links from Parcel K at Chilmington Green to Singleton

2.5 The Appellant is willing to provide the above works prior to first occupation of any dwellings on the Appeal Site and this is contained in the draft S106 Agreement under discussion at the time of writing this evidence as a planning obligation.

2.6 Mr Hogben then states in paragraph 4.2 of his evidence that a half hourly bus service is needed to Ashford Town Centre and Railway Station with bus stops 400m or 5 minutes' walk for new residents.

2.7 The sustainable location of the site is considered in Section 4 of my evidence. My Table ID4.3 is a summary of local facilities and when they will be in place. This is a more extensive list of facilities than identified by Mr Hogben. The walking and cycling facilities and the proposed bus service through the site are set out in detail.

2.8 **Table IDR2.1** below is a summary of the facilities identified by Mr Hogben and when the facilities and associated links will be provided.

Table IDR2.1:Summary of Provision of Local Facilities identifed by KCC

FACILITY	STATUS	WALKING/CYCLING LINKS TO THE FACILITY	ID EVIDENCE REFERENCE/COMMENTS
Primary School	Open	Prior to First Occupation	Paragraphs 4.49 and 4.50
Secondary School	Opens September 2025 which will be Prior to First Occupation	Prior to First Occupation	Paragraphs 4.49 and 4.50
Local Shops (1)	Prior to First Occupation	Prior to First Occupation	Paragraphs 4.49 and 4.50
Public House (2)	Singleton Barn	Prior to First Occupation	Not included in ID evidence as not seen as a key day to day local service
Bus Services	Prior to 100th Occupation	Prior to 100th Occupation	Paragraphs 4.40 to 4.48
Village Hall (3)	Open	Prior to First Occupation	Paragraphs 4.49 and 4.50
Doctors Surgery (4)	Singleton Health Centre	Prior to First Occupation	Table ID4.3 – Longer Term Option

Notes:

(1) The local shop being the foodstore in the District Centre

(2) The Singleton Barn is an existing public house in Singleton.

(3) The temporary CMO building provides spaces that can be rented by the public as a village hall would offer

(4) Singleton Health Centre is the existing facility within Singleton. In 2029-30 the Community Hub including the Doctors Surgery is programmed to open

2.9 As it can be seen, all of the identified local facilities and the links and services to them are either in place or will be in place at an early stage of development.

2.10 The commitments made can be secured through planning conditions and planning obligations as necessary.

2.11 As such, my view is that KCC as the local highway authority should agree the Appeal Scheme will be in a sustainable location with accessibility to local facilities by all modes of transport.

3.0 Site Accesses

3.1 In paragraph 6.1 of his evidence, Mr Hogben states that the design of the primary site access is accepted with the inclusion of the passing bay. This plan is included at Appendix ID7 of my evidence. As stated in paragraph 6.4 of my evidence, the provision of the passing bay can be secured through a suitably worded condition.

3.2 In paragraph 6.2 of his evidence, Mr Hogben states that a plan is needed showing the design of the secondary access including the revision to address the recommendation made in the Stage 1 Road Safety Audit. This has been prepared and is contained in **Appendix IDR1**. The minor amendment does not affect the capacity analysis undertaken. The provision of the secondary site access including this design revision can be secured through a suitably worded condition.

3.3 As such, my view is that KCC as the local highway authority should agree the site access designs.

4.0 Highway Assessment Methodology

4.1 Within his evidence, Mr Hogben makes a number of comments on the highway assessment methodology which are considered in this section of my rebuttal evidence.

Trip Rates

4.2 At paragraph 7.1 of his evidence, Mr Hogben states that both set of trip rates should be used for the assessment. He argues that the revised trip rates cannot be accepted as the site is not sustainable. He does not address the fact that KCC originally objected to the trip rates in the TAA.

4.3 The assessment of the implications of traffic associated with the Appeal Scheme has been undertaken with both sets of trips as set out in Section 5 of my evidence.

4.4 There only remain two queries:

1) Mr Hogben does not explain why he now accepts the trip rates in the TAA having previously questioned them. The revised trip rates were calculated using the amended criteria that Mr Hogben had identified, which did not relate to the accessibility of sites. Mr Hogben also does not explain why similar trips rates to the revised ones have been accepted across various sites in Ashford.

2) As the site will be accessible and have links to the local facilities identified by Mr Hogben (see Section 2 above) then there is no reason for him not to accept the revised trips rates.

Journey Purpose

4.5 In paragraph 8.3 of this evidence, Mr Hogben states that NTS survey data from 2019 should be used. He then states in paragraph 8.9 this is what has been done.

4.6 This is correct. Therefore, there is no difference between Mr Hogben's evidence and my own.

4.7 In paragraph 8.4 of his evidence, Mr Hogben questions the use of the "Education" and "Education Escort" journey purposes from the NTS and states that he believes this leads to double counting.

4.8 This is not accepted and is a surprising point given that KCC as the local highway authority have accepted the use of both trip purposes in the same way for the assessment of other housing schemes in Kent previously, such as Heathlands in Maidstone.

4.9 Section 5 of my rebuttal evidence considers the implications of only using "Education Escort" trips.

Internalisation

4.10 There is no difference between Mr Hogben's evidence (**paragraph 7.2**) and my own (**Table ID5.5**) in relation to the levels of internalisation.

4.11 In paragraph 7.2 of his evidence, Mr Hogben is incorrect. In fact, the modelling of the local junctions does include the internalised traffic travelling to the local facilities close to the site.

Assignment

4.12 In paragraph 8.5 of his evidence, Mr Hogben states that in the original TA 67% of traffic was assumed to travel northbound. This is correct, but this was at a location close to the site and not at the identified key junctions on the A28. Since the TA was produced, more detailed assessment work has been undertaken which supersedes the work in the TA.

4.13 In paragraph 8.7 of his evidence, Mr Hogben questions the assignment routes for traffic for various journey purposes. These are set out in detail in the diagrams in Appendix ID5 of my evidence, which were sent to Mr Hogben by email on 30th August 2024 but are not considered in his evidence.

4.14 The assignment of trips was undertaken using peak period journey time information as set out in paragraphs 5.21 to 5.23 of my evidence.

4.15 I believe that the only differences between the evidence of Mr Hogben and my own are the use of the education/education escort trip purposes and the assignment of traffic on the A28 north of the site.

5.0 A28 Junctions

5.1 This section of my evidence undertakes some additional assessment work on the key junctions on the A28 identified by Mr Hogben in his evidence.

5.2 In paragraph 5.1 of his evidence, Mr Hogben has accepted that there would be no highway safety concerns arising in association with the Appeal Scheme. As such, no further work on this is undertaken.

5.3 For comparison purposes, this section of my evidence discusses an appeal decision where the Secretary of State considered where a highway capacity impact was severe.

5.4 This section of my evidence also considers the implications of using the “Education Escort” only trip purpose as it relates to my conclusions on the highway capacity assessment of the identified key junctions on the A28. This provides a sensitivity test which is undertaken in light of Mr Hogben’s comment on this point in paragraph 8.4, which although not accepted it is nevertheless important to understand whether it makes a difference.

5.5 Finally, this section of my rebuttal considers the impacts of the traffic associated with the Appeal Scheme on the key junctions on the A28 in isolation. In my view, the difference between Mr Hogben’s evidence and my own is not whether there is a need for mitigation on the A28, but the scale of the mitigation that is required and appropriate. Mr Hogben is seeking KCC’s proposed A28 dualling scheme to be completed to mitigate the implications of the traffic associated with the Appeal Scheme, whereas I have suggested improvements to the A28 as detailed in Section 7 of my evidence in (and as shown in Appendices ID13 and ID14).

Definition of Cumulative Severe Residual Impact

5.6 In paragraph 12.19 of his evidence, Mr Hogben refers to an Appeal Decision where an Inspector made a judgement on the level of increase in traffic delays that could be considered severe in the particular circumstances of that case.

5.7 There is no set definition of a cumulative severe residual impact. To provide a further comparison to illustrate the point, I have included an Appeal Decision (22/3295498) (CD8/2) where the Secretary of State supported the Inspector’s interpretation of a severe impact in the circumstances of that case.

5.8 Of particular interest in respect of that comparison is the conclusion that even if there was a large increase in journey times in peak hours this would not necessarily equate to a severe adverse impact.

Sensitivity Test using only “Education Escort” Trip Purpose

5.9 As stated above, a sensitivity test has been undertaken using the “Education Escort” trip purpose as opposed to both “Education” and “Education Escort” trip purposes to represent the proportion of education trips in peak hours. This has the impact of reducing the proportion of educations trips and increase other journey purposes, especially commuting.

5.10 The implications of this change to the journey purposes relating to the Appeal Scheme are:

- AM Peak 0730-0830 – Commuting increases from 21% to 32% and Education Trips decrease from 64% to 45%
- PM Peak 1630-1730 – Commuting increases from 28% to 31% and Education Trips decrease from 28% to 9%

5.11 To put this into the context of the levels of traffic associated with the Appeal Scheme on the A28 link to the south of the Matalan Roundabout the changes are:

- AM Peak 0730-0830 – an increase of 17 trips northbound (56 to 73) and 6 southbound (20 to 26)
- PM Peak 1630-1730 – an increase of 4 trips northbound (50 to 54) and 7 southbound (80 to 87)

5.12 The changes in traffic are considered below.

Matalan Roundabout

5.13 I assessed the capacity of the Matalan Roundabout using 2023 traffic data, asset out in Table ID7.5 of my evidence.

5.14 At paragraph 7.25, I explained that during the identified AM peak hour, the junction is currently operating at or close to capacity with queues and delays occurring on all approaches with one arm close to capacity in the identified PM peak hour.

5.15 Table ID7.6 summarised the effects of committed developments at Matalan Roundabout. As I explained in paragraph 7.26, adding additional traffic to the roundabout during the identified peak hours increases queuing and delays.

5.16 **Tables IDR5.1 and IDR5.2** consider the implications of traffic associated with the Appeal Scheme at the roundabout for the main assessment scenario and the test with higher trip rates sensitivity test.

Table IDR5.1: Matalan Roundabout (2023 Observed + Committed + Dev Eduction Escort)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE)	233.1	518.6	1.16	460.1	1024.1	1.32
B	Brookfield Road (SE)	259.5	1118.9	1.45	149.9	660.9	1.22
C	A28 (SW)	429.1	2471.7	1.85	263.1	1307.9	1.47
D	Chart Road (NW)	91.8	1405.2	1.50	16.5	362.4	1.07

Table IDR5.2: Matalan Roundabout (2023 Observed + Committed + Dev Eduction Escort Senstivity)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE)	265.1	588.9	1.18	549.5	1226.6	1.39
B	Brookfield Road (SE)	266.8	1150.6	1.49	159.5	689.3	1.25
C	A28 (SW)	520.5	2936.7	2.00	309.7	1516.9	1.54
D	Chart Road (NW)	98.7	1565.9	1.56	16.5	362.2	1.07

5.17 The changes in the results are not significant in comparison to those in Tables ID7.7 and ID7.8 of my evidence, they are slightly worse as more traffic passes through the junction. As before, adding additional traffic associated with the Appeal Scheme would exacerbate the issues that would occur in the future at the roundabout as a result of traffic associated with committed development. There would be a severe residual cumulative impact without any mitigation. As such, improvements are proposed to both the Loudon Way traffic signal junction and at the Matalan roundabout, which can be implemented wholly within land that is within the public highway.

5.18 The proposed improvement schemes for Louden Way traffic signals and Matalan Roundabout are contained in **Appendices ID13 and ID14** respectively.

5.19 **Tables IDR5.3 and IDR5.4** consider the implications of the proposed improvement and include the traffic associated with the Appeal Scheme for the main assessment scenario and the higher trip rate sensitivity test.

Table IDR5.3: Improved Matalan Roundabout (2023 Observed + Committed + Dev Education Escort)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE)	4.9	10.6	0.83	22.1	43.1	0.97
B	Brookfield Road (SE)	91.7	341.7	1.12	0.7	3.0	0.42
C	A28 (SW)	202.1	742.3	1.27	1.7	6.4	0.63
D	Chart Road (NW)	36.5	444.6	1.13	0.4	7.5	0.26

Table IDR5.4: Improved Matalan Roundabout (2023 Observed + Committed + Dev Education Escort Sensitivity)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE)	5.0	10.9	0.83	25.7	49.5	0.98
B	Brookfield Road (SE)	94.3	351.6	1.12	0.7	3.0	0.42
C	A28 (SW)	229.2	837.7	1.30	1.8	6.5	0.64
D	Chart Road (NW)	39.0	479.1	1.15	0.4	7.6	0.27

5.20 Again, the differences between these results and those in Tables 7.9 and 7.10 of my evidence are not significant. As before, while the junction remains overcapacity on some approaches, the proposed improvements provide a significant benefit for the operation of the roundabout. The improvements provide benefits that go beyond just addressing the implications of traffic associated with the Appeal Scheme.

Loudon Way Traffic Signal Junction

5.21 My assessment of the capacity of the Loudon Way Traffic Signal Junction using 2023 traffic data is set out in Table ID7.11.

5.22 As set out in paragraph 7.40 of my evidence, my assessment showed that during the identified AM and PM peak hours, the junction is currently operating close to capacity with queues and delays occurring on two approaches.

5.23 At Table ID7.12, I then set out the implications of committed developments at the junction. As explained in paragraph 7.40, adding additional traffic to the roundabout during the identified peak hours increases queuing and delays.

5.24 **Tables IDR5.5 and IDR5.6** consider the implications of traffic associated with the Appeal Scheme at the junction for the main assessment scenario and the higher trip rates sensitivity test.

Table IDR5.5: Loudon Way Traffic Signals (2023 Observed + Committed + Dev Education Escort)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Practical Reserve Capacity (PRC)		-52.3%			-27.8%		
Link No.	Lane	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)
1/1+1/2	Chart Road (West)	137.1	562.2	344.2	115.0	285.4	170.4
2/1+2/2	Loudon Road	128.0	498.4	62.0	103.8	196.4	17.5
3/1	Chart Road (East) - Lane 1	85.1	14.4	28.6	103.2	97.5	90.1
3/2+3/3	Chart Road (East) - Lanes 2/3	89.4	130.3	6.7	86.9	123.7	6.1

Table IDR5.6: Loudon Way Traffic Signals (2023 Observed + Committed + Dev Education Escort Sensitivity)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Practical Reserve Capacity (PRC)		-54.5%			-28.1%		
Link No.	Lane	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)
1/1+1/2	Chart Road (West)	139.0	583.4	360.1	114.1	270.6	164.7
2/1+2/2	Loudon Road	128.0	498.4	62.0	115.3	346.6	29.6
3/1	Chart Road (East) - Lane 1	85.7	14.8	29.3	103.0	94.0	89.6
3/2+3/3	Chart Road (East) - Lanes 2/3	89.4	130.3	6.7	86.9	123.7	6.1

5.25 The changes in the results are not significant in comparison to those in Tables ID7.13 and ID7.14 of my evidence, they are slightly worse as more traffic passes through the junction. Again, as before adding additional traffic associated with the Appeal Scheme would exacerbate the issues that would occur in the future at the roundabout as a result of the traffic associated with the committed developments. There would be a severe residual cumulative impact on some approaches without mitigation. As such, improvements are proposed which can be implemented wholly within land that is within the public highway.

5.26 The proposed improvement scheme is contained in **Appendix ID14** of my evidence.

5.27 **Tables IDR5.7 and IDR5.8** consider the implications of the proposed improvement and include the traffic associated with the Appeal Scheme for the main assessment scenario and the higher trip rate sensitivity test.

Table IDR5.7: Improved Loudon Way Traffic Signals (2023 Observed + Committed + Dev Education Escort)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Practical Reserve Capacity (PRC)		-28.0%			-6.1%		
Link No.	Lane	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)
1/1+1/2	Chart Road (West)	115.2	283.1	196.7	95.5	29.0	39.0
2/1+2/2	Loudon Road	108.3	237.7	30.5	94.3	113.4	11.0
3/1	Chart Road (East) - Lane 1	78.2	11.9	22.4	95.5	30.3	48.4
3/2+3/3	Chart Road (East) - Lanes 2/3	89.4	72.7	7.1	86.9	64.9	6.4

Table IDR5.8: Improved Loudon Way Traffic Signals (2023 Observed + Committed + Dev Education Escort Sensitivity)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Practical Reserve Capacity (PRC)		-29.7%			-7.1%		
Link No.	Lane	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)
1/1+1/2	Chart Road (West)	116.7	304.9	210.9	95.8	30.1	40.4
2/1+2/2	Loudon Road	108.3	237.7	30.5	94.3	113.4	11.0
3/1	Chart Road (East) - Lane 1	78.8	12.1	22.7	96.4	33.5	51.6
3/2+3/3	Chart Road (East) - Lanes 2/3	89.4	72.7	7.1	86.9	64.9	6.4

5.28 Again, the differences between these results and those in Tables 7.9 and 7.10 of my evidence are not significant. As before while the junction remains overcapacity on some approaches, the proposed improvements provide a significant benefit for the operation of the roundabout. The improvements provide benefits that go beyond just addressing the implications of traffic associated with the Appeal Scheme.

Tank Roundabout

5.29 My assessment of the capacity of Tank Roundabout using 2023 traffic data is set out in Table ID7.17.

5.30 As set out in paragraph 7.52 of my evidence, this showed that during the identified AM and PM peak hours the junction is currently operating close to capacity with queues and delays occurring on two approaches.

5.31 Table ID7.18 then set out the implications of committed developments at the junction. As explained in paragraph 7.54, adding additional traffic to the roundabout during the identified peak hours increases queuing and delays.

5.32 **Tables IDR5.9 and IDR5.10** consider the implications of traffic associated with the Appeal Scheme at the roundabout for the main assessment scenario and the higher trip rate sensitivity test.

Table IDR5.9: Tank Roundabout (2023 Observed + Committed + Dev Education Escort)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 – 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE) Templer Way	236.8	630.2	1.19	412.4	1215.7	1.38
B	Chart Road (East)	65.5	632.3	1.18	31.6	365.1	1.08
C	Carlton Way (South)	29.8	822.9	1.22	51.3	1030.1	1.32
D	A28 (SW) Chart Road	387.4	923.2	1.29	234.8	574.2	1.18
E	Sir Henry Brackenbury Road (NW)	74.4	6068.7	2.94	16.0	1199.8	1.32

Table IDR5.10: Tank Roundabout (2023 Observed + Committed + Dev Education Escort Sensitivity)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 – 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE) Templer Way	257.5	690.8	1.21	449.6	1335.3	1.42
B	Chart Road (East)	70.6	668.2	1.20	61.8	665.9	1.19
C	Carlton Way (South)	29.1	800.6	1.21	52.9	1069.1	1.32
D	A28 (SW) Chart Road	447.0	1064.3	1.34	267.2	650.2	1.20
E	Sir Henry Brackenbury Road (NW)	75.0	6181.6	2.97	16.8	1282.0	1.35

5.33 The changes in the results are not significant in comparison to those in Tables ID7.19 and ID7.20 of my evidence, they are slightly worse as more traffic passes through the junction. Again, adding additional traffic associated with the Appeal Scheme would exacerbate the issues that would occur in the future at the roundabout as a result of traffic associated with the committed developments.

5.34 As set out in my evidence, the improvement of the pedestrian crossing to the south of the Tank roundabout would improve the performance of the junction. By improving northbound and southbound traffic flows at the crossing will offset any implications arising from the traffic associated with the Appeal Scheme at Tank Roundabout.

Sensitivity Test Summary

5.35 Using the "Education Escort" journey purpose from the NTS does not affect my conclusion that the implications of traffic associated with the Appeal Scheme would be mitigated by the proposed improvement schemes.

Implications of Traffic Associated with the Appeal Scheme

5.36 In this assessment scenario no traffic associated with the identified committed developments is included. The committed developments are further units being occupied at the consented Chilmington Green scheme and no units coming forward at the proposed Court Lodge development. The Chilmington Green consent is subject to planning obligations in relation to the longer term A28 dualling. The Court Lodge scheme does not have planning consent and there is no identified mitigation strategy.

5.37 In this sensitivity test, the "Education Escort" only trip purpose has been used as a worse case.

Matalan Roundabout

5.38 **Tables IDR5.11 and IDR5.12** consider the implications of traffic associated with the Appeal Scheme at the roundabout for the main assessment scenario and the test with higher trip rates sensitivity test.

Table IDR5.11: Matalan Roundabout (2023 Observed + Dev Eduction Escort)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE)	13.6	39.3	0.94	35.1	92.9	1.00
B	Brookfield Road (SE)	59.6	237.8	1.07	10.0	45.3	0.93
C	A28 (SW)	36.4	246.9	1.06	9.3	55.6	0.93
D	Chart Road (NW)	20.9	251.7	1.05	2.5	56.5	0.75

Table IDR5.12: Matalan Roundabout (2023 Observed + Dev Eduction Escort Senstivity)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE)	14.9	43.0	0.95	42.8	110.6	1.01
B	Brookfield Road (SE)	77.1	310.3	1.10	13.1	58.8	0.96
C	A28 (SW)	51.0	326.0	1.09	12.2	71.3	0.96
D	Chart Road (NW)	25.2	303.9	1.06	3.2	72.0	0.80

5.39 Adding additional traffic associated with the Appeal Scheme would exacerbate the issues that would occur in the future at the roundabout as a result of traffic associated with committed development.

5.40 **Tables IDR5.13 and IDR5.14** consider the implications of the proposed improvement and includes the traffic associated with the Appeal Scheme for the main assessment scenario and the higher trip rate sensitivity test.

Table IDR5.13: Improved Matalan Roundabout (2023 Observed + Dev Education Escort)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE)	1.9	5.3	0.65	2.2	5.8	0.69
B	Brookfield Road (SE)	0.5	2.2	0.34	0.5	2.1	0.33
C	A28 (SW)	0.5	3.7	0.34	0.7	3.9	0.41
D	Chart Road (NW)	0.5	5.9	0.33	0.2	5.1	0.19

Table IDR5.14: Improved Matalan Roundabout (2023 Observed + Dev Education Escort Sensitivity)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE)	2.0	5.4	0.66	2.3	6.0	0.70
B	Brookfield Road (SE)	0.5	2.2	0.34	0.5	2.1	0.33
C	A28 (SW)	0.6	3.8	0.36	0.7	3.9	0.41
D	Chart Road (NW)	0.5	6.1	0.34	0.2	5.1	0.20

5.41 As illustrated above, the proposed improvement scheme fully addresses the implications of traffic associated with the Appeal Scheme with the junction operating within capacity.

Loudon Way Traffic Signal Junction

5.42 **Tables IDR5.15 and IDR5.16** consider the implications of traffic associated with the Appeal Scheme at the junction for the main assessment scenario and the higher trip rates sensitivity test.

Table IDR5.15: Loudon Way Traffic Signals (2023 Observed + Dev Education Escort)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Practical Reserve Capacity (PRC)		-16.8%			-10.3%		
Link No.	Lane	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)
1/1+1/2	Chart Road (West)	105.1	139.0	81.0	99.3	66.0	54.7
2/1+2/2	Loudon Road	87.7	67.4	10.3	78.5	65.6	7.3
3/1	Chart Road (East) - Lane 1	64.8	9.6	14.0	69.1	9.3	16.2
3/2+3/3	Chart Road (East) - Lanes 2/3	60.1	61.1	4.0	48.9	56.1	3.7

Table IDR5.16: Loudon Way Traffic Signals (2023 Observed + Dev Education Escort Sensitivity)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Practical Reserve Capacity (PRC)		-19.1%			-10.8%		
Link No.	Lane	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)
1/1+1/2	Chart Road (West)	107.2	172.4	94.3	99.7	69.3	56.4
2/1+2/2	Loudon Road	87.7	67.4	10.3	78.5	65.6	7.3
3/1	Chart Road (East) - Lane 1	65.4	9.7	14.4	70.0	9.5	16.7
3/2+3/3	Chart Road (East) - Lanes 2/3	60.1	61.1	4.0	48.9	56.1	3.7

5.43 Adding additional traffic associated with the Appeal Scheme would exacerbate the issues that would occur in the future at the roundabout as a result of traffic associated with the committed developments.

5.44 **Tables IDR5.17 and IDR5.18** consider the implications of the proposed improvement and include the traffic associated with the Appeal Scheme for the main assessment scenario and the higher trip rate sensitivity test.

Table IDR5.17: Improved Loudon Way Traffic Signals (2023 Observed + Dev Education Escort)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Practical Reserve Capacity (PRC)		3.8%			7.7%		
Link No.	Lane	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)
1/1+1/2	Chart Road (West)	86.7	23.6	11.8	83.6	21.8	10.8
2/1+2/2	Loudon Road	76.2	29.5	4.8	56.2	24.1	3.0
3/1	Chart Road (East) - Lane 1	67.2	10.7	8.3	75.4	12.8	10.4
3/2+3/3	Chart Road (East) - Lanes 2/3	38.7	13.5	1.6	37.7	13.2	1.6

Table IDR5.18: Improved Loudon Way Traffic Signals (2023 Observed + Dev Education Escort Sensitivity)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 - 1730*		
Practical Reserve Capacity (PRC)		1.7%			7.3%		
Link No.	Lane	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)	Degree of Saturation (%)	Average Delay (s/pcu)	Mean Max. Queue (pcu)
1/1+1/2	Chart Road (West)	88.5	25.0	12.7	83.9	21.9	10.8
2/1+2/2	Loudon Road	76.2	29.5	4.8	56.2	24.1	3.0
3/1	Chart Road (East) - Lane 1	68.0	10.8	8.4	76.5	13.2	10.6
3/2+3/3	Chart Road (East) - Lanes 2/3	38.7	13.5	1.6	37.7	13.2	1.6

5.45 As illustrated, the proposed improvement scheme fully addresses the implications of traffic associated with the Appeal Scheme with the junction operating within capacity.

Tank Roundabout

5.46 **Tables IDR5.19 and IDR5.20** consider the implications of traffic associated with the Appeal Scheme at the roundabout for the main assessment scenario and the higher trip rate sensitivity test.

Table IDR5.19: Tank Roundabout (2023 Observed + Dev Education Escort)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 – 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE) Templer Way	25.5	89.3	0.98	12.8	51.2	0.94
B	Chart Road (East)	18.1	164.9	1.00	14.3	150.3	0.98
C	Carlton Way (South)	5.2	136.9	0.84	14.7	262.9	1.02
D	A28 (SW) Chart Road	6.8	22.3	0.87	12.8	41.1	0.94
E	Sir Henry Brackenbury Road (NW)	5.6	190.8	0.90	1.9	121.6	0.69

Table IDR5.20: Tank Roundabout (2023 Observed + Dev Education Escort Sensitivity)

		AM Peak Hour			PM Peak Hour		
		0800 - 0900			*1630 – 1730*		
Arm	Approach	Queue (pcu)	Delay (s/pcu)	RFC	Queue (pcu)	Delay (s/pcu)	RFC
A	A28 (NE) Templer Way	30.3	104.3	1.00	13.9	55.4	0.95
B	Chart Road (East)	20.1	180.4	1.01	18.4	187.4	1.01
C	Carlton Way (South)	5.4	141.4	0.85	16.8	298.5	1.04
D	A28 (SW) Chart Road	8.1	26.2	0.89	13.1	41.9	0.94
E	Sir Henry Brackenbury Road (NW)	9.7	332.2	1.01	1.9	124.5	0.69

5.47 Adding additional traffic associated with the Appeal Scheme would mean the junction would continue to operate at capacity.

5.48 As set out in my evidence, the improvement of the pedestrian crossing to the south of the Tank roundabout is proposed to improve the performance of the junction.

5.49 This sensitivity test confirms that it is the committed development that creates the future issues on the A28, rather than the traffic associated with the Appeal Scheme which would be mitigated by the Appellant’s proposed improvements.

Section Summary

5.50 There are no highway safety concerns arising as a result of the Appeal Scheme.

5.51 There is no definition of a severe residual cumulative impact, but this should not just be considered at the busiest peak periods.

5.52 Using the “Education Escort” journey purpose from the NTS does not affect the conclusions drawn in my evidence, which is that the implications of traffic associated with the Appeal Scheme would be mitigated by the Appellant’s proposed improvements.

5.53 My assessment of the implications of traffic associated with the Appeal Scheme shows that it is the committed developments that create the future issues on the A28. The implications of the Appeal Scheme would be mitigated by the Appellant's proposed improvements.

6.0 Suggested Conditions

6.1 In paragraph 14.1 of his evidence, Mr Hogben suggests a number of proposed conditions. I would comment on these as follows:

1) Construction Management Plan – accepted

2) Access points onto Ashford Road and Avenue Extension including the provision of visibility splays – accepted

3) A28 dualling – not accepted. The Appellant's proposed improvements would mitigate the highways impacts of the Appeal Scheme and are part of the draft S106 Agreement under discussion

4) District Centre (including foodstore) prior to first occupation. Not accepted, but a condition requiring the foodstore and the pedestrian/cycle routes to it is accepted

5) Secondary School prior to first occupation – accepted, but with the pedestrian/cycle route to it added

6) Various highway works listed prior to first occupation – accepted, but these are included in the S106 Agreement which is under discussion as planning obligations.

7) Details of Car Parking for each property – accepted

8) Details of secure and covered Cycle Parking for each property – accepted

9) Travel Plan prior to first occupation - accepted

6.2 As can be seen, the only major difference relates to condition 3 where my evidence is that the Appellant's proposed improvements are sufficient to mitigate the impacts of the traffic associated with the Appeal Scheme on the A28.

7.0 Summary and Conclusions

7.1 My rebuttal evidence has further considered the transport and highway issues in relation to the proposed development at Land North of Possingham Farmhouse, Ashford.

7.2 It further supports my conclusions that:

- The Appeal Scheme is consistent with national and local transport related policies.
- The appeal site is in a location that will be highly accessible for all modes of transport.
- A package of transport related measures has been identified to further improve the accessibility of this sustainable site.
- The proposed site accesses would safely accommodate traffic associated with the appeal scheme.
- The Appeal Scheme would not give rise to any severe highway or transport impacts with the proposed mitigation measures undertaken.
- There would not be a material impact on the operation of the Strategic Road Network and NH has confirmed this.

7.3 There will be no severe residual cumulative impact arising from traffic associated with the Appeal Scheme. Therefore, in line with the guidance in the NPPF, the proposed development should not be refused on transport grounds.

7.4 I consider that planning permission for the Appeal Scheme can therefore be granted, subject to appropriate conditions being imposed alongside appropriate planning obligations within a S106 Agreement.

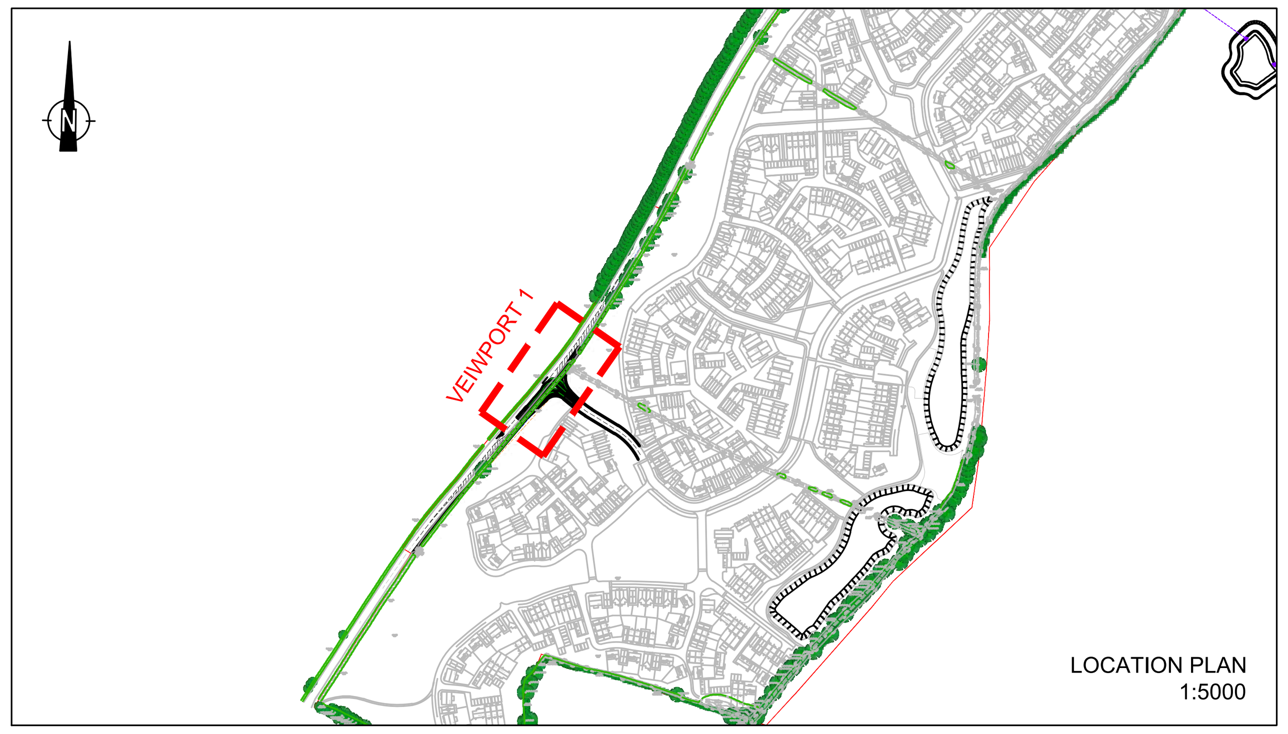
Appendix IDR1 Minor Amendment to Secondary Site Access

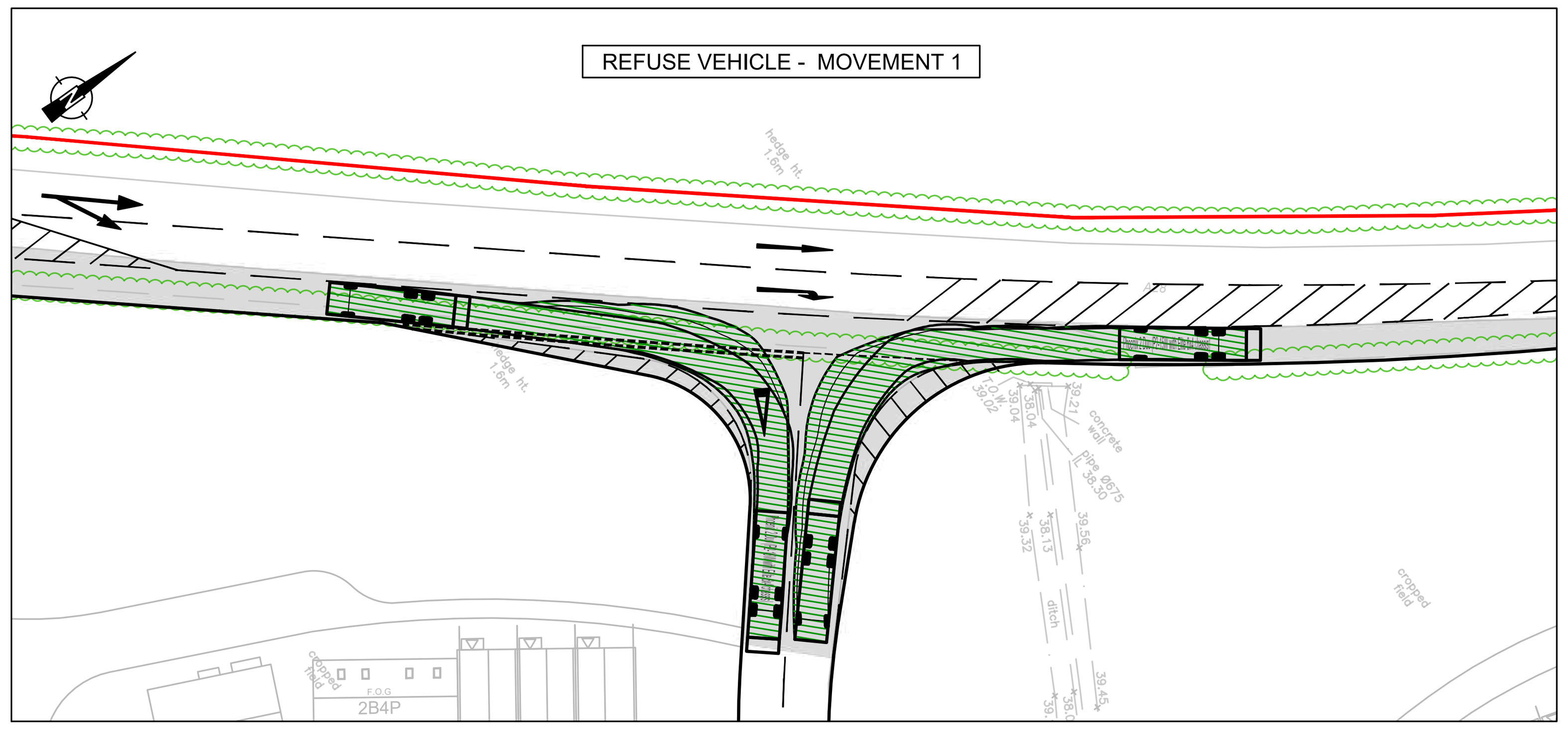
Land North of Possingham Farmhouse, Ashford, Great Chart, Kent

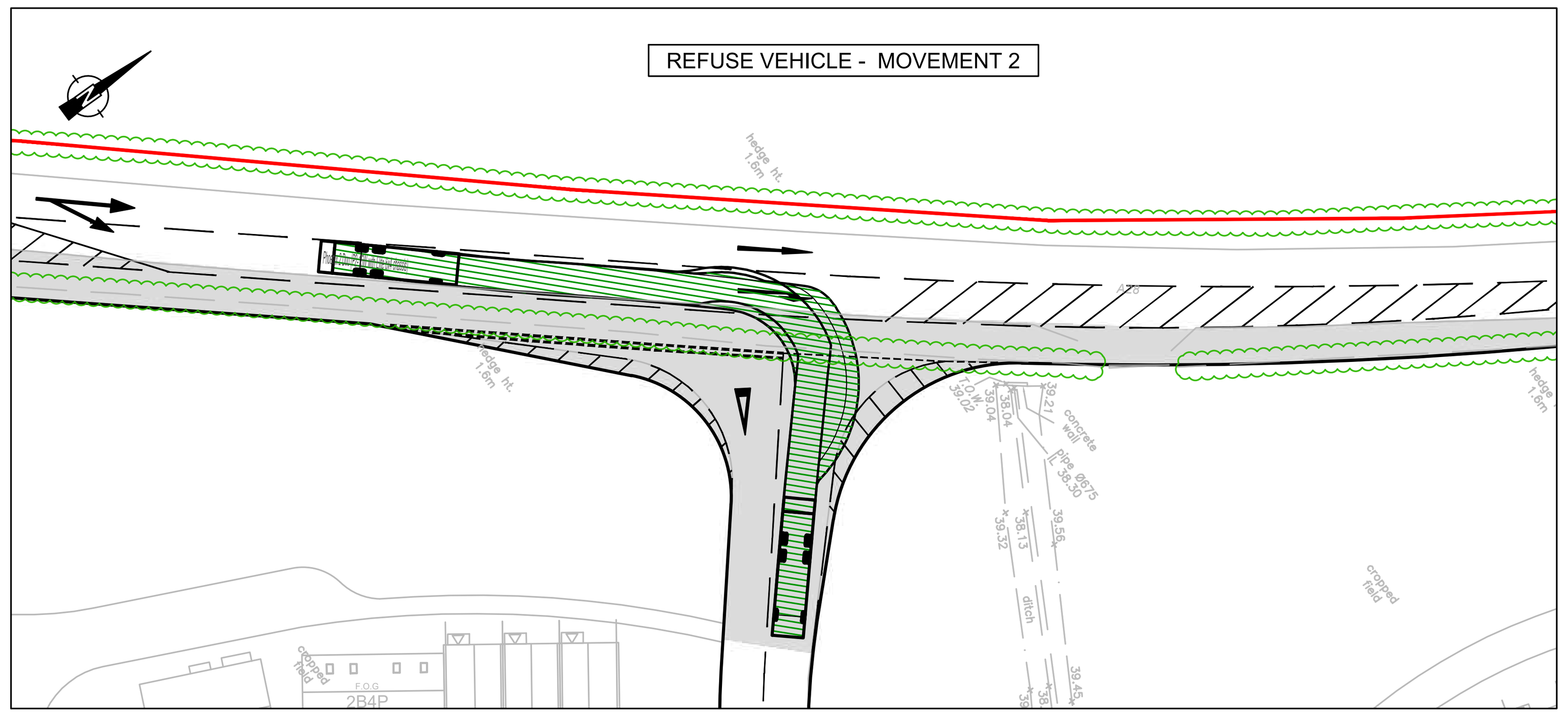
Hodson Development Ltd

SLR Project No.: 425.001542.00001

24 September 2024







SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

PLEASE REFER TO THE HEALTH AND SAFETY FILE FOR A FULL LIST OF THE HAZARDS ASSOCIATED WITH THIS WORK - THE FOLLOWING ARE THE MOST SIGNIFICANT ITEMS TO BE AWARE OF.

CONSTRUCTION

1. OPERATIVES TO TAKE PRECAUTIONS WHEN WORKING ADJACENT TO OR WITHIN DEEP EXCAVATIONS. METHOD STATEMENT TO BE PRODUCED BY THE CONTRACTOR PRIOR TO WORKS COMMENCING.
2. ATTENTION IS DRAWN TO THE EXISTENCE OF BOTH EXISTING UNDERGROUND AND OVERHEAD UTILITIES.

ENVIRONMENTAL

1. EXISTING WATERCOURSES IN CLOSE PROXIMITY TO WORKS, A POLLUTION PREVENTION STRATEGY AND WORKING METHOD STATEMENTS TO BE PRODUCED BY THE CONTRACTOR FOR ALL WORKS.
2. CONSIDERATION GIVEN TO NOISE LEVELS GIVEN PROXIMITY TO EXISTING PROPERTIES.
3. CONSIDERATION GIVEN TO GROUND CONDITIONS. CONTRACTOR TO REVIEW GEOTECHNICAL REPORT PRIOR TO UNDERTAKEN EXCAVATION WORKS.

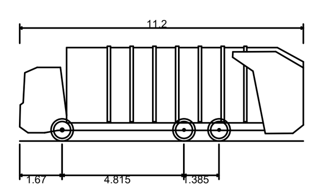
WORK CAN ONLY BE CARRIED OUT BY SUITABLY TRAINED AND BRIEFED PERSONNEL.

REV	DETAILS	DRAWN	CHECKED	DATE
A	MASTERPLAN UPDATED & RED LINE BOUNDARY ADDED	NL	SR	23.04.21
B	DRAWINGS UPDATED FOLLOWING RSA1 COMMENTS	NL	SR	13.09.24

KEY

- SITE BOUNDARY
- VISIBILITY SPLAY 2.4m X 160m
- VISIBILITY SPLAY 4.5m X 160m
- PROPOSED CARRIAGEWAY WIDENING

VEHICLE TRACKED



Phoenix 2 Duo (P2-15W with Elite 6x4 chassis)

Overall Length	11.200m
Overall Width	2.530m
Overall Body Height	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.500m

AWAITING TECHNICAL APPROVAL

This drawing has NOT been technically approved by Local Authority and/or Water Authority. All works subject to change through technical review process with relevant approving authorities.

0 5 10 20 30
1:500 SCALE (m)

PRELIMINARY

DRAWING TITLE: SECONDARY ACCESS (GHOST ISLAND ARRANGEMENT INTO DEVELOPMENT ON THE A28

CLIENT: HODSON DEVELOPMENT

PROJECT: POSSINGHAM FARM, CHILMINGTON GREEN

DRAWN: NL | CHECKED: SR | DATE: 10.02.21 | SCALE: 1:500 @ A1

vectos.

4th Floor Oxford Place, 61 Oxford Street, Manchester, M1 6EQ
0161 228 1008 e: vectos@vectos.co.uk

DRAWING NUMBER: VD21426 - D101 | REVISION: B

13/09/2024 Nick Loughney i:\jobs\2021\vd21426 possingham farm, chilmington green\2. design\cad\vd21426-d101 b ghost island 2nd access.dwg

Appendix IDR2 Secretary of State Appeal Decision

Land North of Possingham Farmhouse, Ashford, Great Chart, Kent

Hodson Development Ltd

SLR Project No.: 425.001542.00001

24 September 2024

Department for Levelling Up, Housing & Communities

Avison Young
Norfolk House
7 Norfolk Street
MANCHESTER
M2 1DW

Our refs:
APP/F2360/W/22/3295498
APP/F2360/W/22/3295502
Your refs:
07/2021/00886/ORM
07/2021/00887/ORM

<u>*By email only*</u>

20 November 2023

Dear Sir/Madam,

TOWN AND COUNTRY PLANNING ACT 1990 – SECTION 78
APPEALS MADE BY TAYLOR WIMPEY AND HOMES ENGLAND
PICKERING'S FARM SITE, FLAG LANE, PENWORTHAM, LANCASHIRE PR1 9TP
APPLICATION REFS: 07/2021/00886/ORM & 07/2021/00887/ORM

This decision was made by Felicity Buchan MP, Parliamentary Under Secretary of State for Housing and Homelessness, on behalf of the Secretary of State

1. I am directed by the Secretary of State to say that consideration has been given to the report of Patrick Hanna MSc MRTPI, who held a public local inquiry between 23 August and 9 September 2022 into your clients' appeals against the decision of South Ribble Borough Council ('the Council') to refuse your clients' applications for outline planning permission for:

   <u>Appeal A:</u> a residential-led mixed-use development of up to 920 dwellings (Use Classes C3 and C2), a local centre including retail, employment and community uses (Use Classes E and Sui Generis), a two form entry primary school (Use Class F), green infrastructure, and associated infrastructure following the demolition of certain existing buildings; in accordance with application Ref 07/2021/00886/ORM, dated 9 August; and

   <u>Appeal B:</u> a residential development of up to 180 dwellings (Use Classes C3 and C2), green infrastructure and associated infrastructure; in accordance with application Ref 07/2021/00887/ORM, dated 9 August 2021.

2. On 24 June 2022 these appeals ware recovered for the Secretary of State's determination, in pursuance of section 79 of, and paragraph 3 of Schedule 6 to, the Town and Country Planning Act (TCPA) 1990.

Inspector's recommendation and summary of the decision

3. The Inspector recommends that Appeal A and Appeal B be allowed.

Department for Levelling Up, Housing & Communities
Philip Barber Decision Officer
Planning Casework Unit
3rd Floor Fry Building
2 Marsham Street
London SW1P 4DF

Email: PCC@levellingup.gov.uk

4. For the reasons given below, the Secretary of State agrees with the Inspector's conclusions and agrees with his recommendation. He has decided to allow the appeals and grant planning permission subject to the conditions set out in Annexes B and C of this letter. A copy of the Inspector's report (IR) is enclosed. All references to paragraph numbers, unless otherwise stated, are to that report.

Environmental Statement

5. In reaching this position, the Secretary of State has taken into account the Environmental Statement which was submitted under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Having taken account of the Inspector's comments at IR8, the Secretary of State is satisfied that the Environmental Statement complies with the above Regulations and that sufficient information has been provided for him to assess the environmental impact of the proposal.

Matters arising since the close of the inquiry

6. A list of representations which have been received since the inquiry is at Annex A. The Secretary of State is satisfied that the issues raised do not affect his decision, and no other new issues were raised in this correspondence to warrant further investigation or necessitate additional referrals back to parties. Copies of these letters may be obtained on request to the email address at the foot of the first page of this letter.

7. Applications for a partial award of costs have been made by Taylor Wimpey and Homes England against South Ribble Borough Council (IR2). These applications are the subject of a separate decision letter.

Policy and statutory considerations

8. In reaching his decision, the Secretary of State has had regard to section 38(6) of the Planning and Compulsory Purchase Act (PCPA) 2004 which requires that proposals be determined in accordance with the development plan unless material considerations indicate otherwise.

9. In this case the development plan consists of South Ribble Local Plan (adopted July 2015) (LP), the Central Lancashire Core Strategy (2012) (CS) and the Penwortham Town Neighbourhood Development Plan 2017 (NP). The Secretary of State considers that relevant development plan policies include those set out at IR18-30. The site is allocated for development under LP Policy C1.

10. Other material considerations which the Secretary of State has taken into account include the National Planning Policy Framework ('the Framework') and associated planning guidance ('the Guidance'). A new version of the Framework was issued on 5 September 2023; however, as the changes relate solely to onshore wind development, and are not relevant to these appeals, the Secretary of State has not taken them into account in reaching his decision.

Emerging plan

11. The emerging plan comprises the Central Lancashire Local Plan, which has completed its Preferred Options Stage 1 consultation.

12. Paragraph 48 of the Framework states that decision makers may give weight to relevant policies in emerging plans according to: (1) the stage of preparation of the emerging plan; (2) the extent to which there are unresolved objections to relevant policies in the emerging plan; and (3) the degree of consistency of relevant policies to the policies in the Framework. As this is at an early stage the Secretary of State gives it little weight.

Main issues

<u>Housing Policies and masterplanning</u>

13. For the reasons set out by the Inspector at IR244-262 and IR345, the Secretary of State agrees that the proposals are suitable in light of local and national policies for housing, with particular regard to masterplanning, design code, phasing, infrastructure delivery, and implementation, such that the proposals would comply with policy C1 and A2 of the LP, and with paragraphs 126 and 132 of the Framework (IR262). The Secretary of State agrees with the Inspector at IR345 that the proposed developments are accompanied by a satisfactory masterplan for the comprehensive development of the site, including a wider safeguarded area of land, phasing and infrastructure delivery schedule, and a programme of implementation.

<u>Impact on highway network</u>

14. For the reasons set out at IR263-307 and IR346 the Secretary of State agrees with the Inspector that the proposed development would not have a severe adverse impact on the local highway network, and complies with policy G17 of the LP and paragraph 111 of the Framework in this respect (IR306).

<u>Pedestrians and cyclists on Bee Lane Bridge</u>

15. For the reasons given at IR308-314 and IR347 the Secretary of State agrees with the Inspector's conclusions, set out in IR314, that the proposed improvements to Bee Lane Bridge would not have an unacceptable impact on highway safety. He further agrees that there would be no significant adverse effect on the safety of pedestrians and cyclists, such that the proposal complies with policy G17 of the LP and paragraph 111 of the NPPF in this respect (R314).

<u>Adequacy of highway improvements</u>

16. For the reasons given at IR315-328 and IR348 the Secretary of State agrees that the proposed development makes adequate provision for highways improvements, primarily in the form of the significant majority of the Cross Borough Link Road and improvements to the Bee Lane bridge (IR348). As such he agrees that in these terms the proposal would comply with policies A1, A2, C1 and G17 of the LP, policy 17 of the CS, and paragraphs 111, 126 and 132 of the Framework (IR328). The Secretary of State agrees

that overall, the masterplan and appeal proposals would successfully integrate the new development into the existing rural street network (IR348).

Other matters

17. For the reasons set out at IR329-332 the Secretary of State agrees that the proposal would result in betterment of the existing surface water flooding situation and would reduce flood risk within the Mill Brook and downstream (IR332). He agrees that this carries limited weight in favour of the development (IR344).

18. For the reasons given at IR333, the Secretary of State notes that to address any adverse impacts on air quality and emissions from the development, air quality mitigation schemes would be agreed as part of future phases. He further agrees that despite interested parties' concerns, very substantial increases in traffic would be required to result in any significant impact on air quality.

19. The main parties have agreed a planning obligation to provide financial contributions to support the delivery of sports infrastructure as the development progresses, as required by policies G10 and G11 of the LP (IR334). Like the Inspector in IR334, the Secretary of State sees no reason to disagree with this approach.

20. For the reasons given at IR335 the Secretary of State agrees that proposed biodiversity measures would provide adequate mitigation for the development and further agrees that the secured biodiversity net gain would be a benefit attracting limited weight (IR344).

21. The Secretary of State notes that in lieu of a financial payment, the planning obligation secures land to be provided for a new school, and that both the education authority and the Council support the calculations (IR336). Like the Inspector, he sees no justifiable reason why a different conclusion should be reached.

22. The Secretary of State agrees with the Inspector's conclusions on the City Deal (IR337), and agrees that the contribution of the scheme to the City Deal is neutral in the planning balance (IR344).

23. He further agrees, for the reasons given at IR338-339, with the Inspector's conclusions on human rights and the Public Sector Equality Duty.

24. For the reasons set out at IR340-341, the Secretary of State agrees with the Inspector's conclusions on housing, disruption during construction, delays on the road network and health facilities. He further agrees with the Inspector at IR341 that there would be no significant adverse impacts on the living conditions and wellbeing of occupants of existing residential properties that cannot be addressed at detailed design stage.

Benefits

25. For the reasons given at IR343 the Secretary of State agrees that the delivery of a total of some 1,100 homes in a mix of sizes is a significant benefit, to which he gives significant weight. He further agrees that the delivery of affordable housing would be a benefit carrying significant weight.

26. For the reasons set out by the Inspector at IR343 the Secretary of State agrees that the provision of land for a new primary school, the creation of a new local centre and the provision of publicly accessible open space would offer moderate benefits to the community beyond the development site, and considers that these provisions carry

moderate weight. He further agrees that the economic benefits arising from the construction of the development and on-site job creation carry moderate weight.

27. For the reasons set out by the Inspector in IR344, the Secretary of State agrees that the provision of a sustainable and active travel network, landscaping, and the economic benefits arising from residents' expenditure each carry limited weight.

Planning conditions

28. The Secretary of State had regard to the Inspector's analysis at IR239-242, the recommended conditions set out at the end of the IR and the reasons for them, and to national policy in paragraph 56 of the Framework and the Guidance. He is satisfied that the conditions recommended by the Inspector comply with the policy test set out at paragraph 56 of the Framework and that the conditions set out at Annexes B and C of this letter should form part of his decision.

Planning obligations

29. The Secretary of State has had regard to the Inspector's analysis at IR5 and IR231-238, the section 106 Agreement and the Unilateral Undertaking both dated 29 September 2022, paragraph 57 of the Framework, the Guidance and the Community Infrastructure Levy (CIL) Regulations 2010, as amended. For the reasons given he agrees with the Inspector's conclusion at IR238 that the obligations comply with Regulation 122 of the CIL Regulations 2010 and the tests at paragraph 57 of the Framework.

Planning balance and overall conclusion

30. This site is allocated for development, and the Secretary of State, like the Inspector, has not identified any conflicts with the development plan. He considers that both appeals are in accordance with the development plan overall. He has gone on to consider whether there are material considerations which indicate that the proposal should be determined other than in line with the development plan.

31. Weighing in favour of the proposal is the delivery of a total of 1,100 homes, and the delivery of affordable housing, which each carry significant weight. The provision of a new school, local centre and public open space carries moderate weight, and the economic benefits in terms of construction and on-site job creation also carries moderate weight. The provision of a sustainable and active travel network, landscaping, biodiversity net gain, economic benefits arising from residents' expenditure, and the betterment of the existing drainage system each carry limited weight.

32. Like the Inspector, the Secretary of State has not identified any material considerations which carry weight against the proposals.

33. Overall, in applying s.38(6) of the PCPA 2004, the Secretary of State considers that the accordance with the development plan and the material considerations in this case indicate that permission should be granted.

34. The Secretary of State therefore concludes that planning permission should be granted for both appeals, subject to the conditions set out in Annexes B and C of this letter.

Formal decision

35. Accordingly, for the reasons given above, the Secretary of State agrees with the Inspector's recommendation. He hereby allows your clients' appeals and grants planning permission for:

    Appeal A: a residential-led mixed-use development of up to 920 dwellings (Use Classes C3 and C2), a local centre including retail, employment and community uses (Use Classes E and Sui Generis), a two form entry primary school (Use Class F), green infrastructure, and associated infrastructure following the demolition of certain existing buildings; in accordance with application Ref 07/2021/00886/ORM, dated 9 August, subject to the conditions set out in Annex B of this decision letter; and

    Appeal B: a residential development of up to 180 dwellings (Use Classes C3 and C2), green infrastructure and associated infrastructure; in accordance with application Ref 07/2021/00887/ORM, dated 9 August 2021, subject to the conditions set out in Annex C of this decision letter.

36. This letter does not convey any approval or consent which may be required under any enactment, bye-law, order or regulation other than section 57 of the TCPA 1990.

Right to challenge the decision

37. A separate note is attached setting out the circumstances in which the validity of the Secretary of State's decision may be challenged. This must be done by making an application to the High Court within 6 weeks from the day after the date of this letter for leave to bring a statutory review under section 288 of the TCPA 1990.

38. An applicant for any consent, agreement or approval required by a condition of this permission for agreement of reserved matters has a statutory right of appeal to the Secretary of State if consent, agreement or approval is refused or granted conditionally or if the Local Planning Authority fail to give notice of their decision within the prescribed period.

39. A copy of this letter has been sent to South Ribble Borough Council, and notification has been sent to others who asked to be informed of the decision.

Yours faithfully

Philip Barber

Decision officer

This decision was made by Felicity Buchan MP, Parliamentary Under Secretary of State for Housing and Homelessness, on behalf of the Secretary of State, and signed on her behalf

ANNEX A

Schedule of representations

General representations

Party	Date
D Miller	11 November 2022
W Miller	11 November 2022
K Diprose	15 November 2022
J Gleave	3 January 2023
Nigel Evans MP	26 January 2023
D Miller	27 March 2023
D Miller	28 May 2023
A Thorpe	1 June 2023
A Thorpe	24 September 2023

ANNEX B

Conditions for Appeal A (Ref. APP/F2360/W/22/3295498)

1) Where, in this planning permission, a condition states “No development shall commence…”, development does not include: site investigations or surveys (including exploratory boreholes or excavations); site clearance; the demolition of any buildings or structures on site; the construction of temporary site access or service roads; works for the provision of drainage or mains services to prepare the site for development; works associated with ecological mitigation; and the construction of internal site roads.

2) Details of the appearance, landscaping, layout, and scale (hereinafter called "the reserved matters" shall be submitted to and approved in writing by the local planning authority for the phase or sub-phase of the development to which the reserved matters relate before development within that phase or sub-phase commences.

3) Prior to the submission of any reserved matters application a Phasing Plan for the development shall be submitted to and approved in writing by the local planning authority. The submitted Phasing Plan shall indicate the extent of each phase, and any sub-phases within each phase, the sequence of development, the approximate number of units proposed within each phase and sub phase, and associated timetable of works. The development shall then be constructed in accordance with the approved Phasing Plan. If the phasing plan submitted pursuant to this condition differs from the Indicative Scheme of Phasing and Implementation Plan (July 2022) and the changed phasing is likely to give rise to any new or different significant environmental impacts to those already assessed, the phasing plan submitted pursuant to this condition shall be accompanied by an Environmental Statement in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

4) Applications for the approval of all reserved matters for Phase 1 of the development shall be made not later than the expiration of 3 years beginning with the date of this permission and the development approved within Phase 1 shall be begun not later than the expiration of two years from the final approval of the

reserved matters for that Phase or, in the case of approval on different dates, the final approval of the last of the reserved matters to be approved for that Phase, whichever is later. Applications for the approval of reserved matters for all subsequent phases or sub phases of the development shall be made not later than the expiration of 15 years beginning with the date of this permission and the development approved within each subsequent phase or sub-phase shall be begun not later than the expiration of two years of the date of approval of the reserved matters for that phase or sub-phase or, in the case of approval on different dates, the final approval of the last of the reserved matters to be approved for that phase or sub-phase, whichever is later.

5) The development hereby permitted shall be carried out substantially in accordance with the submitted masterplan (MP_00_1004 Rev100) and in strict accordance with the following approved plans; MP_00_1000 Rev 101 Parameter Plan - Red Line; MP_00_1001 Rev 105 Parameter Plan – Land Use; MP_00_1002 Rev 103 Parameter Plan – Building Heights; MP_00_1003 Rev 103 Parameter Plan – Demolition Plan; and VN211918-D105A Proposed Site Access Arrangement (Bee Lane).

6) Each application for the approval of reserved matters shall be accompanied by a Compliance Statement that explains how the proposals detailed in the application accord with the approved Parameter Plans and the submitted Design Codes (sections 8 and 9 of The Lanes Penwortham Design and Access Statement, August 2021).

7) The reserved matters for each phase or sub-phase shall include details of existing and proposed ground levels and the proposed finished floor levels of all buildings.

8) No development shall commence within a phase or sub-phase unless and until proposals for the provision of vehicle and cycle parking for all homes, community facilities or businesses within that phase or sub-phase have been submitted to and approved in writing by the local planning authority for approval. The development shall be carried out in accordance with the approved details.

9) No development shall commence within a phase or a sub-phase containing flats or commercial units unless and until proposals for bin storage and the collection of waste from the flats or commercial units within the phase or sub-phase have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

10) No building shall be occupied within a phase or a sub-phase unless and until full construction design details and safety audits have been provided for all roads, footways and cycleways proposed to be constructed within that phase or sub-phase have been submitted to, and approved in writing by, the local planning authority. The development shall be carried out in accordance with the approved details.

11) Prior to occupation of any non-residential building, a deliveries, collections and servicing strategy for the said building shall be submitted to and approved in writing by the local planning authority. Thereafter the development shall be operated in accordance with the approved details.

12) For any car park that is intended to serve any non-residential element of the development, a Car Park Management Strategy shall be submitted to and approved in writing by the local planning authority before the car park is first used. The Strategy shall include details of:

(a) the maximum duration of stay for all users (non-employment);

(b) include number of parking spaces per user type;
(c) car park enforcement;
(d) detail of provision and management measures to satisfy overspill from other land use elements;
(e) measures and techniques to maximise car park efficiency/security and the way it will be managed; and
(f) mechanism for a review of the Strategy within 12 months of the opening of the phase to confirm the satisfactory operation and safety of each car park and surrounding highway network.

The car park shall be surfaced and laid out in accordance with the approved plans and operated thereafter in accordance with the approved Car Park Management Strategy.

13) No dwelling shall be occupied unless and until the new estate roads serving the dwelling have been constructed to at least base course level.

14) No development shall commence within a phase or sub-phase unless and until a Dust Management Plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The Dust Management Plan shall identify all parts of the phase or sub-phase where dust may be generated and further identify control measures aimed to ensure dust and soil does not travel beyond the site boundary for the development hereby approved. The Dust Management Plan shall include a suitable risk assessment. The development shall be carried out in accordance with the approved Dust Management Plans.

15) No development shall commence within a phase or sub-phase unless and until details of the proposed location of the site compound and storage yard for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

16) No development shall commence within a phase or sub-phase unless and until a noise monitoring and management strategy for that phase or sub-phase of development has been submitted to and agreed in writing with by the local planning authority. The strategy shall provide details of proposals for the measurement, monitoring and mitigation of construction related noise including maximum noise levels at the boundary of the nearest noise sensitive receptor, in accordance with BS 5228: 2009+A1:2014. The development shall be carried out in accordance with the approved strategy.

17) During periods of site preparation and construction, no machinery, plant or powered tools shall be operated outside the hours of 08:00 to 18:00 Monday to Friday and 09:00 to 13:00 on Saturdays. No construction shall take place at any time on Sundays or nationally recognised Bank Holidays.

18) No development shall commence within a phase or sub-phase unless and until the following information for that phase or sub-phase has been submitted to and approved in writing by the local planning authority:
(a) The findings of a detailed site investigation undertaken to address the nature, degree and distribution of contamination and/or ground gases which shall include an identification and assessment of the risk to receptors as defined under the Environmental Protection Act 1990, Part 2A, focusing primarily on risks to human health and controlled waters. The investigation shall also address the implications of the health and safety of site workers, of nearby occupied buildings, on services and landscaping schemes, and on wider environmental receptors including ecological systems and

property. The sampling and analytical strategy shall be submitted to and be approved in writing by the local planning authority prior to the start of the site investigation survey.

(b) A remediation statement, detailing the recommendations and remedial measures to be implemented within the phase or sub-phase which has been the subject of the site investigation undertaken under (a) above.

19) No dwelling shall be occupied within a phase or a sub-phase unless and until a verification report relating to that phase or sub-phase has been submitted to the local planning authority confirming that all remediation works specified under Condition 18(b) above have been completed in accordance with the agreed remediation statement.

20) Should site operatives working on a phase or sub-phase discover ground that they suspect may be contaminated, they shall report this to the Site Manager and the Contaminated Land Officer at South Ribble Borough Council as soon as reasonably practicable. Works in the area containing such ground shall cease and the area be secured. A competent person shall be employed to undertake sampling and analysis of the suspected contaminated materials. A report which contains details of sampling methodologies and analysis results, together with any remediation required shall be submitted to and approved in writing by the local planning authority. No dwelling shall be occupied within the phase or sub-phase of the development affected unless and until the relevant approved scheme of remediation has been completed.

21) No development shall commence within a phase or sub-phase unless and until an Arboricultural Impact Assessment and Tree Protection Plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The Tree Protection Plan shall accord with BS5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'. The development shall be carried out in accordance with the approved details.

22) No tree shall be pruned, cut down, uprooted, topped, lopped or wilfully damaged or destroyed including the cutting of roots during any site preparation or construction work stage without the previous written consent of the local planning authority. Any tree subject to these actions or that are removed without such consent or are dying or are being significantly damaged or becoming seriously diseased during that period shall be replaced with trees of such size and species as will be agreed in advance with the local planning authority.

23) Details of landscaping required as part of the reserved matters for the development shall include:

(a) information on existing trees and hedges that are proposed to be removed. Where trees are proposed to be removed, the application for reserved matters should include a statement in relation to the sizes and ratio of replacement trees of greater maturity;

(b) the types and numbers of trees and shrubs proposed, their distribution on site, those areas that are to be seeded, turfed, paved or hard landscaped, including details of any changes of level or landform and the types and details of all fencing and screening proposed. Any new landscaping proposed shall include locally native species; and

(c) proposals for the retention and protection of hedgerows.

Any approved scheme of landscaping shall be implemented in the first planting season following completion of the development of the phase or sub-phase to which the scheme relates. The approved scheme shall be maintained thereafter for a period of 5 years to the satisfaction of the local planning authority. This maintenance shall include the replacement of any tree or shrub which is removed, becomes seriously damaged, seriously diseased or dies, by the same species or different species, and shall be agreed in writing by the local planning authority. The replacement tree or shrub must be of similar size to that originally planted.

24) No development shall commence within a phase or sub-phase unless and until a Construction Environmental Management Plan (CEMP) for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The CEMP shall conform with the principles identified in Chapter 7 of the Environmental Statement including Annexes. The CEMP shall include, where appropriate, the following;
(a) a plan showing the retention of hedgerows;
(b) RAMS methods for amphibians; and
(c) soft fell techniques for trees with identified moderate or high bat roost potential.
The development shall be carried out in accordance with the approved CEMP.

25) No building shall be occupied within a phase or sub-phase unless and until a lighting design strategy for biodiversity for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The strategy shall:
(a) identify any areas/features that are particularly sensitive for bats, badgers, otter and other crepuscular animals and that are likely to cause disturbance in or around their breeding sites and resting places or along important routes used to access key areas of their territory, for example, for foraging; and
(b) show how and where external lighting will be installed (through the provision of appropriate lighting contour plans and technical specifications) so that it can be clearly demonstrated that areas to be lit will not disturb or prevent the above species using their territory or having access to their breeding sites and resting places.
All external lighting shall be installed in accordance with the specifications and locations set out in the strategy, and these shall be maintained thereafter in accordance with the strategy.

26) No development shall commence within a phase or sub-phase unless and until supplementary surveys have been undertaken within that phase or sub-phase for badgers and for bats in trees or buildings that are to be removed or demolished. The surveys for badgers shall extend 30m beyond the boundary of the phase or sub-phase being surveyed. The supplementary surveys shall be of an appropriate type for the above habitats and/or species and survey methods shall follow national good practice guidelines. If the surveys indicate that changes have occurred to the ecological baseline and that ecological impacts will arise that have not been identified or addressed by the Environmental Statement for the development, a revised Supplementary Environmental Statement shall be prepared. If this identifies a need for additional or different mitigation measures, these shall be detailed in the Statement along with a timetable for their implementation. If a Supplementary Environmental Statement is required to be produced, the development within this phase or sub-phase shall not commence until it has been approved in writing by the local planning authority. The development shall thereafter be carried out in accordance with the approved Statement.

27) No development shall commence within a phase or sub-phase (including demolition, ground works, vegetation clearance) unless and until an invasive non-native species protocol for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The protocol shall describe proposals for the containment, control and removal of Japanese knotweed, Himalayan balsam and Japanese rose. The development shall be carried out in accordance with the approved protocol.

28) No development shall commence within a phase or sub-phase unless and until a Landscape and Ecological Management Plan (LEMP) for that phase or sub-phase has been submitted to and approved in writing by, the local planning authority. The LEMP shall include the following:
(a) description and evaluation of features to be managed;
(b) ecological trends and constraints on site that might influence management;
(c) aims and objectives of management;
(d) appropriate management options for achieving aims and objectives;
(e) prescriptions for management actions;
(f) preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period);
(g) details of the body or organization responsible for implementation of the plan;
(h) ongoing monitoring and remedial measures;
(i) details of the legal and funding mechanisms by which the long-term implementation of the plan will be secured by the developer with the management body/bodies responsible for its delivery; and
(j) where the results from monitoring show that conservation aims and objectives of the LEMP are not being met, how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme.

The development shall be implemented in accordance with the approved LEMP.

29) No development shall commence within a phase or sub-phase unless and until a detailed surface water sustainable drainage scheme for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The detailed sustainable drainage scheme shall be fully in accordance with the Lees Roxburgh Limited, The Lanes, Penwortham, Preston Flood Risk Assessment Report no.6337/R2 dated August 2021 and no surface water shall be allowed to discharge to the public sewer, directly or indirectly. The scheme shall also include, as a minimum:
(a) a final drainage layout plan appropriately labelled to include all pipe/structure references, dimensions, design levels, discharge rates, finished floor levels in AOD with adjacent ground levels. Final longitudinal sections plan appropriately labelled to include all pipe/structure references, dimensions, design levels, discharge rates, with adjacent ground levels. Cross section drawings of swales, flow control manholes, attenuation pond inlets/outlets, watercourse outfalls and manholes on watercourse;
(b) cross section drawings of attenuation ponds with 1 in 1 year, 1 in 30 year and 1 in 100 year + climate change water levels;
(c) information confirming that the rate of surface water run-off shall not exceed the pre-development runoff rate;
(d) drainage flow calculations (1 in 1, 1 in 2, 1 in 30 and 1 in 100 + climate change);

(e) a plan identifying areas contributing to the drainage network;
(f) measures taken to prevent flooding and pollution of the receiving groundwater and/or surface waters, including watercourses;
(g) a plan to show overland flow routes and flood water exceedance routes and flood extents;
(h) evidence of an assessment of the site conditions to include site investigation and test results to confirm infiltration rates; and
(i) breakdown of attenuation in pipes, manholes, swales, and attenuation ponds.

The scheme shall be implemented in accordance with the approved details prior to first occupation of any of the approved dwellings.

30) No development shall commence within a phase or sub-phase unless and until details of how surface water and pollution prevention will be managed in that phase or sub-phase have been submitted to and approved in writing by the local planning authority. Such details shall include as a minimum:
(a) measures taken to ensure surface water flows are retained on-site during construction phase(s) and, if surface water flows are to be discharged they are done so at a restricted rate; and
(b) measures taken to prevent siltation and pollutants from the site into any receiving groundwater and/or surface waters, including watercourses, with reference to published guidance.

The development shall be carried out in accordance with the approved details.

31) All attenuation basins, flow control devices/structures and offsite connections to the proposed SUDS drainage relevant to any phase or sub-phase and downstream of that phase or sub-phase to the outfall are to be constructed and operational prior to the occupation of any development within that phase or sub-phase.

32) No development shall commence within a phase or sub-phase unless and until a foul water drainage scheme for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The drainage scheme shall include measures for:
(a) the proposed points of connection and associated properties and catchment area;
(b) proposed discharge rates to each proposed point of connection;
(c) identify any parts of the site where foul pumping is necessary. Thereafter, the strategy shall minimise the number of pumping stations throughout the site;
(d) the timing arrangements including a timetable for implementation, storage requirements and rate of discharge for any pumped foul discharge;
(e) foul and surface water to be drained on separate systems; and
(f) no surface water, highway drainage or land drainage shall be discharged directly or indirectly into the public sewerage system.

The development hereby permitted shall be carried out only in accordance with the approved drainage scheme. No development shall be occupied until the approved foul drainage scheme has been completed in accordance with the approved details. The foul drainage scheme shall be retained thereafter for the lifetime of the development.

33) No building shall be occupied within a phase or sub-phase unless and until a sustainable drainage management and maintenance plan for the lifetime of that phase or sub-phase has been submitted to and approved in writing by the local

planning authority. The sustainable drainage management and maintenance plan shall include as a minimum:

(a) arrangements for adoption by an appropriate public body or statutory undertaker, or management and maintenance by a resident's management company; and

(b) arrangements for inspection and ongoing maintenance of all elements of the sustainable drainage system to secure the operation of the surface water drainage scheme throughout its lifetime.

The development shall thereafter be completed, maintained and managed in accordance with the approved plan.

34) No development shall commence within a phase or sub-phase unless and until a written scheme of investigation for that phase or sub-phase has been submitted to and approved in writing by the local planning authority and the developer has secured the implementation of a programme of archaeological work in accordance with the approved written scheme of investigation. The works specified in the written scheme of investigation shall investigate the presence or absence of buried archaeological remains and their nature, date, extent and significance. Upon completion of the works, a report detailing the results shall be submitted to the local planning authority. If remains are encountered, development within the relevant phase or sub-phase shall pause until a further written scheme of investigation has been submitted to and agreed in writing by the local planning authority. Once the further written scheme of investigation has been approved, the development may proceed in accordance with it.

35) No building shall be occupied within a phase or sub-phase that shares a boundary with the adjacent railway unless and until proposals for the erection of trespass proof fencing to the relevant boundary have been submitted to and approved in writing by the local planning authority and the approved fencing has been installed.

36) Details of any scaffolding proposed to be erected within 10m of a boundary with the adjacent railway, shall be submitted to and approved in writing by the local planning authority before it is installed. The development shall be carried out in accordance with the approved details.

37) No development shall commence within a phase or sub-phase that has a boundary with the adjacent railway unless and until full details of earthworks and excavations to be carried out adjacent to the railway boundary have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

38) No development shall commence within a phase or sub-phase that has a boundary with the adjacent railway unless and until proposals for preventing vehicle incursion onto the railway throughout both the construction phase and occupational phase of the development have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

39) No development shall commence within a phase or sub-phase unless and until details of how each dwelling in that phase or sub-phase will achieve a minimum dwelling emission rate of 19% above 2013 Building Regulations have been submitted to and approved in writing by the local planning authority. The development thereafter shall be completed in accordance with the approved details.

40) No dwelling shall be occupied unless and until a SAP assessment (standard assessment procedure), or other alternative proof of compliance (which has been previously agreed in writing by the local planning authority) such as an energy performance certificate, for that dwelling has been submitted to and approved in writing by the local planning authority demonstrating that the dwelling has achieved the required dwelling emission rate.

41) No development shall commence within a phase or sub-phase unless and until a construction management plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The plan shall include details of:

(a) any piling operations proposed, together with a justification for the piling, a vibration impact assessment and details of any mitigation measures required to control and minimise noise and vibration associated with the proposed piling works;

(b) any vibro-impact works proposed, together with a method statement for the works and an assessment of any effects that the works might have on the railway to the immediate east of the site;
(c) proposals for preventing the burning of waste or other materials on site during the construction phase;
(d) the parking of vehicles of site operatives and visitors;
(e) loading and unloading of plant and materials;
(f) storage of plant and materials used in constructing the development;
(g) the location of the site compound;
(h) suitable wheel washing/road sweeping measures;
(i) details of all external lighting used during demolition/construction;
(j) a scheme for recycling/disposing of waste resulting from demolition and construction works;
(k) 24 hour emergency contact number;
(l) arrangements for turning of vehicles within the site;
(m) swept path analysis showing access for the largest vehicles regularly accessing the site and measures to ensure adequate space is available and maintained, including any necessary temporary traffic management measures;
(n) measures to protect vulnerable road users (pedestrians and cyclists);
(o) the erection and maintenance of security hoarding including decorative displays and facilities for public viewing, where appropriate;
(p) measures to deal with dirt, debris, mud or loose material deposited on the highway as a result of construction; and
(q) proposals for the routing of construction traffic.

The development shall be carried out in accordance with the approved details.

ANNEX C

Conditions for Appeal B (Ref. APP/F2360/W/22/3295502)

1) Where, in this planning permission, a condition states “No development shall commence…”, development does not include: site investigations or surveys (including exploratory boreholes or excavations); site clearance; the demolition of any buildings or structures on site; the construction of temporary site access or service roads; works for the provision of drainage or mains services to prepare the

site for development; works associated with ecological mitigation; and the construction of internal site roads.

2) Details of the appearance, landscaping, layout, and scale (hereinafter called "the reserved matters" shall be submitted to and approved in writing by the local planning authority for the phase or sub-phase of the development to which the reserved matters relate before development within that phase or sub-phase commences.

3) Prior to the submission of any reserved matters application a Phasing Plan for the development shall be submitted to and approved in writing by the local planning authority. The submitted Phasing Plan shall indicate the extent of each phase, and any sub-phases within each phase, the sequence of development, the approximate number of units proposed within each phase and sub phase, and associated timetable of works. The development shall then be constructed in accordance with the approved Phasing Plan. If the phasing plan submitted pursuant to this condition differs from the Indicative Scheme of Phasing and Implementation Plan (July 2022) and the changed phasing is likely to give rise to any new or different significant environmental impacts to those already assessed, the phasing plan submitted pursuant to this condition shall be accompanied by an Environmental Statement in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

4) Applications for the approval of all reserved matters for Phase 1 of the development shall be made not later than the expiration of 3 years beginning with the date of this permission and the development approved within Phase 1 shall be begun not later than the expiration of two years from the final approval of the reserved matters for that Phase or, in the case of approval on different dates, the final approval of the last of the reserved matters to be approved for that Phase, whichever is later. Applications for the approval of reserved matters for all subsequent phases or sub phases of the development shall be made not later than the expiration of 10 years beginning with the date of this permission and the development approved within each subsequent phase or sub-phase shall be begun not later than the expiration of two years of the date of approval of the reserved matters for that phase or sub-phase or, in the case of approval on different dates, the final approval of the last of the reserved matters to be approved for that phase or sub-phase, whichever is later.

5) The development hereby permitted shall be carried out substantially in accordance with the submitted masterplan (MP_00_1004 Rev100) and in strict accordance with the following approved plans; MP_00_1000 Rev 101 Parameter Plan - Red Line; MP_00_1001 Rev 105 Parameter Plan – Land Use; MP_00_2002 Rev 104 Parameter Plan – Building Heights; and MP_00_1003 Rev 103 Parameter Plan – Demolition Plan.

6) Each application for the approval of reserved matters shall be accompanied by a Compliance Statement that explains how the proposals detailed in the application accord with the approved Parameter Plans and the submitted Design Codes (sections 8 and 9 of The Lanes Penwortham Design and Access Statement, August 2021).

7) The reserved matters for each phase or sub-phase shall include details of existing and proposed ground levels and the proposed finished floor levels of all buildings.

8) No development shall commence within a phase or sub-phase unless and until proposals for the provision of vehicle and cycle parking for all homes, community

facilities or businesses within that phase or sub-phase have been submitted to and approved in writing by the local planning authority for approval. The development shall be carried out in accordance with the approved details.

9) No development shall commence within a phase or a sub-phase containing flats or commercial units unless and until proposals for bin storage and the collection of waste from the flats or commercial units within the phase or sub-phase have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

10) No building shall be occupied within a phase or a sub-phase unless and until full construction design details and safety audits have been provided for all roads, footways and cycleways proposed to be constructed within that phase or sub-phase have been submitted to, and approved in writing by, the local planning authority. The development shall be carried out in accordance with the approved details.

11) No dwelling shall be occupied unless and until the new estate roads serving the dwelling have been constructed to at least base course level.

12) No development shall commence within a phase or sub-phase unless and until a Dust Management Plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The Dust Management Plan shall identify all parts of the phase or sub-phase where dust may be generated and further identify control measures aimed to ensure dust and soil does not travel beyond the site boundary for the development hereby approved. The Dust Management Plan shall include a suitable risk assessment. The development shall be carried out in accordance with the approved Dust Management Plans.

13) No development shall commence within a phase or sub-phase unless and until details of the proposed location of the site compound and storage yard for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

14) No development shall commence within a phase or sub-phase unless and until a noise monitoring and management strategy for that phase or sub-phase of development has been submitted to and agreed in writing by the local planning authority. The strategy shall provide details of proposals for the measurement, monitoring and mitigation of construction related noise including maximum noise levels at the boundary of the nearest noise sensitive receptor, in accordance with BS 5228: 2009+A1:2014. The development shall be carried out in accordance with the approved strategy.

15) During periods of site preparation and construction, no machinery, plant or powered tools shall be operated outside the hours of 08:00 to 18:00 Monday to Friday and 09:00 to 13:00 on Saturdays. No construction shall take place at any time on Sundays or nationally recognised Bank Holidays.

16) No development shall commence within a phase or sub-phase unless and until the following information for that phase or sub-phase has been submitted to and approved in writing by the local planning authority:

(a) The findings of a detailed site investigation undertaken to address the nature, degree and distribution of contamination and/or ground gases which shall include an identification and assessment of the risk to receptors as defined under the Environmental Protection Act 1990, Part 2A, focusing primarily on risks to human health and controlled waters. The investigation shall also address the implications of the health and safety of site workers, of nearby occupied buildings, on services and landscaping schemes, and on wider environmental receptors including ecological systems and property. The sampling and analytical strategy shall be submitted to and be approved in writing by the local planning authority prior to the start of the site investigation survey.

(b) A remediation statement, detailing the recommendations and remedial measures to be implemented within the phase or sub-phase which has been the subject of the site investigation undertaken under (a) above.

17) No dwelling shall be occupied within a phase or a sub-phase unless and until a verification report relating to that phase or sub-phase has been submitted to the local planning authority confirming that all remediation works specified under Condition 16(b) above have been completed in accordance with the agreed remediation statement.

18) Should site operatives working on a phase or sub-phase discover ground that they suspect may be contaminated, they shall report this to the Site Manager and the Contaminated Land Officer at South Ribble Borough Council as soon as reasonably practicable. Works in the area containing such ground shall cease and the area secured. A competent person shall be employed to undertake sampling and analysis of the suspected contaminated materials. A report which contains details of sampling methodologies and analysis results, together with any remediation required shall be submitted to and approved in writing by the local planning authority. No dwelling shall be occupied within the phase or sub-phase of the development affected unless and until the relevant approved scheme of remediation has been completed.

19) No development shall commence within a phase or sub-phase unless and until an Arboricultural Impact Assessment and Tree Protection Plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The Tree Protection Plan shall accord with BS5837: 2012 ' Trees in Relation to Design, Demolition and Construction - Recommendations'. The development shall be carried out in accordance with the approved details.

20) No tree shall be pruned, cut down, uprooted, topped, lopped or wilfully damaged or destroyed including the cutting of roots during any site preparation or construction work stage without the previous written consent of the local planning authority. Any tree subject to these actions or that are removed without such consent or are dying or are being significantly damaged or becoming seriously diseased during that period shall be replaced with trees of such size and species as will be agreed in advance with the local planning authority.

21) Details of landscaping required as part of the reserved matters for the development shall include:

(d) information on existing trees and hedges that are proposed to be removed. Where trees are proposed to be removed, the application for reserved matters should include a statement in relation to the sizes and ratio of replacement trees of greater maturity;

(e) the types and numbers of trees and shrubs proposed, their distribution on site, those areas that are to be seeded, turfed, paved or hard landscaped, including details of any changes of level or landform and the types and details of all fencing and screening proposed. Any new landscaping proposed shall include locally native species; and

(f) proposals for the retention and protection of hedgerows.

Any approved scheme of landscaping shall be implemented in the first planting season following completion of the development of the phase or sub-phase to which the scheme relates. The approved scheme shall be maintained thereafter for a period of 5 years to the satisfaction of the local planning authority. This maintenance shall include the replacement of any tree or shrub which is removed, becomes seriously damaged, seriously diseased or dies, by the same species or different species, and shall be agreed in writing by the local planning authority. The replacement tree or shrub must be of similar size to that originally planted.

22) No development shall commence within a phase or sub-phase unless and until a Construction Environmental Management Plan (CEMP) for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The CEMP shall conform with the principles identified in Chapter 7 of the Environmental Statement including Annexes. The CEMP shall include, where appropriate, the following:

(d) a plan showing the retention of hedgerows;

(e) RAMS methods for amphibians; and

(f) soft fell techniques for trees with identified moderate or high bat roost potential.

The development shall be carried out in accordance with the approved CEMP.

23) No building shall be occupied within a phase or sub-phase unless and until a lighting design strategy for biodiversity for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The strategy shall:

(c) identify any areas/features that are particularly sensitive for bats, badgers, otter and other crepuscular animals and that are likely to cause disturbance in or around their breeding sites and resting places or along important routes used to access key areas of their territory, for example, for foraging; and

(d) show how and where external lighting will be installed (through the provision of appropriate lighting contour plans and technical specifications) so that it can be clearly demonstrated that areas to be lit will not disturb or prevent the above species using their territory or having access to their breeding sites and resting places.

All external lighting shall be installed in accordance with the specifications and locations set out in the strategy, and these shall be maintained thereafter in accordance with the strategy.

24) No development shall commence within a phase or sub-phase unless and until supplementary surveys have been undertaken within that phase or sub-phase for badges and for bats in trees or buildings that are to be removed or demolished. The surveys for badgers shall extend 30m beyond the boundary of the phase or sub-phase being surveyed. The supplementary surveys shall be of an appropriate type for the above habitats and/or species and survey methods shall follow national good practice guidelines. If the surveys indicate that changes have occurred to the ecological baseline and that ecological impacts will arise that have not been identified or addressed by the Environmental Statement for the development, a revised Supplementary Environmental Statement shall be prepared. If this identifies a need for additional or different mitigation measures, these shall be detailed in the Statement along with a timetable for their implementation. If a Supplementary Environmental Statement is required to be produced, the development within this phase or sub-phase shall not commence until it has been approved in writing by the local planning authority. The

development shall thereafter be carried out in accordance with the approved Statement.

25) No development shall commence within a phase or sub-phase (including demolition, ground works, vegetation clearance) unless and until an invasive non-native species protocol for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The protocol shall describe the proposals for the containment, control and removal of Japanese knotweed, Himalayan balsam and Japanese rose. The development shall be carried out in accordance with the approved protocol.

26) No development shall commence within a phase or sub-phase unless and until a Landscape and Ecological Management Plan (LEMP) for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The LEMP shall include the following:
(a) description and evaluation of features to be managed;
(b) ecological trends and constraints on site that might influence management;
(c) aims and objectives of management;
(d) appropriate management options for achieving aims and objectives;
(e) prescriptions for management actions;
(f) preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period);
(g) details of the body or organization responsible for implementation of the plan;
(h) ongoing monitoring and remedial measures;
(i) details of the legal and funding mechanisms by which the long-term implementation of the plan will be secured by the developer with the management body(ies) responsible for its delivery; and
(j) where the results from monitoring show that conservation aims and objectives of the LEMP are not being met, how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme.

The development shall be implemented in accordance with the approved LEMP.

27) No development shall commence within a phase or sub-phase unless and until a detailed surface water sustainable drainage scheme for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The detailed sustainable drainage scheme shall be fully in accordance with the Lees Roxburgh Limited, The Lanes, Penwortham, Preston Flood Risk Assessment Report no.6337/R2 dated August 2021 and no surface water shall be allowed to discharge to the public sewer, directly or indirectly. The scheme shall also include, as a minimum:
(a) a final drainage layout plan appropriately labelled to include all pipe/structure references, dimensions, design levels, discharge rates, finished floor levels in AOD with adjacent ground levels. Final longitudinal sections plan appropriately labelled to include all pipe/structure references, dimensions, design levels, discharge rates, with adjacent ground levels. Cross section drawings of swales, flow control manholes, attenuation pond inlets/outlets, watercourse outfalls and manhole on watercourse;
(b) cross section drawings of attenuation ponds with 1 in 1 year, 1 in 30 year and 1 in 100 year + climate change water levels;
(c) information confirming that the rate of surface water run-off shall not exceed the pre-development runoff rate;

(d) drainage flow calculations (1 in 1, 1 in 2, 1 in 30 and 1 in 100 + climate change);
(e) a plan identifying areas contributing to the drainage network;
(f) measures taken to prevent flooding and pollution of the receiving groundwater and/or surface waters, including watercourses;
(g) a plan to show overland flow routes and flood water exceedance routes and flood extents;
(h) evidence of an assessment of the site conditions to include site investigation and test results to confirm infiltrations rates; and
(i) breakdown of attenuation in pipes, manholes, swales, and attenuation ponds.

The scheme shall be implemented in accordance with the approved details prior to first occupation of any of the approved dwellings.

28) No development shall commence within a phase or sub-phase unless and until details of how surface water and pollution prevention will be managed in that phase or sub-phase have been submitted to and approved in writing by the local planning authority. Such details shall include as a minimum:
(a) measures taken to ensure surface water flows are retained on-site during construction phase(s) and, if surface water flows are to be discharged they are done so at a restricted rate; and
(b) measures taken to prevent siltation and pollutants from the site into any receiving groundwater and/or surface waters, including watercourses, with reference to published guidance.

The development shall be carried out in accordance with the approved details.

29) All attenuation basins, flow control devices/structures and offsite connections to the proposed SuDS drainage relevant to any phase or sub-phase and downstream of that phase or sub-phase to the outfall are to be constructed and operational prior to the occupation of any development within that phase or sub-phase.

30) No development shall commence within a phase or sub-phase unless and until a foul water drainage scheme for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The drainage scheme shall include measures for:
(a) the proposed points of connection and associated properties and catchment area;
(b) proposed discharge rates to each proposed point of connection;
(c) identify any parts of the site where foul pumping is necessary. Thereafter, the strategy shall minimise the number of pumping stations throughout the site;
(d) the timing arrangements including a timetable for implementation, storage requirements and rate of discharge for any pumped foul discharge;
(e) foul and surface water to be drained on separate systems; and
(f) no surface water, highway drainage or land drainage shall be discharged directly or indirectly into the public sewerage system.

The development hereby permitted shall be carried out only in accordance with the approved drainage scheme. No development shall be occupied until the approved foul drainage scheme has been completed in accordance with the approved details. The foul drainage scheme shall be retained thereafter for the lifetime of the development.

31) No building shall be occupied within a phase or sub-phase unless and until a sustainable drainage management and maintenance plan for the lifetime of that phase or sub-phase has been submitted to and approved in writing by the local

planning authority. The sustainable drainage management and maintenance plan shall include as a minimum:

(a) arrangements for adoption by an appropriate public body or statutory undertaker, or management and maintenance by a resident's management company; and

(b) arrangements for inspection and ongoing maintenance of all elements of the sustainable drainage system to secure the operation of the surface water drainage scheme throughout its lifetime.

The development shall thereafter be completed, maintained and managed in accordance with the approved plan.

32) No development shall commence within a phase or sub-phase unless and until a written scheme of investigation for that phase or sub-phase has been submitted to and approved in writing by the local planning authority and the developer has secured the implementation of a programme of archaeological work in accordance with the approved written scheme of investigation. The works specified in the written scheme of investigation shall investigate the presence or absence of buried archaeological remains and their nature, date, extent and significance. Upon completion of the works, a report detailing the results shall be submitted to the local planning authority. If remains are encountered, development within the relevant phase or sub-phase shall pause until a further written scheme of investigation has been submitted to and agreed in writing by the local planning authority. Once the further written scheme of investigation has been approved, the development may proceed in accordance with it.

33) No building shall be occupied within a phase or sub-phase that shares a boundary with the adjacent railway unless and until proposals for the erection of trespass proof fencing to the relevant boundary have been submitted to and approved in writing by the local planning authority and the approved fencing has been installed.

34) Details of any scaffolding proposed to be erected within 10m of a boundary with the adjacent railway, shall be submitted to and approved in writing by the local planning authority before it is installed. The development shall be carried out in accordance with the approved details.

35) No development shall commence within a phase or sub-phase that has a boundary with the adjacent railway unless and until full details of earthworks and excavations to be carried out adjacent to the railway boundary have been submitted to and approved in writing by the Local Planning Authority. The development shall be carried out in accordance with the approved details.

36) No development shall commence within a phase or sub-phase that has a boundary with the adjacent railway unless and until proposals for preventing vehicle incursion onto the railway throughout both the construction phase and occupational phase of the development have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

37) No development shall commence within a phase or sub-phase unless and until details of how each dwelling in that phase or sub-phase will achieve a minimum dwelling emission rate of 19% above 2013 Building Regulations have been submitted to and approved in writing by the local planning authority. The development thereafter shall be completed in accordance with the approved details.

38) No dwelling shall be occupied unless and until a SAP assessment (standard assessment procedure), or other alternative proof of compliance (which has been previously agreed in writing by the local planning authority) such as an energy performance certificate, for that dwelling has been submitted to and approved in writing by the local planning authority demonstrating that the dwelling has achieved the required dwelling emission rate.

39) No development shall commence within a phase or sub-phase unless and until a construction management plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The plan shall include details of:

(a) any piling operations proposed, together with a justification for the piling, a vibration impact assessment and details of any mitigation measures required to control and minimise noise and vibration associated with the proposed piling works;
(b) any vibro-impact works proposed, together with a method statement for the works and an assessment of any effects that the works might have on the railway to the immediate east of the site;
(c) proposals for preventing the burning of waste or other materials on site during the construction phase;
(d) the parking of vehicles of site operatives and visitors;
(e) loading and unloading of plant and materials;
(f) storage of plant and materials used in constructing the development;
(g) the location of the site compound;
(h) suitable wheel washing/road sweeping measures;
(i) details of all external lighting used during demolition/construction;
(j) a scheme for recycling/disposing of waste resulting from demolition and construction works;
(k) 24 hour emergency contact number;
(l) arrangements for turning of vehicles within the site;
(m) swept path analysis showing access for the largest vehicles regularly accessing the site and measures to ensure adequate space is available and maintained, including any necessary temporary traffic management measures;
(n) measures to protect vulnerable road users (pedestrians and cyclists);
(o) the erection and maintenance of security hoarding including decorative displays and facilities for public viewing, where appropriate;
(p) measures to deal with dirt, debris, mud or loose material deposited on the highway as a result of construction; and
(q) proposals for the routing of construction traffic.

The development shall be carried out in accordance with the approved details.

The Planning Inspectorate

Report to the Secretary of State for Levelling Up, Housing and Communities

by Patrick Hanna MSc MRTPI

an Inspector appointed by the Secretary of State for Levelling Up, Housing and Communities

Date 9 February 2023

TOWN AND COUNTRY PLANNING ACT 1990

SOUTH RIBBLE BOROUGH COUNCIL

APPEAL BY TAYLOR WIMPEY AND HOMES ENGLAND

RESIDENTIAL-LED MIXED-USE DEVELOPMENT OF UP TO 920 DWELLINGS (USE CLASSES C3 AND C2), A LOCAL CENTRE INCLUDING RETAIL, EMPLOYMENT AND COMMUNITY USES (USE CLASSES E AND SUI GENERIS), A TWO FORM ENTRY PRIMARY SCHOOL (USE CLASS F), GREEN INFRASTRUCTURE, AND ASSOCIATED INFRASTRUCTURE FOLLOWING THE DEMOLITION OF CERTAIN EXISTING BUILDINGS

AND

RESIDENTIAL DEVELOPMENT OF UP TO 180 DWELLINGS (USE CLASSES C3 AND C2), GREEN INFRASTRUCTURE AND ASSOCIATED INFRASTRUCTURE

AT

PICKERING’S FARM SITE, FLAG LANE, PENWORTHAM, LANCASHIRE PR1 9TP

Inquiry Held on 23 August to 9 September 2022

Site visited on 25 August 2022

File Refs: APP/F2360/W/22/3295498 & APP/F2360/W/22/3295502

GLOSSARY AND ABBREVIATIONS

The Act	The Town and Country Planning Act 1990
ARCADY	Assessment of Roundabout Capacity and Delay
BFL	Building for Life
BHL	Building for a Healthy Life (2020)
CBLR	Cross Borough Link Road
CMC	Case Management Conference
CIL Regs	Community Infrastructure Levy Regulations 2010
City Deal	The Preston, South Ribble and Lancashire City Deal
CS	Central Lancashire Adopted Core Strategy (2012)
DAS	Design and Access Statement
DFT	Department for Transport
DOS	Degree of Saturation
EIA	Environmental Impact Assessment
ES	Environmental Statement
The Framework	National Planning Policy Framework
HE	Homes England
KBLR	Keep Bee Lane Rural
LCC	Lancashire County Council
LEA	Local Education Authority
LLFA	Lead Local Flood Authority
LHA	Local Highway Authority
LOS	Level of Service
LP	South Ribble Borough Council Local Plan (2015)
NH	National Highways
NP	Penwortham Town Neighbourhood Development Plan (2017)
NR	Network Rail
PPG	Planning Practice Guidance
PRC	Practical Reserve Capacity
RFC	Ratio of Flow to Capacity
SE	Sport England
SOCG	Statement of Common Ground
SRBC	South Ribble Borough Council
TA	Transport Assessment
TW	Taylor Wimpey
TEMPRO	Trip End Model Presentation Program
TRICS	Trip Rate Information Computer System
WCML	West Coast Mainline

CONTENTS

Appeal A Ref: APP/F2360/W/22/3295498
Pickering's Farm Site, Flag Lane, Penwortham, Lancashire PR1 9TP

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant outline planning permission.
- The appeal is made by Taylor Wimpey and Homes England against the decision of South Ribble Borough Council.
- The application Ref 07/2021/00886/ORM, dated 9 August 2021, was refused by notice dated 30 November 2021.
- The development proposed is a residential-led mixed-use development of up to 920 dwellings (Use Classes C3 and C2), a local centre including retail, employment and community uses (Use Classes E and Sui Generis), a two form entry primary school (Use Class F), green infrastructure, and associated infrastructure following the demolition of certain existing buildings.

Summary of Recommendation: That the appeal be allowed and planning permission be granted subject to conditions.

Appeal B Ref: APP/F2360/W/22/3295502
Pickering's Farm Site, Flag Lane, Penwortham, Lancashire PR1 9TP

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant outline planning permission.
- The appeal is made by Taylor Wimpey and Homes England against the decision of South Ribble Borough Council.
- The application Ref 07/2021/00887/ORM, dated 9 August 2021, was refused by notice dated 30 November 2021.
- The development proposed is a residential development of up to 180 dwellings (Use Classes C3 and C2), green infrastructure and associated infrastructure.

Summary of Recommendation: That the appeal be allowed and planning permission be granted subject to conditions.

PROCEDURAL MATTERS

1. The inquiry opened on 23 August and sat for 9 days on 23, 24, 30 and 31 August and 1, 2, 6, 7 and 9 September 2022. An unaccompanied visit to the sites was undertaken on 25 August, and to the surrounding road network, including key road junctions, on 8 September.[1] A virtual CMC was held on 15 June 2022 with the main parties, when the procedure and timetable for submission of documents was discussed.

2. An application for partial costs was made by TW and HE against SRBC. That application is the subject of a separate report.

3. The appeals were recovered for decisions by the Secretary of State by a direction made on 24 June 2022. The reason for the direction was that the appeals involve proposals for residential development of over 150 units or on sites of over 5 hectares, which would significantly impact on the Government's

[1] Including during the hours of 0730 to 0900 and 1630 to 1800.

objective to secure a better balance between housing demand and supply and create high quality, sustainable, mixed and inclusive communities.

4. The applications were submitted in outline with all matters reserved except for the principal means of access. The access arrangements within the sites, along with appearance, scale, layout and landscaping are reserved for future consideration. The descriptions of development on the application forms were amended before SRBC determined the application and were confirmed as being agreed by the appellant at the CMC. The address of both appeal sites given on the application forms is "The Lanes", however "Pickering's Farm" is the site address given in the LP and on SRBC's decision notice. For clarity and consistency, the latter has been used, as agreed by the appellant at the CMC.

5. Two draft planning obligations under s106 of the Act were submitted: an agreement and a unilateral undertaking. These were discussed at the inquiry, subsequently finalised, signed and submitted dated 29 September 2022. The agreement contains covenants in respect of affordable housing, education, delivery of spine road, delivery of village centre, biodiversity net gain, sports and recreation, local employment and skills, estate management and air quality monitoring. The unilateral undertaking provides for sustainable travel and travel network improvements. I return to the obligations later.

6. As a consequence of agreement on the obligation relating to sports provision, the ninth reason for refusal is no longer a matter of dispute between the main parties. The dispute over the eighth reason for refusal concerning air quality matters focused on a narrow issue relating to traffic data inputs. Following further discussion, a way forward has been agreed between the parties to calculate appropriate mitigation. I have no reason to disagree with these approaches and I have considered the appeal accordingly.

7. Revised building heights parameters plans were submitted during the inquiry, with the agreement of SRBC, which would reduce originally proposed heights,[2] amongst other amended drawings.[3] I am satisfied that no party would be prejudiced were the appeal to be determined on the basis of the amendments, and the parties were invited to explain the position should the Secretary of State decide not to accept any amended drawing. Since the close of the inquiry, the PPG on flood risk and coastal change has been updated. As this brings it into line with the latest position set out in the Framework, I did not consider it necessary to invite the parties to comment further at this stage.

8. An EIA has been undertaken and reported in an ES in accordance with the requirements of The Town and Country Planning (EIA) Regulations 2017. This has been taken into account in arriving at the recommendation.

[2] Appeal A drawing no. MP_00_1002 Rev103; and appeal B drawing no. MP_00_2002 Rev104 showing up to 2 storeys within 20m of the curtilage of existing dwellings, up to 2.5 storeys in identified locations, and up to 3 storeys elsewhere.
[3] A further drawing for the site access (VN211918-D109) was submitted with the Transport SOCG, however, this was confirmed as being only of a different scale to existing drawing VN211918-D103. A revised drawing for the Bee Lane Bridge and site access (VN211918-D105A) is discussed in both of the transport witnesses' POEs.

PLANNING HISTORY AND BACKGROUND

9. The initial acquisition of parcels of land for the site took place in the early 1970s,[4] with a link road through the site first proposed as part of the Central Lancashire New Town project. In 2012, the CS identified the area as suitable for allocation in later development plan documents, and the Pickering's Farm site was consequently allocated as a major development site within the LP in 2015.

10. The appeal sites form a substantial part of the land allocated under policy C1 (Pickering's Farm, Penwortham) of the LP. The allocation, referenced on the policies map as site EE, identifies around 79 hectares for development of up to 1350 dwellings and delivery of the necessary infrastructure for the area. The appellants control approximately two thirds of the allocated land, which includes the two current appeal sites. The policy requires, amongst other things, submission of an agreed masterplan for the comprehensive development of the allocation and of a remaining area of land to the south, referenced on the policies map as site S2, which is safeguarded for future development.

11. An outline planning application[5] for 1,100 dwellings, local centre including retail, employment and community uses, primary school, and community building, green infrastructure and large extent of cross borough link road extension was submitted in December 2019, with an initial masterplan dated December 2019.[6] A second masterplan dated August 2020[7] was subsequently submitted to SRBC and rejected in September 2020 on grounds of highways, green infrastructure, ecology, drainage, air quality, lack of infrastructure, mix of housing and residential amenity. Following this, the planning application was withdrawn by the appellants in March 2021.

12. Two outline planning applications were subsequently submitted, along with a supporting revised masterplan dated August 2021[8] which are the subject of the current appeals.

THE SITES AND SURROUNDINGS

13. The appeal sites are located to the south of the Kingsfold residential area of Penwortham, some 1km from Lostock Hall train station, and close to local services and amenities in the local shopping centres at Kingsfold, Lostock Hall and Middleforth. The sites comprise various parcels of predominantly open agricultural land, with the Appeal A site being some 45.88 hectares in area, and the Appeal B site some 6.39 hectares, totalling some 67% of the LP allocation.

14. The appeal sites surround a number of mostly dispersed individual buildings, predominantly residential dwellings and farm buildings. To the east of the sites is the WCML, beyond which lies Lostock Hall. To the south is open agricultural land comprising the S2 safeguarded land. To the west, the Appeal A site is bounded by the A582 Penwortham Way.

[4] By the then Central Lancashire Development Corporation (now HE).
[5] Planning application ref. 07/2020/00015/ORM.
[6] CD7.8.
[7] CD7.10.
[8] CD1.16.

15. The sites are intersected by a number of rural lanes, including Bee Lane and Flag Lane, both of which lead to narrow road bridges over the WCML. The Bee Lane bridge is dual lane with no footpaths. The Flag Lane bridge is single lane with partial footpaths. There is no existing vehicular access to the sites from Penwortham Way. The sites are relatively flat with levels of some 33 to 34 metres AOD to the east falling to around 26 to 28 metres AOD at the west, with local undulations. The Appeal A site is crossed by a cycleway and various public footpaths, including the Penwortham Cycle and Walking Route.[9]

16. The nearest designated heritage asset is a Grade II listed building some 650 metres to the west of the sites. The red line boundary for Appeal A is drawn around four non-designated heritage assets, these being post-medieval and modern former farmsteads outside of the appeal sites. The site is adjacent to the South Ribble Green Belt designation, the western edge of which is contiguous with Penwortham Way at this location.

PLANNING POLICY

17. The development plan for the area includes the LP, the CS, and the NP. This section focuses on those policies of particular relevance to the issues raised.

The local plan

18. Policy C1 states that planning permission will only be granted for the development of the Pickering's Farm site subject to the submission of; (a) an agreed masterplan for the comprehensive development of the site. The masterplan must include the wider area of the Pickering's Farm site which includes the safeguarded land which extends to Coote Lane as shown on the policies map, and make provision for a range of land uses to include residential, employment and commercial uses, green infrastructure and community facilities; (b) a phasing and infrastructure delivery schedule; and (c) an agreed programme of implementation in accordance with the masterplan and agreed design code.

19. The supporting text for policy C1 states that the comprehensive development of this site is dependent on the provision of infrastructure to ensure a sustainable development, that will be secured through a legal agreement between the developer and SRBC to ensure that the development proceeds only when the necessary infrastructure is in place. It indicates that there are currently a number of issues in the area related to traffic congestion, accessibility, public realm and local facilities. To address these issues, a key piece of infrastructure that will need to be delivered is the section of the CBLR which will link the A582 Penwortham Way with the B5254 Leyland Road and could include a new bridge crossing the WCML or improvements to the existing bridge.

20. This supporting text goes on to state all schemes within the agreed infrastructure delivery schedule will be implemented through the scheme and such contributions could be offset from any CIL monies received. To help increase capacity and reduce congestion levels on the local roads CIL contributions will be used to provide further transport infrastructure as set out

[9] Policy 7 of the Penwortham Town Neighbourhood Development Plan (2017).

in the Central Lancashire Highways and Transport Masterplan. This includes proposals to upgrade links and junctions on the A582 which runs adjacent to the site, or for widening parts of this route into a dual carriageway.

21. The glossary to the LP indicates that comprehensive development should reflect a strategic framework for the vision of a site's development, and that all development should take place in line with a wider strategic framework to avoid uncoordinated piecemeal development and ensure the proper planning of the area. A comprehensive masterplan is described as a masterplan produced following strategic planning and visioning for the whole site which addresses a broad range of constraints, issues and opportunities.

22. Policy A2 (CBLR) requires that land be protected from physical development for the delivery of the CBLR. The CBLR is shown on the policies map as being the road to the east of the allocation site. The map indicates the road to be constructed through the Pickering's Farm site as a potential extension. The supporting text to the policy states that once both elements of the road are complete, they are to be linked to provide the full CBLR, which will improve accessibility in an east-west direction through the borough, increase community access to the range of services within the borough and help traffic flow on existing roads. The completion of the link road is to be delivered in the Plan period, and the Pickering's Farm section of link road will be implemented in accordance with an agreed phasing and infrastructure delivery schedule, to be provided through developer contributions and within an agreed timescale.

23. Policy A1 (Developer Contributions) states that new development will be expected to contribute to mitigating its impact on infrastructure, services and the environment and to contribute to the requirements of the community. The policy specifies that this may include transport infrastructure.

24. The supporting text to policy A1 states that CIL creates a system which passes the cost of infrastructure improvements onto those developments and allows SRBC greater autonomy over expenditure to ensure strategic infrastructure aims are met along with localised issues. CIL does not remove the requirement for s106 planning obligations which will remain to be used, but only in accordance with the tests set out within the CIL Regs. However, s106 obligations will continue to be used for affordable housing and other legal requirements where appropriate. Planning obligations are a key delivery tool in providing the opportunity to secure financial contributions which will mitigate against the localised impacts of development which would otherwise render the proposal unacceptable in planning terms.

25. Policy G3 (Safeguarded Land for Future Development) identifies the southern area of the site at Pickering's Farm as land safeguarded and not designated for any specific purpose within the plan period. Existing uses will for the most part remain undisturbed during the plan period or until the plan is reviewed. Planning permission will not be granted for development which would prejudice potential longer term, comprehensive development of the land.

26. Policy G17 (Design Criteria for New Development) requires that proposals should not have a detrimental impact on the existing area, be of high quality design, not prejudice highway safety, pedestrian safety or the free flow of traffic, conserve heritage assets, and not have a detrimental impact upon landscape features.

27. Policy G10 (Green Infrastructure Provision in Residential Developments) requires that all new residential development resulting in a net gain of five dwellings or more will be required to provide sufficient green infrastructure to meet the recreational needs of the development, with the level of provision varying according to green space typology.

28. Policy G11 (Playing Pitch Provision) states that all new residential development resulting in a net gain of five dwellings or more will be required to provide playing pitches, at a standard provision of 1.14 ha per 1000 population.

The core strategy

29. Policy 17 (Design of New Buildings) requires the design of new buildings to take account of the character and appearance of the local area, linking in with surrounding movement patterns, and achieving Building for Life standards, amongst other things.

The neighbourhood plan

30. Policy 2 (Requirements for New Large Scale Development) supports the phased delivery of allocated large scale residential sites, such that each phase has a distinctive character of its own.

THE PROPOSALS

31. Appeal A is for up to 920 dwellings, a local centre comprising retail, employment and community uses, and a primary school. Appeal B is for 180 dwellings. Both appeals include proposals for green infrastructure and other associated infrastructure. Both appeals are in outline with the principal means of access applied for. The submitted plans include details of a western access point from Penwortham Way to serve the majority of the dwellings on both sites via a traffic signal controlled junction and new spine road. Some 40 dwellings in Appeal A would be served by a separate vehicular access onto Bee Lane, and the Bee Lane bridge over the WCML to Leyland Road.

32. The masterplan[10] indicates that the proposed spine road would be delivered to the standards required for the CBLR on the land within the appellants' control. There would be no vehicular access from the spine road or to Bee Lane or Flag Lane at this stage. Provision would be made to allow other land parcels, that are within the masterplanning area but not within the control of the appellants, to connect to this road at a future date, thereby enabling the completed road to function as the CBLR. The new road would be designed with potential provision for an internal bus loop. Infrastructure and alternative routing arrangements seek to ensure that the existing lanes would be used by pedestrians and cyclists from the developments, and existing users.

33. Although siting, layout, scale and landscaping are reserved for future consideration for both appeals, the applications are accompanied by a design code as part of the design and access statement, land use parameters plan, building heights parameters plan, and demolition plan. It is intended that the planning permissions should be tied to these plans by s106 planning obligations

[10] CD1.16

and conditions. The parameter plans are intended to align with the indicative layout for the sites, and with the submitted masterplan which is for the wider area of the site allocation and safeguarded land.

34. The proposal is for 30% of the residential units to be affordable, that is, up to 330 dwellings, with a tenure split of 70% affordable rented and 30% intermediate. Dwellings would be limited to 2 storeys in height around existing properties, and 2.5 to 3 storeys elsewhere. Some two hectares of land would be safeguarded for the construction of the new primary school, of up to 2,027m^2. The new local centre, of up to 2,500m^2, would comprise retail, commercial, employment and community uses, a mobility hub, and a third space which is described as a co-space working environment for residents.

35. A total of some 16.09 hectares of open space would be provided, comprising 0.3 hectares of equipped play area, 6.35 hectares amenity space (including land under existing pylons that would be safeguarded from development), 9.44 hectares natural/semi-natural space, and retained and proposed ponds. An indicative phasing plan has been provided, showing infrastructure construction commencing in 2025 and the first houses being delivered from 2026.

MATTERS AGREED BETWEEN THE APPELLANTS AND SRBC

36. The matters agreed between SRBC and the appellants are set out in a general SOCG[11], and include the following:
    - the sites are allocated for residential led mixed-use development under Policy C1 of the adopted LP;
    - the proposed residential, local centre, two form entry primary school, employment provision and green infrastructure uses across the sites meet the land use requirements of LP policy C1;
    - the reasoned justification to policy D1 of the LP identifies that the wider allocation could deliver in the region of 1,350 dwellings;
    - the delivery of 1,100 dwellings across the sites meets the housing delivery expectations of LP policy D1 and housing requirement and supply;
    - the most up to date published position on housing land supply indicates that, as at 1 April 2022, SRBC had 13.2 years supply of deliverable housing sites;
    - the proposals provide for 30% affordable housing which equates to up to 330 affordable homes and meets the requirements of LP policy A1 and policy 7 of the CS;
    - the proposed affordable housing provision on the sites complies with SRBC's preferred affordable tenure split of 70% rented and 30% intermediate tenures. This and other matters relevant to affordable housing can be subject to appropriate provisions within a s106 planning obligation;
    - building heights parameters plan indicating maximum height of 2 storeys within 20m of the curtilage of existing dwellings;
    - the amount and typologies of green infrastructure proposed by the schemes (16.09 hectares) is appropriate and exceeds local policy requirements;
    - the masterplan and planning applications are policy compliant in respect of green infrastructure provision;

[11] CD10.4.

- the prioritisation of green infrastructure across the sites with clearly defined locations for play areas and public open spaces and the proposed buffer from Penwortham would not cause noise pollution for residents, is appropriate and meets planning policy requirements;
- the matters raised by SE can be resolved with appropriately worded s106 obligations which will require financial contributions to be made on a phased basis to support the delivery of sports infrastructure as the construction of the development progresses (see below for agreed s106); and
- there are no outstanding technical matters in relation to the following areas: biodiversity, ground conditions, trees and hedgerows, flood risk, drainage, heritage, and archaeology.

37. An air quality statement of common ground[12] has been prepared by SRBC and the appellant agreeing; assessment method; assessment findings; damage costs calculation; and damage costs mechanism for investment.

38. A topic statement of common ground on highway, traffic and transport matters[13] between the LHA and the appellant agrees the following matters: bus services currently operating; the acceptability and achievability of the proposed access with the Penwortham Way; and the criteria for the CBLR.

THE CASE FOR THE APPELLANTS

39. The following is principally a summary of the appellants' closing submissions.[14]

Introduction

40. The appellants' case is the determination which would be in accordance with the development plan when read as a whole would be to allow the appeals and that material considerations do not indicate otherwise. Accordingly, the appeals should be allowed. The appellants cite SRBC's case as being that the determination which would be in accordance with the development plan when read as a whole would be to dismiss the appeals and material considerations do not indicate otherwise and that, accordingly, the appeals should be dismissed.

41. However, if the Secretary of State agrees with the appellants that the appeal proposals accord with the development plan when read as a whole, then the SRBC does not contend that the appeals should be dismissed nonetheless because of material considerations. SRBC does not have a second, other material considerations, step in its case. SRBC's case stands or falls with the answer to the question of development plan compliance. If the Secretary of State agrees with the appellants concerning the development plan, then the appeals should be allowed.

42. The appellants do have a second step in their case. In the event the Secretary of State agrees with SRBC that the appeal proposals do not accord with the development plan when read as a whole, material considerations (namely, the extensive public benefits the appeal proposals would bring, including the much needed 30% affordable housing) indicate that the appeals should be allowed.

[12] CD10.6.
[13] CD10.81.
[14] CD10.95.

Context

43. The appeal sites are a strategically important location and allocation central to achieving the strategy in the CS and LP. Pickering's Farm is the largest housing allocation in the LP. The appeal sites constitute the major part, some 67%, of a strategic site allocation.[15] LP policy D1 indicates 1,350 homes for the allocation. The appeal applications propose up to 1,100 homes, some 82% of the indicative number. There can be no in-principle objection to the appeal proposals.

44. In order to conclude that the appeal proposals do not accord with the development plan, (a) there would need to be a policy concerning a point of detail (rather than principle) which the appeal applications do not comply with, and (b) the breach in question means that the appeal proposals do not accord with the development plan when read as a whole. Even in the event of noncompliance with a, or even a number of, development plan policies that does not necessarily mean the application does not accord with the plan when read as a whole. In other words, the point of detail, whatever it might be, would have to outweigh the appeal proposals' in-principle compliance with the development plan, given the allocation.

45. In order to address the issue of accordance or not with the development plan it makes sense to address first the policies referred to in the reasons for refusal, before secondly checking whether there are any other development plan policies which bear on the subject.

Masterplanning, design code, phasing, infrastructure delivery, and implementation programme

46. SRBC confirmed during the inquiry that there is no policy requirement for a masterplan to be agreed before a planning application could be submitted, although the Leader of SRBC, who appeared as an interested party, expressed otherwise. SRBC also confirmed that, if the Secretary of State concludes in the appeal decision the submitted masterplan is suitable, then that would satisfy the policy. The next issue which arises is whether the submitted masterplan meets the policy requirements, namely LP policy C1. Policy C1 requires that the masterplan must include the allocated and safeguarded land to Coote Lane. The submitted masterplan does as a matter of fact.

47. The safeguarded land in question is location S2 in policy G3 which provides: "*Within the borough, land remains safeguarded and not designated for any specific purpose within the Plan period at the following locations: [..]. Existing uses will for the most part remain undisturbed during the Plan period or until the Plan is reviewed. Planning permission will not be granted for development which would prejudice potential longer term, comprehensive development of the land".* In other words, the appellant considers that a planning application cannot be made now for development on the safeguarded land.

48. Policy C1 requires that the masterplan must *"make provision for a range of land uses"*. The submitted masterplan does as a matter of fact.

[15] Allocation EE is some 78.25ha, appeal site A some 45.88ha, appeal site B some 6.39ha.

49. Policy C1 also says that the masterplan is to be *"for the comprehensive development of the site".* Here, the "site" can only mean the allocated site. Given that policy C1 does not require a single planning application to be brought forward, the underlying purpose of requiring a masterplan is to ensure that when planning applications are made for the development of parts of the allocated site, there is an overall strategy for the wider area which individual applications should be consistent with, so that the individual parts facilitate rather than inhibit bringing forward the greater whole. The LP glossary definitions of Comprehensive Development and Comprehensive Masterplan are consistent with this agreed position. The submitted masterplan is for the comprehensive development of the allocated site. This too is a straightforward matter of fact.

50. There are no other policy requirements for the masterplan set out in policy C1. Accordingly, as Dr Price agreed in answers in cross-examination the submitted masterplan meets the requirements of the policy.

51. The appellants do not contend that because the masterplan meets the requirements of policy C1 in this respect the Secretary of State must agree the submitted masterplan. However, that is not the point made in reason for refusal 5. Instead, the reason for refusal contends that the masterplan does not meet the requirements of policy C1 rather than it being unacceptable for some other reason. This is plain wrong.

52. SRBC provide very little evidence concerning the acceptability or otherwise of the masterplan. Many of the points made relate to a criticism that the appeal applications are not comprehensive and do not include the entirety of the allocated site. Of course they don't - that is the role of the comprehensive masterplan. SRBC's central criticism is misplaced (a) as the reason for refusal concerns the masterplan, not the appeal applications and the accompanying DAS, and (b) policy C1 does not require a single planning application to be brought forward for the land which it requires to be included in the masterplan.

53. Other criticisms of the masterplan rest on a review of the 12 considerations set out in BHL carried out by Dr Price. One of the appellants, HE, is one of the partners to this publication. This SRBC analysis must be put into context.

54. First, there is no evidence to substantiate that any of the points are matters which SRBC considers should lead to the Secretary of State not agreeing the masterplan. None of the points made are mentioned in the officer's report, the reasons for refusal, SRBC's Statement of Case or the exchanges of emails before the inquiry in which the appellants sought clarification of SRBC's case.

55. Secondly, the use of BHL was never raised as a point by SRBC during the processing of the applications. Dr Price asserted that the use of BHL and its predecessor BFL is embedded in the development plan and the Central Lancashire Design Guide SPD (2012). However, as he agreed in cross-examination, it is no such thing. His proof refers to policy 17 which expects achieving BFL silver or gold rating. BFL is no longer in force and the current publication BHL has dropped that ratings system. There is nothing in the LP, which predates BHL, about the predecessor BFL. The SPD only mentions the predecessor document in passing. Neither advocate the use of BHL or its predecessor as a way of auditing masterplans.

56. Thirdly, BHL recommends that the best way to use BHL is to *"use the 12 considerations as a starting point and for those involved to agree what is needed to secure a green light against each consideration. It is particularly helpful if local authorities clearly explain what is expected to secure a green light against a particular consideration."* SRBC has never sought to do this or apply BHL in a collaborative way. BHL is not some form of score sheet.

57. Fourthly, each of the BHL considerations sets out what's needed for each. None have been applied by Dr Price in his analysis. This is not how BHL works. Fifthly, SRBC indicates it would have preferred more detail in certain respects. The masterplan provides sufficient detail and there is a danger in putting too much detail in what is after all a strategic overall vision for the allocation. Sixthly, Dr Price agreed that all of the details he would have preferred to have at this stage could be secured by conditions, and, seventhly, importantly, that nothing in the masterplan would preclude a satisfactory outcome applying BHL.

58. Eighthly, as a matter of fact, the masterplan has been audited applying BHL by the independent design review team within HE and found to be satisfactory. Dr Price confirmed that he did not challenge the independence of the process, and Mr Thornton explained just how rigorous the process was. Ninthly, none of the very few specific points made by SRBC amount to anything of substance:
    - *Concern that the applications would not deliver the entirety of the CBLR*. The masterplan does include the entirety of the CBLR, and no suggestions have been made as to what the owners of part of the allocated site could do, beyond making a CIL payment, to deliver the link road on land which they do not control or a new crossing over the WCML, if needed. Ensuring the rural lanes are not used by cars from the development arises from the allocation itself. Physical measures would need to be employed, and engineering solutions found, to inhibit cars accessing the lanes, even with the CBLR. Dr price agreed there must be engineering solutions to this issue which arises from the allocation itself. Whether or not the CBLR would assist with the provision of a bus loop, the reason for refusal concerns the masterplan, which includes the entirety of the CBLR in any event. The s106 also secures the provision of bus services.
    - *Car parking strategy.* This was not a point that SRBC had ever raised before. It could be resolved by way of a suitably worded condition.
    - *Building heights parameter plan.* This matter has been resolved by way of an agreed condition on building heights.

59. Finally, the process by which the masterplan was drawn up was thorough, inclusive, collaborative and extensive. It is suitable and fit for purpose.

60. Policy C1 also requires a phasing and infrastructure delivery schedule and an agreed programme of implementation. The draft Indicative Phasing and Implementation Plan[16] sets out 6 phases for delivery of the development. The first phase, until December 2024, is to secure technical approvals and prepare the site. The second phase, to December 2027, will deliver essential infrastructure, including roads, drainage, flood basins, footpaths, cycleways,

[16] Mr Alsbury POE, Appx 2.

public open space, and bus route. The subsequent phases will each deliver 30% affordable housing, along with any infrastructure required for that phase.

61. Whilst this schedule and programme have been submitted to meet policy requirements, it is expected that there would need to be an obligation attached to each permission requiring a fuller delivery strategy to be submitted and approved at an appropriate point before the development commences. The appellant considers that this would be secured by the s106 planning obligation.

62. The submitted schedule and programme does what the policy requires. The only point raised by Dr Price on the schedule and programme related to the timing of the provision of the local centre which he considered should happen earlier than specified in the draft document. This has now been addressed in the s106 planning obligation. To the extent the reason for refusal makes the point about the programme not having been agreed, the points made earlier apply just as much here. The appellants have submitted a design code and none of the reasons for refusal criticise the design code.

63. In conclusion, the masterplan, phasing and infrastructure delivery schedule and programme of implementation accord with the terms of LP Policy C1.

Impact upon the local highway network

64. The appellants' TA[17] sets out key principles for the delivery of the 1,100 residential units as part of the appeal proposal, whilst also considering trip generation and trip distribution for the allocated 1,350 units and the introduction of a new school, based upon the masterplan principles and mobility strategy. In highways terms, this is intended to create a new vision for living, where people want and have the option to live locally, with strong community relationships, whilst connected to regional centres through direct active travel and alongside sustainable shared travel routes which prioritise convenience. The vision has been prepared in the context of the health and climate agenda, and by considering what a post-pandemic world might look like.

65. The TA proposes use of the existing network of lanes to provide local access and form part of an active travel network penetrating into the surrounding residential areas, and accessible to local services and facilities. The lanes are to be retained with no additional vehicle traffic using them. The provision of a new local centre, mobility hub, third place working environment, and primary school is intended to encourage further local living and active travel. Internal site bus access is proposed to enhance existing public transport services.

66. The TA concludes that:
    - the proposed access on Penwortham Way will be sufficient for the proposed development demands, whilst not prejudicing the delivery of additional dwellings within the site allocation;
    - the location and accessibility of the sites, along with the mobility characteristics of the proposed development, would allow opportunity for local, healthy and sustainable living;

[17] CD1.68.

- the travel plan, public transport improvements, and pedestrian and cycle initiatives would reduce reliance on the private car;
- the modelling results lead to a judgement that the proposal would not have a severe adverse impact on the highway network.

67. Paragraph 111 of the Framework mandates that development should only be refused on highways grounds if the residual cumulative impacts on the road network would be severe.

68. Neither of the related reasons for refusal contends that there would be a severe adverse impact. To contemplate the dismissal of the appeals on the basis that they would cause severe adverse impacts there would need to be clear evidence to substantiate that this would be the case. This is an important point.

69. The reasons for refusal assert that because it has not been demonstrated that there would not be a severe adverse impact the proposals are contrary to the requirements of paragraph 111. This approach is incorrect. If the appeals are to be dismissed because there would be a severe adverse impact, it is for the LHA to make good its case. The LHA evidence does not substantiate there would be a severe adverse impact.

70. The reference to CS Policy 17 in reasons for refusal 1 and 2 is mystifying as it says nothing at all about highways impact. LP policy G17 does contain a proviso that the development should not prejudice the free flow of traffic. However, this is inconsistent with paragraph 111 which sets the bar far higher. Also, SRBC does not dismiss the appeals on the basis that the proposals would prejudice the free flow of traffic. The LHA contend that there is already congestion, rather than free flowing traffic, in the peak hours at the 5 disputed junctions. The reference to LP policy G17 is misplaced. This main issue turns on paragraph 111 and not the development plan.

71. The Framework does not define what it means by severe and so it is used in its ordinary meaning rather than as a term of art. The OED tells us severe means "very great", which the LHA agreed with.

72. The appellants consider that journey times are the appropriate and common-sense way in which to gauge whether the proposals would cause a severe adverse impact. A driver might or might not get the hump about congestion at junctions and might or might not be interested in average speed. Ultimately what counts is how long it has taken to get from A to B.

73. The LHA took an extreme position in which journey times were described as *"meaningless"* as a way of gauging severe adverse impact. It cannot be the case that an understanding of the effect of the proposals on journey times is beside the point. It is noteworthy that the LHA utilise changes in journey times, albeit via a different model to the appellants', in its own planning application to dual the A582.[18] Doing so gives the lie to the position taken at the inquiry.

74. This extreme position led to assertions that the largest increases in journey times (which range from under an additional 2 minutes on a journey of over 13 minutes, to less than 3 minutes on a journey of more than 15 minutes) would

[18] Which was under consideration by the planning authority at the time of the inquiry.

constitute a severe, or very great, adverse impact, whereas the increases of a minute or so would not.[19] This position was then shifted to say even the larger increases in journey times would not be severe. This shifted again to a position that one couldn't tell from journey times whether impacts would or would not be severe and that *"it would be unreasonable… to say they are severe"*. The upshot is that, if journey times are a helpful, real-life metric, the LHA makes no case concerning them in relation to paragraph 111.

75. The appellants' microsimulation modelling in terms of journey times are shown and explained in evidence.[20] To assess if the impact of the proposal is severe or not, the appellants have selected seven particular routes and sought to calculate additional journey times resulting from the additional traffic from the appeal schemes. To do so, a micro-simulation model was developed that considers routing and assignment as well as traffic growth with a single model network, and accounts for interactions between junctions. The model takes place within a defined extent around the appeal sites, encompassing the Lower Penwortham and Lostock Hall area, including all key arterial routes and junctions.[21]

76. The effects of the proposals should be looked at across the whole day rather than isolating the peak hours as the LHA have. Even if there would be a large change in relative journey times in the peak hours, this would not substantiate a severe adverse impact, The Hartford appeal decision concluded that *"…any additional delay however carries less weight as it is not the aim of policy to protect the convenience of commuting car drivers".* [22]

77. The modelled changes in journey times along the various routes whether across the day or simply in the peak hours are for the most part very small indeed. [23] Even the largest changes (which are limited to the peak hours on only one route) are modest and it would be an abuse of English language to describe them as very great or severe. Whether looked at in the round, or isolating peak hours, the impacts of the proposals cannot be characterised as severe.

78. The LHA's criticisms of this modelling do not change the position. The largest difference between the appellants and the LHA is whether one should or should not add unknown growth from TEMPRO.[24] This accounted for circa 15%

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[19] Mr Axon rebuttal p26 notes that the increase is within plus or minus one minute for 8 hours of the 12-hour modelled period northbound and for 5 hours southbound, with an AM peak increase in journey time of 1 minute 52 seconds northbound on a journey time of just over 13 minutes, and 2 minutes 43 seconds southbound on a journey time of just over 15 minutes.
[20] Routes A (the A582), B (Leyland Road) and C (the A6)(shown in Mr Axon's Figure MA-Rebuttal POE 1-12, page 28) with optimised signal settings are in Mr Axon's Rebuttal POE paras 1.90-1.105. Routes 6 (Penwortham Way to the A6 via Coote Lane), 7 (Penwortham bypass) and 5 (Penwortham town centre) without optimised signal settings are in the TA at CD 1.68 see pages 57, 60, 61 (PDF pages 63, 66, 67). Route 6 with optimised signal settings is in Mr Axon's Rebuttal Appendix 2 at paras 26–31.
[21] Appellants' TA Fig 7.1 shows the model's geographical extents and the roads included.
[22] CD10.44 APP/A0665/A/12/2179410 & APP/A0665/A/12/2179374 Lands at Grange Farm and east of School Lane, Hartford, Cheshire.
[23] CD1.68 TA Ch7 Highway Network Assessment and Mr Stevens POE paras 4.1.83-4.1.85.
[24] Background traffic growth is assessed by the appellants in the TA on the basis of their 2021 survey figures and based on growth from six committed development schemes, suggesting growth is 8.3% from 2021 to 2035. The LHA had 18-50% from 2018-2035, of which 13.5% is

difference between the traffic flows in the appellants and the LHA analyses. The dispute about which base year to use,[25] some 11%. How committed development trips are distributed, some 3%, and trip rates from the proposals, some 2%. Nothing else makes any real difference.[26]

79. The NH letter dated 28th July 2022[27] which states NH have no objection to the proposal does not analyse the dispute or side with the LHA. Detailed responses had been provided to NH concerning all the points previously made by NH on the modelling. At no stage, even now, has NH commented on any of this; instead, it seems NH have predominantly adopted the LHA inputs so as to move on and reach their concluded position of no objection.

80. However, it may well be unnecessary to resolve the disputes. Whichever way they are resolved makes no real difference to the outcomes. This is because; (a) the context is that there is a plus or minus tolerance of some 10% in the survey data,[28] and daily variations in traffic are typically some plus or minus 15%; (b) the appellants' sensitivity test[29] in which traffic flows in both with and without scenarios have been increased by 10%; (c) a sensitivity test[30] in which higher development trip rates, akin to the LHAs, have been fed into the microsimulation model; (d) the results of these sensitivity tests show no change in journey times, or are barely registrable, and could not be characterised as very great or severe; and (e) the same outcome would arise even were all the LHA points to be accepted. The LHA compare development traffic flow with existing schemes, but ones which are smaller than the appeal schemes.[31]

81. The LHA describe how the appellants' modelling shows on one of the routes (the A582) average speeds in one direction in the PM peak hour would reduce by 1mph (from 7.6 mph to 6.5 mph).[32] The LHA consider that a change of 1mph in average speed along a 2½ mile route would amount to a severe adverse impact. It is impossible to take this seriously. It would be indiscernible.

82. Turning to the LHA's assessment, it has produced its own standalone modelling for 7 junctions, of which 5 junctions are claimed to be of concern.[33] Originally, Mr Stevens contended that the impact at all 5 would be severe but he confirmed that the impact on the Table 12 junction from the appeal proposals would be "slight" and not severe. Despite the assertion that the Secretary of State should

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related to uncertain growth from an old version of TEMPRO. The latest DFT growth forecasts are 6.9%-8%, which is closer to the appellants figures than the LHA's (Mr Axon rebuttal, para 1.58-161).

[25] Mr Stevens, 2018 v Mr Axon, 2021.

[26] See Mr Axon's written note on TEMPRO at CD10.93.

[27] CD10.71.

[28] Mr Axon POE para 6.21 also indicates that average traffic flows in April 2021 were at 89% of pre-pandemic levels, and June 2022 flows were at 91%.

[29] Mr Axon rebuttal POE Appx 1, paras 139-148 (Test 3).

[30] Mr Axon rebuttal POE Appx 1, paras 133-148 (Test 2).

[31] Mr Axon rebuttal POE p1.23-1.32 indicating the schemes are 182, 143 and 75 units

[32] The appellants' TA at Table 7.3, page 60, records a journey time of 1,158 seconds (19.3 minutes) along the A582, equating to average speed of 7.6 mph. With the proposed schemes, this increases to 1,310 seconds (21.8 minutes), equating to an average speed of 6.5 mph.

[33] Mr Stevens POE tables 12 (p.94), 13 (p.96), 14 (p.97), 15 (p.99) and 17 (p.102).

have *"100% confidence"* in the LHA modelling results there are a number of issues which tell against reliance on the results.

83. First, the 5 tables utilise either LinSig modelling,[34] which expresses results by reference to DOS, or ARCADY modelling,[35] which utilise RFC. The LHA accept that, once the DOS reaches or exceeds 100%, or the RFC reaches 1, the algorithms do not produce a reliable indication of queue length or delays. They do not give sufficiently reliable results to judge whether impacts would be severe. Table 14 indicates a queue of some 2½ miles and a delay of some half an hour in the PM peak hour in year 2035 without the traffic from the appeal proposals, an inconceivable result in the real world. This means seeking to compare the situation with and without the appeal proposals is a fruitless task. The degree of worsening shown simply cannot be relied on, nor can they be relied on to gauge severity of any traffic impact.

84. Secondly, the LHA agreed that the results shown in the 5 tables for 2035 (without the appeal proposals) show that interventions would be needed to address the issues at the junctions in question in any event. The LHA explained that the Table 12 junction has been identified for interventions and improvements in any event and that the dualling of the A582 would resolve the issues at the junctions shown in Tables 13 & 14. At some point between now and 2035, something would need to be done anyway at all 5 junctions. It is not the responsibility of the appellants to resolve these issues. Instead, applying paragraph 110(d) of the Framework, it should be ensured that any significant impacts from the development can be cost-effectively mitigated. The LHA have not suggested any cost-effective mitigation which satisfies the tests in regulation 122 of the CIL Regs in respect of planning obligations or paragraph 56 of the Framework for conditions.

85. There is no evidence at all substantiating that a planning obligation requiring the appellants to make a financial contribution towards the small part of the CBLR remaining and / or a new road bridge across the WCML would meet these tests. The work in support of the LHA's application to dual the A582 shows that even including a larger number of homes in the model than the appeal proposals promote, when comparing journey times without the completed CBLR and with it, there is no tangible difference. It would not justify requiring the appellants to fund the completion of the CBLR including a road bridge over the WCML or holding back the development until these are in place.[36]

86. Thirdly, each junction is modelled in isolation, as if it existed without other junctions before or after it in one's journey necessarily assumes that there are no problems at any other junctions on the route despite the models for the other junctions showing congestion at each of them. This is unrealistic. Fourthly, the standalone models use a synthesised peak. It introduces a Trumpian or fake curve, which creates a peak for half an hour within the peak hour. In other words, it artificially increases the traffic demand. In fact, the surveys show a flat profile. The reported results are for this synthesised peak within the peak, with

[34] Tables 12, 15 & 17.
[35] Tables 13 & 14.
[36] See Mr Axon's POE for scenarios 4 and 5 (pages 70, 71, 74, 75) and the report of the journey time differences in without and with dualling scenarios 3 and 5 (pages 70, 71, 72).

compounding effect. Fifthly, the LHA models do not allow for traffic to re-route in order to avoid congestion at the junctions in question. In the real world drivers relying on sat-navs take alternative routes to avoid problems on the network, rather than respecting the *"road hierarchy"*.

87. These reasons apply regardless of whether the LHA's inputs into the models are reliable. It might well be concluded that there is no need to resolve these disputes. One of the LHA model assumptions is that all peak hour trips are to and from work; this assumption affects the routes and distances assumed in the model and is an unrealistic assumption. Another assumption is that travel by car in the peak hours will return to pre-pandemic levels, which infers that promoting sustainable transport has been and will continue to be in vain. LinSig and ARCADY models may well have a useful role in designing junction improvements, but they are not fit for purpose in the context of paragraph 111.

88. The LHA's network management duty is set out in s16 of the Traffic Management Act 2004.[37] However, the decision on these appeals is the responsibility of the Secretary of State, who is not the subject of the caveated duty in s16 and who will instead apply national planning policy on the subject as expressed in paragraph 111. This sets a high bar for a potential refusal, rather than whether the expeditious movement of traffic would be impinged upon.

89. In overall conclusion, the proposed development would not give rise to severe impacts on the road network. Even were one to apply the LHA's alternative analysis, this does not demonstrate the proposed development would cause severe impacts on the road network either. If the Secretary of State concludes there would be severe adverse impacts then the appeals should not be dismissed because of this. The language of paragraph 111 is *"should only be refused... if…."* [38] The next step would be to take whatever has been found to be a severe impact and weigh it against the considerable public benefits the appeal proposals would bring. The public benefits of 1,100 new homes of which 330 would be affordable homes would very readily outweigh any such impacts.

Safety of pedestrians and cyclists on the Bee Lane bridge

90. Reason for refusal 3 contends there would be conflict with CS policy 17 and LP policy G17. The former is irrelevant as it doesn't mention highways safety. The latter states that the development should not prejudice highway or pedestrian safety. Paragraph 111 of the Framework sets an unacceptable impact on highway safety as the threshold of refusal. The language of paragraph 111 postdates the adoption of the LP and there are obvious differences. This could be resolved if one says an "unacceptable" impact on safety would amount to "prejudice" to safety. It would not be appropriate to apply any less exacting approach to the issue of safety than that set out in paragraph 111.

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[37] Which is "to manage their road network with a view to achieving, so far as may be reasonably practicable having regard to their other obligations, policies and objectives, the following objectives – (a) securing the expeditious movement of traffic .., and (b) facilitating the expeditious movement of traffic ..".

[38] As opposed to "it should be refused" as one finds in NPPF 91 for example.

91. Bee Lane bridge is currently used by pedestrians and cyclists and there is no separation between users. There have been no injury accidents in the last 5 years. The current position in safety terms is agreed as being acceptable.

92. Policy 7 of the NP includes the Bee Lane bridge as part of the "Penwortham Cycle and Walking Route" which is to be safeguarded for a dedicated circular route for cyclists and walkers. In other words, as a matter of planning policy, more use is planned to be made of the bridge in its current form by cyclists and walkers. The appeal proposals would similarly lead to more use of the bridge by cyclists and walkers. There would be some but not much additional vehicular traffic on the bridge too. The LHA confirm its concerns do not arise from additional cars but from additional pedestrians and cyclists. The question which arises is whether the increase in walking and cycling would change the current acceptable situation in safety terms to an unacceptable one.

93. The bridge currently accommodates around 10 pedestrians and 5 cyclists per hour, with the proposal expecting some 15 more pedestrians and 10 more cyclists per hour. These figures are a judgment by way of a high-level estimate based on the multi-modal assessment in the TA. The appeal proposals seek to encourage walking and cycling, and the numbers could happily be considerably more. Mr Axon's professional judgment is that there would not be an unacceptable impact on highway safety were the bridge to be left without any improvements to it. The character of the bridge would not change from being acceptable in safety terms to being unacceptable in safety terms with greater use by pedestrians and cyclists.

94. Quiet Lanes provide a useful analogy. These are minor roads, rural in character, which are appropriate for shared use by walkers, cyclists and vehicles. They have low traffic flows[39] travelling in the main at low speeds along narrow road widths. Bee Lane and its bridge fit these criteria as usage is some 250 vehicles a day, with a 30mph speed limit, and carriageway of less than 5m.

95. However, two options have been advanced for changes to the bridge in the event that the view is reached that something must be done to improve the safety of the bridge.[40] This would provide for the shared use of the carriageway by vehicles and cyclists, and a separate footway for pedestrians, with measures to protect the footway from encroachment by vehicles to protect the parapets similar to the existing Coote Lane railway bridge. These improvements would satisfactorily address any safety concerns, should the view be formed that the bridge would be unacceptable. A road safety risk assessment concludes that it would be low risk, meaning acceptable. Either way, there would not be an unacceptable impact on highway safety.

96. The LHA confirm that its safety concerns would be resolved by the provision of a separate bridge over the WCML for pedestrians and cyclists. This is the cheapest of the options assessed by WSP.[41] If the Secretary of State concludes in favour of the LHA's evidence, then there is a solution; an interim "minded to" decision

[39] Less than 1,000 vehicles per day.
[40] Mr Axon POE page 28.
[41] Mr Lloyd POE Appx 7 options

in which time is given to the parties to agree either a Grampian-style condition or a s106 planning obligation to address the point.

97. The LHA are also concerned about safety in terms of the use of the lanes by vehicular traffic associated with the appeal proposals. The LHA accept that this issue is not incapable of resolution. The appellants illustrate and discuss potential engineering solutions[42] and explain that physical measures would make such a manoeuvre extremely difficult for a small car and impossible for anything larger. In the unlikely event that measures like these prove insufficient then the LHA can apply to the Secretary of State for the power to enforce via fines moving traffic offences[43] (such powers were only previously held by the police). Accordingly, the appropriate conclusion on the evidence is that there would not be an unacceptable impact on highway safety in the lanes.

Provision of highways improvements for the CBLR and Bee Lane bridge

98. The Bee Lane Bridge improvements already referred to would be adequate for all users of the bridge. Turning to the CBLR, this link road is a leftover from very different times; it was first thought of some 50 years ago. The appellants would do a great deal to deliver the remaining part of it. The issues which arise are:
- whether development plan policies require the appellants to secure the delivery of the small part of the road, which the appellants would not build as part of the appeal proposals and / or a new road bridge over the WCML;
- whether requiring such a contribution would meet the CIL tests; and
- in any event, whether a Grampian-style condition to hold back homes on the sites pending the completion of the entirety of the CBLR including a bridge over the WCML would meet the tests in paragraph 56 of the Framework.

99. Firstly, the LP policies referred to in the reasons for refusal which relate to the CBLR are policies A1, A2 & C1. Policy A1 is a general developer contributions policy; it does not refer to the CBLR or a bridge over the WCML. It adds nothing to the tests which would need to be applied to any obligation of condition.

100. Policy A2 *"protects"* land from physical development for the delivery of the CBLR, part of which runs through the Pickering's Farm allocation. That is all that is required by the policy. Paragraph 4.21 of the supporting text in the plan explains this section *"will be provided through developer contributions"*. As a matter of law, supporting text cannot impose requirements on developments. Neither the policy nor the supporting text requires the developer of part of the allocated site to build or pay for the whole of the stretch of the CBLR or a new or improved bridge across the WCML.

101. LP Policy C1 does not mention the CBLR or the bridge. Paragraph 6.11 of the supporting text states that the CBLR *"could include a new bridge crossing the [WCML] or improvements to the existing bridge."* There is no reference in the supporting text to this being provided either directly by the developers of the whole or parts of the allocated site, or indirectly via financial contributions. The key point is that none of the policies referred to in the reasons for refusal address the situation where the applications are for part of the allocation only.

[42] Mr Axon POE Appx MA-3 pages 27,28, and Rebuttal POE paras 3.92, 3.93.
[43] Under part 6 of the Traffic Management Act 2004.

102. The submitted masterplan safeguards a route for the CBLR as it would cross the allocated site. The appeal schemes would build those some 1.08km of road that cross the appeal site, at a cost of over £5m. This is some 89% of the CBLR, leaving in the order of 130 metres to be built on the in-between land, and is a substantial contribution. The appeal schemes would also pay an estimated £7.6m in CIL which could to some or other extent be spent on delivering the rest of the CBLR including for example paying for or contributing towards a new bridge over the railway. It is wrong to suggest that the appellants aren't doing their bit towards delivering the CBLR; they are. In conclusion, there is nothing in the development plan which requires the appellants to do more towards the delivery of the CBLR than they propose to do.

103. Secondly, given that the appellants cannot deliver the CBLR across land which is not in their ownership, the only potential way in which a s106 planning obligation could work would be via making a financial contribution. As above, there is no evidence to substantiate an additional contribution. Even had the LP contained a requirement for a contribution, as a matter of law the CIL tests would still need to be applied. Such a requirement would not meet the tests. Nor is there any basis for saying that the CBLR and new or improved bridge is necessary in order for the appeal proposals not to cause a severe impact on the road network. SRBC also confirmed that SRBC was requesting nothing more from the appellants in paying towards the delivery of the CBLR. Thirdly, there is no evidence to substantiate that a Grampian-style condition with regards the CBLR would meet the tests in paragraph 56 of the Framework.

104. That leaves the following miscellaneous points:
- Dr Price confirmed he had not considered SRBC's and the LHA's ability to deliver the rest of the CBLR by the use of CPO powers and CIL funds. Mr Wood confirmed that SRBC intended to use CIL funds towards the provision of the dualling of the A582 rather than the CBLR. It wasn't clear whether this included future CIL funds from the whole allocated site which would be "close to £10m."[44] That tells us how unimportant the CBLR must be to the SRBC. It cannot contend that delivery of the full CBLR is critical, yet maintain that it would not deliver the remainder when it had the funds. It would still be open to SRBC at any time in the future to change their minds and use CIL funds towards paying in whole or part for the last section and a new bridge. This is for SRBC to sort, not the appellants. SRBC is not a powerless bystander.
- Reason for refusal 11 is downright peculiar. Policies A1 and C1 do not require submission of viability evidence to enable an assessment of whether necessary infrastructure can be provided. The SRBC suggestion that the developers of the rest of the allocation would not be able viably to fund the rest of the CBLR has nothing to do with whether the appeal proposals accord with the development plan.
- Much time has been spent by SRBC exploring the history of the adoption of the LP. However, nothing in the history can add to or change what the development plan does and does not require. The appellants are either required by the development plan to do more towards the delivery of the CBLR or they are not. It cannot conceivably be argued that if the development plan does not require any more from the appellants, then the

[44] Mr Alsbury in cross-examination.

history amounts to a material consideration which would indicate the appeals should be dismissed. Finally, nothing in the history could make a planning obligation or Grampian style condition compliant with the relevant tests.

Other policies

105. The appeal proposals accord with all other relevant development plan policies, and SRBC has not argued to the contrary.

Public benefits

106. The appeal proposals would bring with them extensive economic, social & environmental public benefits. SRBC take no issue with any of the 17 listed benefits. The difference concerns the weight to be given. The appellant gives significant weight to 11 of the benefits and moderate weight to 5. The limited weight given to on-site job creation has been reconsidered by the appellant and deserves more weight. Overall, the appellant gives significant weight to the benefits. In contrast, SRBC give significant weight to the social benefits (which include the new market homes and the new affordable homes) but only limited weight to the economic and environmental benefits; no view was expressed as to the overall weight of all the benefits taken together.

107. The appellants' individual weightings, and overall cumulative weighting, should be accepted by the Secretary of State. The provision of 1,100 new homes of which 330 would be affordable homes, for which there is an acute and pressing need is a hugely worthwhile public benefit in its own right. The additional household expenditure of some £12.7m per annum, bringing some 156 FTE jobs, at least 10% biodiversity net gain, resolving local flooding and drainage issues, and providing generous green infrastructure which would benefit the wider community, are among the stand-out benefits of very real substance.

Response to KBLR highways review

108. The KBLR report presents a KBLR derived vehicle trip forecast and is a first principle approach to trip forecasting which relies upon assumptions. Some of the assumptions are derived from documents that are specific to other areas. There are factors which have either been applied incorrectly or not applied at all. A basic assessment has been undertaken of how the KBLR development trip numbers would change as a result of making two adjustments as an example.[45] Applying just these two adjustments to the KBLR work reduces the KBLR 12-hour workplace departures by people in cars to 716 people from 1,008. This compares with the Vectos assessment of the same which is 676 (the sum of car drivers and passengers).[46] Given this, the differences between the KBLR assessment and the Vectos assessment are not substantive. This is the KBLR starting point for traffic assessment. Adjusting this starting point as done here will flow through the rest of the traffic forecasting work.

109. KBLR's own estimate of committed developments and traffic from committed developments is not accepted. There is agreement between the appellants and the LHA on the developments to be included. KBLR also uses its alternative trip

[45] See CD10.88 for details of the examples.
[46] Table 6.5 of the Transport Assessment CD1.68.

forecasting methodology to derive higher trip forecasts for the proposed development and also the committed developments. This then results in journey time differences compared with those reported by the appellants and the LHA. These results are not accepted as reasonable or likely future forecasts of effect.

110. It is not reasonable to make the broad assumption that journey time delay is proportional to traffic flow, and the quantum of effect reported by KBLR is not reasonable. KBLR equates journey time changes to a notional net cost, which is not balanced by any other elements. This is not an assessment that can be accepted in mathematical terms or in principle. Similarly, KBLR relates journey time to net carbon emissions, again not accepted. Vision & Validate is not highly idealistic, it is the current approach expected in both policy and guidance.

Other matters

Flood risk

111. The ES contains a Flood Risk Assessment and Surface Water Drainage Strategy. A Technical Note on Flood Risk and Drainage has also been prepared explaining the appellant's engagement with the LLFA and United Utilities, the flood risk and surface water drainage proposals for the site, and addressing the key points raised by KBLR.[47] Their concerns are based on a misunderstanding of the proposals and the Flood Risk Assessment.

112. KBLR's assertion of a complete re-ordering of site hydrology is a fundamental misunderstanding of the proposed strategy. The northern basin has no site drainage attenuation function and is designed to accommodate pre-existing surface water/ordinary watercourse flooding, as demonstrated by detailed hydraulic modelling. Development surface water drainage in the southern catchment (Catchment A) is to be contained within an attenuation basin located alongside Penwortham Way and discharged by gravity to the watercourse to the north west. Development surface water drainage in the northern catchment (Catchment B) is to be attenuated within a piped network and connected into the culverted ordinary watercourse at the north boundary. Site levels indicate the system will need to be pumped.

113. The model predictions match or exceed available records, so that the model results are precautionary[48]. It does not seek to claim that the recorded flood is representative of a 30-year event. The proposed development runoff rate is considerably less than the existing runoff rates,[49] providing protection and betterment up to the 1 in 100 year plus 40% climate change event, and betterment in post-development runoff into Mill Brook, thus reducing flood risk within the brook and downstream in its catchment.

114. It is not proposed to construct a berm but to generally raise levels by a maximum of about 1m, which will deliver significant benefits by managing currently uncontrolled surface water flooding within the north of the site. Baseline flood mapping confirms existing and substantial flooding to the site and

[47] Mr Alsbury POE Appendix 4.
[48] FRA Appx 4 Section 3.10 - the 1 in 30 year flood matches or exceeds recorded flooding.
[49] FRA Section 4.3 and McCloy Table 4-2.

to Kingsfold.[50] The proposed flood management scheme will have a beneficial effect including on land in Kingsfold for all flood probabilities assessed. There is no requirement to alleviate pre-existing flood risk to adjacent land. The key planning test of not worsening pre-existing flood risk to adjacent land as a result of planned development is addressed by the FRA.

115. Whether spoil might be used to raise certain parts of the site will be addressed at the discharge of condition stage. However, no material ground level changes in the vicinity of existing homes and businesses is anticipated. 50,000 tonnes of spoil (30,000m^3) could be accommodated on the 520,000m^2 appeal sites without noticeable land raising. Maintenance of drainage systems within the development area will be the responsibility of the management company or the purchasers of new property. The pumping station will incorporate a standby pump and emergency storage. The risk of failure is so low it can be discounted. United Utilities will adopt the system for its future long term maintenance.

116. Both the LLFA and United Utilities found the proposed development to be acceptable, subject to a number of standard planning conditions.

Air Quality

117. Modelling has found that impacts for NO_2, PM_{10}, and $PM_{2.5}$ at all receptor locations along the modelled road links were predicted to be negligible and are therefore not significant. The additional traffic is therefore not predicted to result in significant worsening of the air quality at any sites, even at the air quality monitoring areas of Lostock Hall, Penwortham and Walton-le-Dale. In line with general improvements in air quality as a result of widespread adoption of low and emission free vehicles over the next decade those baseline levels would be expected to reduce. SRBC agree that the air quality report methodology and conclusions are acceptable. A damage cost assessment has been prepared, identifying an air quality mitigation cost[51] which must be spent on air quality mitigation measures.

118. A further sensitivity assessment of the modelling results has been carried out, including increases in development traffic flow. This indicates that the impact would remain at worst as slight adverse and therefore not significant. In order to reach impacts that could be defined as moderate adverse and therefore significant, the development trips would have to be increased by over 500%.

Ecology

119. There is no reference to ecology or biodiversity in the reasons for refusal and the SOCG records that there are no outstanding issues in respect of biodiversity, trees or hedgerows. To address interested party concerns a peer review[52] of the ecological work has been undertaken.

120. The vast majority of the hedgerow network onsite will be replaced with planting at a 1.5:1 ratio[53] (baseline hedgerow of 8.59km with post development

[50] Appendix C to the McCloy Consulting Flood Study.
[51] The agreed planning obligation secures a maximum contribution.
[52] Mr Alsbury POE Appx 5, Technical Note produced by Mr Goodwin.
[53] CD1.22 Biodiversity Net Gain Assessment [August 2021].

hedgerow of 12.8km). Whilst 100% loss of hedgerows on site has been assumed, with 150% replacement, this is a worst case scenario. A large number of hedgerows are likely to be retained, particularly those that qualify as important. Any indirect impacts to retained hedgerows during construction can be addressed by a Construction Environmental Management Plan and biodiversity plans.

121. Bat roosting surveys[54] for the site found no confirmed roosts in the 18 trees across the site. One building outside the site supports a day roost of Common Pipistrelle and will not be lost to the proposals. The surveys conclude low activity across the site indicating a lack of roosts. Trees with moderate and high roosting suitability for bats[55] will be re-assessed prior to each phase of the development. Lighting will be designed to avoid adverse impacts.

122. Barn owls were recorded roosting in an offsite building, between the application sites. There is potential for indirect impacts and disturbance to this Schedule 1 species. Opportunities and mitigation, including sensitive lighting and nest box for each phase of development, will be within the forthcoming Construction Environmental Management Plan and biodiversity plans.

123. In terms of planting proposal, the biodiversity plans will ensure that a clear map is provided, including methods to ensure that all retained and created habitats are managed and enhanced in the long term. The Construction Environmental Management Plan and biodiversity plans will also detail proposals to rectify invasive non-native species and protect nesting birds. Pre-commencement surveys are also recommended for badgers.

124. Biodiversity net gain of 10% could be achieved through on-site habitat creation; off-site acquisition and improvement; purchase of credits; or a combination of these options. The metric assumes a 30-year management and monitoring plan and, whilst trees can take longer to mature, the metric allows for the long-term establishing of habitats such as woodland. Subject to appropriate conditions and obligations, the proposals will be acceptable in all ecological respects.

Education

125. Assuming that all 1,100 dwellings will be 4 bed homes, as a maximum case scenario, the LEA calculates there will be sufficient spare capacity within existing schools for primary and secondary pupils from the development. However, if all live planning applications are granted planning permissions there will be a shortage of primary school places. As part of masterplanning the whole allocation, and the safeguarded land, the LEA has requested that land be set aside for a new primary school. The land for the school will be gifted to the LEA as a serviced plot at nil consideration. The value of this plot exceeds the contribution sought. Use of the land will be safeguarded through the s106.

126. The LEA bases its pupil yield calculations on its own bespoke research, applied consistently to all proposals across the County. That Northamptonshire Council use different ratios does not suggest they should be applied here. Locally

[54] CD1.56 and CD1.61.
[55] CD1.61.

derived data is likely to be considerably more reliable. Interested parties may have misread the LEA assessment which states that all committed developments have been factored into the calculations, including those in the 5 year land supply document. The LEA has had regard to live planning applications. There are a number of reasons why the overall size of the population might grow but the percentage of young children might not grow to the same extent or at all. Migration is one. The LEA has considerable experience in interrogating and applying this data consistently across the County.

Healthcare

127. In South Ribble, developers make financial contributions towards the cost of maintaining and enhancing healthcare infrastructure through CIL.

Utilities and services during construction

128. The appellants are highly experienced developers who have processes and standards in place that ensure disruption is kept to the minimum. There will also be a condition which requires the submission of a Construction Environmental Management Plan to agree matters such as construction traffic routing, hours of working, control of noise, dust and vibration, the monitoring of compliance and measures for communicating with local residents and businesses.

The City Deal

129. KBLR has incorrectly assumed that the appellants will be inviting that significant weight be attached to the contribution that the proposed development will make to that programme. This is not the case.

130. One of the appellants is HE, whose mission is to work proactively to ensure more homes are built in areas of the greatest need and ensure affordability of homes. Government has made very clear that it expects HE to intervene and use its powers to deliver, or speed up the delivery of, housing and regeneration, where it is appropriate to do so. HE seek to unlock land, make it available for development at the earliest opportunity and accelerate housing delivery.

131. The Pickering's Farm site is one such opportunity; it is a large, allocated housing site. HE has the freehold ownership of 17.04 ha of land and Taylor Wimpey has control over a further 35.19 hectares of land (under two option agreements). The remaining land is in third party ownership. In order to bring the site forward for development in a comprehensive and integrated manner, the appellants have been working in partnership for 15 years.

132. As one of HE's 11 sites in the City Deal, should the appeal not be upheld then potential land receipts will not be paid into the deal, nor will the site contribute to delivery of the City Deal's housing and economic targets. The City Deal is designed to achieve an ambitious step-change in the delivery of infrastructure, housing and employment, creating over 17,000 new homes and 50,000 new jobs over a 10-year period. Income received from the sale of the 11 sites is invested into the City Deal in the form of loan and grant funding. Grant funding is capped at £37.5m and both loan and grant are paid into the deal to facilitate delivery of major strategic infrastructure (including the dualling of the A582). To date, HE has been successful in securing planning permission on 10 of the 11 City Deal sites, with Pickering's Farm being the last remaining site.

133. Of 3,801 homes with planning consent, 1,229 homes have been completed. Final terms are being agreed to deliver 62,500m^2 of commercial floorspace at the Preston East employment site. HE's sites are delivering policy compliant levels of affordable housing. To date, HE has paid £30.3m of loan and £24.2m of grant funding into the City Deal. HE is fully committed to directly and purposefully supporting housing delivery in South Ribble and Lancashire.

134. KBLR assert that there is a deficit in the funding of the City Deal. However, the model operates over a long-term period of 15-20 years. Any mid-term deficit is a snapshot in time and does not acknowledge that the housing and the associated generation of CIL means funds will be paid back after the infrastructure schemes have been delivered. On current forecasts, there is some £101m of income still to flow into the model beyond 2022/23.

135. The delivery of further improvements to the A582 is a priority for the City Deal. The cost, scope and benefits of the improvements remain under review. The costs quoted by KBLR are not accurate. The LHA is in discussions with DFT regarding major roads network funding for the scheme. The Broughton Bypass was delivered within its final approved budget, and the Preston Western Distributor is on target and is forecast to complete within the approved budget.

Conclusion

136. The determination which would be in accordance with the development plan, when read as a whole, would be to allow both appeals. Material considerations do not indicate otherwise than this. Should the conclusion be reached that the appeal proposals do not accord with the development plan then in those circumstances material considerations, and in particular the extensive public benefits would indicate otherwise such that the appeals should be allowed.

THE CASE FOR SRBC

137. The following is principally a summary of SRBC's closing submissions.[56]

Background

138. The site at Pickering's Farm is the largest of only three major residential-led sites in the LP.[57] The LP recognises that, *"Due to the size and importance of these sites a comprehensive approach will be adopted that sets out the infrastructure needs and delivery mechanisms for the whole site and considers the relationship to existing communities"*.[58] Any development proposal for the allocation must address the comprehensive development of the whole allocation and the delivery of infrastructure required to serve the whole allocation.

139. The appeal schemes fundamentally fail to achieve those ends. In particular, and by reference to the main issues identified for determination at these appeals;[59]
- the masterplanning and infrastructure delivery proposals associated with the appeal schemes are inadequate,

[56] CD10.94.
[57] CD5.2.
[58] LP para 6.4.
[59] The last two identified main issues have now been satisfactorily addressed.

- the appellants' assessment of impacts on the local highway network under-state effects, and there is a risk that those effects will be severe, with no solutions advanced to address them,
- similarly, there remain concerns about the safety of pedestrians and cyclists crossing Bee Lane Bridge. Proposals to address those concerns have continually evolved but remain inadequate, and,
- in contrast to the clearly stated position previously advanced by the appellants in an effort to achieve an allocation in the development plan,[60] the commitment to deliver the remaining section of the CBLR in conjunction with development of the Pickering's Farm allocation has been unceremoniously dropped, and its delivery put at risk.

140. Each of those failures is harmful and generates breaches of policy. It is acknowledged that the appeal schemes will deliver substantial benefits, but those should not be at the cost of achieving a proper, comprehensive development of the allocation that delivers important infrastructure and meets the expectations and requirements of the LP.

Masterplanning and infrastructure delivery failings

141. The central failing of the masterplan and infrastructure delivery scheme is the failure to provide for acceptable east/west connections across the allocation, including the lack of any commitment to the completion of the CBLR. The appellants dismiss their earlier approaches to the development of the allocation, and the understanding of the policy position, as irrelevant. This demonstrates the same approach by the appellants, SRBC and LP Inspector to understanding of the development plan. Accordingly, the appellants' previous approach is directly relevant in addressing the merits of the current schemes.

142. The process of allocation begun as far back as 2007[61]. The appellants' initial efforts at masterplanning for the allocation (and the land extending down to Coote Lane) were made in representations to the CS examination. That first masterplan in 2011 included a primary vehicular and bus route through the allocation and crossing the WCML. The Development Statement confirmed that; *"Development of the Pickerings Farm site will enable the completion of a key highways link connecting Penwortham Way to Leyland Road which is deliverable through the land controlled by TWUK and the HCA"*.[62] The CS was duly adopted in 2012 including the land as a strategic location.

143. The same approach was advanced by the appellants during the examination of the LP.[63] The appellants and SRBC understood that the completion of the CBLR would be delivered as part of the proposed development of the allocation. The LP Inspector was equally clear; *"The Plan indicates that significant infrastructure improvements will be required to support the development of the site. This would include the CBLR…"* [64]

[60] In respect of both the CS and the LP.
[61] Mr Llyod POE para 2.6.
[62] The Development Statement contains a series of other statements to the same effect.
[63] CD5.1 p48.
[64] CD5.5 para 65.

144. Having secured the allocation, the understanding of the policy position was unchanged. In both the 2019 masterplan[65] and the 2020 masterplan,[66] the appellants stated that; *"The CBLR extension will be a primary route through the site from Penwortham Way linking to the Cawsey to the north east. As part of the development proposals, the CBLR extension will be delivered in phases".* [67] Both prior to the adoption of the LP and following its adoption, and until the current schemes, the appellants were proceeding on the basis that delivery of that section of the CBLR was required *"as part of the development proposals"*. Until recently, the appellants' interpretation of the policy position was consistent with that of the LP Inspector and SRBC.

145. The change in position is stark. The current 2021 masterplan merely states that, in accordance with the LP[68], land is protected from physical development to allow for the delivery of the full CBLR. That change of position is not explained anywhere. Policy A2 of the LP does require land to be protected from physical development for the delivery of the CBLR but must be read together with Policy C1. This contains three requirements to be satisfied in order to allow the grant of planning permission for development at the allocation.

146. The first is common to all the major residential-led development sites allocated in the LP. In order for planning permission to be granted for development within the allocation, including any part of it, there must be an agreed masterplan for its comprehensive development.[69] The expectation is that a masterplan would be prepared in advance of the submission of any planning applications. [70] That approach makes sense and avoids the risk of applications being refused because of deficiencies in a masterplan. However, submitting an application at the same time as the masterplan is the appellants' choice. If the masterplan is not agreed by the Secretary of State, then there would be a breach of policy C1(a).

147. This policy requires that a masterplan must extend to Coote Lane and include a specified range of land uses. This is not an exhaustive list. The appellants' appeared to accept that a document that did no more than these two things would not be an adequate masterplan for comprehensive development. A suite of considerations are relevant to agreeing the masterplan including the provision of infrastructure in accordance with the development plan and the adequacy of connections across the site. On these two issues the masterplan fails.

148. The infrastructure required to be delivered for the development is not listed in policy C1. The items of infrastructure required is set out in the supporting text, as also for policies C2 and C3. The requirement to provide the remaining section of the CBLR is a requirement of policy C1 because; part (a) requires a masterplan to be agreed that will necessarily include infrastructure provision, the adequacy of which has to be assessed by the decision-maker; part (b) requires a planning and infrastructure delivery schedule that, again, must be

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[65] CD7.8.
[66] CD7.10.
[67] CD7.8 p45 and CD7.10 p47.
[68] The other two are addressed at policies C2 and C3.
[69] CD5.2 p25 Policy C1(a)
[70] As set out at LP paragraph 6.1.

acceptable to the decision-maker; and supporting text expressly lists the infrastructure to be provided including the CBLR.

149. That approach to the allocation does not seek to impose an illegitimate additional 'policy' requirement through the medium of supporting text.[71] The policy contains a requirement for infrastructure (through the need for an agreed masterplan and infrastructure delivery schedule) and the supporting text explains what those items of infrastructure comprise. They unquestionably include the remaining section of the CBLR. There is no dispute that the current masterplan and the accompanying phasing and infrastructure delivery schedule[72] do not provide for the delivery of the remaining section of the CBLR. That failure comprises a breach of policy C1.

150. The current masterplan also undermines a central component of the LP that seeks completion of the CBLR as one of two *"key pieces of highways infrastructure proposed within the borough"*, and an important route serving new developments and improving east/west travel across the urban area.[73] The LP confirms then that, *"All schemes within the agreed infrastructure delivery schedule will be implemented through the scheme and such contributions could be offset from any CIL monies required".* The LP then explains that the CBLR is to be provided, *"through the scheme"*, not by applying CIL monies.[74]

151. Although the current masterplan makes no provision for the completion of the CBLR, other developers for the remaining allocation are highly unlikely to have a viable scheme if that responsibility falls on their shoulders. Given that the applications represent 81.5% of the allocated units, this would leave just 250 units to fund the remaining infrastructure.[75] Either the remaining section of the CBLR would not be completed or other parts of the allocation would be stymied.

152. It is no answer to say that SRBC can complete the CBLR itself by applying CIL money from the schemes.[76] That suggestion assumes CIL monies from the

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[71] It is of course well established that supporting text can do no such thing. As confirmed in R (Cherkley Campaign Ltd) v Mole Valley DC [2014] EWCA Civ 567 where Richards LJ said: *"…when determining the conformity of a proposed development with a local plan the correct focus is on the plan's detailed policies for the development and use of land in the area. The supporting text consists of descriptive and explanatory matter in respect of the policies and/or a reasoned justification of the policies. That text is plainly relevant to the interpretation of a policy to which it relates but it is not itself a policy or part of a policy, it does not have the force of policy and it cannot trump the policy. I do not think that a development that accorded with the policies in the local plan could be said not to conform with the plan because it failed to satisfy an additional criterion referred to only in the supporting text. That applies even where, as here, the local plan states that the supporting text indicates how the polices will be implemented".*

[72] The phasing information that accompanied the masterplan was contained at p37. It did not include provision for the completion of the CBLR. It simply divided the area into 9 phases and gave no indication of the order of development. The latest phasing and infrastructure information (at Mr Alsbury's Appendix 2) does not provide for completion of the CBLR.

[73] LP paras 4.16-4.18.

[74] Although para 6.11 recognises that there might be scope for offsetting.

[75] Mr Lloyd POE para 2.32.

[76] It is also no answer to state that SRBC makes no request for any particular level of contribution from the appellants for completion of the CBLR. The LP requires the development

schemes and other allocation development will be available and sufficient. There is no evidence in support of either proposition, whereas SRBC confirmed that that the CIL monies arising were likely to be committed to the A582 improvements.[77] Even if available, there is a clear risk that CIL monies will not be sufficient to complete the CBLR. Estimates for the basic construction costs range from £2m to £12.5m and the level of other inevitable costs are unknown.[78] There is no evidence to support a conclusion that those costs can all be covered by CIL monies from the allocation.

153. In short, the current masterplan and its associated infrastructure delivery scheme fail to make provision for completion of the CBLR in breach of policy C1 and significant harm flows from that breach.

154. One of the consequences of the current masterplan's failings is the absence of proper east/west connections and what that means for users of routes to and from the east that make use of the lanes. The current masterplan emphasises turning the existing lanes into sustainable pedestrian and cycle friendly routes and, to achieve that, the masterplan states that the vast majority of new vehicular traffic will be prevented from using the existing lanes.[79] The DAS contains a plan showing some bollards placed around a junction.[80] Further evidence augments that by showing the carriageway of new development roads narrowed (to the point of allowing only one-way movements) at the intersections between those roads and the lanes. None of those solutions would prevent vehicles from turning from new roads to the lanes and vice versa.

155. There is likely to be a real incentive to make that manoeuvre.[81] Access to Lostock Hall is much shorter by way of the lanes as opposed to Penwortham Way. In rebuttal the appellants suggested that those manoeuvres could be prohibited as a matter of law. There is no evidence that either the police or the County Council would be able to enforce it.

156. The appellants recognise that their vision for the lanes requires the exclusion of new development traffic from them. However, there is a clear risk that the existing lanes will be used by vehicles from the new development who wish to

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of the allocation to deliver that infrastructure through a comprehensive masterplanning and infrastructure delivery exercise. Its cost would be borne by various landowners/developers and would be divided by a process of equalisation. It is not for SRBC to dictate the outcome of that commercial process. If the appellants had undertaken that exercise and sought to discharge their responsibility by paying a contribution for completion of the CBLR, then that would have to satisfy the Reg. 122 tests. In principle, those requirements would have been satisfied, as confirmed by Mr Wood, as it would be necessary because the requirements of the LP for that development (as part of the allocation) include the completion of the CBLR (in the same way that provision of affordable housing is necessary to satisfy the LP).

[77] That would accord with the LP at §6.12; "To help increase capacity and reduce congestion levels on the local roads CIL contributions will be used to provide further transport infrastructure as set out in the Central Lancashire Highways and Transport Masterplan. This includes proposals to upgrade links and junctions on the A582 which runs adjacent to the site, or for widening parts of this route into a dual carriageway."

[78] As listed in Mr Lloyd's POE Appx 7.

[79] CD1.16 p8.

[80] CD1.17 p44.

[81] Mr Stevens POE p62

head east and west by the shortest route. The current masterplan (even if augmented by subsequent evidence) fails to address that risk and is deficient.

157. The current masterplan also states that, *"Access can be provided for a new or extended bus service servicing the site accessing via Penwortham Way with an internal loop provided to ensure good penetration…"*. More recently it has been suggested that buses might gain access to the appeal sites via Bee Lane bridge and Bee Lane.[82] No satisfactory solution for the bus service is provided in the event that the other parts of the allocated site do not come forward (thereby preventing the formation of an internal loop). The proposed planning obligation simply defers the issue. The current masterplan does not properly address the provision of satisfactory public transport for the allocation and is deficient.

158. Other concerns about the current masterplan have been assessed against the 12 objectives of BHL.[83] The concerns relate to accommodation mix within each of the character areas, the relationship between new and existing development, and the way in which local context has informed design decisions. Whilst each of those matters can be addressed through reserved matters applications, they should have appeared within the current masterplan and infrastructure delivery scheme. This increases the risk of disagreement or delay further down the line. Paragraphs 126 and 132 of the Framework focus on the importance of place, and the proposals do not follow the 'proper planning approach' or represent good planning for the area.

159. In conclusion, the masterplan and the phasing and infrastructure delivery schedule are not acceptable, and their failings mean that policy C1 is not met.

Risk of severe highways impacts

160. In accordance with paragraph 111 of the Framework; *"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe"*. Paragraph 110 of the Framework lists matters relevant to that assessment, including that safe and suitable access to the site can be achieved for all users and that any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

161. Nothing in national policy suggests that significant impacts on the transport network in terms of capacity and congestion (that are not being mitigated) attract limited weight or any less weight than any of the other matters referred to in paragraph 110. Paragraph 110 requires development schemes to address impacts on the transport network in terms of capacity and congestion, just as it requires them to address impacts on highway safety.[84]

162. The appellants' approach to this departs from an earlier approach by former highways consultants who were engaged with the two earlier applications.[85]

[82] Mr Axon POE para 4.27.
[83] CD10.22.
[84] The Hartford appeal decision (CD10.44) is of limited relevance and doesn't affect the application of paras 110 and 111.
[85] Applications for 1,100 dwellings on the Appeal Sites and the remaining section of the CBLR.

There was no meaningful engagement with the LHA prior to completion of the TA to agree the parameters for assessment,[86] which cannot be relied upon in reaching a determination on the severity of impact. The Vision and Validate model does not replicate existing conditions, acknowledge existing concerns, fully report impacts with development, or mitigate against impacts to maintain a safe and reliable network for users (motorised and non-motorised). The single access onto the A582 may present difficulties for the elderly or those with health or mobility issues, emergency access has not been agreed, drivers taking shortcuts may result in safety impacts on Coote Lane, and Bee Lane is not suitable for drop off or pick up at the proposed school site.[87]

Current flows

163. The starting point for analysis is a clear understanding of how the network currently operates. The appellants' surveys took place in April 2021, during the third national covid lockdown. They are clearly unrepresentative of current conditions. SRBC presents traffic survey results for May 2019, May 2021, and May 2022. Traffic flows on the A582 in May 2021 are substantially lower than in May 2019.[88] By May 2022, those traffic flows have grown and, for the AM peak period in particular, they are almost back to May 2019 levels. The appellants have conducted no subsequent surveys to verify their reliance on April 2021 traffic levels. On the basis of the only evidence of 2022 surveys, it is apparent that reliance on the April 2021 surveys means that they measure impacts against an unrepresentatively low estimation of local highway use.

164. When the survey results are compared side by side, the percentage difference between the appellants' result and other survey period results is between 88% and 98% on the AM peak, 86% and 88% on the PM peak, and 88% and 90% on a 5-day average over 24 hours.[89]

Design year

165. Existing levels of traffic will continue to grow between now and completion of the schemes. If the appellants are right that the only traffic growth that needs to be accounted for outside of the development traffic itself are the 6 committed developments then the design year is irrelevant. If background traffic growth beyond that should be accounted for, then the design year is relevant. Background traffic growth increases over time. It will be at a lower level in 2031 when compared with 2035. If factored into the analysis, then an appropriate design year should be selected. Whilst the TA refers to 2031,[90] reference to the appellants' latest phasing information confirms that 2035 would be more appropriate, as adopted in the LHA assessment.

Background traffic growth

166. The appellants accept that some traffic growth is likely between now and the 2030s on the local highway network. The traffic growth that the appellants

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[86] The TA is dated July 2021 and Mr Axon's team made contact with the LHA in June 2021.
[87] Mr Stevens POE paras 4.2.18, 4.3.17, 4.3.20 & 4.4.19
[88] Well over 10% lower.
[89] Mr Stevens POE para 4.1.46 Table 3.
[90] Albeit it makes no difference to the TA's analysis since no background growth is considered.

accept is associated with six committed local schemes that will generate traffic using this part of the highway network. Those six schemes are not going to be the only developments that generate traffic using the network. There are likely to be other new developments in the local area between now and 2035 that also generate traffic. There will also be other developments in the wider area that generate traffic and use this part of the local network. An approach which adopts traffic growth as 'capped' by reference to only a handful of identified committed development (and excludes any other background growth) is likely to under-estimate usage of the highway network in future years.

167. The TEMPRO growth factors represent the DFT's attempt to forecast future growth. Those growth factors are produced through a series of demographic, economic and other factors including likely levels of development. They are relied upon, including by both the LHA and NH, to give a robust indication of future levels of traffic. [91] There is no justification for dispensing with their use and assuming traffic growth that arises only from a small number of committed schemes in a particular local area. The appellants' failure to account for any further background traffic growth means that the forecast of future conditions is likely to be unrealistic. It will under-estimate levels of traffic in future years.

168. That failure compounds the deficiency caused by using the unrepresentative April 2021 traffic flows as the starting point. The LHA has sought to apply TEMPRO growth rates, albeit adjusted to account for the 6 committed schemes to avoid double-counting. Whilst those growth rates are not current, they are not dissimilar to the current growth rates. They are accepted by NH as appropriate.[92] More recently released growth rates are not approved for use. Given that they may be subject to revision, they should attract limited weight.

Trip generation

169. The appellants' assessment of highways impact under-state current and future levels of traffic on the network, and under-estimate the levels of traffic that are likely to be generated by the schemes. Assessing likely trip generation relies on survey data from TRICS, but that data is drawn from around the country including areas where car ownership levels are lower than in South Ribble. There are relatively high levels of car ownership and relatively high levels of commuting by car in the borough, due to proximity to the motorway network.

170. Sense checking trip rates (derived from TRICS) with local survey data taken from residential developments in South Ribble indicates that trip generation is greater than assumed by the appellants. The three developments surveyed by the LHA are different to the schemes, but each is close to local facilities and enjoy good motorway access.[93] The appellants' approach is to then divide those trips by purpose. Three purposes are identified (commuting, education, leisure) but division by purpose is not performed by reference to any local data. For the leisure category, the appellants assume that half of all journeys will be internal, involving no travel off-site. It is unclear how that judgment has been reached given limited information on the leisure that will be offered.

[91] Growth factors of 1.126 to 1.134 (Mr Stevens POE para 5.1.19) from 2018 to 2035.
[92] CD10.71.
[93] Mr Stevens POE 4.1.55-4.1.57 & Table 4

171. The result of the appellants' approach is likely to be a level of trip generation from the schemes that is artificially low.

Delays along selected routes

172. The TA highlights some surprising and concerning results. On the A582 westbound, the model indicates journey time of 19.3 minutes to travel circa 4km (without development) at average speed of 7.6mph. This increases to 22.8 minutes with development at 6.5mph. On the B5254 Leyland Road southbound, the PM peak indicates a journey time of 12.85 minutes to travel 4.2km in a without development scenario, equating to average speed of 11.8mph. With development, this increases to 15.29 minutes at average speed of circa 9.8mph. On the B5257, the modelled journey time of 10.9 minutes and speed of 13.7mph change to 13.9 minutes at 10.8mph. These results are not seen as a concern to the appellants, but this is most certainly of concern to the LHA whose responsibility is for network reliability and safety.[94]

173. The TA calculates the additional journey time for seven routes, based on all of the assumptions addressed above concerning current and future levels of traffic flow and trip generation. That analysis used morning and evening peak hours for the seven routes. Whilst the TA did not correctly identify the peak hours,[95] the appellants were aiming to address the impact on the local highway network during the periods of greatest concern to most users of the network. Later analysis looked at other periods during the day, but it is of little comfort to the traveller that the local highway network is relatively uncongested then. That journey times are not materially affected for several hours of the day outside of peak times does not make the impact of the schemes acceptable.

174. More significantly, the assessment of increases in journey times along particular routes does not give a comprehensive impression of the driver experience. The increased journey time caused by the schemes is not experienced as a constant. Delays will occur at particular junctions that are already suffering from congestion. It is delays at those junctions that impact on the user's experience. Even with the under-estimated inputs to the assessment, there is likely to be significant delay at particular junctions, but the appellants' assessment, including the sensitivity tests, does not consider these localised effects.

175. Whilst no particular reliance can be placed on specific queue lengths generated by the LHA's own individual junction analysis, given the instability of the assessment tools once the junction is over-capacity, the LHA's assessments do flag a serious cause for concern across already problematic junctions along the east/west stretch of the A582. If the dualling of the A582[96] proceeds, then that significant intervention is likely to address the LHA and SRBC concerns. However, there is a real risk that the scheme may be delayed or fail to proceed, which is not answered by the appellants' assessment save to suggest increases in journey times are not significant. This leaves SRBC in the position of not being able to conclude safely that impacts fall below the threshold of severe.

[94] Mr Stevens POE 4.1.81-4.1.85, based on TA Tables 7.3, 7.5 and 7.7
[95] The appellants used 8-9am and 5-6pm and the LHA used 7.30-8.30am and 4.30-5.30pm.
[96] Subject to a current planning application (made by LCC) and funding.

Junction assessments

176. The LHA and NH traffic assessment[97] builds upon the work previously carried out by the appellants[98] for the appeal sites as part of the previous application. The assessment considers traffic counts, assessment years, growth factors, committed and emerging development, and trip generation and distribution, leading to operational assessments of key junctions. The assessment concludes there is a clearer picture of the base situation and resulting greater impacts on A582, particularly between Tank roundabout and the A6/M65 roundabout. Seven junctions were modelled[99] (5 are in dispute, see Appendix 5) concluding:

B5254 Leyland Road/Bee Lane/The Cawsey roundabout (Table 11)

177. In the scenario with the appeal sites with the impacts of 40 units, there would still be queuing and delay but only slight increases. With the increase in cycle and pedestrian demand from the appeal sites, with no formal provision, this will clearly result in safety issues as pedestrians will have no option but to cross in between stationary queuing cars. This is a safety issue and unacceptable.

B5254 Tardy Gate (Table 12)

178. With the appeal proposal of 40 units queuing and delay only increases slightly. However, the increase in pedestrian and cycle movements from the appeal sites will increase pedestrian demand at Tardy Gate signalised crossings. This will result in increased delays for motorised users as pedestrian all red stages are called more frequently.

A582 Flensburg Way/A582 Croston Road/Fidler Lane/Croston Road roundabout (Table 13)

179. The level of operation in 2035 with the inclusion of the appeal site further deteriorates, with Croston Road and also Flensburg Way having unacceptable impacts. Until A582 works are committed, the sites need to provide mitigation.

A582 Croston Road/A582 Farington Road/Centurion Way roundabout (Table 14)

180. The level of operation in 2035 with the inclusion of the appeal sites further deteriorates with Farington Road and Croston Road having unacceptable impacts. Until A582 works are committed, the sites need to provide mitigation.

A582 Lostock Lane/A582 Farington Road/A5083 Stanifield Lane/B5254 Watkin Lane signalised roundabout (Table 15)

181. As a consequence of the limitations of the model, with the knowledge that the results in this case underestimate the significance of the junction delay, they have limited merit. However, the results can be used to consider the step difference between each scenario. In the future scenario the results show that the junction will be over capacity in 2035. When development is added these values increase significantly. As such these simple results highlight that the

[97] See Mr Stevens POE Section 5.0.
[98] Using different transport consultants Croft Consulting.
[99] Mr Stevens POE p92-98.

works to the A582 and key junctions will be necessary. Until the A582 works are completed, and include this junction, the sites need to provide mitigation.

A582 Penwortham Way/Chain House Lane signalised crossroads (Table 16)

182. Considering the scenario with the appeal sites in 2035, the junction will be operating slightly worse, just exceeding PRC. As the increases are marginal it is likely that minor junction changes should be sufficient to manage traffic flows as a consequence of development in 2035.

Sainsburys Roundabout M65/A6/A582 signalised (Table 17)

183. The results at this junction are unacceptable and this site needs to provide mitigation. A scheme is necessary to negate against the significant impacts from the development at this location in terms of capacity and congestion. The required scheme should cost-effectively mitigate the impact to an acceptable degree on the highway network, in line with paragraph 110 of the Framework.

Conclusion

184. Accordingly, the appellants have failed to demonstrate that the schemes avoid a severe impact, in terms of capacity and congestion, on the local highway network in accordance with paragraph 111 of the Framework.

The safety of Bee Lane bridge

185. A significant increase in the use of Bee Lane bridge by pedestrians and cyclists is proposed. Current levels of use are low,[100] and there have been no recorded accidents. Whilst an increase of 15 pedestrians and 10 cyclists per hour is estimated, there could be many more, as the appellants are aiming for.[101] Vehicular usage is currently 30 vehicles per hour, and that will increase due to the 40 dwellings to be served by the Bee Lane bridge. However, buses are now also likely to cross Bee Lane bridge and there may also be traffic seeking to make use of the lanes for access to and from the main part of the schemes.

186. The level of use of Bee Lane bridge is obviously relevant to assessment of its safety. That significant numbers of cyclists would need to share a narrow 2-way carriageway gives rise to obvious safety concerns.[102] The risk assessment of the proposals has proceeded on the basis of the low forecast increases in use of the bridge. It does not address the position if usage is significantly greater.

187. Accordingly, the schemes generate an unacceptable risk to highway safety and conflict with paragraph 111 of the Framework and LP policy G17.

Conclusion

188. There are undoubted benefits associated with a substantial residential-led development that includes a significant number of affordable houses for which there is a particular need. The parties differ as to the weight attaching to some

[100] Typically, 10 pedestrians and 5 cyclists an hour (Mr Axon POE para 8.33)
[101] The appellants' TA (Table 6.14) indicates that, during the AM peak, up to some 264 pedestrians and cyclists would be generated by the appeal sites (Mr Stevens POE para 4.2.7).
[102] A solution not been advanced by the appellants is a new bridge for non-vehicular traffic.

of the benefits, but in SRBC's view, breaches of the development plan and national policy are not outweighed by the benefits.

OTHER PARTIES WHO APPEARED AT THE INQUIRY

189. The following are summaries of the material points of the cases for the interested parties who appeared at the inquiry.

Mr Eastham

190. Mr Eastham was one of two parties, along with Mr Bowe, representing the KBLR residents' group at the inquiry, where a statement[103] was read.

191. This is an unprecedented scheme in the UK to build a new circa 3000 house community on top of an existing one. The families have been totally invisible to the developers, or they simply chosen to ignore their basic human rights. The highest density housing is proposed immediately adjacent to existing residents. This is not positive consultation and engagement with the existing community.

192. KBLR found a plethora of misinformation and vast swathes of missing or incomplete information in the masterplan and applications, including the absence of the CBLR. When the masterplan was refused back in November 2021 it was rejected unanimously with major concerns from statutory consultees such as the LHA, NR and the Environment Agency.

193. KBLR are not anti-development and appreciate the unique opportunity that Pickering's Farm could offer the local community in terms of recreation, employment, housing and sustainable transport links. Despite a railway line running round its eastern perimeter, no effort has been made to utilise this with a park and ride solution. What is proposed is a car-centric cul-de-sac that will be totally unsustainable and blight the lives of all living under and nearby.

Mr Bowe

194. Mr Bowe was also representing the KBLR residents' group. Mr Bowe produced a statement[104] that was read to the inquiry.

195. The appellants completed their TA without agreement on methodology with the LHA. The lack of consensus has thrown considerable doubt on the validity of the appellants' conclusions. The Vision and Validate approach appears highly idealistic. To function it requires adequate local social infrastructure, excellent sustainable transport links and significant local employment.

196. Local education capacity should be properly assessed. The LEA employs an 'as the crow flies' radius to define education catchments. Given the size of the site, and its single main point of access on the western side and with many of the schools to the east of the site, this is not a credible approach. There has been no site-specific evaluation of population demographics to assess demand for local services and to test available capacity. No account has been made of the population impact of the 30% social housing. As a result, primary school and

[103] CD10.76.
[104] CD10.77.

secondary school populations and resulting trip rates may be seriously underestimated and the trip impact for pre-school provision has been omitted.

197. Given the location and size of the site, the assumption that 43% of commuting trips are less than 5km is questionable. Many jobs are located outside the City Deal region, with many major housing developments specifically located close to motorway junctions. Local housing need will be saturated as South Ribble has more than ten years supply. The appellants' claim that half of leisure trips occur within the site boundary is not justified. This assumption lacks credibility and leisure trips have been grossly underestimated. Existing congestion will make sustainable transport unattractive and unviable to users. There needs to be properly designed and segregated cycle paths and pedestrian crossings, and a firm contractual commitment to reliable, regular local bus services.

198. There is insufficient local infrastructure to sustain a population influx, and local roads will gridlock as residents are forced to travel further afield for key services. The site would become a cul-de-sac via the A582. The impact of construction and occupation is likely to be profound. City Deal finances suggest little prospect of the A582 widening being completed in the foreseeable future. The Bee Lane bridge was designed to accommodate a farm track and is now intended to provide two-way access for vehicles, cyclists and pedestrians. There is insufficient, resulting in a major safety concern.

199. The spoil from the artificial flood basin will be used for raised earthworks above the predicted 100-year event water level. Several existing properties would be partially or completely surrounded. As well as adversely impacting visual amenity, the design of the flood basin and the raised earthworks would preferentially flood Kingsfold to save the development. The model significantly under-predicts such extreme flooding. Economic benefits from the development may be non-existent or marginal. The City Deal appears to be overspent and underfunded. Local traffic congestion and the associated ill health impacts will add further cost to the local area. The destruction of a high-quality recreational amenity and wildlife habitat is an immeasurable loss to the community.

Cllr Walton

200. The member for the Farington West Ward Cllr Walton delivered a statement[105] to the inquiry.

201. Many of the issues from the refused earlier masterplan have not been addressed, including the link road, an important route to serve new developments and to help traffic flow on existing roads. The masterplan does not demonstrate the delivery of the infrastructure necessary to support the scale of the proposed development. The dualling of the A582 needs to be completed before any new housing development takes place in this area. The increase in traffic will have a considerable detrimental effect on the safety and capacity of local roads, many of which are narrow, rural country roads, overused with traffic now and not designed to cope with the additional amount of traffic expected to be generated by such a large development.

[105] CD10.75.

202. The Leyland Road has become heavily congested. Exposing existing and future residents to slow and idling traffic will have a detrimental impact. The Air Quality Management Area of Lostock Hall/Tardy Gate already has one of the highest levels of NO^2 particles monitored in the borough. The development will cause even poorer air quality and health of residents. The main access to the site on to the A582 would not help to solve the problem of the already congested and gridlocked road. There are developments or plans for developments for over 2,000 dwellings within the local area all accessing the same local routes. The Bee Lane bridge access would cause problems for the many pedestrians and cyclists who use this narrow access now. From here, all existing routes are heavily congested especially at peak times. The development should be reducing, not adding to, such problems.

203. The active travel strategy would include a regular bus service through the development but the increase in traffic movement would impact on journey times and discourage use. Until the development is completed the local primary and secondary schools will be oversubscribed or will only be able to provide limited places. This will inevitably impact on the local road infrastructure as parents will need to drive further away. The impact of climate change and the effect on air quality needs to be considered carefully.

Cllr Foster

204. Cllr Foster is the Leader of SRBC, and he produced a statement[106] that was read to the inquiry.

205. Whilst the site is allocated in the LP it appears increasingly more difficult for it to come forward in a sustainable manner, to the extent that its deliverability as a site now at all is questioned. Local residents' requests have not been accommodated within the submitted masterplan. Placing tall housing units immediately adjacent to existing properties shows no sensitivity. Submitting the masterplan with the applications, instead of before, shows that the developer has no intention of dealing with the sites' issues. The approach should be sequential. Not all issues from the earlier masterplan have been dealt with.

206. The LP is clear that the site must deliver infrastructure. The proposal gives no clarity or certainty on how the infrastructure will come forward, including the CBLR. Instead, a long cul-de-sac is proposed. Such an 'estate road' would be required anyway. The previous planning applications included a scheme for the CBLR, rather than the current fragmented approach. There is concern about the appellants' modelling and that the consequential impacts would have a significant impact on the local highway. Impacts on air quality are inherently linked to traffic generation. This is not well-planned sustainable development.

207. Residents have provided photos of large scale flooding events on the site. The submitted masterplan shows surface water basins. Elsewhere in the borough, serious flooding issues have occurred where all the technical evidence suggested there was no issue and now new homes flood regularly which has required further mitigation works to resolve.

[106] CD10.86.

WRITTEN REPRESENTATIONS

208. Written representations were submitted in response to the appeal. The majority are from local residents, some of whom spoke at the inquiry.

Keep Bee Lane Rural residents' group

209. KBLR presented detailed written submissions in the lead up to and at the close of the inquiry.[107]

Transport

210. Primary and secondary schools are currently under pressure, many at or close to capacity. Committed development will take any remaining capacity. It is estimated that the site will have a population of 523 primary and 307 secondary children. No attempt has been made to establish the development demographics to understand demand for local education and health service provision. It is unlikely that there will be sufficient local pre-school facilities to cater for the demand of up to 493 pre-school children. This lack of local education infrastructure will increase car dependency.

211. The provision of 30% affordable housing could have significant impact on demographics and trip demand. The committed developments and the proposed development will add over 10,000 people to the local population. This will place local GP and health facilities under severe strain. An additional 5 GPs plus buildings and support staff will be required to provide for the development.

212. The appellants' estimation of trip demand and modal split is woefully inadequate. Using a trip demand based on likely site demographics, the appellants have underestimated trips by 78% for the AM peak and by 61% for the PM peak. This leads to significantly underestimated traffic delays on all local routes and the A582 in particular. There is a significant disparity between total arrivals and departures. The methodology for model journey time has disparity between Tom Tom data and Google maps, thereby significantly underestimating journey times. The trip rates assigned to committed developments has been underestimated by 30% for the peak hours. This results in a significant underestimation of traffic congestion impacts.

213. The impact of trip rate underestimation leads to significantly increased journey times on key routes. At the AM peak the TA indicates committed developments will add 6.8 minutes to Route 1 journey time, however using more realistic trip rates indicates 8.8 minutes. The scenario of committed developments plus the appellants estimates a delay of 8.5 minutes, however use of more realistic trip rates estimated in this analysis leads to a journey time increase of 15.1 minutes. Similar patterns of journey time increase are observed for the PM peak. These predicted journey time increases will be catastrophic for the region.

214. TA2 table 7.5 shows that committed developments will add 12.8 minutes to PM peak journey times, and the addition of the proposal will increase this to 15.3 minutes. Similar delays are anticipated for the AM peak. The actual delay is likely to be far higher, due to significantly and consistently underestimated trip

[107] CD10.18 and inquiry documents 36 & 37.

demand. These delay figures will increase to 17 and 20+ minutes respectively. Such delays will effectively render any bus service using this route non-viable.

215. Air quality in the area is some of the worst in the UK. The increases in traffic volume will significantly worsen air quality leading to higher levels of illness and premature death. Widening the A582 will not provide a solution as it is the numerous major junctions located along the route that determine average traffic speed. Providing an additional traffic light controlled junction to access the proposal will further weaken the case for dualling. The A582 widening is also prohibitively expensive. Funding from the City Deal is highly unlikely. If the impact of delays is accounted for, the cost to the local economy is £12.39m, with £5.5 million per year directly attributable to the proposal. This cost penalty swamps any financial benefits listed in the supporting statement.

216. The increase in traffic volume and delays results in additional CO^2 emissions. The CO^2 emission resulting from committed development traffic delays is 4,627 tonnes per year, and 8,003 tonnes CO^2 per year if the proposal is added in. South Ribble has declared a climate emergency yet committed developments and the proposal could add 3.3% to existing levels. Offsetting the 8,003 tonnes additional CO^2 emissions would require planting of 381,000 trees.

217. The major difference between the appellants and KBLR trip analysis relate to education and leisure trips. Education trips are 107% to 200% higher and leisure trips 140% to 200% higher for peak hours than stated by the appellants. KBLR assumptions in analysing site demographics are reasonable and are supported by reference. KBLR have applied the same methodology as the appellants but used site specific demographics; this sheds light on the appellants' shortcomings in analysing pre-school, primary school trip demand and leisure trips. KBLR provide a useful alternative perspective on likely development impact at a local scale.

218. The appellants have analysed the impact on journey time on key routes but have failed to monetise the impact of the delays on the local economy. Delay costs will be significant and are not accounted for in the weighting of development benefits and disbenefits. Likewise, the additional cost of providing adequate education and health provision has not been accounted for.

The City Deal

219. The programme cost escalation appears to be justified by absence of construction cost inflation provision and design costs. The amount committed to works in progress was already in deficit in March 2020. A spreadsheet has been provided which shows all City Deal infrastructure projects, which excludes two key projects including the Penwortham Way dualling scheme. The cost of this project is underestimated given significant construction inflation.

220. Two major failings have occurred, relating to infrastructure costs estimation failings and misleading job creation. The City Deal cannot deliver the infrastructure programme agreed with the Government. The City Deal has had a minimal or negative impact on private sector net employment and overall economic development in the area. LCC's economic valuation of the two major road schemes (the Penworthham Way dualling and the Preston western distributor) is deeply flawed. Both schemes understate estimated costs, are

overspent, and commit LCC to future cost overruns. The conduct of the City Deal has led to both Stage 1 and Stage 2 complaints being made to LCC.

221. KBLR are concerned that the appellants will argue that the appeal proposal must be approved in order to realise the major economic benefits promised by the City Deal in 2013. Income levels suggest a programme deficit of up to £115m after inflation. The £7.6m CIL payment from the proposal will simply be used to pay down that deficit. This supports Mr Foster's verbal submission to the inquiry that the A582 dualling is highly unlikely.

Flood risk

222. The appellant's flooding assessment fails to state what the uncontrolled surface water runoff will be for the development, which is essential to set a design baseline. For catchment A the developer proposes that the new dwellings will have raised foundations but is silent on their maximum height. Disposal of excavation spoil from the attenuation basin will result in large areas of the site being raised to the detriment of existing dwellings. This will considerably increase flood risk for existing dwellings at ground level. The probability of flooding has increased for all regions of the UK during winter and for the north west of England for summer periods, so it is highly likely that these properties will experience more than two flooding events on average in 60 years.

223. The catchment B flood basin is designed with raised earthworks on the southern side. The berm could be 1-2 m in height, completely or partially surrounding a number of existing properties. Those properties will be at significantly increased risk of flooding. The environmental and visual impact will be severe. The flood basin has insufficient capacity, preferentially floods the unprotected Kingsfold, and will flood in just under four hours. The pumps will have little impact on this. The average flood duration is 20 hours, indicating that the flood basin will be ineffective for the majority of extreme rainfall events. The pumped outflow is likely to be in continuous use to maintain a drained basin in an extreme rainfall event. Electric pumps will need flood protection. The use of a pumped discharge system is not sustainable, and it is unclear who will be responsible for the cost.

224. The appellants' claim that objectors' pictures of flooding represent extreme events, but this flooding occurs regularly. No detailed flood data is available for accurate validation or calibration of the model. Spoil disposal from excavations will generate a significant emission and transport problem. United Utilities has a record of underinvestment and routine discharge of untreated sewage to river and sea, with the worst record in England. On this basis alone no new housing development applications should be approved.

Education

225. The use of an "as the crow flies" measurement for school catchments leads to some worrying anomalies. It ignores the impact of 1033 homes in adjacent committed developments, and other committed developments have also been discounted. If these are accounted for then primary school places available for the proposed development reduce by 190. Evidence clearly contradicts the LEA position on social housing; this significantly increases pupil yield for a range of house sizes. By accounting for this effect, pupil yield increases significantly for the proposed development. When both revisions are correctly accounted for,

and if the proposed development is approved, there will be a minimum primary pupil deficit of 286 places rather than the LEA predicted deficit of 8 places.

226. The appellants' state that, in agreement with the LEA, they will fund 6 primary places with a cost of £96,303.24. This position appears wholly unacceptable. By scaling this figure, the true cost of funding this primary education deficit will be £4.59 million. These systemic schools planning errors also result in a significant overstatement of secondary school places. These discrepancies could have a major impact on the provision of education services in South Ribble.

Network Rail

227. Not installing a kerb to physically delineate and protect pedestrians using the proposed footway from adjacent highway traffic introduces a potential risk to the operational railway. Collision avoidance action may then result in the bridge parapets being struck. The increase of mixed use traffic will increase the current probability of accidents or incidents occurring on the rail overbridge. Whilst the probability of such an accident might be considered low, the subsequent disruption to users could be significant and protracted. Vehicle incursion and traffic calming measures should be progressed on the bridge approaches.

228. Construction traffic should be prevented from using Bee Lane or Flag Lane rail overbridges. The assumed number of 'active travel' users currently appears to be limited to 40 dwellings for Bee Lane overbridge, but numbers should also be provided for when the development is fully occupied. The proposal will increase the risk of railway trespass, vandalism and antisocial behaviour. Bee Lane rail overbridge is currently unsuitable for increased highway and pedestrian traffic flows. The project should show that a new rail overbridge spanning the WCML could be constructed within the footprint of land available. NR object to the proposal but should planning permission be granted require a number of conditions to be attached.

LEA School Planning Team

229. The LEA welcomes the appellant's intentions to provide 2ha of land that will be safeguarded for a defined period. Once the LEA is ready to proceed with the construction of the new 2 form entry primary school, the land will be transferred at nil consideration. The site for the primary school will be serviced and available for development at the point at which it is transferred.

Other written representations

230. Some nine objections were submitted from the local community in response to the appeal notification. These largely refer to the matters already addressed above, as well as to mental health and living costs, residential amenity, disruption to utilities and services, loss of biodiversity, and empty existing housing. One letter of support was received during the inquiry. There were some 27 representations to SRBC in respect of the planning applications.

PLANNING OBLIGATIONS

The agreement

231. The agreement relates to both appeals and has been signed by the main parties and the various landowners. It contains covenants in respect of affordable

housing, education, delivery of infrastructure and the spine road, delivery of village centre, biodiversity net gain, sports and recreation, local employment and skills, estate management and air quality monitoring.

232. In line with the affordable housing policy requirements of policy A1 of the LP and policy 7 of the CS, the obligation would secure 30% of dwellings in each phase to be affordable, of which 70% would be affordable rented and 30% intermediate units. As part of the first application for reserved matters for each phase, a scheme would set out the strategy for delivery and phasing of affordable units. This obligation would contribute towards housing need in the area. Due to the size of the development, land is to be safeguarded towards provision of a new two-form entry primary school, in accordance with policy 14 of the CS to address lack of capacity. Before occupation of the 600th dwelling, SRBC may trigger transfer of the land for nil consideration, following which a school must be commenced within 10 years.

233. An Infrastructure Delivery Plan would be submitted with the first application for reserved matters. It is required in order to deliver key infrastructure requirements, including movement corridors, key strategic infrastructure such as SUDS, green infrastructure and place making features. The delivery and completion of the spine road for each phase is necessary to comply with policy A2 of the LP and includes provision for third party owners to make future connections. The delivery of a village centre within the site would ensure that the development is sustainable and would meet the requirements of policy C1 for provision of a range of land uses. Delivery of an interim centre would be by occupation of 50 dwellings and the permanent centre by 625 dwellings. Biodiversity net gain of at least 10% above baseline would be secured, in order to comply with the requirement of policy G16 of the LP to enhance biodiversity.

234. The size of the proposals would generate a demand for sporting facilities over and above passive public open space provided on site. The contribution has been calculated on a tariff basis and would be secured towards improving existing facilities, including provision of playing pitches, changing rooms, and investment in sports halls and swimming pools to cater for additional visitors. Commitments to local employment and training would fairly and reasonably assist the development integrate into the local community and economy. Estate management commitments would ensure maintenance of the public realm by the developer until otherwise adopted or transferred. An air quality mitigation scheme would be submitted with each application for reserved matters, and where on-site mitigation is insufficient, balancing payments would be made.

The unilateral undertaking

235. The unilateral undertaking also relates to both appeals but addresses sustainable travel and travel network improvement matters where agreement could not be reached between the main parties. The dispute on these matters stems directly from the disagreement on the highways matters; in simple terms, that many of the measures proposed would not be necessary if the CBLR was being provided by the appellant. Nonetheless, SRBC have provided a CIL compliance statement confirming its view that all the obligations meet the CIL tests of necessity, directly relate to the proposed development, and are fair and reasonable in scale and kind.

236. A sustainable travel scheme would be agreed to maximise active travel, including the details of delivery and operation of the mobility hub, superfast broadband roll-out, and community concierge. Travel plan measures would be overseen by a travel plan steering group comprising SRBC, the LHA and the appellants. A sustainable public transport service would provide for a minimum 30-minute frequency service from the development site to Preston city centre operating seven days a week, or equivalent, for up to 15 years or to a cost limit. A flexible travel fund would be available to residents upon application where the proposed scheme only achieves what has been assessed in the TA in respect of minimising vehicle movements. Active travel vouchers would be provided to residents for bus and rail passes, and bike accessories, amongst other things.

237. Highways improvements would be secured for improvements to the Bee Lane / Leyland Road junction and the introduction of traffic control measures on and approaching the Bee Lane bridge, which are necessary for the reasons set out below. Pedestrian and cycle improvements would also be submitted to SRBC for some eight sections of existing highways and footpaths within the site, five sections of existing public footpaths outside the site, and a contribution towards the provision and improvement of links to Avenham Park, Guild Wheel, Preston City Centre, Preston Railway Station including access to the University of Lancashire, and links to BAE systems. All the above measures are necessary to ensure that the development is sustainable and safe and meets the objectives of policy 3 of the CS.

Conclusion on planning obligations

238. For the reasons given, I am satisfied that the obligations are necessary, directly related to the development, and fairly related in scale and kind. They comply with Regulation 122 of the CIL Regs and paragraph 57 of the Framework.

CONDITIONS

239. A list of suggested conditions was submitted and discussed at the inquiry that were mostly agreed. Amendments have been made to the wording of some conditions for clarity, brevity, or to avoid duplication, and to ensure accordance with the tests set out in paragraph 55 of the Framework. Pre-commencement conditions have been agreed by the appellant. For simplicity the reason for each condition is included beneath the condition.

240. Turning to the disputed conditions, the suggested conditions for electric vehicle charging are not necessary because, despite the broadly written policy 3(i) of the CS, these would largely duplicate amendments to the Buildings Regulations which came into force in June 2022. The provision of shower and changing facilities for local centre staff is not necessary to facilitate sustainable transport use. A suggested condition listing a range of off-site highway and sustainable travel measures duplicates some of the provisions of the planning obligation. However, the remaining measures are overly vague and there is no substantive justification of what the effects are at each location or what works are required.

241. The suggested requirement for a travel plan largely duplicates the sustainable travel scheme required by the unilateral undertaking. A condition for the management of traffic entering Bee Lane bridge and beyond to Leyland Road is not required as it is again addressed by the planning obligation. A deliveries strategy is necessary to manage vehicle movements at non-residential buildings

such as the proposed local centre, but not at residential properties. Annual roads condition surveys are not necessary, as the effects of construction traffic can be suitably managed through the construction management plan, as can ongoing access to existing properties. The current proposals are in outline, and any remaining highways matters can be addressed in future applications.

242. Construction noise should be managed in accordance with the code of practice for noise on construction sites, rather than using the methods for rating and assessing industrial sound. It is unclear what the condition for a method statement and risk assessment suggested by NR would achieve over and above other NR conditions and a construction management plan. In supporting the transition to a low carbon future, conditions requiring increased energy efficiency standards are justified by the approach of policy 27 of the CS, notwithstanding that its cited standards are no longer relevant.

INSPECTOR'S CONCLUSIONS

The numbers in square brackets refer to earlier paragraphs in this report.

243. Mindful of the reason for recovery, the reasons for refusal, and the agreement reached on air quality and sports provision,[108] the main considerations are:
    - whether or not the proposals are suitable in light of local and national policies for housing, with particular regard to masterplanning, design code, phasing, infrastructure delivery, and implementation programme[109];
    - whether or not the proposed development would have a severe adverse impact on the local highway network[110];
    - the effect of the proposed improvements to the Bee Lane bridge on the safety of pedestrians and cyclists[111]; and
    - whether or not the proposal makes adequate provision for highways improvements, with particular regard to the CBLR and Bee Lane bridge[112].

Housing policies and masterplanning

244. At the outset, it is important to emphasise that the appeal sites form part of a site that has been allocated for residential led development in the LP since 2015, with the process of allocation having begun as far back as 2007. Consequently, there is no dispute between the main parties that the sites are suitable for residential led development in land use terms. [9, 36, 142]

245. The Pickering's Farm allocation is identified by policy C1 in the LP. The allocation is the largest of three major sites for development within the borough and is indicated as being suitable for up to 1350 dwellings. The appeal sites together occupy some 67% of the allocated site and would provide some 82% of the anticipated units [10, 13, 18, 43].

246. Policy C1 states that planning permission will be granted for the development of the Pickering's Farm site. The only requirements are for submission of, firstly, an agreed masterplan for the comprehensive development of the wider area of the allocated site and safeguarded land, secondly, a phasing and infrastructure delivery schedule and, thirdly, an agreed programme of implementation in accordance with the masterplan. [18]

247. Policy A2 requires land to be protected from development for delivery of the CBLR, including across the allocated site. The CBLR is shown on the policies map to the east of the allocated site, with a new road to be constructed through the Pickering's Farm site as shown on the policies map as a *"potential extension"*. [22]

The masterplan

248. The wording of policy C1(a) requires a masterplan to be agreed but does not require that it be agreed in advance of any application for planning permission.

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108 Reasons for refusal 8 and 9 respectively.
109 Drawing from SRBC reasons for refusal 5, 6 and 10.
110 Drawing from SRBC reasons for refusal 1 and 2.
111 Drawing from SRBC reason for refusal 3.
112 Drawing from SRBC reasons for refusal 3, 4, 7, 10 and 11.

Submitting the masterplan along with the applications is a matter of choice for the appellant and would be in line with policy. SRBC accept that, if the Secretary of State as decision maker in these appeals finds the submitted masterplan to be suitable, he is entitled to agree the submitted masterplan as part of these appeals, in the terms of that policy. [46, 146, 205]

249. Just two policy requirements for the suitability of a masterplan are identified in policy C1(a). Firstly, the masterplan must extend to Coote Lane to take in the safeguarded land and, secondly, it must include a specified range of land uses. The masterplan does those two things. However, a masterplan should be more than those two things. Indeed, the wording of policy C1(a) also requires that the masterplan be for comprehensive development of the site. As such, any masterplan should, according to the glossary of the LP, be produced *"following strategic planning and visioning for the whole site which address a broad range of constraints, issues and opportunities".* [18, 21, 147]

250. To this end, SRBC analyses the suitability of the masterplan against the 12 objectives of BHL, identifying a number of minor failings. However, even though some of these failings do increase the risk of disagreement at a later date, each could be appropriately dealt with through reserved matters and conditions. [53-58, 158]

251. Consequently, the dispute regarding the suitability of the masterplan boils down to objections on two key points. Firstly, the failure to provide infrastructure in accordance with the development plan and, secondly, the adequacy of connections across the site. [147]

252. Addressing the first point, although a masterplan agreed under policy C1 would normally include the provision of infrastructure as part of addressing the broader range of constraints, the wording of the policy itself does not contain a list of infrastructure requirements, and there is no specific stipulation for provision of infrastructure. [18, 60-62, 147-148]

253. SRBC nonetheless contend that the policy contains a requirement for infrastructure, through the masterplan and infrastructure delivery schedule, and that the supporting text explains what those items of infrastructure comprise. Indeed, the supporting text for policy C1 does explain that comprehensive development of this site is crucial to ensure delivery of essential infrastructure. This policy also states that the CBLR is a key piece of infrastructure that would be needed to address congestion, amongst other things, and that a new bridge over the WCML could also be included. The supporting text of policy A2 also highlights the importance of the CBLR. [18-22, 148]

254. However, the supporting text is not itself a policy or part of a policy and, accordingly, it does not have the force of policy, as confirmed in *Cherkley*. Whilst the supporting text is relevant to the interpretation of the policy, in this case, SRBC's position on this point is reading something into the policy that is not there. Such an interpretation goes beyond what the policy actually says. [100, 149]

255. In any case, the key policy for the CBLR is policy A2. This is worded to require only that *"land will be protected from physical development"* for the delivery of the CBLR. Although the policy defines the extent of the CBLR as including a section of road to be constructed through the allocated site, this is merely a

description. There is no specific requirement for the CBLR to be delivered by the developer in this policy either. Again, the requirements of policy A2 are not outweighed by supporting text. [22, 100]

256. In addition, it has already been established that policy C1 requires the masterplan to include the wider safeguarded land to Coote Lane, that is, site S2. Policy G3 deals with the safeguarding of land for future development and states that planning permission will not be granted for development which would prejudice potential longer term, comprehensive development of such land. This effectively discourages the submission of an application for planning permission for that safeguarded land now. This policy context emphasises that the purpose of the masterplan is to ensure a strategy for the wider area, with which any individual applications for planning permission should be consistent, as is the case here. [18, 25, 47-49]

257. On that basis, whilst the masterplan shows the provision of the CBLR across the allocated site, the current appeal proposals only commit to delivering the sections of the CBLR that would be within the appeal sites. The appeal schemes do not contain any such provision, nor could they, on the remainder of the allocation outside of the appeal sites, which is under separate third party ownership. Instead, the masterplan appropriately and suitably indicates that land would be safeguarded for delivery of the CBLR at a future date. [32, 102-103]

258. Earlier iterations of the masterplan did contain commitments to the delivery of the CBLR. However, the appellants explained at the inquiry that, at that time, all of the relevant land had been, or had been anticipated to be, within the appellant's control. This is not the case now. That the appellants had seemingly been previously willing to deliver the whole of the CBLR does not change the development plan policy position, nor do any of the previous submissions on this matter made to the examination of the LP. [104, 141-145, 206]

259. SRBC's second objection to the masterplan is the adequacy of connections across the site. This primarily relates to the second and fourth main considerations, to which I return later. It will be seen that I have concluded that the proposed development would not have a severe adverse impact on the highway network and makes adequate provision for highways improvements with particular regard to the CBLR and the Bee Lane bridge.

The phasing and infrastructure delivery plan, implementation plan and design code

260. The draft Indicative Phasing and Implementation Plan sets out 6 phases for delivery of the development, firstly to secure technical approvals and prepare the site. Secondly, to deliver essential infrastructure, including roads, drainage, flood basins, footpaths, cycleways, public open space, and bus route. Subsequent phases will each deliver housing, including 30% affordable housing, along with any infrastructure required for that phase, and the local centre, within defined timescales. SRBC's objection to this document is principally the same as to the masterplan, namely its failure to make provision for completion of the CBLR, for which the above assessment of the masterplan, and below assessment of adequacy of connections, are equally relevant here. None of the reasons for refusal criticise the submitted design code nor was this point pursued by SRBC at the inquiry. [34-35, 62, 147-149]

Other housing and masterplanning matters

261. The lack of an agreed masterplan and the cited failure to provide the CBLR are said by SRBC, in the tenth reason for refusal, to not follow the 'proper planning approach'. Paragraphs 126 and 132 of the Framework require that design expectations be clear, and that design quality should be considered throughout the evolution of proposals. However, this does not prevent proposals being considered in outline with detailed design reserved for future consideration. Whilst no viability evidence has been submitted by the appellants to demonstrate whether the necessary infrastructure could be provided to support the housing allocation, neither policies A1 nor C1 require such information. Nonetheless I return to viability later when considering the adequacy of proposed road improvements. [104, 158]

Conclusion on housing policies and masterplanning

262. The proposals are suitable in light of local and national policies for housing, with particular regard to masterplanning, design code, phasing, infrastructure delivery, and implementation programme, such that the proposals would comply with policy C1 of the LP, and with paragraphs 126 and 132 of the Framework.

Impact upon highway network

263. Policy G17(c) of the LP states that development should not prejudice the free flow of traffic. However, SRBC acknowledge that a number of the roads under consideration are already subject to congestion rather than free flow. The key test is paragraph 111 of the Framework, which indicates that development should only be refused on highways grounds if the residual cumulative impact on the road network would be severe. [26, 70, Appx 5]

264. SRBC's reasons for refusal do not contend that the proposal would result in a severe impact. Rather, SRBC have refused the application and responded to the appellants' case on the basis that it has not been demonstrated that the proposals would not have such an impact, and that there is a risk those effects would be severe. [68-69, 139, 184]

265. The appellants and the LHA both take differing approaches to their modelling of impacts. The appellants use Paramics microsimulation to reach a conclusion on severity primarily on the basis of journey times. The LHA instead consider the effect mainly on capacity and congestion at individual junctions, using LinSig and ARCADY. I take each assessment in turn. [75, 82-83, 176]

The appellants' transport assessment

266. The appellants' TA sets out key principles for the delivery of the 1,100 residential units as well as considering trip generation and trip distribution for the allocated 1,350 units and the introduction of a new school. The TA's vision has been prepared in the context of the health and climate agenda and the post-pandemic world. It concludes that the modelling leads to a judgement that the proposal would not have a severe adverse impact on the highway network. [64-66]

267. Interested parties argue that the appellant's Vision and Validate modelling approach is idealistic, with the LHA witness arguing that this approach does not replicate existing conditions, acknowledge existing concerns, fully report impacts, or mitigate against impacts to maintain a safe and reliable network for users. Whether the vision is valid or not, for the purpose of assessing the appeal proposals, the key test is against the development plan and the Framework. [162, 195]

268. NH provided comments on the appellants' TA prior to the SRBC committee meeting. No agreement was reached on the suitability of the evidence provided and NH had been unable to form a view on the proposals on the evidence provided. The appellants dispute this version of events, indicating that further information was subsequently provided but not responded to. Either way, whilst the views of NH as a statutory consultee are clearly of importance, in the end, NH did not object to the impact of the appeal proposals on the strategic road network. [79]

269. The LHA argue there are a number of specific flaws in the appellants' approach. These relate to five main issues; delays along selected routes; current flows, background traffic growth, design year, and trip generation. That the previous transport consultant for the appellants took a different approach does not mean that the current modelling is inherently flawed. Rather, it should be assessed by taking each point in turn, as follows. [163, 165, 166, 169, 172]

Delays along selected routes

270. The appellants' modelling includes an assessment of the severity of impacts when the appeal proposals are added to the network (with committed development). The conclusions include:
- *A582 westbound.* Along a journey of some 4km, journey times would increase from some 19.3 minutes to 22.8 minutes (speeds would decrease from some 7.6mph to 6.5mph);
- *B5254 Leyland Road.* Along a distance of some 4.2km, journey times would increase from some 12.85 minutes to 15.29 minutes (speeds would decrease from some 11.8mph to 9.8mph); and
- *B5257 Coote Lane – Brownedge Road*. Along a distance of some 4km journey times would increase from some 10.9 minutes to 13.9 minutes (speeds would decrease from 13.7mph to 10.8mph). [172]

271. To my mind, it is likely that a reasonable driver would find such journey time increases and speed decreases as simply mildly inconvenient, over and above this baseline. It is quite possible that many drivers would barely notice, particularly given such changes are likely to occur over a number of years. In considering if this delay would be severe, in terms of the Framework, there is no precise definition of what should constitute severe. The dictionary definition is 'very great'. Consequently, this magnitude of change in journey time, when taken at its face value, falls far short of being very great or severe. Even if the residual cumulative impacts on the highways could be described as severe, a very substantial proportion of the impact would arise from the existing committed development, to which I return later. [71-77, 81, 172, 213-214]

272. The LHA assert that assessing journey times in isolation is meaningless. Indeed, it is self-evident that queues and capacity at individual junctions can affect the overall journey time, and such queues will invariably form part of drivers'

experience of delay in using the road network. However, this does not mean that many drivers would not judge their experience on the road network in terms of delay along that journey. Furthermore, the LHA's own application for planning permission for the dualling of the A582 reports forecast effects using journey times, albeit using different modelling. This provides significant support in favour of the appellants' approach to testing severity of impact over the LHA's approach. [72-73, 174-175]

273. The modelling indicates that journey times are not materially affected outside of peak hours. Nonetheless, it remains useful to understand the peaks, even if it is not the aim of policy to protect the convenience of commuting drivers. The above selected peak hours journey time changes represent the appellants' forecast worst case scenario. Given my overall below conclusion on the appellants' modelling and, as other scenarios would not be significantly worse again, there is no need to consider them further, even though there is a difference in the selection of peak hours used in both parties' modelling. This includes the other routes of concern raised by interested parties. [76-78, 173]

274. Before concluding on this issue, however, it is necessary to consider the remaining criticisms of the appellants' modelling which could impact upon forecast journey times, and the appellants' sensitivity assessments.

Current flows

275. The appellants surveyed the network around the site in April 2021, which coincided with the third pandemic lockdown. Consequently, it represents a particular period of time when less traffic was utilising the highway network. Comparison of these results with the LHA surveys demonstrates that the percentage difference varies between 86% and 98%, notwithstanding the reporting of effects by either TomTom or Google. On the other hand, the road network has been used differently since the pandemic restrictions were first introduced. In April 2021, average traffic flows were at 89% of pre-pandemic levels, and in June 2022 at 91%. It cannot be known with any certainty if traffic will return fully to pre-pandemic levels or not. As such, whilst this criticism weighs against the appellants' traffic flow conclusions, the amount by which it does so is very limited. [80, 87, 163-164, 212]

Background traffic growth

276. The appellants' TA assesses background traffic growth on six committed development schemes using a base year of 2021. The LHA base its own figures on 2018 traffic data and growth from TEMPRO figures. [166-167]

277. There are three key factors that indicate that the appellants' approach is less convincing than the LHA's. Firstly, in considering only committed development, the appellants' approach excludes growth from other development both within South Ribble and in neighbouring authorities. Secondly, the use of TEMPRO is widely accepted methodology across the industry for reflecting what expected growth might be across the network. Finally, NH as statutory consultee for the strategic road network have reviewed background traffic growth. NH consider that LHA's approach to derive TEMPRO rates and input parameters are appropriate, notwithstanding the appellants provision of further information. [79, 166-168]

278. Then again, the rates recently published by DFT indicate lower growth forecasts, suggesting a downward trend that would not be dissimilar to the appellants' forecasts. However, at the time of the inquiry, these rates were not approved for use, meaning they are of limited weight, although that position may change before the Secretary of State determines the appeals. In addition, the LHA's use of a base date of 2018 assumes no behavioural change following the pandemic. [78, 168]

279. This dispute only accounts for somewhere between 11% and 15% difference between the traffic flows in both main parties' assessments, with the dispute about which base year to use, some 11%. Taking together the points both in favour of and against the appellants' approach, I find limited weight against the appellants' case on this issue. [78]

Design year

280. The appellants' TA refers to 2031 as the design year, but this was conceded as being incorrect during cross examination and hence to be disregarded.[113] In rebuttal, it is confirmed that growth modelling was calculated to 2035, albeit from known committed development. Either way, there is no substantive evidence to suggest that this would have anything other than a very limited impact on overall background traffic growth and journey times. [78, 165]

Trip generation

281. The appellants' trip generation forecasts include the use of figures from the TRICS database, along with census and national trip survey information. Whilst these data sources are widely accepted methodology, they are drawn from around the country, whereas car ownership and commuting levels are evidenced as being higher in South Ribble than the country average, given proximity to the motorway network. Given this, there would have been merit in the appellants' having adjusted their figures in this regard. [169-170]

282. Further points made by the LHA and KBLR are less persuasive. Whilst the LHA suggest that surveys from existing developments demonstrate greater trip generation, those developments can be readily distinguished from the appeal schemes. The largest comparison scheme is just 182 houses with limited internal local facilities despite the nearby employment centre, which is in sharp contrast to the size and proposed facilities of the appeal scheme. The other surveys relate to even smaller schemes. [80, 170]

283. Trip distribution has been divided by the appellants into purpose (commuting, education and leisure) using national travel survey data. Whilst the LHA and KBLR claim some of the percentage shares seem high, there is no persuasive evidence to indicate significant differing local circumstances in this respect. Given the size of the sites and the internal facilities, such as the local centre, school and open space, a proportion of these journeys would not involve travel off-site. Accordingly, some leisure journeys have also been internalised, and the premise of this approach is reasonable. Even though the appellants' claim that half of all leisure trips would be internalised is simply a judgement, it is not an

[113] Mr Axon, PM session, Day 5, Thursday 1 September

unreasonable one in this context. Judgements have also been made by both main parties in respect of trip distribution but the differences between them are marginal. [78-80, 170, 210-213, 217]

284. KBLR are concerned that the LEA underestimates pupil and pre-school children yield from the development, and hence traffic forecasts. However, in the discussion on education below, I find no justifiable reason to deviate from the LEA methodology. KBLR further argue that local demographics lead to an underestimation of trips by the appellant and that development trips should be higher, based on its own alternative trip forecasting methodology. However, when incorrect assumptions are adjusted for (commuters take leave and have sick days, for example) the differences between the KBLR and appellants' assessments are not substantive. Consequently, the traffic forecasting work and projected journey time delays by KBLR are not as convincing as those from the appellants' highways consultants. [108-109, 211-213]

285. Trip distribution would account for just a 3% difference between the appellants' and the LHA's traffic flow analysis, and trip rates just some 2%. Overall, the weight against the appellants' case in this respect is very limited. [78]

Sensitivity testing

286. The appellants have produced sensitivity tests for their modelling. Firstly, when traffic flows have been increased by 10%, both with and without the appeal developments, the results demonstrate no notable change to the originally reported model results. Secondly, when the higher LHA development trip rates have been fed into the microsimulation model, the results are in line with the magnitude of impact reported within the original model results. As such, even if all the LHA points were accepted, a very similar outcome would be forecast. [80, 174]

Conclusion on appellants' transport assessment

287. Taken at face value, the appellants' transport assessments calculation of journey time delays fall far short of what could be considered as having a severe impact on the highway network. Whilst NH were not satisfied with the modelling, they did not object to the appeal proposals. The LHA have made a number of valid and partly valid criticisms of the appellants' modelling. However, based on the evidence provided, I conclude that these are all of limited or very limited weight against the modelling. Even when these are taken together, they do not come close to indicating that the appellants' transport assessment is so flawed that it demonstrates that the threshold of a severe impact would be breached.

The LHA traffic assessment

288. Before considering the LHA's assessment in detail, it is significant that the LHA's own application for planning permission for the dualling of the A582 reports forecast effects using journey delays, contrary to the approach taken by the LHA here. Even though the LHA's witness was not part of the team that prepared the dualling application on behalf of the LHA, nor had the application been assessed or determined by the time of the inquiry, this nonetheless makes the LHA's objection to the use of journey delays in these appeals considerably less persuasive from the outset. [73]

289. Of the seven junctions that were modelled, at the inquiry the LHA confirmed that five of these were of concern. The modelling results for these junctions are included at Appendix 5, summarised as follows. [82]

A582 Flensburg Way/A582 Croston Road/Fidler Lane/Croston Road roundabout (Table 13)

290. This roundabout is located very close to the A582 Croston Road/A582 Farington Road/Centurion Way roundabout (discussed below). It is indicated to be currently operating over capacity with queues and delays in the PM peak on the Croston Road, and with both RFC and LOS exceeding practical capacity. When committed development is added, Croston Road would be above capacity in both AM and PM peaks and Flensburg Way in the AM peak, with forecast figures demonstrating some substantial increases. With the proposed development added to this, both arms would be above capacity during both peaks, with some measures increasing to a substantial extent and others limited. [179, Appx5]

291. Overall, the additional increase from the appeal proposals is significant, when taken at face value, albeit that this increase pales in broad comparison with that arising from the existing committed development. However, under cross-examination, the LHA accepted that the RFC figure, which is derived from ARCADY modelling, becomes less stable when it reaches 1.0. This instability means that the level of predicted queueing and delay is consequently unreliable. This concession casts substantial doubt over how reliable the LHA's predictions are in terms of concluding whether the proposal would result in severe impacts, or indeed the level and extent of any step change in capacity or congestion, notwithstanding that the cruder LOS indicator can be read separately. [83, 175]

292. Furthermore, the LHA approach does not allow for real life adjustments. When encountering potential delays, many drivers would re-route in order to avoid delay. Indeed, many satellite navigation systems do so automatically. This junction is also assessed by the LHA in isolation from other junctions, even though the four other junctions identified as being of concern to the LHA have, at face value, shown forecast congestion. Moreover, the LHA's modelling uses a synthesised profile which creates a peak for half an hour within the peak hour, which has the effect of artificially increasing the traffic demand by some 10%. Consequently, I find that these matters further detract from the persuasiveness of the LHA's modelling. [86]

293. The LHA accept that, even without the proposed development, some form of mitigation will be required for the existing committed development. It is clearly not the responsibility of the appellants to resolve existing issues that are unrelated to the appeal proposals. The LHA further indicate that, if the dualling of the A582 goes ahead, then that significant intervention would address its concerns in respect of both committed development and the current appeal proposals, notwithstanding KBLR's view to the contrary. [84, 85, 175, 215]

294. However, that project is still subject to permissions and business case (which would necessarily consider feasibility and value for money). Whilst funding for the project is not yet confirmed, no funding is being requested from the appellants towards this scheme. Some objectors suggested the dualling is unlikely to be implemented in the foreseeable future. Given the early stages of the project, only very limited weight can currently be given to the full mitigation it would offer. [175, 198, 215, 219-221]

295. Whilst paragraph 110 of the Framework is not referred to in the reasons for refusal, this states that it should be ensured that any significant impacts from the development on the highway network should be cost effectively mitigated to an acceptable degree. The LHA argue that mitigation is required at this junction. However, given the conclusions of the appellants' modelling and the unreliability of the LHA's modelling, it is not clear exactly what level of mitigation, if any, would be required from the appeal schemes. Nor have any substantively justified cost effective mitigation schemes been suggested by the LHA beyond those set out in the planning obligation. [84-85, 161, 179]

A582 Croston Road/A582 Farington Road/Centurion Way roundabout (Table 14)

296. Situated very close to the roundabout discussed above, this roundabout is also already operating above capacity on two of the four arms in both the AM and PM peaks, and on all measures. Again, when committed development is added, the same two arms would remain above capacity thresholds but there would be substantial increases in queues, delays and RFC, although LOS would remain at the same breakdown flow level. When the appeal proposals are added to this, all measures on those two arms remain above thresholds, with mostly moderate increases in queues and delays and with a limited increase in RFC. The LOS would remain the same. [180, Appx 5]

297. This set of results, when taken at face value, again indicates significant queues and delays from existing committed development, even without the proposed development. Indeed, this modelling presents a somewhat extreme position in some instances, surprisingly suggesting that a queue of some 4km would form, even without traffic from the appeal sites. Whilst this could potentially be considered as a guide to a step change in congestion, it is more likely that this emphasises the unreliability of the modelling results, given its above discussed instability. The points discussed for the previous roundabout which detract from the LHA's case are also equally valid here. [83]

A582 Lostock Lane/Farington Road/A5083 Stanifield Lane/B5254 Watkin Lane signalised roundabout (Table 15)

298. This junction has been modelled with LinSig modelling, which assesses capacity and delay at signalised junctions. This junction is already operating beyond capacity on three of the four arms in the PM peak, and one in the AM peak, where the DOS already exceeds the capacity threshold of 90%, and where the PRC is already negative in both peaks. With committed development added, PRC reduces significantly, but a mixed picture emerges in terms of DOS and queues, with some increasing and some actually decreasing. With the appeal development added, PRC decreases significantly again, and the DOS and queuing on some arms would also again decrease. [181, Appx 5]

299. As with ARCADY modelling at 1.0 RFC, once the DOS in LinSig modelling reaches 100% the algorithm becomes unstable and hence becomes less accurate in predicting queueing length. The LHA further acknowledge that these junction results have limited merit. Even following adjustments to inputs (as the default parameters were not considered to reflect local conditions), the LHA consider that the results underestimate queueing, and suggest that Paramics microsimulation modelling of this junction would be preferable. Despite any potential step change this may present at face value, the mix and match approach is not persuasive and cannot be relied upon to any reasonable extent.

Along with the relevant detractors and mitigation issues discussed for earlier junctions, these matters weigh significantly against the persuasiveness of the LHA conclusions. [83, 181]

Sainsburys roundabout M65/A6/A582 signalised (Table 17)

300. The LHA note that this junction does not suffer as much from operational issues as the Stanifield Lane signalised junction, due to the length and greater number of approach lanes in all directions. Nonetheless, Lostock Lane is already operating above capacity in the PM peak, with PRC already in the negative at this time. With the committed development added, three arms would be operating above capacity in the PM peak and two arms in the AM peak, to significant levels, with PRC decreasing significantly in both AM and PM peaks. When the appeal traffic is added, the same arms would be additionally affected to a significant degree, with PRC decreasing. Again, taken at face value these changes are significant, but the previously identified detractors and mitigation issues again considerably reduce reliance on these results. [183, Appx 5]

B5254 Tardy Gate (Table 12)

301. The effect of the proposed development on vehicle movement at this junction would only be slight. The LHA's main concern is that an increase in pedestrian and cycle movements from the appeal sites would result in increased use of the crossings, and result in increased delays for motorised users. However, that the effect of this would be severe somewhat stretches plausibility. The crossings here are mostly signalised, which could adequately control non-motorised movements and manage the effect on motorised traffic, even if all red stages are called more frequently. [178, Appx 5]

Conclusion on the LHA transport assessment

302. The LHA argue that its modelling flags cause for concern, in particular across a series of already problematic junctions along the east/west stretch of the A582. Indeed, taking these results at face value, the existing committed development and the appeal proposals would have significant effects on the road network. However, these results cannot be sufficiently relied upon given the acknowledged instability of the assessment tools, amongst the other above identified detractors.

Other matters relating to impact on highway network

303. Although the LHA have a duty under s16 of the Traffic Management Act 2004 to secure and facilitate the expeditious movement of traffic on its road network, the key test of these appeal proposals is against the development plan and the Framework. [88]

Conclusion on impact on highways network

304. The appellants' transport modelling, when taken at face value, suggests that delays will fall considerably short of being severe. Aspects of the traffic flow surveys, background traffic growth, and trip generation and distribution, weigh against the appellants' modelling conclusions. However, taken as a whole, these detractors are of no more than limited weight and do not show that the appellants' modelling is so flawed that it demonstrates that the threshold of a severe impact would be breached.

305. The LHA have produced their own alternative modelling. Instead of measuring severity by way of delay along routes, it considers capacity and congestion at key junctions. At face value, the impacts at those junctions are indicated as being significant. However, the results are inherently unreliable due to the instability of the algorithms used. Consequently, the forecasts of capacity and congestion are unreliable, even when considering them only as indicators of a step change. Therefore, neither does the LHA's modelling demonstrate that the impacts of the development would be severe.

306. I conclude that the proposed development would not have a severe adverse impact on the local highway network. Accordingly, the proposal complies with policy G17 of the LP and paragraph 111 of the Framework. Policy 17 of the CS relates to the design of new buildings and is not relevant to this main issue.

307. Even if the residual cumulative impacts on the highways could be described as severe, this does not necessarily lead to a conclusion that the appeal proposal should be refused, particularly bearing in mind that the appeal site is an allocated site in the adopted local plan. I return to this point in the planning balance. [89]

Pedestrians and cyclists on Bee Lane bridge

308. Current levels of use of the bridge are low and, given that the bridge would only serve the proposed 40 dwellings off Bee Lane, and a potential bus service, forecast vehicular movements are correspondingly not large. There have been no injury accidents on the bridge in the past 5 years, and the road is identified as part of the Penwortham Cycle and Walking Route, indicating the bridge currently operates safely. [91-92, 185]

309. The number of pedestrians and cyclists using the bridge could be larger, by drawing users from the wider appeal sites. The dispute over how to address this is stark. The appellants are satisfied that the existing bridge layout can safely accommodate large increases in pedestrians and cyclists on the premise of the Quiet Lanes shared space approach. On the other hand, the LHA suggest that a new separate lightweight bridge for sustainable users, or a new bridge entirely, would be potential solutions, at indicative basic costs of some £2m or £12.5m respectively though potentially more. [93-96, 152, 186, 202]

310. However, there would only be up to some 264 pedestrians and cyclists generated by the whole of both sites in the AM peak hour. Given the number of other pedestrian and cycle routes that would be available in and out of the sites, a substantial percentage are likely to use those other connections. Even if a high proportion of these were to use this bridge, there is no substantive evidence to demonstrate that a new bridge for active travel users would be necessary to accommodate the increase, let alone a new vehicular bridge. [185]

311. Nevertheless, it is also my judgement that the layout of the existing bridge is unlikely to be satisfactory for such an increase given the lack of segregation between vehicles, cyclists and pedestrians, the lack of pedestrian refuge at a pinch point, and the lack of separation between the highway and the bridge's parapets. [186]

312. The appellants have prepared a bridge improvement option. A pedestrian route would run across one side of the bridge that would be physically separated from

the main carriageway. On the other side, a delineation strip would be provided to protect the bridge parapet. This would allow pedestrians and less mobile users to walk safely along a segregated path. The remaining carriageway would be just wide enough for two small cars to slowly pass each other, albeit that wider vehicles could not. Vehicles would be very unlikely to hit the parapet under this proposed arrangement. This option would appropriately and proportionately minimise scope for conflict, prioritise pedestrians, and offer secure arrangements for more vulnerable users. [95]

313. A risk assessment considers the shared use of the bridge under this arrangement, in consultation with a road safety auditor. Having taken into account pedestrians and cyclists using this route from the appeal sites, it concludes that the level of risk is low on all measures, and no concern is raised regarding proximity of the bridge to the Leyland Road junction. Some further support for this improvement option is also provided by comparison with the nearby Coote Lane railway bridge, which already operates in a similar manner to that proposed here. [95, 186]

314. In conclusion, the proposed improvements to the Bee Lane bridge would not have an unacceptable impact on highway safety. There would be no significant adverse effect on the safety of pedestrians and cyclists, such that the proposal complies with policy G17 of the LP and paragraph 111 of the Framework. Policy 17 of the CS is again not relevant to this main issue.

Adequacy of highway improvements

315. The funding of infrastructure is addressed by three policies in the LP. I have already found above that the wording of policies A2 and C1 of the LP do not require that the CBLR be delivered as part of the proposed developments. The policy requirement is that land will be protected from physical development for the delivery of the CBLR. The appeal proposals and masterplan would do that. Policy A1 further sets out general requirements for developer contributions and CIL payments but makes no reference to specific infrastructure projects. This policy further indicates that, where appropriate, SRBC will permit developers to provide the necessary infrastructure, rather than making financial contributions. [18, 22-23, 99]

316. The supporting text for policy A2 does state that this link road *"will be provided through developer contributions"*, and the justification for policy C1 does state that *"all schemes within the agreed infrastructure delivery schedule will be implemented through the scheme and such contributions could be offset from any CIL monies required"*. However, even though the LP records the CBLR as an important route, in neither case can this supporting text impose requirements on the developments when no such requirements are contained within the policy, as already found above. [22, 100, 148-150]

317. The appellants would provide a significant majority of the infrastructure, some 89%, in the form of a spine road for the full extent of the land under the appellants' control. This would allow the remaining CBLR to potentially be completed at a future date when the remaining parcels of allocated land are developed, as set out in the masterplan. [102]

318. SRBC are concerned that delivering even this small remaining section of the CBLR would be unviable, given that the appeal sites represent 81.5% of the

allocated units, leaving a small number of units to fund the remaining infrastructure, potentially including the bridge. However:

- whilst the remaining allocated land is outside of the appellants' control and the developers have not assembled all of the land in the masterplan area, the masterplan does instead make provision for future delivery in accordance with policy requirements;
- the development plan does not require the appellants to fund the remaining section of the CBLR; and
- there is no substantive evidence to suggest that funding of the remaining infrastructure beyond what is already proposed would be necessary in terms of the tests under the CIL Regs.

On this basis, there is insufficient justification to require the appellants to fund the remaining infrastructure. [102-103, 151]

319. The appeal schemes would contribute some £7.6m in CIL (or some £10m from the wider allocated site), but this money is instead likely to be committed towards the dualling of the A582, notwithstanding any application for CIL relief. Instead, SRBC suggest that the cost of the full CBLR should be borne by the various landowners and developers of the allocated site, divided by a process of equalisation, despite the appellants' assertion that they would be delivering a significant majority of the CBLR at a cost of some £5m. [102-104, 152]

320. Either way, the remaining allocated parcels of land would be able to connect to the proposed spine road where necessary, as secured by the masterplan planning obligation. There is no substantive evidence to indicate that the delivery of those land parcels would be otherwise prejudiced by the appeal proposals. The question of how the remainder of the CBLR would be funded, if in the future it is found to be necessary, currently remains unanswered. Nevertheless, the development plan does not require anything more than is currently proposed. [102-104, 152]

321. The appeal schemes would not, in themselves, provide full east-west connections across the site for all vehicular traffic, with only the 40 dwellings in the last phase of development able to access Bee Lane bridge. To achieve this, private cars and larger vehicles would be physically prevented from accessing the existing lanes, whilst allowing existing properties to retain access to their rural lane, notwithstanding any private or other access rights. Delineation and bollard placement would prevent vehicles accessing the existing lanes from the new road network, and the indicative layouts offer examples of a satisfactory physical solution that could be readily and simply achieved. [58, 97, 154-156]

322. Any incentive or opportunity that there may be for new residents of the development to use the existing lanes to reach Bee Lane bridge are likely to be very limited. In physical terms, it would be extremely difficult for even a small car to navigate such an arrangement. In any case, reasonable drivers respect and obey road layouts and signs, and roads cannot sensibly be designed specifically for the few that may choose to contravene them. [97, 155-156]

323. Although the crossing points could be monitored by automatic number plate recognition, this would be somewhat heavy handed given that a physical solution could effectively achieve the same result. In the unlikely event of the physical solution failing after implementation, this option would remain available to the LHA should it consider it appropriate to do so. The suggested potential

provision of a bus gate at Bee Lane would prioritise shared travel and enhance sustainable permeability without increasing private vehicle use at Bee Lane bridge, although this can only be given limited weight as it has not been fully tested through the transport assessment and safety audit. [97, 155-156]

324. A number of objections refer to the proposals as a large cul-de-sac. Vehicular access to the larger part of the development would indeed only be by means of the A582, meaning distances to facilities to the east for vehicles would be longer. However, many other connections would be available for active travel users, including the public rights of way network that would be maintained. Provision of active travel routes would not in themselves inherently disadvantage residents that require motorised transport, such as those with restricted mobility. Access to facilities and services would still be equally available. Whilst it is also argued that those that are elderly or with health or mobility issues would be fearful of using the major road network, I see no good reason why this should be any more the case than when using the local road network. [162, 193, 198, 206]

325. Satisfactory emergency access could be provided to the appeal sites as part of the detailed design, and Lancashire Fire and Rescue Service raise no objection in these terms. Although concern has been raised regarding a potential knock-on adverse effect on the safety of Coote Lane, this does not form part of the reasons for refusal nor has the level or extent of such harm been substantively evidenced. Adequate improvements in public transport and the active travel network would be secured by the planning obligations. [162, 203]

326. The appeal proposals would provide appropriate and safe management of movement for the increase in active travel users when needed during the busier peak hours. This would include during drop off and pick up times at the proposed school site which, in any case, can be expected to provide purpose-designed drop off and pick up facilities from the main road network that would be more attractive to drivers than using Bee Lane, as well as there being suitable walk to school routes. The risk of Bee Lane being used in an unsafe manner to access the new school is therefore likely to be low. The remaining NR objections could be suitably addressed by conditions. [162, 227-228]

327. That the network of lanes across the sites would retain their existing rural character is an integral part of the overall vision of the masterplan. In this respect, the proposals would, in my view, positively and congruously integrate the new development into the historic rural street network. Overall, the appeal proposals would ensure that the sites would be as well integrated into the existing transport network as is necessary at this stage. Nonetheless, it is self-evident that the provision of the CBLR would provide greater connectivity with the surrounding area. The opportunity for providing this at a future date, and for realising further connectivity benefits, would be safeguarded by the masterplan and the planning obligation, should this east-west link be considered as necessary at any future time.

328. Therefore, the proposed development makes adequate provision for highways improvements, with particular regard to the CBLR and Bee Lane bridge. In these terms, the proposals therefore comply with policies A1, A2, C1 and G17 of the LP, policy 17 of the CS, and paragraphs 111, 126 and 132 of the Framework.

Other considerations

Flooding

329. The northern part of the site is subject to mapped and historic surface water flooding, primarily due to runoff from the residential development to the north. A flood basin here would manage and contain the extent of existing surface water, discharging by gravity and independent of the development drainage system, into the northern boundary culvert and to the Mill Brook. The existing runoff from the south will be diverted as part of the development proposals to an attenuation basin alongside the Penwortham Way, with outfall to the road drainage infrastructure and thereafter to the Mill Brook. [112, 199, 222-223]

330. Although site levels will be raised, this is not proposed to exceed 1m in height, no berms are intended, and this arrangement will provide better management of surface water flooding. The extent and degree of ground raising, and any potential impact on existing dwellings, could be adequately controlled at the detailed application stage and through conditions. [114, 199, 222-224]

331. Concerns have been raised about the capacity of the basins, but the detailed hydraulic modelling suggests they would be adequate, with proposed development runoff providing protection from a 1 in 100 year event, with a 40% allowance for climate change. The use of pumps is not uncommon in such developments, and the maintenance of these would be the responsibility of the management company, as required by condition. That KBLR are concerned with the track record of United Utilities does not mean that the proposed development cannot be properly designed, constructed, managed and maintained to meet the necessary standards. There is no objection to the proposal from United Utilities, the Environment Agency, or the LLFA. [113-116, 199, 207, 223-224]

332. Overall, the proposal would result in betterment of the existing surface water flooding situation and would reduce flood risk within the Mill Brook and downstream. [113]

Air quality

333. To address any adverse impacts on air quality and emissions from the development, air quality mitigation schemes would be agreed as part of future phases. These could include on-site measures to encourage sustainable transport and, where full mitigation cannot be achieved on-site, a financial contribution would instead secure wider compensatory measures. The calculation of this contribution was the subject of dispute between the main parties (due to disagreements about traffic forecasting inputs) leading to the eighth reason for refusal. The main parties have subsequently agreed a maximum contribution. Despite interested parties' concerns about the effects of underestimated traffic forecasts on air quality, including from spoil removal from the site, and fuel inefficiency from decreased speeds, very substantial increases would be required to result in any significant impact on air quality. [117-118, 139, 202-203, 206, 215]

Green and sports infrastructure

334. Green and sports infrastructure provision is required to be made under policies G10 and G11 of the LP. Further to the ninth reason for refusal, the main parties have subsequently agreed that the planning obligation would adequately provide for financial contributions to be made on a phased basis to support the delivery of sports infrastructure as the development progresses. I see no reason to disagree. [139]

Biodiversity

335. A suite of ecology related surveys and assessments were undertaken for the application, which were then peer reviewed for the appeal. The loss of any hedgerows would be replaced at 150%. Whilst there are no bat roosts, and low bat activity, across the site, one building outside the site supports a day roost. Barn owls were also recorded roosting in an offsite building. Further surveys would be required at the appropriate time by condition, as would details of tree retention, landscaping, construction environment management plan, landscape and ecology management plan, lighting scheme and invasive species strategy. Together these measures would provide adequate mitigation for the development. Furthermore, a biodiversity net gain of at least 10% would be secured for the site through the planning obligation. SRBC raise no objection to the proposal on biodiversity grounds. [119-124, 199, 230]

Education

336. Although the proposals are in outline only, the LEA currently anticipates a slight shortage of primary school places, calculated using the education contribution methodology. That methodology is applied consistently to proposed developments across the region, notwithstanding perceived flaws such as ‘as the crow flies’ measurements, pre-school places, pupil yield from social housing, and the alternative approach taken by Northamptonshire Council. Although the forecast is low there is also a need for the masterplan to address demands from the wider allocated site. In lieu of a financial payment, the planning obligation secures land to be provided for a new school. Both the education authority and SRBC support the calculations and the proposed land contribution in this regard, and I see no justifiable reason why a different conclusion should be reached. [125-126, 196, 203, 210, 217, 225-226, 229]

City Deal

337. The appeal sites are one of HE’s eleven sites in the City Deal, and should planning permission be granted, the potential land receipts will be paid into the deal. The City Deal is said by interested parties to be in substantial deficit. Even if that is the case, the appellant is not suggesting that significant weight should be given to the appeal schemes’ contribution to the City Deal or that the scheme must be approved in order to realise the promised major economic benefits. Nor do I in reaching a planning balance on these appeals. [129-135, 199, 219-221]

Human rights and the Public Sector Equality Duty

338. Representations were made to the effect that the human rights of the existing residents would be violated if the appeals were allowed. I do not consider this argument to be well founded because I have found that the proposal would not cause unacceptable harm to existing residents. The degree of interference that

would be caused would be insufficient to give rise to a violation of rights under Article 1 of the First Protocol to the Convention, as incorporated by the Human Rights Act 1998. In determining the current appeals, the inquiry process has allowed interested parties to be fully heard. [191]

339. There was no formal equalities impact assessment before the inquiry, however the evidence included matters pertaining to equalities. The transport measures would include improvements to pedestrian and cycle routes that would improve accessibility. This would be a positive impact in that it would advance equality of opportunity for persons sharing relevant protected characteristics. I earlier concluded that the concerns about longer drive times and potential fear of using the major road network by persons with a disability or limited mobility would not lead to disadvantage. No other negative impacts were identified.

Other matters

340. Even though SRBC can demonstrate a housing land supply position of 13.2 years deliverable sites, the appeal sites are nonetheless allocated for residential led development in the local plan. Furthermore, the Framework emphasises the Government's objective to significantly boost the supply of housing. That there may be existing empty housing in the region does not outweigh this wider recognised need for housing, and for affordable housing in particular. A park and ride has been suggested by one objector, but this does not form part of the proposals before me. Disruption during construction would be adequately addressed by a construction management plan. The costs of delays on the road network to the local economy is likely to be limited, given the above conclusions that the impact on highways would not be severe. [36, 193, 199, 218, 230]

341. There would be no significant adverse effects on the living conditions and wellbeing of occupants of existing residential properties that cannot be addressed at the detailed design stages. A parameters plan has been agreed with SRBC that would contribute towards securing this. Concerns have been raised that local services, including health facilities, would be unable to cope with additional development. However, there is a general expectation that the health service will provide the necessary facilities to meet the needs of the local population. [127, 205, 211, 230]

Planning benefits

342. The development proposals would result in a number of economic, social and environmental benefits, with the main parties differing only on the weight to be afforded to them. The scale of limited, moderate and significant is used.

343. The Framework seeks to significantly boost the supply of housing and, even though SRBC has considerably more than a 5 year supply of housing, the delivery of a total of some 1,100 homes of a mix of sizes is a significant benefit. SRBC accept that there is a pressing need for affordable housing and, given that 330 of the proposed units would be affordable, this would also be a benefit of significant weight. The provision of land for a new primary school, the creation of a new local centre, and the provision of publicly accessible open space, would offer moderate benefits to the community beyond the development site. The economic benefits arising from the construction of the development and on-site job creation are together also of moderate weight. [106-107, 188]

344. The provision and improvement of a sustainable and active travel network arises partly from the need to serve the development and is of limited weight, as is the proposed landscaping of the site, the secured biodiversity net gain, and the economic benefits arising from residents' expenditure and council tax revenues. The development must necessarily be adequately drained; however the betterment of the existing drainage situation attracts limited weight. Other infrastructure and financial contributions towards the creation or improvement of local facilities are needed largely to meet policy requirements, such that they are neutral in the planning balance, as is the contribution of the scheme to the City Deal. [106-107, 188]

OVERALL CONCLUSIONS AND PLANNING BALANCE

345. The proposals are for outline planning permission on part of an allocated site. The proposed developments are accompanied by a satisfactory masterplan for the comprehensive development of the site, including a wider safeguarded area of land, phasing and infrastructure delivery schedule, and programme of implementation. In this respect the proposal accords with policy C1 of the LP. The proposals would also ensure that land would be protected from physical development for the delivery of the CBLR, in accordance with policy A2 of the LP, and would also include construction of some 89% of the CBLR.

346. The appellants transport evidence indicates at face value that the impact of the proposed developments on the road network would not be severe. The various criticisms of the modelling do not demonstrate that the modelling is so flawed that the threshold of a severe impact would be breached. Furthermore, neither does the traffic assessment by the LHA demonstrate severe impacts, in light of the unreliability of its modelling.

347. Vehicular movements over the Bee Lane bridge from the proposed development would be limited. The proposed improvements to the bridge would ensure that the proposals not have a significant adverse effect on the safety of pedestrians and cyclists.

348. The proposals would provide adequate highways improvements, primarily in the form of the significant majority of the CBLR and improvements to the Bee Lane bridge. Should it be considered necessary to deliver the final section of the CBLR and further bridge improvements in the future, the safeguarding of the route would be secured by the masterplan. The opportunity for remaining land parcels to connect to the proposed spine road would also be safeguarded and there is no substantive evidence that delivery of those parcels would be otherwise prejudiced. The funding of the remaining section of the CBLR, if found in the future to be necessary, remains uncertain, but the development plan does not require anything more than is currently proposed. Overall, the masterplan and appeal proposals would successfully integrate the new development into the existing rural street network.

349. The conclusion is that the appeal is in accordance with policy and with the development plan as a whole. Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires that applications for planning permission be determined in accordance with the development plan, unless material considerations indicate otherwise. There are no material considerations, taken individually or cumulatively, that indicate a decision other than in accordance with the development plan. Paragraph 11 of the Framework states that

development proposals that accord with an up-to-date development plan should be approved without delay. Therefore, planning permission should be granted subject to the conditions in the attached schedule.

350. However, the Secretary of State may consider that the proposed development would result in severe residual cumulative impacts on the road network. Under these circumstances, the evidence does not necessarily lead to a conclusion that the appeal proposals should be refused. Instead, it is concluded that the identified benefits of the scheme, including delivery of 1,100 new homes, inclusive of 330 affordable homes for which there is a particular need, on an allocated site in the development plan, would outweigh that harm. If the Secretary of State considers that there would be unacceptable impact on highway safety at Bee Lane bridge, then a Grampian-style condition or section 106 planning obligation could be agreed to address the point, although neither have been provided by the appellants at this stage.

RECOMMENDATION

351. I recommend that both appeals be allowed and planning permission granted subject to the conditions set out in Appendix 1.

Patrick Hanna

INSPECTOR

APPENDIX 1 - SUGGESTED CONDITIONS

Conditions for Appeal A (Ref. APP/F2360/W/22/3295498)

1) Where, in this planning permission, a condition states “No development shall commence…”, development does not include: site investigations or surveys (including exploratory boreholes or excavations); site clearance; the demolition of any buildings or structures on site; the construction of temporary site access or service roads; works for the provision of drainage or mains services to prepare the site for development; works associated with ecological mitigation; and the construction of internal site roads.

   REASON: In order to define the terms of the permission.

2) Details of the appearance, landscaping, layout, and scale (hereinafter called "the reserved matters" shall be submitted to and approved in writing by the local planning authority for the phase or sub-phase of the development to which the reserved matters relate before development within that phase or sub-phase commences.

   REASON: To comply with s92 of the Town and Country Planning Act 1990 and reflect the development proceeding on a multi-phase basis.

3) Prior to the submission of any reserved matters application a Phasing Plan for the development shall be submitted to and approved in writing by the local planning authority. The submitted Phasing Plan shall indicate the extent of each phase, and any sub-phases within each phase, the sequence of development, the approximate number of units proposed within each phase and sub phase, and associated timetable of works. The development shall then be constructed in accordance with the approved Phasing Plan. If the phasing plan submitted pursuant to this condition differs from the Indicative Scheme of Phasing and Implementation Plan (July 2022) and the changed phasing is likely to give rise to any new or different significant environmental impacts to those already assessed, the phasing plan submitted pursuant to this condition shall be accompanied by an Environmental Statement in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

   REASON: To ensure satisfactory comprehensive development and proper planning of the area.

4) Applications for the approval of all reserved matters for Phase 1 of the development shall be made not later than the expiration of 3 years beginning with the date of this permission and the development approved within Phase 1 shall be begun not later than the expiration of two years from the final approval of the reserved matters for that Phase or, in the case of approval on different dates, the final approval of the last of the reserved matters to be approved for that Phase, whichever is later. Applications for the approval of reserved matters for all subsequent phases or sub phases of the development shall be made not later than the expiration of 15 years beginning with the date of this permission and the development approved within each subsequent phase or sub-phase shall be begun not later than the expiration of two years of the date of approval of the reserved matters for that phase or sub-phase or, in the case of

approval on different dates, the final approval of the last of the reserved matters to be approved for that phase or sub-phase, whichever is later.

REASON: To comply with s92 of the Town and Country Planning Act 1990 and reflect the development proceeding on a multi-phase basis over an extended period.

5) The development hereby permitted shall be carried out substantially in accordance with the submitted masterplan (MP_00_1004 Rev100) and in strict accordance with the following approved plans; MP_00_1000 Rev 101 Parameter Plan - Red Line; MP_00_1001 Rev 105 Parameter Plan – Land Use; MP_00_1002 Rev 103 Parameter Plan – Building Heights; MP_00_1003 Rev 103 Parameter Plan – Demolition Plan; and VN211918-D105A Proposed Site Access Arrangement (Bee Lane).

REASON: For the avoidance of doubt and to ensure a satisfactory standard of development.

6) Each application for the approval of reserved matters shall be accompanied by a Compliance Statement that explains how the proposals detailed in the application accord with the approved Parameter Plans and the submitted Design Codes (sections 8 and 9 of The Lanes Penwortham Design and Access Statement, August 2021).

REASON: To ensure satisfactory comprehensive development and proper planning of the area.

7) The reserved matters for each phase or sub-phase shall include details of existing and proposed ground levels and the proposed finished floor levels of all buildings.

REASON: To ensure satisfactory comprehensive development and proper planning of the area.

8) No development shall commence within a phase or sub-phase unless and until proposals for the provision of vehicle and cycle parking for all homes, community facilities or businesses within that phase or sub-phase have been submitted to and approved in writing by the local planning authority for approval. The development shall be carried out in accordance with the approved details.

REASON: To ensure provision and retention of adequate on-site parking.

9) No development shall commence within a phase or a sub-phase containing flats or commercial units unless and until proposals for bin storage and the collection of waste from the flats or commercial units within the phase or sub-phase have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

REASON: To provide effective storage facilities for domestic refuse and to safeguard the visual amenity of the area.

10) No building shall be occupied within a phase or a sub-phase unless and until full construction design details and safety audits have been provided for all roads, footways and cycleways proposed to be constructed within that phase or sub-phase have been submitted to, and approved in writing

by, the local planning authority. The development shall be carried out in accordance with the approved details.

REASON: To ensure safe operation of new highways.

11) Prior to occupation of any non-residential building, a deliveries, collections and servicing strategy for the said building shall be submitted to and approved in writing by the local planning authority. Thereafter the development shall be operated in accordance with the approved details.

REASON: In order to maintain free flow of traffic.

12) For any car park that is intended to serve any non-residential element of the development, a Car Park Management Strategy shall be submitted to and approved in writing by the local planning authority before the car park is first used. The Strategy shall include details of:
(a) the maximum duration of stay for all users (non-employment);
(b) include number of parking spaces per user type;
(c) car park enforcement;
(d) detail of provision and management measures to satisfy overspill from other land use elements;
(e) measures and techniques to maximise car park efficiency/security and the way it will be managed; and
(f) mechanism for a review of the Strategy within 12 months of the opening of the phase to confirm the satisfactory operation and safety of each car park and surrounding highway network.

The car park shall be surfaced and laid out in accordance with the approved plans and operated thereafter in accordance with the approved Car Park Management Strategy.

REASON: To ensure provision and retention of adequate on-site parking.

13) No dwelling shall be occupied unless and until the new estate roads serving the dwelling have been constructed to at least base course level.

REASON: In the interests of highway safety.

14) No development shall commence within a phase or sub-phase unless and until a Dust Management Plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The Dust Management Plan shall identify all parts of the phase or sub-phase where dust may be generated and further identify control measures aimed to ensure dust and soil does not travel beyond the site boundary for the development hereby approved. The Dust Management Plan shall include a suitable risk assessment. The development shall be carried out in accordance with the approved Dust Management Plans.

REASON: To protect the living conditions of nearby residents.

15) No development shall commence within a phase or sub-phase unless and until details of the proposed location of the site compound and storage yard for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

REASON: To protect the living conditions of nearby residents.

16) No development shall commence within a phase or sub-phase unless and until a noise monitoring and management strategy for that phase or sub-phase of development has been submitted to and agreed in writing with by the local planning authority. The strategy shall provide details of proposals for the measurement, monitoring and mitigation of construction related noise including maximum noise levels at the boundary of the nearest noise sensitive receptor, in accordance with BS 5228: 2009+A1:2014. The development shall be carried out in accordance with the approved strategy.

REASON: To protect the living conditions of nearby residents.

17) During periods of site preparation and construction, no machinery, plant or powered tools shall be operated outside the hours of 08:00 to 18:00 Monday to Friday and 09:00 to 13:00 on Saturdays. No construction shall take place at any time on Sundays or nationally recognised Bank Holidays.

REASON: To protect the living conditions of nearby residents.

18) No development shall commence within a phase or sub-phase unless and until the following information for that phase or sub-phase has been submitted to and approved in writing by the local planning authority:
    (a) The findings of a detailed site investigation undertaken to address the nature, degree and distribution of contamination and/or ground gases which shall include an identification and assessment of the risk to receptors as defined under the Environmental Protection Act 1990, Part 2A, focusing primarily on risks to human health and controlled waters. The investigation shall also address the implications of the health and safety of site workers, of nearby occupied buildings, on services and landscaping schemes, and on wider environmental receptors including ecological systems and property. The sampling and analytical strategy shall be submitted to and be approved in writing by the local planning authority prior to the start of the site investigation survey.
    (b) A remediation statement, detailing the recommendations and remedial measures to be implemented within the phase or sub-phase which has been the subject of the site investigation undertaken under (a) above.

REASON: To prevent pollution of ground and surface waters on and off site.

19) No dwelling shall be occupied within a phase or a sub-phase unless and until a verification report relating to that phase or sub-phase has been submitted to the local planning authority confirming that all remediation works specified under Condition 18(b) above have been completed in accordance with the agreed remediation statement.

REASON: To prevent pollution of ground and surface waters on and off site.

20) Should site operatives working on a phase or sub-phase discover ground that they suspect may be contaminated, they shall report this to the Site Manager and the Contaminated Land Officer at South Ribble Borough Council as soon as reasonably practicable. Works in the area containing such ground shall cease and the area be secured. A competent person shall be employed to undertake sampling and analysis of the suspected contaminated materials. A report which contains details of sampling methodologies and analysis results, together with any remediation required

shall be submitted to and approved in writing by the local planning authority. No dwelling shall be occupied within the phase or sub-phase of the development affected unless and until the relevant approved scheme of remediation has been completed.

REASON: To prevent pollution of ground and surface waters on and off site.

21) No development shall commence within a phase or sub-phase unless and until an Arboricultural Impact Assessment and Tree Protection Plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The Tree Protection Plan shall accord with BS5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'. The development shall be carried out in accordance with the approved details.

REASON: To prevent damage to trees during construction works.

22) No tree shall be pruned, cut down, uprooted, topped, lopped or wilfully damaged or destroyed including the cutting of roots during any site preparation or construction work stage without the previous written consent of the local planning authority. Any tree subject to these actions or that are removed without such consent or are dying or are being significantly damaged or becoming seriously diseased during that period shall be replaced with trees of such size and species as will be agreed in advance with the local planning authority.

REASON: To prevent damage to trees during construction works.

23) Details of landscaping required as part of the reserved matters for the development shall include:
(a) information on existing trees and hedges that are proposed to be removed. Where trees are proposed to be removed, the application for reserved matters should include a statement in relation to the sizes and ratio of replacement trees of greater maturity;
(b) the types and numbers of trees and shrubs proposed, their distribution on site, those areas that are to be seeded, turfed, paved or hard landscaped, including details of any changes of level or landform and the types and details of all fencing and screening proposed. Any new landscaping proposed shall include locally native species; and
(c) proposals for the retention and protection of hedgerows.
Any approved scheme of landscaping shall be implemented in the first planting season following completion of the development of the phase or sub-phase to which the scheme relates. The approved scheme shall be maintained thereafter for a period of 5 years to the satisfaction of the local planning authority. This maintenance shall include the replacement of any tree or shrub which is removed, becomes seriously damaged, seriously diseased or dies, by the same species or different species, and shall be agreed in writing by the local planning authority. The replacement tree or shrub must be of similar size to that originally planted.

REASON: To protect the character and appearance of the area.

24) No development shall commence within a phase or sub-phase unless and until a Construction Environmental Management Plan (CEMP) for that phase or sub-phase has been submitted to and approved in writing by the local

planning authority. The CEMP shall conform with the principles identified in Chapter 7 of the Environmental Statement including Annexes. The CEMP shall include, where appropriate, the following;

(a) a plan showing the retention of hedgerows;
(b) RAMS methods for amphibians; and
(c) soft fell techniques for trees with identified moderate or high bat roost potential.

The development shall be carried out in accordance with the approved CEMP.

REASON: To protect the habitats of wildlife.

25) No building shall be occupied within a phase or sub-phase unless and until a lighting design strategy for biodiversity for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The strategy shall:

(a) identify any areas/features that are particularly sensitive for bats, badgers, otter and other crepuscular animals and that are likely to cause disturbance in or around their breeding sites and resting places or along important routes used to access key areas of their territory, for example, for foraging; and
(b) show how and where external lighting will be installed (through the provision of appropriate lighting contour plans and technical specifications) so that it can be clearly demonstrated that areas to be lit will not disturb or prevent the above species using their territory or having access to their breeding sites and resting places.

All external lighting shall be installed in accordance with the specifications and locations set out in the strategy, and these shall be maintained thereafter in accordance with the strategy.

REASON: To ensure that adequate provision is made for protected species.

26) No development shall commence within a phase or sub-phase unless and until supplementary surveys have been undertaken within that phase or sub-phase for badgers and for bats in trees or buildings that are to be removed or demolished. The surveys for badgers shall extend 30m beyond the boundary of the phase or sub-phase being surveyed. The supplementary surveys shall be of an appropriate type for the above habitats and/or species and survey methods shall follow national good practice guidelines. If the surveys indicate that changes have occurred to the ecological baseline and that ecological impacts will arise that have not been identified or addressed by the Environmental Statement for the development, a revised Supplementary Environmental Statement shall be prepared. If this identifies a need for additional or different mitigation measures, these shall be detailed in the Statement along with a timetable for their implementation. If a Supplementary Environmental Statement is required to be produced, the development within this phase or sub-phase shall not commence until it has been approved in writing by the local planning authority. The development shall thereafter be carried out in accordance with the approved Statement.

REASON: To ensure that adequate provision is made for protected species.

27) No development shall commence within a phase or sub-phase (including demolition, ground works, vegetation clearance) unless and until an

invasive non-native species protocol for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The protocol shall describe proposals for the containment, control and removal of Japanese knotweed, Himalayan balsam and Japanese rose. The development shall be carried out in accordance with the approved protocol.

REASON: To prevent the spread of invasive plants.

28) No development shall commence within a phase or sub-phase unless and until a Landscape and Ecological Management Plan (LEMP) for that phase or sub-phase has been submitted to and approved in writing by, the local planning authority. The LEMP shall include the following:

(a) description and evaluation of features to be managed;
(b) ecological trends and constraints on site that might influence management;
(c) aims and objectives of management;
(d) appropriate management options for achieving aims and objectives;
(e) prescriptions for management actions;
(f) preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period);
(g) details of the body or organization responsible for implementation of the plan;
(h) ongoing monitoring and remedial measures;
(i) details of the legal and funding mechanisms by which the long-term implementation of the plan will be secured by the developer with the management body/bodies responsible for its delivery; and
(j) where the results from monitoring show that conservation aims and objectives of the LEMP are not being met, how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme.

The development shall be implemented in accordance with the approved LEMP.

REASON: To protect habitats of wildlife and the character and appearance of the surrounding area.

29) No development shall commence within a phase or sub-phase unless and until a detailed surface water sustainable drainage scheme for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The detailed sustainable drainage scheme shall be fully in accordance with the Lees Roxburgh Limited, The Lanes, Penwortham, Preston Flood Risk Assessment Report no.6337/R2 dated August 2021 and no surface water shall be allowed to discharge to the public sewer, directly or indirectly. The scheme shall also include, as a minimum:

(a) a final drainage layout plan appropriately labelled to include all pipe/structure references, dimensions, design levels, discharge rates, finished floor levels in AOD with adjacent ground levels. Final longitudinal sections plan appropriately labelled to include all pipe/structure references, dimensions, design levels, discharge rates, with adjacent ground levels. Cross section drawings of swales, flow control manholes, attenuation pond inlets/outlets, watercourse outfalls and manholes on watercourse;

(b) cross section drawings of attenuation ponds with 1 in 1 year, 1 in 30 year and 1 in 100 year + climate change water levels;
(c) information confirming that the rate of surface water run-off shall not exceed the pre-development runoff rate;
(d) drainage flow calculations (1 in 1, 1 in 2, 1 in 30 and 1 in 100 + climate change);
(e) a plan identifying areas contributing to the drainage network;
(f) measures taken to prevent flooding and pollution of the receiving groundwater and/or surface waters, including watercourses;
(g) a plan to show overland flow routes and flood water exceedance routes and flood extents;
(h) evidence of an assessment of the site conditions to include site investigation and test results to confirm infiltration rates; and
(i) breakdown of attenuation in pipes, manholes, swales, and attenuation ponds.

The scheme shall be implemented in accordance with the approved details prior to first occupation of any of the approved dwellings.

REASON: To ensure satisfactory sustainable drainage of the site.

30) No development shall commence within a phase or sub-phase unless and until details of how surface water and pollution prevention will be managed in that phase or sub-phase have been submitted to and approved in writing by the local planning authority. Such details shall include as a minimum:
(a) measures taken to ensure surface water flows are retained on-site during construction phase(s) and, if surface water flows are to be discharged they are done so at a restricted rate; and
(b) measures taken to prevent siltation and pollutants from the site into any receiving groundwater and/or surface waters, including watercourses, with reference to published guidance.

The development shall be carried out in accordance with the approved details.

REASON: To ensure satisfactory sustainable drainage of the site.

31) All attenuation basins, flow control devices/structures and offsite connections to the proposed SUDS drainage relevant to any phase or sub-phase and downstream of that phase or sub-phase to the outfall are to be constructed and operational prior to the occupation of any development within that phase or sub-phase.

REASON: To ensure satisfactory sustainable drainage of the site.

32) No development shall commence within a phase or sub-phase unless and until a foul water drainage scheme for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The drainage scheme shall include measures for:
(a) the proposed points of connection and associated properties and catchment area;
(b) proposed discharge rates to each proposed point of connection;
(c) identify any parts of the site where foul pumping is necessary. Thereafter, the strategy shall minimise the number of pumping stations throughout the site;

(d) the timing arrangements including a timetable for implementation, storage requirements and rate of discharge for any pumped foul discharge;
(e) foul and surface water to be drained on separate systems; and
(f) no surface water, highway drainage or land drainage shall be discharged directly or indirectly into the public sewerage system.

The development hereby permitted shall be carried out only in accordance with the approved drainage scheme. No development shall be occupied until the approved foul drainage scheme has been completed in accordance with the approved details. The foul drainage scheme shall be retained thereafter for the lifetime of the development.

REASON: To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution.

33) No building shall be occupied within a phase or sub-phase unless and until a sustainable drainage management and maintenance plan for the lifetime of that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The sustainable drainage management and maintenance plan shall include as a minimum:
(a) arrangements for adoption by an appropriate public body or statutory undertaker, or management and maintenance by a resident's management company; and
(b) arrangements for inspection and ongoing maintenance of all elements of the sustainable drainage system to secure the operation of the surface water drainage scheme throughout its lifetime.

The development shall thereafter be completed, maintained and managed in accordance with the approved plan.

REASON: To manage the risk of flooding and pollution for the lifetime of the development.

34) No development shall commence within a phase or sub-phase unless and until a written scheme of investigation for that phase or sub-phase has been submitted to and approved in writing by the local planning authority and the developer has secured the implementation of a programme of archaeological work in accordance with the approved written scheme of investigation. The works specified in the written scheme of investigation shall investigate the presence or absence of buried archaeological remains and their nature, date, extent and significance. Upon completion of the works, a report detailing the results shall be submitted to the local planning authority. If remains are encountered, development within the relevant phase or sub-phase shall pause until a further written scheme of investigation has been submitted to and agreed in writing by the local planning authority. Once the further written scheme of investigation has been approved, the development may proceed in accordance with it.

REASON: To protect any matters of archaeological/historical importance.

35) No building shall be occupied within a phase or sub-phase that shares a boundary with the adjacent railway unless and until proposals for the erection of trespass proof fencing to the relevant boundary have been submitted to and approved in writing by the local planning authority and the approved fencing has been installed.

REASON: To ensure safe operation of the adjacent railway.

36) Details of any scaffolding proposed to be erected within 10m of a boundary with the adjacent railway, shall be submitted to and approved in writing by the local planning authority before it is installed. The development shall be carried out in accordance with the approved details.

REASON: To ensure safe operation of the adjacent railway.

37) No development shall commence within a phase or sub-phase that has a boundary with the adjacent railway unless and until full details of earthworks and excavations to be carried out adjacent to the railway boundary have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

REASON: To ensure safe operation of the adjacent railway.

38) No development shall commence within a phase or sub-phase that has a boundary with the adjacent railway unless and until proposals for preventing vehicle incursion onto the railway throughout both the construction phase and occupational phase of the development have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

REASON: To ensure safe operation of the adjacent railway.

39) No development shall commence within a phase or sub-phase unless and until details of how each dwelling in that phase or sub-phase will achieve a minimum dwelling emission rate of 19% above 2013 Building Regulations have been submitted to and approved in writing by the local planning authority. The development thereafter shall be completed in accordance with the approved details.

REASON: To minimise the environmental impact of the development.

40) No dwelling shall be occupied unless and until a SAP assessment (standard assessment procedure), or other alternative proof of compliance (which has been previously agreed in writing by the local planning authority) such as an energy performance certificate, for that dwelling has been submitted to and approved in writing by the local planning authority demonstrating that the dwelling has achieved the required dwelling emission rate.

REASON: To support the transition to a low carbon future.

41) No development shall commence within a phase or sub-phase unless and until a construction management plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The plan shall include details of:

(a) any piling operations proposed, together with a justification for the piling, a vibration impact assessment and details of any mitigation measures required to control and minimise noise and vibration associated with the proposed piling works;

(b) any vibro-impact works proposed, together with a method statement for the works and an assessment of any effects that the works might have on the railway to the immediate east of the site;

(c) proposals for preventing the burning of waste or other materials on site during the construction phase;

(d) the parking of vehicles of site operatives and visitors;
(e) loading and unloading of plant and materials;
(f) storage of plant and materials used in constructing the development;
(g) the location of the site compound;
(h) suitable wheel washing/road sweeping measures;
(i) details of all external lighting used during demolition/construction;
(j) a scheme for recycling/disposing of waste resulting from demolition and construction works;
(k) 24 hour emergency contact number;
(l) arrangements for turning of vehicles within the site;
(m) swept path analysis showing access for the largest vehicles regularly accessing the site and measures to ensure adequate space is available and maintained, including any necessary temporary traffic management measures;
(n) measures to protect vulnerable road users (pedestrians and cyclists);
(o) the erection and maintenance of security hoarding including decorative displays and facilities for public viewing, where appropriate;
(p) measures to deal with dirt, debris, mud or loose material deposited on the highway as a result of construction; and
(q) proposals for the routing of construction traffic.

The development shall be carried out in accordance with the approved details.

REASON: To safeguard the living conditions of neighbouring properties.

Conditions for Appeal B (Ref. APP/F2360/W/22/3295502)

1) Where, in this planning permission, a condition states "No development shall commence…", development does not include: site investigations or surveys (including exploratory boreholes or excavations); site clearance; the demolition of any buildings or structures on site; the construction of temporary site access or service roads; works for the provision of drainage or mains services to prepare the site for development; works associated with ecological mitigation; and the construction of internal site roads.

   REASON: In order to define the terms of the permission.

2) Details of the appearance, landscaping, layout, and scale (hereinafter called "the reserved matters" shall be submitted to and approved in writing by the local planning authority for the phase or sub-phase of the development to which the reserved matters relate before development within that phase or sub-phase commences.

   REASON: To comply with s92 of the Town and Country Planning Act 1990 and reflect the development proceeding on a multi-phase basis.

3) Prior to the submission of any reserved matters application a Phasing Plan for the development shall be submitted to and approved in writing by the local planning authority. The submitted Phasing Plan shall indicate the extent of each phase, and any sub-phases within each phase, the sequence of development, the approximate number of units proposed within each phase and sub phase, and associated timetable of works. The development

shall then be constructed in accordance with the approved Phasing Plan. If the phasing plan submitted pursuant to this condition differs from the Indicative Scheme of Phasing and Implementation Plan (July 2022) and the changed phasing is likely to give rise to any new or different significant environmental impacts to those already assessed, the phasing plan submitted pursuant to this condition shall be accompanied by an Environmental Statement in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

REASON: To ensure satisfactory comprehensive development and proper planning of the area.

4) Applications for the approval of all reserved matters for Phase 1 of the development shall be made not later than the expiration of 3 years beginning with the date of this permission and the development approved within Phase 1 shall be begun not later than the expiration of two years from the final approval of the reserved matters for that Phase or, in the case of approval on different dates, the final approval of the last of the reserved matters to be approved for that Phase, whichever is later. Applications for the approval of reserved matters for all subsequent phases or sub phases of the development shall be made not later than the expiration of 10 years beginning with the date of this permission and the development approved within each subsequent phase or sub-phase shall be begun not later than the expiration of two years of the date of approval of the reserved matters for that phase or sub-phase or, in the case of approval on different dates, the final approval of the last of the reserved matters to be approved for that phase or sub-phase, whichever is later.

REASON: To comply with s92 of the Town and Country Planning Act 1990 and reflect the development proceeding on a multi-phase basis over an extended period.

5) The development hereby permitted shall be carried out substantially in accordance with the submitted masterplan (MP_00_1004 Rev100) and in strict accordance with the following approved plans; MP_00_1000 Rev 101 Parameter Plan - Red Line; MP_00_1001 Rev 105 Parameter Plan – Land Use; MP_00_2002 Rev 104 Parameter Plan – Building Heights; and MP_00_1003 Rev 103 Parameter Plan – Demolition Plan.

REASON: For the avoidance of doubt and to ensure a satisfactory standard of development.

6) Each application for the approval of reserved matters shall be accompanied by a Compliance Statement that explains how the proposals detailed in the application accord with the approved Parameter Plans and the submitted Design Codes (sections 8 and 9 of The Lanes Penwortham Design and Access Statement, August 2021).

REASON: To ensure satisfactory comprehensive development and proper planning of the area.

7) The reserved matters for each phase or sub-phase shall include details of existing and proposed ground levels and the proposed finished floor levels of all buildings.

REASON: To ensure satisfactory comprehensive development and proper planning of the area.

8) No development shall commence within a phase or sub-phase unless and until proposals for the provision of vehicle and cycle parking for all homes, community facilities or businesses within that phase or sub-phase have been submitted to and approved in writing by the local planning authority for approval. The development shall be carried out in accordance with the approved details.

REASON: To ensure provision and retention of adequate on-site parking.

9) No development shall commence within a phase or a sub-phase containing flats or commercial units unless and until proposals for bin storage and the collection of waste from the flats or commercial units within the phase or sub-phase have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

REASON: To provide effective storage facilities for domestic refuse and to safeguard the visual amenity of the area.

10) No building shall be occupied within a phase or a sub-phase unless and until full construction design details and safety audits have been provided for all roads, footways and cycleways proposed to be constructed within that phase or sub-phase have been submitted to, and approved in writing by, the local planning authority. The development shall be carried out in accordance with the approved details.

REASON: To ensure safe operation of new highways.

11) No dwelling shall be occupied unless and until the new estate roads serving the dwelling have been constructed to at least base course level.

REASON: In the interests of highway safety.

12) No development shall commence within a phase or sub-phase unless and until a Dust Management Plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The Dust Management Plan shall identify all parts of the phase or sub-phase where dust may be generated and further identify control measures aimed to ensure dust and soil does not travel beyond the site boundary for the development hereby approved. The Dust Management Plan shall include a suitable risk assessment. The development shall be carried out in accordance with the approved Dust Management Plans.

REASON: To protect the living conditions of nearby residents.

13) No development shall commence within a phase or sub-phase unless and until details of the proposed location of the site compound and storage yard for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

REASON: To protect the living conditions of nearby residents.

14) No development shall commence within a phase or sub-phase unless and until a noise monitoring and management strategy for that phase or sub-phase of development has been submitted to and agreed in writing by the local planning authority. The strategy shall provide details of proposals for the measurement, monitoring and mitigation of construction related noise

including maximum noise levels at the boundary of the nearest noise sensitive receptor, in accordance with BS 5228: 2009+A1:2014. The development shall be carried out in accordance with the approved strategy.

REASON: To protect the living conditions of nearby residents.

15) During periods of site preparation and construction, no machinery, plant or powered tools shall be operated outside the hours of 08:00 to 18:00 Monday to Friday and 09:00 to 13:00 on Saturdays. No construction shall take place at any time on Sundays or nationally recognised Bank Holidays.

REASON: To protect the living conditions of nearby residents.

16) No development shall commence within a phase or sub-phase unless and until the following information for that phase or sub-phase has been submitted to and approved in writing by the local planning authority:

(a) The findings of a detailed site investigation undertaken to address the nature, degree and distribution of contamination and/or ground gases which shall include an identification and assessment of the risk to receptors as defined under the Environmental Protection Act 1990, Part 2A, focusing primarily on risks to human health and controlled waters. The investigation shall also address the implications of the health and safety of site workers, of nearby occupied buildings, on services and landscaping schemes, and on wider environmental receptors including ecological systems and property. The sampling and analytical strategy shall be submitted to and be approved in writing by the local planning authority prior to the start of the site investigation survey.

(b) A remediation statement, detailing the recommendations and remedial measures to be implemented within the phase or sub-phase which has been the subject of the site investigation undertaken under (a) above.

REASON: To prevent pollution of ground and surface waters on and off site.

17) No dwelling shall be occupied within a phase or a sub-phase unless and until a verification report relating to that phase or sub-phase has been submitted to the local planning authority confirming that all remediation works specified under Condition 16(b) above have been completed in accordance with the agreed remediation statement.

REASON: To prevent pollution of ground and surface waters on and off site.

18) Should site operatives working on a phase or sub-phase discover ground that they suspect may be contaminated, they shall report this to the Site Manager and the Contaminated Land Officer at South Ribble Borough Council as soon as reasonably practicable. Works in the area containing such ground shall cease and the area secured. A competent person shall be employed to undertake sampling and analysis of the suspected contaminated materials. A report which contains details of sampling methodologies and analysis results, together with any remediation required shall be submitted to and approved in writing by the local planning authority. No dwelling shall be occupied within the phase or sub-phase of the development affected unless and until the relevant approved scheme of remediation has been completed.

REASON: To prevent pollution of ground and surface waters on and off site.

19) No development shall commence within a phase or sub-phase unless and until an Arboricultural Impact Assessment and Tree Protection Plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The Tree Protection Plan shall accord with BS5837: 2012 ' Trees in Relation to Design, Demolition and Construction - Recommendations'. The development shall be carried out in accordance with the approved details.

REASON: To prevent damage to trees during construction works.

20) No tree shall be pruned, cut down, uprooted, topped, lopped or wilfully damaged or destroyed including the cutting of roots during any site preparation or construction work stage without the previous written consent of the local planning authority. Any tree subject to these actions or that are removed without such consent or are dying or are being significantly damaged or becoming seriously diseased during that period shall be replaced with trees of such size and species as will be agreed in advance with the local planning authority.

REASON: To prevent damage to trees during construction works.

21) Details of landscaping required as part of the reserved matters for the development shall include:

(d) information on existing trees and hedges that are proposed to be removed. Where trees are proposed to be removed, the application for reserved matters should include a statement in relation to the sizes and ratio of replacement trees of greater maturity;

(e) the types and numbers of trees and shrubs proposed, their distribution on site, those areas that are to be seeded, turfed, paved or hard landscaped, including details of any changes of level or landform and the types and details of all fencing and screening proposed. Any new landscaping proposed shall include locally native species; and

(f) proposals for the retention and protection of hedgerows.

Any approved scheme of landscaping shall be implemented in the first planting season following completion of the development of the phase or sub-phase to which the scheme relates. The approved scheme shall be maintained thereafter for a period of 5 years to the satisfaction of the local planning authority. This maintenance shall include the replacement of any tree or shrub which is removed, becomes seriously damaged, seriously diseased or dies, by the same species or different species, and shall be agreed in writing by the local planning authority. The replacement tree or shrub must be of similar size to that originally planted.

REASON: To protect the character and appearance of the area.

22) No development shall commence within a phase or sub-phase unless and until a Construction Environmental Management Plan (CEMP) for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The CEMP shall conform with the principles identified in Chapter 7 of the Environmental Statement including Annexes. The CEMP shall include, where appropriate, the following:

(d) a plan showing the retention of hedgerows;

(e) RAMS methods for amphibians; and

(f) soft fell techniques for trees with identified moderate or high bat roost potential.

The development shall be carried out in accordance with the approved CEMP.

REASON: To protect the habitats of wildlife.

23) No building shall be occupied within a phase or sub-phase unless and until a lighting design strategy for biodiversity for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The strategy shall:

(c) identify any areas/features that are particularly sensitive for bats, badgers, otter and other crepuscular animals and that are likely to cause disturbance in or around their breeding sites and resting places or along important routes used to access key areas of their territory, for example, for foraging; and

(d) show how and where external lighting will be installed (through the provision of appropriate lighting contour plans and technical specifications) so that it can be clearly demonstrated that areas to be lit will not disturb or prevent the above species using their territory or having access to their breeding sites and resting places.

All external lighting shall be installed in accordance with the specifications and locations set out in the strategy, and these shall be maintained thereafter in accordance with the strategy.

REASON: To ensure that adequate provision is made for protected species.

24) No development shall commence within a phase or sub-phase unless and until supplementary surveys have been undertaken within that phase or sub-phase for badges and for bats in trees or buildings that are to be removed or demolished. The surveys for badgers shall extend 30m beyond the boundary of the phase or sub-phase being surveyed. The supplementary surveys shall be of an appropriate type for the above habitats and/or species and survey methods shall follow national good practice guidelines. If the surveys indicate that changes have occurred to the ecological baseline and that ecological impacts will arise that have not been identified or addressed by the Environmental Statement for the development, a revised Supplementary Environmental Statement shall be prepared. If this identifies a need for additional or different mitigation measures, these shall be detailed in the Statement along with a timetable for their implementation. If a Supplementary Environmental Statement is required to be produced, the development within this phase or sub-phase shall not commence until it has been approved in writing by the local planning authority. The development shall thereafter be carried out in accordance with the approved Statement.

REASON: To ensure that adequate provision is made for protected species.

25) No development shall commence within a phase or sub-phase (including demolition, ground works, vegetation clearance) unless and until an invasive non-native species protocol for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The protocol shall describe the proposals for the containment, control and removal of Japanese knotweed, Himalayan balsam and Japanese rose. The development shall be carried out in accordance with the approved protocol.

REASON: To prevent the spread of invasive plants.

26) No development shall commence within a phase or sub-phase unless and until a Landscape and Ecological Management Plan (LEMP) for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The LEMP shall include the following:
   (a) description and evaluation of features to be managed;
   (b) ecological trends and constraints on site that might influence management;
   (c) aims and objectives of management;
   (d) appropriate management options for achieving aims and objectives;
   (e) prescriptions for management actions;
   (f) preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period);
   (g) details of the body or organization responsible for implementation of the plan;
   (h) ongoing monitoring and remedial measures;
   (i) details of the legal and funding mechanisms by which the long-term implementation of the plan will be secured by the developer with the management body(ies) responsible for its delivery; and
   (j) where the results from monitoring show that conservation aims and objectives of the LEMP are not being met, how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme.

   The development shall be implemented in accordance with the approved LEMP.

   REASON: To protect the habitats of wildlife and the character and appearance of the surrounding area.

27) No development shall commence within a phase or sub-phase unless and until a detailed surface water sustainable drainage scheme for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The detailed sustainable drainage scheme shall be fully in accordance with the Lees Roxburgh Limited, The Lanes, Penwortham, Preston Flood Risk Assessment Report no.6337/R2 dated August 2021 and no surface water shall be allowed to discharge to the public sewer, directly or indirectly. The scheme shall also include, as a minimum:
   (a) a final drainage layout plan appropriately labelled to include all pipe/structure references, dimensions, design levels, discharge rates, finished floor levels in AOD with adjacent ground levels. Final longitudinal sections plan appropriately labelled to include all pipe/structure references, dimensions, design levels, discharge rates, with adjacent ground levels. Cross section drawings of swales, flow control manholes, attenuation pond inlets/outlets, watercourse outfalls and manhole on watercourse;
   (b) cross section drawings of attenuation ponds with 1 in 1 year, 1 in 30 year and 1 in 100 year + climate change water levels;
   (c) information confirming that the rate of surface water run-off shall not exceed the pre-development runoff rate;
   (d) drainage flow calculations (1 in 1, 1 in 2, 1 in 30 and 1 in 100 + climate change);

(e) a plan identifying areas contributing to the drainage network;
(f) measures taken to prevent flooding and pollution of the receiving groundwater and/or surface waters, including watercourses;
(g) a plan to show overland flow routes and flood water exceedance routes and flood extents;
(h) evidence of an assessment of the site conditions to include site investigation and test results to confirm infiltrations rates; and
(i) breakdown of attenuation in pipes, manholes, swales, and attenuation ponds.

The scheme shall be implemented in accordance with the approved details prior to first occupation of any of the approved dwellings.

REASON: To ensure satisfactory sustainable drainage of the site.

28) No development shall commence within a phase or sub-phase unless and until details of how surface water and pollution prevention will be managed in that phase or sub-phase have been submitted to and approved in writing by the local planning authority. Such details shall include as a minimum:
(a) measures taken to ensure surface water flows are retained on-site during construction phase(s) and, if surface water flows are to be discharged they are done so at a restricted rate; and
(b) measures taken to prevent siltation and pollutants from the site into any receiving groundwater and/or surface waters, including watercourses, with reference to published guidance.

The development shall be carried out in accordance with the approved details.

REASON: To ensure satisfactory sustainable drainage of the site.

29) All attenuation basins, flow control devices/structures and offsite connections to the proposed SuDS drainage relevant to any phase or sub-phase and downstream of that phase or sub-phase to the outfall are to be constructed and operational prior to the occupation of any development within that phase or sub-phase.

REASON: To ensure satisfactory sustainable drainage of the site.

30) No development shall commence within a phase or sub-phase unless and until a foul water drainage scheme for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The drainage scheme shall include measures for:
(a) the proposed points of connection and associated properties and catchment area;
(b) proposed discharge rates to each proposed point of connection;
(c) identify any parts of the site where foul pumping is necessary. Thereafter, the strategy shall minimise the number of pumping stations throughout the site;
(d) the timing arrangements including a timetable for implementation, storage requirements and rate of discharge for any pumped foul discharge;
(e) foul and surface water to be drained on separate systems; and
(f) no surface water, highway drainage or land drainage shall be discharged directly or indirectly into the public sewerage system.

The development hereby permitted shall be carried out only in accordance with the approved drainage scheme. No development shall be occupied until the approved foul drainage scheme has been completed in accordance with the approved details. The foul drainage scheme shall be retained thereafter for the lifetime of the development.

REASON: To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution.

31) No building shall be occupied within a phase or sub-phase unless and until a sustainable drainage management and maintenance plan for the lifetime of that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The sustainable drainage management and maintenance plan shall include as a minimum:

(a) arrangements for adoption by an appropriate public body or statutory undertaker, or management and maintenance by a resident's management company; and

(b) arrangements for inspection and ongoing maintenance of all elements of the sustainable drainage system to secure the operation of the surface water drainage scheme throughout its lifetime.

The development shall thereafter be completed, maintained and managed in accordance with the approved plan.

REASON: To manage the risk of flooding and pollution for the lifetime of the development.

32) No development shall commence within a phase or sub-phase unless and until a written scheme of investigation for that phase or sub-phase has been submitted to and approved in writing by the local planning authority and the developer has secured the implementation of a programme of archaeological work in accordance with the approved written scheme of investigation. The works specified in the written scheme of investigation shall investigate the presence or absence of buried archaeological remains and their nature, date, extent and significance. Upon completion of the works, a report detailing the results shall be submitted to the local planning authority. If remains are encountered, development within the relevant phase or sub-phase shall pause until a further written scheme of investigation has been submitted to and agreed in writing by the local planning authority. Once the further written scheme of investigation has been approved, the development may proceed in accordance with it.

REASON: To protect any matters of archaeological/historical importance.

33) No building shall be occupied within a phase or sub-phase that shares a boundary with the adjacent railway unless and until proposals for the erection of trespass proof fencing to the relevant boundary have been submitted to and approved in writing by the local planning authority and the approved fencing has been installed.

REASON: To ensure safe operation of the adjacent railway.

34) Details of any scaffolding proposed to be erected within 10m of a boundary with the adjacent railway, shall be submitted to and approved in writing by the local planning authority before it is installed. The development shall be carried out in accordance with the approved details.

REASON: To ensure safe operation of the adjacent railway.

35) No development shall commence within a phase or sub-phase that has a boundary with the adjacent railway unless and until full details of earthworks and excavations to be carried out adjacent to the railway boundary have been submitted to and approved in writing by the Local Planning Authority. The development shall be carried out in accordance with the approved details.

REASON: To ensure safe operation of the adjacent railway.

36) No development shall commence within a phase or sub-phase that has a boundary with the adjacent railway unless and until proposals for preventing vehicle incursion onto the railway throughout both the construction phase and occupational phase of the development have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

REASON: To ensure safe operation of the adjacent railway.

37) No development shall commence within a phase or sub-phase unless and until details of how each dwelling in that phase or sub-phase will achieve a minimum dwelling emission rate of 19% above 2013 Building Regulations have been submitted to and approved in writing by the local planning authority. The development thereafter shall be completed in accordance with the approved details.

REASON: To minimise the environmental impact of the development.

38) No dwelling shall be occupied unless and until a SAP assessment (standard assessment procedure), or other alternative proof of compliance (which has been previously agreed in writing by the local planning authority) such as an energy performance certificate, for that dwelling has been submitted to and approved in writing by the local planning authority demonstrating that the dwelling has achieved the required dwelling emission rate.

REASON: To support the transition to a low carbon future.

39) No development shall commence within a phase or sub-phase unless and until a construction management plan for that phase or sub-phase has been submitted to and approved in writing by the local planning authority. The plan shall include details of:

(a) any piling operations proposed, together with a justification for the piling, a vibration impact assessment and details of any mitigation measures required to control and minimise noise and vibration associated with the proposed piling works;
(b) any vibro-impact works proposed, together with a method statement for the works and an assessment of any effects that the works might have on the railway to the immediate east of the site;
(c) proposals for preventing the burning of waste or other materials on site during the construction phase;
(d) the parking of vehicles of site operatives and visitors;
(e) loading and unloading of plant and materials;
(f) storage of plant and materials used in constructing the development;
(g) the location of the site compound;
(h) suitable wheel washing/road sweeping measures;
(i) details of all external lighting used during demolition/construction;

(j) a scheme for recycling/disposing of waste resulting from demolition and construction works;
(k) 24 hour emergency contact number;
(l) arrangements for turning of vehicles within the site;
(m) swept path analysis showing access for the largest vehicles regularly accessing the site and measures to ensure adequate space is available and maintained, including any necessary temporary traffic management measures;
(n) measures to protect vulnerable road users (pedestrians and cyclists);
(o) the erection and maintenance of security hoarding including decorative displays and facilities for public viewing, where appropriate;
(p) measures to deal with dirt, debris, mud or loose material deposited on the highway as a result of construction; and
(q) proposals for the routing of construction traffic.

The development shall be carried out in accordance with the approved details.

REASON: To safeguard the living conditions of neighbouring properties.

APPENDIX 2 - APPEARANCES

FOR THE APPELLANT

Christopher Katkowski KC and Constanze Bell of Counsel, instructed by Avison Young

They called

Adam Thornton RIBA	5Plus Architects
Mike Axon BEng FCIHT	SLR Vectos
Craig Alsbury BA(Hons) BTP MRTPI	Avison Young
Lee Faulkner(for the conditions RTS)	E3P
Richard Lloyd (for the obligation RTS)	Eversheds

FOR SRBC AND LCC

Ian Ponter of Counsel, instructed by Tasneem Safdar SRBC

He called

Dr Darren Price BA(Hons) BArch DCE	Consultant
Murray Lloyd	Continuum
Neil Stevens BEng(Hons) MSc	Strategic Highways Planning Manager
Richard Wood BA(Hons) BPI MBA MRTPI	Richard Wood Associates
Janice Crook (for the conditions RTS)	Senior Planning Officer
Chris Sowerby (for the conditions RTS)	Development Planning Team Leader
Neil Martin (for the conditions RTS)	Environmental Health Officer
David Whelan (for the obligation RTS)	Shared Services Lead – Legal

INTERESTED PERSONS

Cllr Karen Walton	Ward Councillor
Graham Eastham	Keep Bee Lane Rural
Mike Bowe	Keep Bee Lane Rural
Cllr Paul Foster	Leader of SRBC

APPENDIX 3 – INQUIRY DOCUMENTS

(A number of inquiry documents were added to the core documents list during the event, and these are numbered accordingly)

1. Email dated 22 August 2022 from Janice Crook regarding building height parameters plan
2. Appellant appearances (CD10.73)
3. Council appearances (CD10.78)
4. Appellant opening statement (CD10.72)
5. Council opening statement (CD10.74)
6. Cllr Watson statement (CD10.75)
7. Mr Eastham statement (CD10.76)
8. Mr Bowe statement (CD10.77)
9. Email dated 23 August 2022 from Craig Alsbury regarding building height parameters plan
10. Email dated 24 August 2022 from Janice Crook regarding CBLR corridor
11. Email dated 22 August 2022 from Craig Alsbury regarding safeguarded land
12. Pickering's Farm Development Statement (CD10.79)
13. Spine Road land Plan Dwg No VN211918-Spine01 (CD10.80)
14. Transport Statement of Common Ground (CD10.81)
15. CBLR Movement Corridor Criteria (CD10.82)
16. Proposed Site Access Arrangement – Wider Plan Dwg No VN211918-D109 (CD10.83)
17. Email dated 24 August 2022 from Alistair Pike regarding Bee Lane Bridge Risk Assessment (CD10.84)
18. Letter of Support (10.85)
19. Cllr Foster statement (10.86)
20. Draft agreed planning conditions (Appeal A)
21. Draft agreed planning conditions (Appeal B)
22. Draft s106 planning obligation agreement
23. Draft s106 planning obligation unilateral undertaking
24. CIL compliance statement
25. Updated Transport Assessment clarification of Table 6.4 (CD10.87)
26. Vectos response to KBLR representations (CD10.88)

27. Building Heights Parameters Plan MP_00_1002 Rev 103 (Appeal A) (CD10.89)
28. Building Heights Parameters Plan MP_00_2002 Rev 104 (Appeal B) (CD10.90)
29. Proposed Site Access Arrangement (Bee Lane) VN211918 Rev D105A (CD10.91)
30. Proposed Site Access Arrangement - Wider Plan VN211918 Rev D109 (CD10.92)
31. Vectos Tempro Summary Mr Axon XC (CD10.93)
32. Final s106 planning obligation agreement
33. Final s106 planning obligation unilateral undertaking
34. Final agreed planning conditions (Appeal A)
35. Final agreed planning conditions (Appeal B)
36. KBLR further submission on highways matters and CIL/City Deal
37. KBLR further submission on infrastructure costs and programme (FOI response)
38. SRBC closing submission (CD10.94)
39. Appellant closing submission (CD10.95)
40. R (Cherkley Campaign Ltd) v Mole Valley DC [2014] EWCA Civ 567 (CD10.95)
41. Appellant costs application
42. Council costs reply
43. Appellant costs reply
44. Appellant response to KBLR further submissions
45. Signed s106 planning obligation agreement dated 29 September 2022
46. Signed s106 planning obligation unilateral undertaking dated 29 September 2022

APPENDIX 4 – CORE DOCUMENTS

Follow the below link to view core documents on the Council's website - https://www.southribble.gov.uk/pickeringsfarm

CD1 Application Documents and Plans

Application A Plans

CD1.1	Planning Application Form and Certificates (Application A)
CD1.2	Red Line Parameter Plan
CD1.3	Land Use Parameter Plan Application A
CD1.4	Building Heights Parameter Plan Application B
CD1.5	Demolition Parameter Plan
CD1.6	Illustrative Masterplan Application A
CD1.7	Bee Lane Access Plan
CD1.8	Penwortham Way Access Plan

Application B Plans

CD1.9	Application Form and Certificates Application B
CD1.10	Red Line Parameter Plan Application B
CD1.11	Land Use Parameter Plan Application B
CD1.12	Building Heights Parameter Plan Application B
CD1.13	Illustrative Masterplan Application B

Application A and B Plans

CD1.14	POS Provision
CD1.15	Phasing Plan

Documents

CD1.16	Revised Masterplan (Apps A and B)
CD1.17	Design & Access Statement incorporate Design Code (Apps A & B)
CD1.18	Supporting Planning Statement incorporating IDS (Apps A & B)
CD1.19	Affordable Housing Statement
CD1.20	Employment & Skills Report
CD1.21	Waste Management Strategy
CD1.22	Biodiversity Net Gain Report and Calculation
CD1.23	Construction Environmental Management Plan (Apps A and B)
CD1.24	Statement of Community Involvement

Environmental Statement

CD1.25	Chapter 1 - Introduction
CD1.26	Chapter 2 - Approach
CD1.27	Chapter 3 - Site Description

CD1.28	Chapter 4 - Alternatives
CD1.29	Chapter 5 - Proposed Development
CD1.30	Chapter 6 - Planning Policy Context
CD1.31	Chapter 7 - Ecology and Nature Conservation
CD1.32	Chapter 8 - Archaeology and Heritage
CD1.33	Chapter 9 - Landscape and Visual
CD1.34	Chapter 10 - Ground Conditions
CD1.35	Chapter 11 - Flood Risk and Drainage
CD1.36	Chapter 12 - Transport and Access
CD1.37	Chapter 13 - Air Quality and Dust
CD1.38	Chapter 14 - Noise and Vibration
CD1.39	Chapter 15 - Socioeconomics
CD1.40	Chapter 16 - Health
CD1.41	Chapter 17 - Climate Change
CD1.42	Chapter 18 - Cumulative Effects
CD1.43	Chapter 19 - Summary of Mitigation and Residual Effects
CD1.44	Environmental Statement - Volume 1 - Non-Technical Summary
	Appendices to Environmental Statement
CD1.45	Appendix 1.1 - EIA Competent Experts
CD1.46	Appendix 2.1 - EIA Scoping Report - FINAL incl Appendices
CD1.47	Appendix 2.2 - Scoping Opinion 17 December 2018
CD1.48	Appendix 5.1 - The Lanes CEMP
CD1.49	Appendix 7.1 - Desk Study
CD1.50	Appendix 7.2 - Phase 1 Habitat Survey
CD1.51	Appendix 7.3 - Hedgerow Assessment update
CD1.52	Appendix 7.4 - Tree Survey Report
CD1.53	Appendix 7.5 - Badger Survey
CD1.54	Appendix 7.6 - Barn Owl Survey
CD1.55	Appendix 7.7 - Bat Activity
CD1.56	Appendix 7.8 - Bat Roost 2019
CD1.57	Appendix 7.9 - Breeding Birds
CD1.58	Appendix 7.10 - Wintering Birds
CD1.59	Appendix 7.11 - GCN
CD1.60	Appendix 7.12 - Water Vole
CD1.61	Appendix 7.13 - bat roost survey 2021
CD1.62	Appendix 8.1 - Historic Environment Desk-Based Assessment
CD1.63	Appendix 9.1 - Photoview Sheets
CD1.64	Appendix 10.1 - Phase 1 SI
CD1.65	Appendix 10.2 - Utilities Report
CD1.66	Appendix 10.3 - Geo-Environmental Assessment Report
CD1.67	Appendix 11.1 - FRA
CD1.68	Appendix 12.1 - Transport Assessment
CD1.69	Appendix 12.2 - Travel Plan
CD1.70	Appendix 12.3 - Transport Assessment Drawings

CD1.71	Appendix 12.4 - Bus Stops
CD1.72	Appendix 13.1 - ADMS INPUTS
CD1.73	Appendix 13.2 - Sensitivity Analysis Impact Assessment
CD1.74	Appendix 13.3 - Damage Cost Assessment
CD1.75	Appendix 14.1 - Noise surveys results
CD1.76	Appendix 14.2 - Traffic data for noise assessment
CD1.77	Appendix 16.1 - LSOA
CD1.78	Appendix 16.2 - Ward Boundaries
CD1.79	Appendix 16.3 - Site Location
CD1.80	Appendix 16.4 - Indices of Multiple Deprivation
CD1.81	Appendix 16.5 - Population Over 65
CD1.82	Appendix 16.6 - Population Under 18
CD1.83	Appendix 16.7 - Population Unemployed
CD1.84	Appendix 16.8 - Residents with Bad or Very Bad General Health
CD1.85	Appendix 16.9 - Residents whose Day to Activities are Limited

CD2 Statutory Consultee Responses

CD2.1	Arboriculturist
CD2.2	Archaeology
CD2.3	Cadent Holding
CD2.4	CStep CalicoTEP email
CD2.5	CStep Calico Headline KPIs NSAfC Outline 2016 KPIs CBA v2
CD2.6	CStep Calico Residential Benchmarks
CD2.7	Electricity North West Limited
CD2.8	Environment Agency
CD2.9	Environmental Health
CD2.10	GMEU
CD2.11	GMEU
CD2.12	HSE WebApp
CD2.13	Lancashire Fire and Rescue
CD2.14	Lancashire Police
CD2.15	LCC Education Assessment
CD2.16	LCC Education Schools Planning Enquiries 07/2021/00886/ORM
CD2.17	LCC Lead Local Flood Authority 07-2021-00887-ORM
CD2.18	LCC Highways Final
CD2.19	LCC Highways Initial
CD2.20	LCC Lead Local Flood Authority 07-2021-00886-ORM
CD2.21	LCC Lead Local Flood Authority 07-2021-00887-ORM
CD2.22	National Highways
CD2.23	Natural England
CD2.24	Network Rail
CD2.25	Penwortham Town Council
CD2.26	Planning Policy Team

CD2.27	Planning Policy Team Open Space & Playing Pitch Requirements
CD2.28	Preston City Council 07-2021-00886-ORM
CD2.29	Preston City Council 07-2021-00887-ORM
CD2.30	LCC PROW Team Response LCC Public Rights of Way and PROW Map
CD2.31	LCC Public Health
CD2.32	Sport England Holding
CD2.33	Sport England
CD2.34	Strategic Housing
CD2.35	United Utilities
CD2.36	UU Standard Conditions
CD2.37	Wildlife Trust

CD3 Application Representations

CD3.1	Neighbour Notification Letter
CD3.2	Site Notice
CD3.3	Press Notice
CD3.4	List of addresses notified
CD3.5	Interested Parties Representations

CD4 National Planning Policy and Guidance

CD4.1	National Planning Policy Framework
CD4.2	National Planning Practice Guidance

CD5 Local Planning Policy and Guidance

CD5.1	Central Lancashire Core Strategy (Full Document) Policies 1, 2, 3, 4, 5, 6, 7, 14, 15, 17, 18, 21, 22, 23, 24, 25, 26, 27, 29, 30
CD5.2	South Ribble Local Plan (Full Document) Policies A2, C1, G8, G10, G11, G12, G13, G16, G17, H1
CD5.3	South Ribble Local Plan Policies Map South Ribble Local Plan Policies Map (interactive)
CD5.4	Inspector's Report Central Lancashire Core Strategy
CD5.5	Local Plan Inspector's Report
CD5.6	Penwortham Town Neighbourhood Development Plan

CD6 Supplementary Planning Documents

CD6.1	Employment and Skills
CD6.2	Open Space and Playing Pitch
CD6.3	Biodiversity and Nature Conservation

CD6.4	Design Guide
CD6.5	Affordable Housing
CD6.6	Renewable and Low Carbon Energy
CD7	**Miscellaneous Documents**
CD7.1	Air Quality Action Plan 2018
CD7.2	Central Lancashire Highways and Transport Masterplan
CD7.3	CIL Charging Schedule
CD7.4	PROW Definitive Map
CD7.5	TPO No 2 2021 TPO 1st schedule TPO Location Map
CD7.6	Planning Advisory Note Low Emissions and Air Quality
CD7.7	Housing Land Position Statement and update to Strategic Housing Land Availability Assessment
CD7.8	The Lanes Masterplan 2019
CD7.9	The Lanes Design Code 2019
CD7.10	Masterplan final 2020
CD7.11	Design Code 2020
CD8	**Committee Documentation**
CD8.1	Planning Committee Report
CD8.2	Planning Committee Report Addendum
CD8.3	Decision Notice 07-2021-00886-ORM
CD8.4	Decision Notice 07-2021-00887-ORM
CD8.5	Planning Committee Minutes
CD9	**Appeal Publicity**
CD9.1	Neighbour Notification Letter
CD9.2	List of addresses notified
CD9.3	Press Notice
CD9.4	Appeal Site Notice
CD10	**Appeal Documentation**
CD10.1	Appellant Appeal Application Form
CD10.2	Appellant Statement of Case
CD10.3	LPA Statement of Case Final
CD10.4	Statement of Common Ground 6 June 2022
CD10.5	Mobility (Highway) Statement of Common Ground (to follow)
CD10.6	Air Quality Statement of Common Ground

CD10.7	LP Planning POE Final
CD10.8	LPA Planning Proof of Evidence Summary
CD10.9	LPA Transport POE Pickerings Farm Final
CD10.10	LPA Transport POE Pickerings Farm SUMMARY Final
CD10.11	Transport Appendix 1 - LCC Highways EIA Scoping Opinion Response
	Transport Appendix 2
	Transport Appendix 3
	Transport Appendix 3C - LCC Highways Comment Draft Masterplan
	Transport Appendix 3D
	Transport Appendix 3E
	Transport Appendix 3G
	Transport Appendix 3H
	Transport Appendix 3I
	Transport Appendix 3K
	Transport Appendix 4
	Transport Appendix 5
	Transport Appendix 6 - VN211918 The Lanes Penwortham - Minutes 220527_Edits final
	Transport Appendix 7 - VN211918 The Lanes Penwortham - Minutes 220530 - LCC Amended
	Transport Appendix 9
	Transport Appendix 10
	Transport Appendix 11
	Transport Appendix 12
	Transport Appendix 13
	Transport Appendix 14
	Transport Appendix 15 - Unconstrained LCC June 22 V6
	Transport Appendix 16 A-F
	Transport Appendix 17 - Junction Modelling Results
	Transport Appendix 18
	Transport Appendix 19
	Transport Appendix 20
	Transport Appendix 22
	Transport Appendix 23
	Transport Appendix 24
	Transport Appendix 26
	Transport Appendix 27
CD10.12	LPA Urban Design Proof of Evidence
CD10.13	LPA Urban Design Summary Proof of Evidence
CD10.14	LPA Viability PoE Pickering's Farm - FINAL
CD10.15	LPA Viability PoE Pickering's Farm Summary - FINAL
CD10.16	LPA Viability PoE Pickering's Farm Appendices
CD10.17	LPA Air Quality Proof of Evidence
CD10.18	Interested Parties Representations - Appeal

Other Appeal Documents

CD10.19	Strategic Housing Land Availability Assessment
CD10.20	National Design Code
CD10.21	National Model Design Code Parts 1 and 2
CD10.22	Building for a Healthy Life
CD10.23	Indicative Phasing and Implementation Plan (duplicate no.)
CD10.23	Background Topic Paper Strategic Sites and Locations Assessment (duplicate no.)
CD10.24	Draft S106 HOTs for discussion
CD10.25	Central Lancashire Urban Village
CD10.26	Pickering's Farm Development Statement February 2013
CD10.27	Response to Inspectors Letter on behalf of Taylor Wimpey
CD10.28	Central Lancashire Transport Study 2008
	Central Lancashire Transport Study 2008 Appendices
CD10.29	Strategic Sites and Locations Assessment BTP Revised Nov 11 final
CD10.30	Statement of Common Ground between LCC and SRBC
CD10.31	WSP Study
CD10.32	South Ribble Local Plan 2000
CD10.33	Central Lancashire Infrastructure Delivery Schedule
CD10.34	Planning for Air Quality IAQM
CD10.35	Inspector's letter of 27 July 11
CD10.36	Inspector's letter of 15 July 11
CD10.37	Manual for Streets 1
CD10.38	Manual for Streets 2
CD10.39	Vectos Technical Note 03
CD10.40	Vectos Technical Note 04
CD10.41	Create Streets Briefing Paper Computer Says Road
CD10.42	Transportation Professional Article
CD10.43	EU SUMP-PLUS (Sustainable urban Mobility Planning)
CD10.44	Appeal Decision Hartford (Refs APP/A0665/A/12/2179410 & APP/A0665/A/12/2179374)
CD10.45	TCPA Garden City Standards for the 21st Century
CD10.46	Decarbonising Transport – A Better, Greener Britain
CD10.47	RTPI Net Zero Transport
CD10.48	CIHT Better Planning Better Transport Better Places
CD10.49	DfT Circular September 2013
CD10.50	DfT Circular July 2022
CD10.51	SRBC Climate Emergency Action Plan
CD10.52	IPCC Special Report Global Warming
CD10.53	The European Green Deal European Commission 2020
CD10.54	A582 South Ribble Western Distributor Strategic Ouline Business Case
CD10.55	A582 South Ribble Western Distributor Traffic Forecasting Report

CD10.56	A582 Dualling EIA Chapter 12
CD10.57	Bee Lane Access Designer's Response Form
CD10.58	Bee Lane RSA1
CD10.59	Cycle infrastructure design LTN 1 20
CD10.60	Appellant Pickerings Farm PoE CA Final with App 1-6
CD10.61	Planning Summary Proof of Evidence
CD10.62	Appellant VN211918 The Lanes Penwortham - M Axon PoE Final - Volume 1 Appellant VN211918 The Lanes Penwortham - M Axon PoE_Final - Volume 2 Appendices
CD10.63	Appellant VN211918 The Lanes Penwortham - M Axon Summary PoE Final
CD10.64	Appellant Masterplan_Witness_Statement_220726_Final
CD10.65	Masterplanning Summary Proof of Evidence
CD10.66	Draft Planning Conditions
CD10.67	Section 106 Heads of Terms (to follow)
CD10.68	Transport Rebuttal - Final
CD10.69	M Axon Rebuttal of Mr N Stevens and Dr D Price Evidence Final - Vol 1
CD10.70	M Axon Rebuttal of Mr N Stevens and Dr D Price Evidence Final - Vol 2 Appendices
CD10.71	National Highways Letter - Pickerings Farm Final View on Proposals

APPENDIX 5 - LHA MODELLING RESULTS TABLES

The LHA modelling results for the five disputed junction scenarios are summarised in the following tables. The full results are available in Mr Stevens POE Appendix 17 (CD10.11). The Ratio to Flow Capacities (RFC) threshold of less than 0.85 (practical capacity) indicates satisfactory performance. Level of Service (LOS) grades average vehicle delay from free flowing (A) to forced or breakdown flow (F). Degree of Saturation (DOS) is the ratio of vehicle flow against capacity of the arm, with 90% the point when capacity is reached. Results of concern to the LHA are in red.

B5254 Watkin Lane/Brownedge Road, B5254 Leyland Road/Coote Lane, and B5254 Watkin Lane/Jubilee Road linked signalised T-junctions (Tardy Gate)

Table 12: B5254 Watkin Ln/Brownedge Rd, B5254 Leyland Rd/Coote Ln & B5254 Watkin Lane/Jubilee Road (linked) -Tardy Gate

	AM Peak			PM Peak		
Tardy Gate junctions	Deg of Sat (%)	MMQ (pcu)	PRC (%)	Deg of Sat (%)	MMQ (pcu)	PRC (%)
2018 Observed Year						
Coote Lane junction	94.3%	13.4	-4.8%	91.2%	12.4	-1.3%
Brownedge Road junction	88.6%	10.5	1.5%	98.0%	16.8	-8.9%
Jubilee Road junction	76.2%	20.4	18.2%	90.3%	12.6	-0.4%
2035 Future Year Base (including committed)						
Coote Lane junction	98.0%	17.3	-8.9%	105.8%	24.1	-17.6%
Brownedge Road junction	84.0%	5.8	7.1%	96.9%	9.4	-7.6%
Jubilee Road junction	90.1%	10.1	-0.2%	115.6%	50.3	-28.4%
2035 Future Year Base (including committed) and development						
Coote Lane junction	98.8%	40.3	-9.8%	106.5%	25	-18.3%
Brownedge Road junction	84.8%	5.9	6.1%	98.5%	10.2	-9.4%
Jubilee Road junction	93.8%	13.1	-4.2%	115.6%	50.5	-28.5%

Note: The results shown for each junction display the arm with highest degree of saturation

A582 Flensburg Way/A582 Croston Road/Fidler Lane/Croston Road roundabout

Table 13: A582 Flensburg Way/A582 Croston Rd/Fidler Ln/Croston Rd roundabout								
	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
2018 Observed Year								
Croston Road	3.7	10.63	0.79	B	46.9	95.12	1.04	F
Fidler Lane	0	7.76	0.01	A	0	11.97	0.02	B
Croston Road	0.9	8.68	0.49	A	0.4	6.91	0.28	A
Flensburg Way	2	7.21	0.67	A	2	6.72	0.67	A
2035 Future Year Base (including committed)								
Croston Road	48.2	97.83	1.04	F	511.4	1082.16	1.45	F
Fidler Lane	0	11.79	0.02	B	0	12.43	0.03	B
Croston Road	3.9	27.79	0.81	D	0.6	8.12	0.39	A
Flensburg Way	52.2	113.08	1.05	F	12.1	30.92	0.94	D
2035 Future Year Base (including committed) and development								
Croston Road	137.6	291.74	1.16	F	614.2	1291.04	1.51	F
Fidler Lane	0	12	0.03	B	0	12.43	0.03	B
Croston Road	4.6	32.57	0.84	D	0.6	8.29	0.39	A
Flensburg Way	142.6	317.9	1.18	F	29.4	65.48	1	F

A582 Croston Road/A582 Farington Road/Centurion Way roundabout

Table 14: A582 Croston Road/A582 Farington Road/Centurion Way roundabout								
	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
2018 Observed Year								
Croston Road	0.7	7.06	0.42	A	0.5	6.17	0.32	A
Farington Road	97.3	241.23	1.14	F	129.1	337.40	1.18	F
Centurion Way	0.3	3.69	0.20	A	0.8	5.51	0.43	A
Croston Road	39.6	99.24	1.03	F	19.0	55.91	0.98	F
2035 Future Year Base (including committed)								
Croston Road	1	8.4	0.49	A	0.6	7.22	0.38	A
Farington Road	411.1	1087.34	1.46	F	678.5	1741.38	1.67	F
Centurion Way	0.3	3.95	0.24	A	1	6.43	0.5	A
Croston Road	487	1224.44	1.5	F	256	672.38	1.32	F
2035 Future Year Base (including committed) and development								
Croston Road	1	8.6	0.5	A	0.6	7.33	0.39	A
Farington Road	469.7	1237.5	1.51	F	876.4	2353.3	1.77	F
Centurion Way	0.3	3.99	0.25	A	1.1	6.71	0.53	A
Croston Road	677.2	1679.56	1.64	F	342.4	883.13	1.39	F

A582 Lostock Lane/A582 Farington Road/A5083 Stanifield Lane/B5254 Watkin Lane signalised roundabout

Table 15: A582 Lostock Ln/Farington Rd/A5083 Stanifield Ln/B5254 Watkin Ln signal r'bout				
	AM Peak		PM Peak	
	Degree of Saturation (%)	Mean Max Queue (pcu)	Deg Degree of Saturation (%)	Mean Max Queue (pcu)
2018 Observed Year				
B5254 Watkin Lane	68.10%	6.5	97.30%	18.1
A582 Lostock Lane	58.90%	7.2	90.70%	14.1
A5083 Stanifield Ln	60.90%	5.3	70.60%	6.6
A582 Farington Rd	91.30%	13.7	97.30%	19.2
PRC (%) 50 sec cycle time	-1.40%		-8.10%	
2035 Future Year Base (including committed)				
B5254 Watkin Lane	103.90%	39.5	102.60%	33.4
A582 Lostock Lane	54.80%	6.1	64.30%	8.1
A5083 Stanifield Ln	78.20%	6.8	92.60%	10.6
A582 Farington Rd	88.70%	10.9	99.50%	18.7
PRC (%) 50 sec cycle time	-15.40%		-14.00%	
2035 Future Year Base (including committed) and development				
B5254 Watkin Lane	110.70%	67.3	126.70%	124.3
A582 Lostock Lane	56.50%	6.6	96.40%	22.1
A5083 Stanifield Ln	78.20%	6.8	84.90%	8.2
A582 Farington Rd	82.10%	9.5	97.10%	16.4
PRC (%) 50 sec cycle time	-23.00%		-40.80%	

Note: The results shown for each arm display the lane with the highest degree of saturation

Sainsburys Roundabout M65/A6/A582 signalised

Table 17: Sainsburys Roundabout M65/A6/A582 signalised				
	AM Peak		PM Peak	
	Degree of Saturation (%)	Mean Max Queue (pcu)	Degree of Saturation (%)	Mean Max Queue (pcu)
2018 Observed Year				
A6 London Way	62.40%	6.0	80.00%	8.0
A6 Lostock Lane	82.80%	8.3	105.20%	9.1
M65	85.00%	9.4	83.60%	8.2
A582 Lostock Lane	77.70%	9.8	83.30%	9.8
PRC (%) 50 sec cycle time	5.80%		-16.90%	
2035 Future Year Base (including committed)				
A6 London Way	87.90%	9.3	94.10%	12.4
A6 Lostock Lane	99.90%	8.1	117.50%	63.5
M65	82.20%	9.7	87.70%	10.2
A582 Lostock Lane	116.00%	80.7	120.70%	77.7
PRC (%) 50 sec cycle time	-28.80%		-34.20%	
2035 Future Year Base (including committed) and development				
A6 London Way	82.50%	8.3	88.50%	10.4
A6 Lostock Lane	100.50%	9.2	131.40%	71.2
M65	81.30%	9.5	94.80%	14.1
A582 Lostock Lane	127.40%	119.1	123.90%	87.4
PRC (%) 50 sec cycle time	-41.50%		-46.00%	

Note: Results shown for each arm display the approaches lane with the highest degree of saturation

Department for Levelling Up, Housing & Communities

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RIGHT TO CHALLENGE THE DECISION IN THE HIGH COURT

These notes are provided for guidance only and apply only to challenges under the legislation specified. If you require further advice on making any High Court challenge, or making an application for Judicial Review, you should consult a solicitor or other advisor or contact the Crown Office at the Royal Courts of Justice, Queens Bench Division, Strand,London,WC2 2LL (0207 947 6000).

The attached decision is final unless it is successfully challenged in the Courts. The Secretary of State cannot amend or interpret the decision. It may be redetermined by the Secretary of State only if the decision is quashed by the Courts. However, if it is redetermined, it does not necessarily follow that the original decision will be reversed.

SECTION 1: PLANNING APPEALS AND CALLED-IN PLANNING APPLICATIONS

The decision may be challenged by making an application for permission to the High Court under section 288 of the Town and Country Planning Act 1990 (the TCP Act).

Challenges under Section 288 of the TCP Act
With the permission of the High Court under section 288 of the TCP Act, decisions on called-in applications under section 77 of the TCP Act (planning), appeals under section 78 (planning) may be challenged. Any person aggrieved by the decision may question the validity of the decision on the grounds that it is not within the powers of the Act or that any of the relevant requirements have not been complied with in relation to the decision. An application for leave under this section must be made within six weeks from the day after the date of the decision.

SECTION 2: ENFORCEMENT APPEALS

Challenges under Section 289 of the TCP Act
Decisions on recovered enforcement appeals under all grounds can be challenged under section 289 of the TCP Act. To challenge the enforcement decision, permission must first be obtained from the Court. If the Court does not consider that there is an arguable case, it may refuse permission. Application for leave to make a challenge must be received by the Administrative Court within 28 days of the decision, unless the Court extends this period.

SECTION 3: AWARDS OF COSTS

A challenge to the decision on an application for an award of costs which is connected with a decision under section 77 or 78 of the TCP Act can be made under section 288 of the TCP Act if permission of the High Court is granted.

SECTION 4: INSPECTION OF DOCUMENTS

Where an inquiry or hearing has been held any person who is entitled to be notified of the decision has a statutory right to view the documents, photographs and plans listed in the appendix to the Inspector's report of the inquiry or hearing within 6 weeks of the day after the date of the decision. If you are such a person and you wish to view the documents you should get in touch with the office at the address from which the decision was issued, as shown on the letterhead on the decision letter, quoting the reference number and stating the day and time you wish to visit. At least 3 days notice should be given, if possible.

Appendix IDR3 Matalan Roundabout Modelling – Sensitivity Tests

Land North of Possingham Farmhouse, Ashford, Great Chart, Kent

Hodson Development Ltd

SLR Project No.: 425.001542.00001

24 September 2024

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Matalan Roundabout (Existing) v4.0.j10
Path: X:\Projects\220000\226730 - Possingham Farm\Modelling\Modelling in Response to KCC\Modelling - Escort Education Only
Report generation date: 18/09/2024 13:56:51

Summary of junction performance

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
	2023 Observed					
1 - A28 (NE)	11.0	32.33	0.92	13.7	39.57	0.94
2 - Brookfield Road (SE)	17.8	75.18	0.98	0.5	2.02	0.31
3 - A28 (SW)	10.2	84.54	0.95	0.6	3.70	0.37
4 - Chart Road (NW)	7.6	94.72	0.93	0.2	4.68	0.18
	2023 Obs + Cttd					
1 - A28 (NE)	233.1	518.62	1.16	460.1	1024.09	1.32
2 - Brookfield Road (SE)	259.5	1118.89	1.45	149.9	660.86	1.22
3 - A28 (SW)	429.1	2471.69	1.85	263.1	1307.92	1.47
4 - Chart Road (NW)	91.8	1405.17	1.50	16.5	362.43	1.07
	2023 Obs + Cttd + Dev					
1 - A28 (NE)	255.7	568.38	1.18	535.0	1193.93	1.38
2 - Brookfield Road (SE)	264.8	1141.74	1.48	158.1	685.18	1.25
3 - A28 (SW)	491.7	2791.27	1.96	304.3	1492.87	1.54
4 - Chart Road (NW)	96.7	1518.31	1.54	16.6	362.47	1.07
	2023 Obs + Cttd + Dev (Sens.Test)					
1 - A28 (NE)	265.1	588.90	1.18	549.5	1226.61	1.39
2 - Brookfield Road (SE)	266.8	1150.56	1.49	159.5	689.25	1.25
3 - A28 (SW)	520.5	2936.71	2.00	309.7	1516.92	1.54
4 - Chart Road (NW)	98.7	1565.91	1.56	16.5	362.23	1.07
	2032 Base + Cttd					
1 - A28 (NE)	321.7	711.74	1.23	557.3	1239.99	1.39
2 - Brookfield Road (SE)	301.0	1253.16	1.52	187.0	788.28	1.29
3 - A28 (SW)	473.3	2791.92	1.96	328.9	1721.02	1.62
4 - Chart Road (NW)	115.7	1819.37	1.66	20.4	415.63	1.10
	2032 Base + Cttd + Dev					
1 - A28 (NE)	344.5	761.93	1.24	631.9	1409.82	1.45
2 - Brookfield Road (SE)	305.7	1272.74	1.55	196.1	815.45	1.31
3 - A28 (SW)	536.8	3120.24	2.06	370.4	1906.29	1.68
4 - Chart Road (NW)	120.5	1944.59	1.70	20.4	416.27	1.11
	2032 Base + Cttd + Dev (Sens.Test)					
1 - A28 (NE)	353.8	782.53	1.25	646.4	1442.59	1.46
2 - Brookfield Road (SE)	307.6	1280.95	1.56	197.8	820.91	1.31
3 - A28 (SW)	565.7	3267.50	2.11	375.6	1928.68	1.69
4 - Chart Road (NW)	122.5	2002.02	1.72	20.4	416.06	1.11

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.

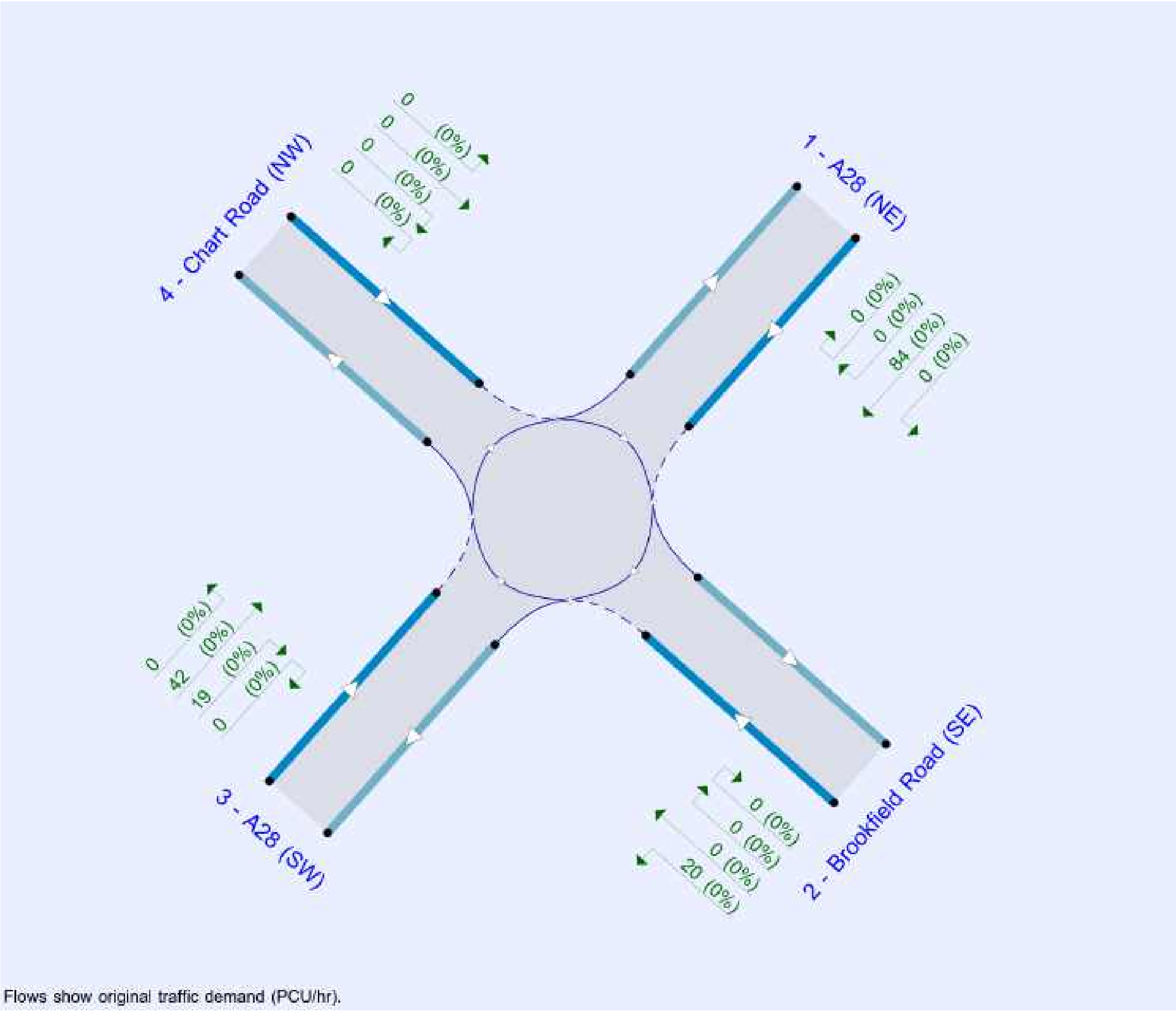
File summary

File Description

Title	Possingham Farm, Ashford
Location	Matalan Roundabout
Site number	
Date	18/09/2024
Version	Dev Flows -> Escort Education Only
Status	Existing Junction Layout
Identifier	
Client	
Jobnumber	
Enumerator	David Noyce
Description	Observed flows from surveys of Tuesday, 28th March 2023. A28(NE) exit restriction based on observations and is directly related to the A28(SW) entry capacity of the Louden Way signalised juntion.

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D1	2023 Observed	AM	FLAT	08:00	09:00	60	15	✓		
D2	2023 Observed	PM	FLAT	16:30	17:30	60	15	✓		
D3	: Committed	AM	FLAT	08:00	09:00	60	15			
D4	: Committed	PM	FLAT	16:30	17:30	60	15			
D5	: Dev	AM	FLAT	08:00	09:00	60	15			
D6	: Dev	PM	FLAT	16:30	17:30	60	15			
D7	: Dev (Sensitivity Test)	AM	FLAT	08:00	09:00	60	15			
D8	: Dev (Sensitivity Test)	PM	FLAT	16:30	17:30	60	15			
D10	2023 Obs + Cttd	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3
D11	2023 Obs + Cttd	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4
D12	2023 Obs + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D5
D13	2023 Obs + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D6
D14	2023 Obs + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D7
D15	2023 Obs + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D8
D20	2032 Base	AM	FLAT	08:00	09:00	60	15		Simple	D1*1.070
D21	2032 Base	PM	FLAT	16:30	17:30	60	15		Simple	D2*1.073
D22	2032 Base + Cttd	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3
D23	2032 Base + Cttd	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4
D24	2032 Base + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D5
D25	2032 Base + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D6
D26	2032 Base + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D7
D27	2032 Base + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D8

Analysis Set Details

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

2023 Observed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	59.89	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	59.89	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	6.89	10.0	19.0	45.0	28.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	25.0	45.0	23.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1223
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.589	1498
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.640	1716

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 period length (min)	Time segment length (min)	Run automatically
D1	2023 Observed	AM	FLAT	08:00	09:00	60	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1290	100.000
2 - Brookfield Road (SE)		FLAT	✓	879	100.000
3 - A28 (SW)		FLAT	✓	460	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	612	637	40
	2 - Brookfield Road (SE)	653	0	201	26
	3 - A28 (SW)	372	81	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	8	5	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.92	32.33	11.0	D	1290	1290
2 - Brookfield Road (SE)	0.98	75.18	17.8	F	879	879
3 - A28 (SW)	0.95	84.54	10.2	F	460	460
4 - Chart Road (NW)	0.93	94.72	7.6	F	308	308

Main Results for each time segment

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 - A28 (NE)	1290	322	167	1399	0.922	1254	1223	0.0	9.0	22.060	C
2 - Brookfield Road (SE)	879	220	687	1071	0.821	862	734	0.0	4.3	16.662	C
3 - A28 (SW)	460	115	705	635	0.725	450	845	0.0	2.6	19.935	C
4 - Chart Road (NW)	308	77	1090	454	0.679	300	64	0.0	2.0	22.954	C

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 - A28 (NE)	1290	322	168	1399	0.922	1285	1223	9.0	10.2	30.299	D
2 - Brookfield Road (SE)	879	220	703	951	0.925	862	749	4.3	8.7	35.712	E
3 - A28 (SW)	460	115	705	533	0.863	450	860	2.6	5.2	41.612	E
4 - Chart Road (NW)	308	77	1090	371	0.830	301	65	2.0	3.9	47.236	E

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 - A28 (NE)	1290	322	168	1399	0.922	1287	1223	10.2	10.7	31.678	D
2 - Brookfield Road (SE)	879	220	705	911	0.965	861	750	8.7	13.2	55.702	F
3 - A28 (SW)	460	115	705	500	0.920	450	861	5.2	7.7	63.697	F
4 - Chart Road (NW)	308	77	1090	344	0.895	301	65	3.9	5.7	71.630	F

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 - A28 (NE)	1290	322	168	1399	0.922	1288	1223	10.7	11.0	32.335	D
2 - Brookfield Road (SE)	879	220	705	893	0.984	861	751	13.2	17.8	75.177	F
3 - A28 (SW)	460	115	705	485	0.949	451	862	7.7	10.2	84.540	F
4 - Chart Road (NW)	308	77	1090	332	0.930	301	65	5.7	7.6	94.719	F

2023 Observed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	19.59	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	19.59	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2023 Observed	PM	FLAT	16:30	17:30	60	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1319	100.000
2 - Brookfield Road (SE)		FLAT	✓	823	100.000
3 - A28 (SW)		FLAT	✓	584	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	630	633	55
	2 - Brookfield Road (SE)	609	1	157	56
	3 - A28 (SW)	482	98	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	0.94	39.57	13.7	E	1319	1319
2 - Brookfield Road (SE)	0.31	2.02	0.5	A	823	823
3 - A28 (SW)	0.37	3.70	0.6	A	584	584
4 - Chart Road (NW)	0.18	4.68	0.2	A	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1319	330	163	1402	0.941	1277	1199	0.0	10.4	24.269	C
2 - Brookfield Road (SE)	823	206	678	2658	0.310	821	763	0.0	0.5	1.996	A
3 - A28 (SW)	584	146	719	1575	0.371	582	780	0.0	0.6	3.675	A
4 - Chart Road (NW)	174	44	1189	955	0.182	173	112	0.0	0.2	4.658	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1319	330	164	1401	0.941	1311	1202	10.4	12.2	35.676	E
2 - Brookfield Road (SE)	823	206	696	2640	0.312	823	780	0.5	0.5	2.018	A
3 - A28 (SW)	584	146	722	1573	0.372	584	796	0.6	0.6	3.700	A
4 - Chart Road (NW)	174	44	1192	952	0.183	174	114	0.2	0.2	4.682	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 - A28 (NE)	1319	330	164	1401	0.941	1315	1202	12.2	13.2	38.231	E
2 - Brookfield Road (SE)	823	206	697	2638	0.312	823	782	0.5	0.5	2.020	A
3 - A28 (SW)	584	146	722	1573	0.372	584	798	0.6	0.6	3.700	A
4 - Chart Road (NW)	174	44	1192	952	0.183	174	114	0.2	0.2	4.682	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 - A28 (NE)	1319	330	164	1401	0.941	1316	1202	13.2	13.7	39.571	E
2 - Brookfield Road (SE)	823	206	698	2638	0.312	823	782	0.5	0.5	2.021	A
3 - A28 (SW)	584	146	722	1573	0.372	584	799	0.6	0.6	3.701	A
4 - Chart Road (NW)	174	44	1192	952	0.183	174	114	0.2	0.2	4.682	A

2023 Obs + Cttd, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1233.20	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1233.20	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D10	2023 Obs + Cttd	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1661	100.000
2 - Brookfield Road (SE)		FLAT	✓	965	100.000
3 - A28 (SW)		FLAT	✓	1004	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	653	967	40
	2 - Brookfield Road (SE)	739	0	201	26
	3 - A28 (SW)	916	81	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	3	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	3	5	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	1.16	518.62	233.1	F	1661	1661
2 - Brookfield Road (SE)	1.45	1118.89	259.5	F	965	965
3 - A28 (SW)	1.85	2471.69	429.1	F	1004	1004
4 - Chart Road (NW)	1.50	1405.17	91.8	F	308	308

Main Results for each time segment

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 - A28 (NE)	1661	415	114	1431	1.161	1408	1223	0.0	63.2	88.117	F
2 - Brookfield Road (SE)	965	241	874	664	1.454	655	647	0.0	77.5	219.251	F
3 - A28 (SW)	1004	251	553	619	1.622	613	977	0.0	97.9	301.072	F
4 - Chart Road (NW)	308	77	1114	233	1.322	223	52	0.0	21.4	198.194	F

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 - A28 (NE)	1661	415	113	1432	1.160	1430	1223	63.2	120.7	238.243	F
2 - Brookfield Road (SE)	965	241	888	683	1.414	682	655	77.5	148.3	588.522	F
3 - A28 (SW)	1004	251	575	588	1.708	588	995	97.9	202.1	956.570	F
4 - Chart Road (NW)	308	77	1110	226	1.363	225	53	21.4	42.1	546.646	F

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 - A28 (NE)	1661	415	106	1435	1.157	1435	1223	120.7	177.2	379.000	F
2 - Brookfield Road (SE)	965	241	890	731	1.321	731	652	148.3	206.9	868.237	F
3 - A28 (SW)	1004	251	614	558	1.801	558	1007	202.1	313.7	1694.499	F
4 - Chart Road (NW)	308	77	1117	213	1.450	212	54	42.1	66.1	958.129	F

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 - A28 (NE)	1661	415	103	1437	1.155	1437	1223	177.2	233.1	518.618	F
2 - Brookfield Road (SE)	965	241	890	755	1.279	755	650	206.9	259.5	1118.887	F
3 - A28 (SW)	1004	251	633	543	1.850	543	1012	313.7	429.1	2471.693	F
4 - Chart Road (NW)	308	77	1121	206	1.499	206	55	66.1	91.8	1405.169	F

2023 Obs + Cttd, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	980.32	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	980.32	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D11	2023 Obs + Cttd	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1879	100.000
2 - Brookfield Road (SE)		FLAT	✓	865	100.000
3 - A28 (SW)		FLAT	✓	920	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	700	1123	55
	2 - Brookfield Road (SE)	651	1	157	56
	3 - A28 (SW)	818	98	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	1	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	1	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.32	1024.09	460.1	F	1879	1879
2 - Brookfield Road (SE)	1.22	660.86	149.9	F	865	865
3 - A28 (SW)	1.47	1307.92	263.1	F	920	920
4 - Chart Road (NW)	1.07	362.43	16.5	F	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1879	470	128	1423	1.321	1410	1223	0.0	117.1	154.329	F
2 - Brookfield Road (SE)	865	216	894	707	1.223	691	645	0.0	43.4	124.250	F
3 - A28 (SW)	920	230	608	698	1.318	687	977	0.0	58.5	164.583	F
4 - Chart Road (NW)	174	44	1206	165	1.054	145	88	0.0	7.3	125.841	F

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 - A28 (NE)	1879	470	130	1421	1.322	1421	1223	117.1	231.4	446.406	F
2 - Brookfield Road (SE)	865	216	901	707	1.223	706	650	43.4	83.1	332.333	F
3 - A28 (SW)	920	230	621	666	1.382	666	986	58.5	122.2	502.748	F
4 - Chart Road (NW)	174	44	1197	163	1.071	156	90	7.3	11.8	253.872	F

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 - A28 (NE)	1879	470	130	1421	1.322	1421	1223	231.4	345.8	735.092	F
2 - Brookfield Road (SE)	865	216	901	720	1.201	720	650	83.1	119.4	510.417	F
3 - A28 (SW)	920	230	632	650	1.416	650	989	122.2	189.7	888.150	F
4 - Chart Road (NW)	174	44	1191	167	1.044	162	91	11.8	14.8	323.768	F

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 - A28 (NE)	1879	470	130	1422	1.322	1422	1223	345.8	460.1	1024.090	F
2 - Brookfield Road (SE)	865	216	902	743	1.164	742	649	119.4	149.9	660.863	F
3 - A28 (SW)	920	230	651	627	1.468	627	994	189.7	263.1	1307.917	F
4 - Chart Road (NW)	174	44	1185	172	1.012	167	92	14.8	16.5	362.428	F

2023 Obs + Cttd + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1371.78	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1371.78	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D12	2023 Obs + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1683	100.000
2 - Brookfield Road (SE)		FLAT	✓	968	100.000
3 - A28 (SW)		FLAT	✓	1077	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	653	989	40
	2 - Brookfield Road (SE)	739	0	204	26
	3 - A28 (SW)	978	92	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	3	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	3	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	1.18	568.38	255.7	F	1683	1683
2 - Brookfield Road (SE)	1.48	1141.74	264.8	F	968	968
3 - A28 (SW)	1.96	2791.27	491.7	F	1077	1077
4 - Chart Road (NW)	1.54	1518.31	96.7	F	308	308

Main Results for each time segment

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 - A28 (NE)	1683	421	117	1429	1.178	1408	1223	0.0	68.7	94.800	F
2 - Brookfield Road (SE)	968	242	881	653	1.482	645	644	0.0	80.8	230.318	F
3 - A28 (SW)	1077	269	543	634	1.699	628	983	0.0	112.3	336.512	F
4 - Chart Road (NW)	308	77	1121	230	1.343	219	51	0.0	22.2	207.843	F

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 - A28 (NE)	1683	421	114	1431	1.176	1430	1223	68.7	131.9	259.081	F
2 - Brookfield Road (SE)	968	242	894	682	1.420	682	650	80.8	152.4	607.236	F
3 - A28 (SW)	1077	269	573	598	1.802	598	1004	112.3	232.1	1082.802	F
4 - Chart Road (NW)	308	77	1118	220	1.403	219	52	22.2	44.5	588.747	F

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 - A28 (NE)	1683	421	108	1434	1.173	1434	1223	131.9	194.1	414.281	F
2 - Brookfield Road (SE)	968	242	896	732	1.324	731	646	152.4	211.7	888.626	F
3 - A28 (SW)	1077	269	612	566	1.904	566	1015	232.1	360.0	1919.004	F
4 - Chart Road (NW)	308	77	1124	207	1.487	207	54	44.5	69.8	1036.864	F

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 - A28 (NE)	1683	421	105	1436	1.172	1436	1223	194.1	255.7	568.377	F
2 - Brookfield Road (SE)	968	242	897	756	1.281	756	644	211.7	264.8	1141.737	F
3 - A28 (SW)	1077	269	631	551	1.956	551	1021	360.0	491.7	2791.273	F
4 - Chart Road (NW)	308	77	1127	201	1.537	200	54	69.8	96.7	1518.309	F

2023 Obs + Cttd + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1118.03	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1118.03	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D13	2023 Obs + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1949	100.000
2 - Brookfield Road (SE)		FLAT	✓	882	100.000
3 - A28 (SW)		FLAT	✓	974	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	700	1193	55
	2 - Brookfield Road (SE)	651	1	174	56
	3 - A28 (SW)	855	115	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	1	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	1	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.38	1193.93	535.0	F	1949	1949
2 - Brookfield Road (SE)	1.25	685.18	158.1	F	882	882
3 - A28 (SW)	1.54	1492.87	304.3	F	974	974
4 - Chart Road (NW)	1.07	362.47	16.6	F	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1949	487	138	1417	1.375	1406	1223	0.0	135.6	178.017	F
2 - Brookfield Road (SE)	882	220	910	708	1.245	693	634	0.0	47.1	132.805	F
3 - A28 (SW)	974	244	597	716	1.360	706	1006	0.0	67.2	182.497	F
4 - Chart Road (NW)	174	44	1217	163	1.066	144	86	0.0	7.5	129.560	F

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 - A28 (NE)	1949	487	139	1416	1.376	1416	1223	135.6	268.8	518.790	F
2 - Brookfield Road (SE)	882	220	917	715	1.234	714	638	47.1	89.1	352.379	F
3 - A28 (SW)	974	244	614	680	1.434	679	1016	67.2	140.9	566.893	F
4 - Chart Road (NW)	174	44	1206	162	1.072	156	88	7.5	12.0	259.320	F

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 - A28 (NE)	1949	487	139	1416	1.376	1416	1223	268.8	402.0	856.353	F
2 - Brookfield Road (SE)	882	220	917	730	1.207	730	638	89.1	127.0	534.977	F
3 - A28 (SW)	974	244	627	661	1.474	661	1020	140.9	219.3	1011.508	F
4 - Chart Road (NW)	174	44	1200	167	1.041	162	89	12.0	14.9	326.456	F

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 - A28 (NE)	1949	487	138	1417	1.375	1417	1223	402.0	535.0	1193.927	F
2 - Brookfield Road (SE)	882	220	918	758	1.164	757	637	127.0	158.1	685.177	F
3 - A28 (SW)	974	244	649	634	1.536	634	1026	219.3	304.3	1492.868	F
4 - Chart Road (NW)	174	44	1193	173	1.008	168	90	14.9	16.6	362.466	F

2023 Obs + Cttd + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1435.22	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1435.22	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D14	2023 Obs + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1692	100.000
2 - Brookfield Road (SE)		FLAT	✓	969	100.000
3 - A28 (SW)		FLAT	✓	1110	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	653	998	40
	2 - Brookfield Road (SE)	739	0	205	26
	3 - A28 (SW)	1006	97	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	3	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	3	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	1.18	588.90	265.1	F	1692	1692
2 - Brookfield Road (SE)	1.49	1150.56	266.8	F	969	969
3 - A28 (SW)	2.00	2936.71	520.5	F	1110	1110
4 - Chart Road (NW)	1.56	1565.91	98.7	F	308	308

Main Results for each time segment

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 - A28 (NE)	1692	423	119	1428	1.184	1408	1223	0.0	71.0	97.578	F
2 - Brookfield Road (SE)	969	242	884	649	1.493	641	642	0.0	82.1	234.705	F
3 - A28 (SW)	1110	278	539	640	1.734	635	986	0.0	118.9	353.205	F
4 - Chart Road (NW)	308	77	1123	228	1.352	218	50	0.0	22.5	211.958	F

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 - A28 (NE)	1692	423	115	1430	1.183	1429	1223	71.0	136.5	267.700	F
2 - Brookfield Road (SE)	969	242	897	683	1.420	682	647	82.1	153.8	613.831	F
3 - A28 (SW)	1110	278	572	601	1.847	601	1007	118.9	246.2	1142.490	F
4 - Chart Road (NW)	308	77	1121	217	1.419	217	52	22.5	45.4	605.214	F

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 - A28 (NE)	1692	423	109	1434	1.180	1433	1223	136.5	201.1	428.876	F
2 - Brookfield Road (SE)	969	242	898	731	1.326	731	644	153.8	213.4	896.331	F
3 - A28 (SW)	1110	278	611	569	1.951	569	1019	246.2	381.5	2022.549	F
4 - Chart Road (NW)	308	77	1126	206	1.499	205	53	45.4	71.1	1067.885	F

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 - A28 (NE)	1692	423	106	1436	1.178	1436	1223	201.1	265.1	588.905	F
2 - Brookfield Road (SE)	969	242	899	756	1.283	756	642	213.4	266.8	1150.561	F
3 - A28 (SW)	1110	278	630	554	2.003	554	1024	381.5	520.5	2936.712	F
4 - Chart Road (NW)	308	77	1130	198	1.555	198	54	71.1	98.7	1565.911	F

2023 Obs + Cttd + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1141.44	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1141.44	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D15	2023 Obs + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1963	100.000
2 - Brookfield Road (SE)		FLAT	✓	885	100.000
3 - A28 (SW)		FLAT	✓	981	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	700	1207	55
	2 - Brookfield Road (SE)	651	1	177	56
	3 - A28 (SW)	860	117	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	1	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	1	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.39	1226.61	549.5	F	1963	1963
2 - Brookfield Road (SE)	1.25	689.25	159.5	F	885	885
3 - A28 (SW)	1.54	1516.92	309.7	F	981	981
4 - Chart Road (NW)	1.07	362.23	16.5	F	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1963	491	139	1416	1.386	1406	1223	0.0	139.2	182.586	F
2 - Brookfield Road (SE)	885	221	913	709	1.248	694	631	0.0	47.7	134.012	F
3 - A28 (SW)	981	245	596	718	1.366	708	1011	0.0	68.4	184.856	F
4 - Chart Road (NW)	174	44	1218	163	1.067	144	86	0.0	7.6	129.994	F

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 - A28 (NE)	1963	491	140	1415	1.387	1415	1223	139.2	276.0	532.738	F
2 - Brookfield Road (SE)	885	221	920	715	1.237	715	636	47.7	90.2	355.804	F
3 - A28 (SW)	981	245	613	682	1.439	682	1022	68.4	143.3	574.936	F
4 - Chart Road (NW)	174	44	1207	162	1.072	156	87	7.6	12.0	259.681	F

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 - A28 (NE)	1963	491	140	1415	1.387	1415	1223	276.0	412.9	879.684	F
2 - Brookfield Road (SE)	885	221	920	733	1.207	732	635	90.2	128.3	538.907	F
3 - A28 (SW)	981	245	627	662	1.482	662	1026	143.3	223.2	1027.617	F
4 - Chart Road (NW)	174	44	1201	167	1.040	162	88	12.0	14.9	326.408	F

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 - A28 (NE)	1963	491	139	1416	1.386	1416	1223	412.9	549.5	1226.610	F
2 - Brookfield Road (SE)	885	221	921	760	1.164	760	634	128.3	159.5	689.249	F
3 - A28 (SW)	981	245	649	635	1.545	635	1032	223.2	309.7	1516.919	F
4 - Chart Road (NW)	174	44	1194	173	1.008	168	90	14.9	16.5	362.231	F

2032 Base + Cttd, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1454.39	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1454.39	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D22	2032 Base + Cttd	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1751	100.000
2 - Brookfield Road (SE)		FLAT	✓	1027	100.000
3 - A28 (SW)		FLAT	✓	1037	100.000
4 - Chart Road (NW)		FLAT	✓	330	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	696	1012	43
	2 - Brookfield Road (SE)	785	0	215	27
	3 - A28 (SW)	942	87	9	0
	4 - Chart Road (NW)	241	66	22	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	3	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	3	5	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	1.23	711.74	321.7	F	1751	1751
2 - Brookfield Road (SE)	1.52	1253.16	301.0	F	1027	1027
3 - A28 (SW)	1.96	2791.92	473.3	F	1037	1037
4 - Chart Road (NW)	1.66	1819.37	115.7	F	330	330

Main Results for each time segment

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 - A28 (NE)	1751	438	117	1429	1.225	1412	1223	0.0	84.7	114.074	F
2 - Brookfield Road (SE)	1027	257	872	675	1.522	667	657	0.0	90.0	246.533	F
3 - A28 (SW)	1037	259	562	607	1.709	601	976	0.0	108.9	340.853	F
4 - Chart Road (NW)	330	82	1111	238	1.384	229	53	0.0	25.2	224.607	F

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 - A28 (NE)	1751	438	112	1432	1.223	1431	1223	84.7	164.5	319.205	F
2 - Brookfield Road (SE)	1027	257	882	706	1.455	705	661	90.0	170.3	654.687	F
3 - A28 (SW)	1037	259	593	576	1.801	576	995	108.9	224.2	1086.476	F
4 - Chart Road (NW)	330	82	1115	221	1.494	220	54	25.2	52.6	678.552	F

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 - A28 (NE)	1751	438	106	1435	1.220	1435	1223	164.5	243.4	516.112	F
2 - Brookfield Road (SE)	1027	257	884	752	1.366	751	658	170.3	239.2	968.343	F
3 - A28 (SW)	1037	259	630	547	1.896	547	1006	224.2	346.7	1918.616	F
4 - Chart Road (NW)	330	82	1121	208	1.584	208	55	52.6	83.0	1209.766	F

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 - A28 (NE)	1751	438	102	1438	1.218	1438	1223	243.4	321.7	711.739	F
2 - Brookfield Road (SE)	1027	257	884	780	1.317	780	655	239.2	301.0	1253.156	F
3 - A28 (SW)	1037	259	652	530	1.955	530	1012	346.7	473.3	2791.925	F
4 - Chart Road (NW)	330	82	1126	199	1.657	199	56	83.0	115.7	1819.372	F

Generated on 18/09/2024 13:57:01 using Junctions 10 (10.1.1.1905)

2032 Base + Cttd, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1213.22	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1213.22	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D23	2032 Base + Cttd	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1975	100.000
2 - Brookfield Road (SE)		FLAT	✓	925	100.000
3 - A28 (SW)		FLAT	✓	963	100.000
4 - Chart Road (NW)		FLAT	✓	187	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	746	1170	59
	2 - Brookfield Road (SE)	695	1	168	60
	3 - A28 (SW)	854	105	2	2
	4 - Chart Road (NW)	119	58	9	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	1	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	1	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.39	1239.99	557.3	F	1975	1975
2 - Brookfield Road (SE)	1.29	788.28	187.0	F	925	925
3 - A28 (SW)	1.62	1721.02	328.9	F	963	963
4 - Chart Road (NW)	1.10	415.63	20.4	F	187	187

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1975	494	131	1421	1.390	1411	1223	0.0	141.1	184.354	F
2 - Brookfield Road (SE)	925	231	887	717	1.291	704	655	0.0	55.3	150.686	F
3 - A28 (SW)	963	241	619	683	1.410	674	972	0.0	72.4	204.978	F
4 - Chart Road (NW)	187	47	1202	169	1.103	152	90	0.0	8.8	138.028	F

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 - A28 (NE)	1975	494	133	1420	1.391	1420	1223	141.1	279.9	538.364	F
2 - Brookfield Road (SE)	925	231	893	725	1.275	725	659	55.3	105.3	405.281	F
3 - A28 (SW)	963	241	637	646	1.490	646	981	72.4	151.6	643.472	F
4 - Chart Road (NW)	187	47	1191	170	1.099	165	92	8.8	14.2	283.159	F

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 - A28 (NE)	1975	494	133	1420	1.391	1420	1223	279.9	418.7	889.265	F
2 - Brookfield Road (SE)	925	231	893	746	1.240	746	659	105.3	150.0	614.732	F
3 - A28 (SW)	963	241	654	623	1.546	623	986	151.6	236.7	1162.928	F
4 - Chart Road (NW)	187	47	1183	176	1.058	173	93	14.2	17.7	360.688	F

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 - A28 (NE)	1975	494	131	1421	1.390	1421	1223	418.7	557.3	1239.985	F
2 - Brookfield Road (SE)	925	231	894	777	1.190	777	657	150.0	187.0	788.283	F
3 - A28 (SW)	963	241	679	594	1.621	594	992	236.7	328.9	1721.019	F
4 - Chart Road (NW)	187	47	1178	180	1.040	176	95	17.7	20.4	415.634	F

2032 Base + Cttd + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1594.75	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1594.75	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D24	2032 Base + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1773	100.000
2 - Brookfield Road (SE)		FLAT	✓	1030	100.000
3 - A28 (SW)		FLAT	✓	1110	100.000
4 - Chart Road (NW)		FLAT	✓	330	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	696	1034	43
	2 - Brookfield Road (SE)	785	0	218	27
	3 - A28 (SW)	1004	98	9	0
	4 - Chart Road (NW)	241	66	22	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	3	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	3	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	1.24	761.93	344.5	F	1773	1773
2 - Brookfield Road (SE)	1.55	1272.74	305.7	F	1030	1030
3 - A28 (SW)	2.06	3120.24	536.8	F	1110	1110
4 - Chart Road (NW)	1.70	1944.59	120.5	F	330	330

Main Results for each time segment

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 - A28 (NE)	1773	443	119	1428	1.242	1411	1223	0.0	90.3	121.050	F
2 - Brookfield Road (SE)	1030	257	878	665	1.548	658	653	0.0	93.0	256.251	F
3 - A28 (SW)	1110	277	553	620	1.788	615	983	0.0	123.6	378.431	F
4 - Chart Road (NW)	330	82	1117	235	1.406	226	52	0.0	26.0	235.155	F

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 - A28 (NE)	1773	443	113	1431	1.239	1431	1223	90.3	175.9	340.527	F
2 - Brookfield Road (SE)	1030	257	888	707	1.456	707	656	93.0	173.6	669.137	F
3 - A28 (SW)	1110	277	592	583	1.904	583	1003	123.6	255.3	1220.622	F
4 - Chart Road (NW)	330	82	1122	215	1.532	215	54	26.0	54.8	722.238	F

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 - A28 (NE)	1773	443	108	1435	1.236	1434	1223	175.9	260.5	551.880	F
2 - Brookfield Road (SE)	1030	257	890	752	1.370	752	652	173.6	243.2	985.050	F
3 - A28 (SW)	1110	277	627	555	1.999	555	1014	255.3	393.9	2151.365	F
4 - Chart Road (NW)	330	82	1128	203	1.624	203	55	54.8	86.5	1294.038	F

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 - A28 (NE)	1773	443	104	1437	1.234	1437	1223	260.5	344.5	761.929	F
2 - Brookfield Road (SE)	1030	257	890	780	1.320	780	650	243.2	305.7	1272.743	F
3 - A28 (SW)	1110	277	650	538	2.061	538	1020	393.9	536.8	3120.241	F
4 - Chart Road (NW)	330	82	1133	194	1.701	194	56	86.5	120.5	1944.588	F

2032 Base + Cttd + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1352.47	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1352.47	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D25	2032 Base + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	2045	100.000
2 - Brookfield Road (SE)		FLAT	✓	942	100.000
3 - A28 (SW)		FLAT	✓	1017	100.000
4 - Chart Road (NW)		FLAT	✓	187	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	746	1240	59
	2 - Brookfield Road (SE)	695	1	185	60
	3 - A28 (SW)	891	122	2	2
	4 - Chart Road (NW)	119	58	9	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	1	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	1	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.45	1409.82	631.9	F	2045	2045
2 - Brookfield Road (SE)	1.31	815.45	196.1	F	942	942
3 - A28 (SW)	1.68	1906.29	370.4	F	1017	1017
4 - Chart Road (NW)	1.11	416.27	20.4	F	187	187

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	2045	511	140	1415	1.445	1407	1223	0.0	159.6	208.298	F
2 - Brookfield Road (SE)	942	235	902	718	1.311	706	644	0.0	58.9	158.959	F
3 - A28 (SW)	1017	254	609	700	1.453	691	1000	0.0	81.4	223.713	F
4 - Chart Road (NW)	187	47	1212	168	1.111	151	88	0.0	9.0	140.832	F

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 - A28 (NE)	2045	511	141	1415	1.446	1414	1223	159.6	317.2	611.082	F
2 - Brookfield Road (SE)	942	235	908	730	1.289	730	648	58.9	111.9	425.805	F
3 - A28 (SW)	1017	254	628	661	1.538	661	1010	81.4	170.5	710.430	F
4 - Chart Road (NW)	187	47	1199	170	1.100	165	90	9.0	14.4	287.434	F

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 - A28 (NE)	2045	511	141	1415	1.445	1415	1223	317.2	474.7	1010.582	F
2 - Brookfield Road (SE)	942	235	909	760	1.240	759	647	111.9	157.5	637.467	F
3 - A28 (SW)	1017	254	652	630	1.614	630	1016	170.5	267.2	1273.125	F
4 - Chart Road (NW)	187	47	1190	177	1.055	173	92	14.4	17.8	362.333	F

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 - A28 (NE)	2045	511	139	1416	1.444	1416	1223	474.7	631.9	1409.825	F
2 - Brookfield Road (SE)	942	235	910	787	1.196	787	645	157.5	196.1	815.449	F
3 - A28 (SW)	1017	254	675	604	1.683	604	1023	267.2	370.4	1906.295	F
4 - Chart Road (NW)	187	47	1185	180	1.039	176	94	17.8	20.4	416.271	F

2032 Base + Cttd + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1658.90	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1658.90	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D26	2032 Base + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1782	100.000
2 - Brookfield Road (SE)		FLAT	✓	1031	100.000
3 - A28 (SW)		FLAT	✓	1143	100.000
4 - Chart Road (NW)		FLAT	✓	330	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	696	1043	43
	2 - Brookfield Road (SE)	785	0	219	27
	3 - A28 (SW)	1032	103	9	0
	4 - Chart Road (NW)	241	66	22	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	3	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	3	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	1.25	782.53	353.8	F	1782	1782
2 - Brookfield Road (SE)	1.56	1280.95	307.6	F	1031	1031
3 - A28 (SW)	2.11	3267.50	565.7	F	1143	1143
4 - Chart Road (NW)	1.72	2002.02	122.5	F	330	330

Main Results for each time segment

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 - A28 (NE)	1782	445	121	1427	1.249	1411	1223	0.0	92.7	123.930	F
2 - Brookfield Road (SE)	1031	258	880	662	1.558	654	652	0.0	94.1	260.162	F
3 - A28 (SW)	1143	286	550	626	1.825	621	985	0.0	130.3	395.814	F
4 - Chart Road (NW)	330	82	1119	233	1.416	224	52	0.0	26.4	239.827	F

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 - A28 (NE)	1782	445	114	1431	1.245	1430	1223	92.7	180.5	349.313	F
2 - Brookfield Road (SE)	1031	258	891	708	1.457	708	654	94.1	175.0	675.098	F
3 - A28 (SW)	1143	286	592	586	1.951	586	1006	130.3	269.5	1281.607	F
4 - Chart Road (NW)	330	82	1124	213	1.548	213	53	26.4	55.7	741.390	F

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 - A28 (NE)	1782	445	108	1434	1.242	1434	1223	180.5	267.5	566.584	F
2 - Brookfield Road (SE)	1031	258	892	751	1.372	751	650	175.0	244.9	992.008	F
3 - A28 (SW)	1143	286	627	559	2.045	559	1017	269.5	415.5	2256.071	F
4 - Chart Road (NW)	330	82	1131	201	1.643	201	55	55.7	88.0	1332.214	F

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 - A28 (NE)	1782	445	104	1437	1.240	1436	1223	267.5	353.8	782.535	F
2 - Brookfield Road (SE)	1031	258	893	780	1.321	780	648	244.9	307.6	1280.951	F
3 - A28 (SW)	1143	286	649	542	2.109	542	1024	415.5	565.7	3267.498	F
4 - Chart Road (NW)	330	82	1136	192	1.722	191	55	88.0	122.5	2002.024	F

2032 Base + Cttd + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	1375.86	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1375.86	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D27	2032 Base + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	2059	100.000
2 - Brookfield Road (SE)		FLAT	✓	945	100.000
3 - A28 (SW)		FLAT	✓	1024	100.000
4 - Chart Road (NW)		FLAT	✓	187	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	746	1254	59
	2 - Brookfield Road (SE)	695	1	188	60
	3 - A28 (SW)	896	124	2	2
	4 - Chart Road (NW)	119	58	9	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	1	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	1	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.46	1442.59	646.4	F	2059	2059
2 - Brookfield Road (SE)	1.31	820.91	197.8	F	945	945
3 - A28 (SW)	1.69	1928.68	375.6	F	1024	1024
4 - Chart Road (NW)	1.11	416.06	20.4	F	187	187

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	2059	515	141	1415	1.455	1406	1223	0.0	163.2	212.907	F
2 - Brookfield Road (SE)	945	236	906	719	1.314	707	641	0.0	59.5	160.133	F
3 - A28 (SW)	1024	256	607	702	1.459	694	1005	0.0	82.6	226.178	F
4 - Chart Road (NW)	187	47	1213	168	1.112	151	88	0.0	9.0	141.163	F

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 - A28 (NE)	2059	515	142	1414	1.456	1414	1223	163.2	324.5	625.073	F
2 - Brookfield Road (SE)	945	236	911	731	1.292	731	645	59.5	113.0	428.965	F
3 - A28 (SW)	1024	256	627	663	1.544	663	1015	82.6	172.9	718.924	F
4 - Chart Road (NW)	187	47	1200	170	1.101	165	89	9.0	14.4	287.923	F

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 - A28 (NE)	2059	515	142	1415	1.456	1414	1223	324.5	485.6	1033.958	F
2 - Brookfield Road (SE)	945	236	912	761	1.241	761	644	113.0	158.9	641.653	F
3 - A28 (SW)	1024	256	651	632	1.622	631	1022	172.9	271.1	1289.113	F
4 - Chart Road (NW)	187	47	1191	177	1.055	173	91	14.4	17.8	362.625	F

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 - A28 (NE)	2059	515	140	1416	1.454	1416	1223	485.6	646.4	1442.593	F
2 - Brookfield Road (SE)	945	236	913	789	1.197	789	642	158.9	197.8	820.910	F
3 - A28 (SW)	1024	256	673	606	1.690	606	1028	271.1	375.6	1928.684	F
4 - Chart Road (NW)	187	47	1186	180	1.039	176	93	17.8	20.4	416.061	F

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Matalan Roundabout (Existing) v4.1.j10
Path: X:\Projects\220000\226730 - Possingham Farm\Modelling\Modelling in Response to KCC\Modelling - Escort Education Only
Report generation date: 19/09/2024 10:35:13

Summary of junction performance

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
	2023 Observed					
1 - A28 (NE)	11.0	32.33	0.92	13.7	39.57	0.94
2 - Brookfield Road (SE)	17.8	75.18	0.98	0.5	2.02	0.31
3 - A28 (SW)	10.2	84.54	0.95	0.6	3.70	0.37
4 - Chart Road (NW)	7.6	94.72	0.93	0.2	4.68	0.18
	2023 Obs + Dev					
1 - A28 (NE)	13.6	39.33	0.94	35.1	92.87	1.00
2 - Brookfield Road (SE)	59.6	237.75	1.07	10.0	45.29	0.93
3 - A28 (SW)	36.4	246.88	1.06	9.3	55.56	0.93
4 - Chart Road (NW)	20.9	251.66	1.05	2.5	56.52	0.75
	2023 Obs + Dev (Sens.Test)					
1 - A28 (NE)	14.9	42.96	0.95	42.8	110.63	1.01
2 - Brookfield Road (SE)	77.1	310.27	1.10	13.1	58.77	0.96
3 - A28 (SW)	51.0	326.00	1.09	12.2	71.34	0.96
4 - Chart Road (NW)	25.2	303.85	1.06	3.2	72.02	0.80
	2032 Base					
1 - A28 (NE)	29.4	79.39	0.99	45.7	116.54	1.01
2 - Brookfield Road (SE)	84.2	317.93	1.11	43.4	173.93	1.04
3 - A28 (SW)	39.7	293.41	1.08	35.7	203.31	1.05
4 - Chart Road (NW)	27.2	304.91	1.07	8.8	181.63	0.97
	2032 Base + Dev					
1 - A28 (NE)	40.1	104.25	1.00	105.3	248.44	1.07
2 - Brookfield Road (SE)	121.8	475.12	1.15	67.1	263.94	1.08
3 - A28 (SW)	71.1	466.41	1.14	59.2	311.36	1.10
4 - Chart Road (NW)	39.0	442.84	1.12	11.3	232.17	0.99
	2032 Base + Dev (Sens.Test)					
1 - A28 (NE)	45.4	116.20	1.01	118.5	277.84	1.08
2 - Brookfield Road (SE)	136.2	538.42	1.17	70.2	275.33	1.08
3 - A28 (SW)	88.0	555.13	1.17	62.8	327.26	1.10
4 - Chart Road (NW)	43.9	504.27	1.15	11.5	237.11	1.00

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.

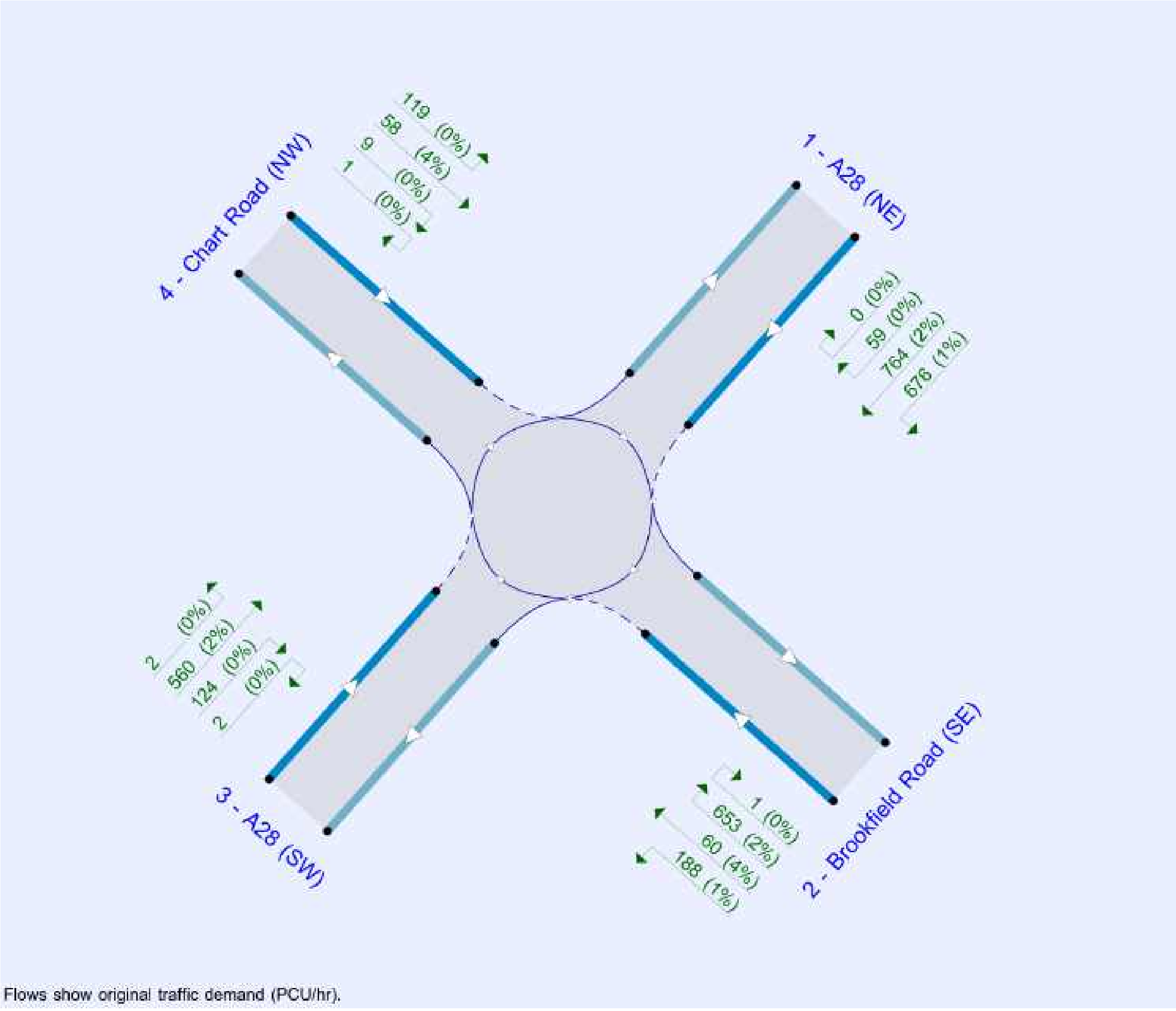
File summary

File Description

Title	Possingham Farm, Ashford
Location	Matalan Roundabout
Site number	
Date	19/09/2024
Version	Dev Flows -> Escort Education Only
Status	Existing Junction Layout
Identifier	
Client	
Jobnumber	
Enumerator	David Noyce
Description	Observed flows from surveys of Tuesday, 28th March 2023. A28(NE) exit restriction based on observations and is directly related to the A28(SW) entry capacity of the Louden Way signalised juntion.

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D1	2023 Observed	AM	FLAT	08:00	09:00	60	15	✓		
D2	2023 Observed	PM	FLAT	16:30	17:30	60	15	✓		
D3	: Committed	AM	FLAT	08:00	09:00	60	15			
D4	: Committed	PM	FLAT	16:30	17:30	60	15			
D5	: Dev	AM	FLAT	08:00	09:00	60	15			
D6	: Dev	PM	FLAT	16:30	17:30	60	15			
D7	: Dev (Sensitivity Test)	AM	FLAT	08:00	09:00	60	15			
D8	: Dev (Sensitivity Test)	PM	FLAT	16:30	17:30	60	15			
D10	2023 Obs + Cttd	AM	FLAT	08:00	09:00	60	15		Simple	D1+D3
D11	2023 Obs + Cttd	PM	FLAT	16:30	17:30	60	15		Simple	D2+D4
D12	2023 Obs + Cttd + Dev	AM	FLAT	08:00	09:00	60	15		Simple	D1+D3+D5
D13	2023 Obs + Cttd + Dev	PM	FLAT	16:30	17:30	60	15		Simple	D2+D4+D6
D14	2023 Obs + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15		Simple	D1+D3+D7
D15	2023 Obs + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15		Simple	D2+D4+D8
D16	2023 Obs + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D5
D17	2023 Obs + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D6
D18	2023 Obs + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D7
D19	2023 Obs + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D8
D20	2032 Base	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1*1.070
D21	2032 Base	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2*1.073
D22	2032 Base + Cttd	AM	FLAT	08:00	09:00	60	15		Simple	D20+D3
D23	2032 Base + Cttd	PM	FLAT	16:30	17:30	60	15		Simple	D21+D4
D24	2032 Base + Cttd + Dev	AM	FLAT	08:00	09:00	60	15		Simple	D20+D3+D5
D25	2032 Base + Cttd + Dev	PM	FLAT	16:30	17:30	60	15		Simple	D21+D4+D6
D26	2032 Base + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15		Simple	D20+D3+D7
D27	2032 Base + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15		Simple	D21+D4+D8
D28	2032 Base + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D5
D29	2032 Base + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D6
D30	2032 Base + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D7
D31	2032 Base + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D8

Analysis Set Details

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

2023 Observed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	59.89	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	59.89	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	6.89	10.0	19.0	45.0	28.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	25.0	45.0	23.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1223
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.589	1498
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.640	1716

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 period length (min)	Time segment length (min)	Run automatically
D1	2023 Observed	AM	FLAT	08:00	09:00	60	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1290	100.000
2 - Brookfield Road (SE)		FLAT	✓	879	100.000
3 - A28 (SW)		FLAT	✓	460	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	612	637	40
	2 - Brookfield Road (SE)	653	0	201	26
	3 - A28 (SW)	372	81	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	8	5	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.92	32.33	11.0	D	1290	1290
2 - Brookfield Road (SE)	0.98	75.18	17.8	F	879	879
3 - A28 (SW)	0.95	84.54	10.2	F	460	460
4 - Chart Road (NW)	0.93	94.72	7.6	F	308	308

Main Results for each time segment

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 - A28 (NE)	1290	322	167	1399	0.922	1254	1223	0.0	9.0	22.060	C
2 - Brookfield Road (SE)	879	220	687	1071	0.821	862	734	0.0	4.3	16.662	C
3 - A28 (SW)	460	115	705	635	0.725	450	845	0.0	2.6	19.935	C
4 - Chart Road (NW)	308	77	1090	454	0.679	300	64	0.0	2.0	22.954	C

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 - A28 (NE)	1290	322	168	1399	0.922	1285	1223	9.0	10.2	30.299	D
2 - Brookfield Road (SE)	879	220	703	951	0.925	862	749	4.3	8.7	35.712	E
3 - A28 (SW)	460	115	705	533	0.863	450	860	2.6	5.2	41.612	E
4 - Chart Road (NW)	308	77	1090	371	0.830	301	65	2.0	3.9	47.236	E

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 - A28 (NE)	1290	322	168	1399	0.922	1287	1223	10.2	10.7	31.678	D
2 - Brookfield Road (SE)	879	220	705	911	0.965	861	750	8.7	13.2	55.702	F
3 - A28 (SW)	460	115	705	500	0.920	450	861	5.2	7.7	63.697	F
4 - Chart Road (NW)	308	77	1090	344	0.895	301	65	3.9	5.7	71.630	F

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 - A28 (NE)	1290	322	168	1399	0.922	1288	1223	10.7	11.0	32.335	D
2 - Brookfield Road (SE)	879	220	705	893	0.984	861	751	13.2	17.8	75.177	F
3 - A28 (SW)	460	115	705	485	0.949	451	862	7.7	10.2	84.540	F
4 - Chart Road (NW)	308	77	1090	332	0.930	301	65	5.7	7.6	94.719	F

2023 Observed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	19.59	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	19.59	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2023 Observed	PM	FLAT	16:30	17:30	60	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1319	100.000
2 - Brookfield Road (SE)		FLAT	✓	823	100.000
3 - A28 (SW)		FLAT	✓	584	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	630	633	55
	2 - Brookfield Road (SE)	609	1	157	56
	3 - A28 (SW)	482	98	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	0.94	39.57	13.7	E	1319	1319
2 - Brookfield Road (SE)	0.31	2.02	0.5	A	823	823
3 - A28 (SW)	0.37	3.70	0.6	A	584	584
4 - Chart Road (NW)	0.18	4.68	0.2	A	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1319	330	163	1402	0.941	1277	1199	0.0	10.4	24.269	C
2 - Brookfield Road (SE)	823	206	678	2658	0.310	821	763	0.0	0.5	1.996	A
3 - A28 (SW)	584	146	719	1575	0.371	582	780	0.0	0.6	3.675	A
4 - Chart Road (NW)	174	44	1189	955	0.182	173	112	0.0	0.2	4.658	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1319	330	164	1401	0.941	1311	1202	10.4	12.2	35.676	E
2 - Brookfield Road (SE)	823	206	696	2640	0.312	823	780	0.5	0.5	2.018	A
3 - A28 (SW)	584	146	722	1573	0.372	584	796	0.6	0.6	3.700	A
4 - Chart Road (NW)	174	44	1192	952	0.183	174	114	0.2	0.2	4.682	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 - A28 (NE)	1319	330	164	1401	0.941	1315	1202	12.2	13.2	38.231	E
2 - Brookfield Road (SE)	823	206	697	2638	0.312	823	782	0.5	0.5	2.020	A
3 - A28 (SW)	584	146	722	1573	0.372	584	798	0.6	0.6	3.700	A
4 - Chart Road (NW)	174	44	1192	952	0.183	174	114	0.2	0.2	4.682	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 - A28 (NE)	1319	330	164	1401	0.941	1316	1202	13.2	13.7	39.571	E
2 - Brookfield Road (SE)	823	206	698	2638	0.312	823	782	0.5	0.5	2.021	A
3 - A28 (SW)	584	146	722	1573	0.372	584	799	0.6	0.6	3.701	A
4 - Chart Road (NW)	174	44	1192	952	0.183	174	114	0.2	0.2	4.682	A

2023 Obs + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	155.04	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	155.04	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D16	2023 Obs + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1312	100.000
2 - Brookfield Road (SE)		FLAT	✓	882	100.000
3 - A28 (SW)		FLAT	✓	533	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	612	659	40
	2 - Brookfield Road (SE)	653	0	204	26
	3 - A28 (SW)	434	92	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	7	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.94	39.33	13.6	E	1312	1312
2 - Brookfield Road (SE)	1.07	237.75	59.6	F	882	882
3 - A28 (SW)	1.06	246.88	36.4	F	533	533
4 - Chart Road (NW)	1.05	251.66	20.9	F	308	308

Main Results for each time segment

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 - A28 (NE)	1312	328	169	1398	0.938	1270	1223	0.0	10.3	24.342	C
2 - Brookfield Road (SE)	882	221	704	888	0.994	827	735	0.0	13.9	44.139	E
3 - A28 (SW)	533	133	675	552	0.967	496	856	0.0	9.4	51.942	F
4 - Chart Road (NW)	308	77	1108	335	0.921	285	63	0.0	5.9	59.189	F

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 - A28 (NE)	1312	328	170	1398	0.938	1304	1223	10.3	12.1	35.538	E
2 - Brookfield Road (SE)	882	221	723	836	1.056	822	752	13.9	28.9	108.170	F
3 - A28 (SW)	533	133	673	513	1.041	497	873	9.4	18.5	120.040	F
4 - Chart Road (NW)	308	77	1106	304	1.013	288	64	5.9	11.0	129.790	F

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 - A28 (NE)	1312	328	170	1398	0.938	1308	1223	12.1	13.0	37.976	E
2 - Brookfield Road (SE)	882	221	725	829	1.065	823	753	28.9	43.7	171.130	F
3 - A28 (SW)	533	133	673	503	1.061	496	875	18.5	27.9	185.465	F
4 - Chart Road (NW)	308	77	1105	297	1.037	288	64	11.0	16.0	191.952	F

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 - A28 (NE)	1312	328	171	1397	0.939	1309	1223	13.0	13.6	39.328	E
2 - Brookfield Road (SE)	882	221	726	822	1.074	819	755	43.7	59.6	237.747	F
3 - A28 (SW)	533	133	670	504	1.059	499	875	27.9	36.4	246.878	F
4 - Chart Road (NW)	308	77	1105	294	1.047	289	64	16.0	20.9	251.657	F

2023 Obs + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	69.82	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	69.82	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D17	2023 Obs + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1389	100.000
2 - Brookfield Road (SE)		FLAT	✓	840	100.000
3 - A28 (SW)		FLAT	✓	638	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	630	703	55
	2 - Brookfield Road (SE)	609	1	174	56
	3 - A28 (SW)	519	115	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.00	92.87	35.1	F	1389	1389
2 - Brookfield Road (SE)	0.93	45.29	10.0	E	840	840
3 - A28 (SW)	0.93	55.56	9.3	F	638	638
4 - Chart Road (NW)	0.75	56.52	2.5	F	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1389	347	178	1393	0.997	1318	1223	0.0	17.8	34.981	D
2 - Brookfield Road (SE)	840	210	730	1177	0.714	830	766	0.0	2.4	10.311	B
3 - A28 (SW)	638	160	712	904	0.707	629	849	0.0	2.3	12.911	B
4 - Chart Road (NW)	174	44	1230	424	0.411	171	111	0.0	0.7	14.300	B

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1389	347	178	1393	0.997	1360	1223	17.8	25.0	65.268	F
2 - Brookfield Road (SE)	840	210	753	991	0.847	830	785	2.4	4.9	21.480	C
3 - A28 (SW)	638	160	713	758	0.843	629	870	2.3	4.6	26.614	D
4 - Chart Road (NW)	174	44	1230	296	0.588	171	112	0.7	1.3	28.612	D

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 - A28 (NE)	1389	347	178	1393	0.997	1367	1223	25.0	30.5	80.640	F
2 - Brookfield Road (SE)	840	210	757	928	0.905	830	788	4.9	7.5	33.498	D
3 - A28 (SW)	638	160	713	708	0.902	629	874	4.6	6.9	41.088	E
4 - Chart Road (NW)	174	44	1230	254	0.685	172	113	1.3	2.0	42.720	E

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 - A28 (NE)	1389	347	178	1393	0.997	1370	1223	30.5	35.1	92.869	F
2 - Brookfield Road (SE)	840	210	759	898	0.935	830	790	7.5	10.0	45.291	E
3 - A28 (SW)	638	160	713	683	0.934	629	876	6.9	9.3	55.564	F
4 - Chart Road (NW)	174	44	1230	233	0.747	172	113	2.0	2.5	56.522	F

2023 Obs + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	197.86	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	197.86	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D18	2023 Obs + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1321	100.000
2 - Brookfield Road (SE)		FLAT	✓	883	100.000
3 - A28 (SW)		FLAT	✓	566	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	612	668	40
	2 - Brookfield Road (SE)	653	0	205	26
	3 - A28 (SW)	462	97	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	6	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.95	42.96	14.9	E	1321	1321
2 - Brookfield Road (SE)	1.10	310.27	77.1	F	883	883
3 - A28 (SW)	1.09	326.00	51.0	F	566	566
4 - Chart Road (NW)	1.06	303.85	25.2	F	308	308

Main Results for each time segment

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 - A28 (NE)	1321	330	170	1398	0.945	1277	1223	0.0	11.0	25.384	D
2 - Brookfield Road (SE)	883	221	711	857	1.031	811	735	0.0	18.2	54.450	F
3 - A28 (SW)	566	142	662	557	1.016	515	860	0.0	12.8	63.183	F
4 - Chart Road (NW)	308	77	1114	318	0.969	279	62	0.0	7.3	71.030	F

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 - A28 (NE)	1321	330	171	1397	0.945	1312	1223	11.0	13.1	38.073	E
2 - Brookfield Road (SE)	883	221	731	814	1.086	806	753	18.2	37.5	138.492	F
3 - A28 (SW)	566	142	659	525	1.079	516	877	12.8	25.4	152.416	F
4 - Chart Road (NW)	308	77	1112	294	1.048	283	63	7.3	13.7	159.494	F

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 - A28 (NE)	1321	330	172	1397	0.945	1316	1223	13.1	14.2	41.184	E
2 - Brookfield Road (SE)	883	221	733	809	1.092	806	755	37.5	56.9	222.621	F
3 - A28 (SW)	566	142	659	519	1.091	515	880	25.4	38.2	238.714	F
4 - Chart Road (NW)	308	77	1111	290	1.064	284	63	13.7	19.8	235.740	F

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 - A28 (NE)	1321	330	172	1396	0.946	1318	1223	14.2	14.9	42.965	E
2 - Brookfield Road (SE)	883	221	734	804	1.098	803	756	56.9	77.1	310.274	F
3 - A28 (SW)	566	142	657	518	1.094	515	880	38.2	51.0	325.999	F
4 - Chart Road (NW)	308	77	1109	291	1.061	287	63	19.8	25.2	303.850	F

2023 Obs + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	85.91	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	85.91	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D19	2023 Obs + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1403	100.000
2 - Brookfield Road (SE)		FLAT	✓	843	100.000
3 - A28 (SW)		FLAT	✓	645	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	630	717	55
	2 - Brookfield Road (SE)	609	1	177	56
	3 - A28 (SW)	524	117	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.01	110.63	42.8	F	1403	1403
2 - Brookfield Road (SE)	0.96	58.77	13.1	F	843	843
3 - A28 (SW)	0.96	71.34	12.2	F	645	645
4 - Chart Road (NW)	0.80	72.02	3.2	F	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1403	351	180	1392	1.008	1324	1223	0.0	19.7	37.491	E
2 - Brookfield Road (SE)	843	211	740	1094	0.770	830	764	0.0	3.2	13.328	B
3 - A28 (SW)	645	161	709	845	0.764	633	861	0.0	3.0	16.465	C
4 - Chart Road (NW)	174	44	1232	366	0.475	171	110	0.0	0.9	18.305	C

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 - A28 (NE)	1403	351	180	1392	1.008	1366	1223	19.7	28.9	73.085	F
2 - Brookfield Road (SE)	843	211	763	948	0.889	830	783	3.2	6.5	28.095	D
3 - A28 (SW)	645	161	710	728	0.886	633	882	3.0	6.1	34.393	D
4 - Chart Road (NW)	174	44	1232	267	0.653	171	112	0.9	1.7	36.736	E

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 - A28 (NE)	1403	351	180	1392	1.008	1373	1223	28.9	36.3	93.395	F
2 - Brookfield Road (SE)	843	211	767	899	0.937	829	786	6.5	9.8	43.690	E
3 - A28 (SW)	645	161	710	689	0.936	633	886	6.1	9.1	53.093	F
4 - Chart Road (NW)	174	44	1232	234	0.745	171	112	1.7	2.5	54.920	F

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 - A28 (NE)	1403	351	180	1392	1.008	1377	1223	36.3	42.8	110.632	F
2 - Brookfield Road (SE)	843	211	769	877	0.961	829	787	9.8	13.1	58.774	F
3 - A28 (SW)	645	161	711	671	0.962	633	888	9.1	12.2	71.340	F
4 - Chart Road (NW)	174	44	1232	218	0.799	171	112	2.5	3.2	72.017	F

2032 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	208.01	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	208.01	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D20	2032 Base	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1*1.070

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1380	100.000
2 - Brookfield Road (SE)		FLAT	✓	941	100.000
3 - A28 (SW)		FLAT	✓	493	100.000
4 - Chart Road (NW)		FLAT	✓	330	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	655	682	43
	2 - Brookfield Road (SE)	699	0	215	27
	3 - A28 (SW)	398	87	9	0
	4 - Chart Road (NW)	241	66	22	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	8	5	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.99	79.39	29.4	F	1380	1380
2 - Brookfield Road (SE)	1.11	317.93	84.2	F	941	941
3 - A28 (SW)	1.08	293.41	39.7	F	493	493
4 - Chart Road (NW)	1.07	304.91	27.2	F	330	330

Main Results for each time segment

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 - A28 (NE)	1380	345	167	1399	0.986	1315	1223	0.0	16.2	32.949	D
2 - Brookfield Road (SE)	941	235	719	910	1.034	864	763	0.0	19.3	53.864	F
3 - A28 (SW)	493	123	708	495	0.995	450	875	0.0	10.7	62.361	F
4 - Chart Road (NW)	330	82	1091	339	0.974	299	66	0.0	7.7	69.662	F

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 - A28 (NE)	1380	345	169	1399	0.987	1356	1223	16.2	22.0	58.841	F
2 - Brookfield Road (SE)	941	235	741	865	1.088	858	784	19.3	40.2	138.349	F
3 - A28 (SW)	493	123	704	464	1.062	453	895	10.7	20.7	145.374	F
4 - Chart Road (NW)	330	82	1089	313	1.053	302	67	7.7	14.6	158.060	F

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 - A28 (NE)	1380	345	169	1398	0.987	1363	1223	22.0	26.1	70.529	F
2 - Brookfield Road (SE)	941	235	745	858	1.096	856	787	40.2	61.5	224.972	F
3 - A28 (SW)	493	123	703	458	1.076	453	898	20.7	30.7	222.181	F
4 - Chart Road (NW)	330	82	1088	310	1.065	304	67	14.6	21.1	234.088	F

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 - A28 (NE)	1380	345	170	1398	0.987	1367	1223	26.1	29.4	79.392	F
2 - Brookfield Road (SE)	941	235	747	851	1.105	850	790	61.5	84.2	317.935	F
3 - A28 (SW)	493	123	699	460	1.071	457	898	30.7	39.7	293.411	F
4 - Chart Road (NW)	330	82	1088	309	1.066	305	67	21.1	27.2	304.907	F

2032 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	154.21	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	154.21	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D21	2032 Base	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2*1.073

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1415	100.000
2 - Brookfield Road (SE)		FLAT	✓	883	100.000
3 - A28 (SW)		FLAT	✓	627	100.000
4 - Chart Road (NW)		FLAT	✓	187	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	676	680	59
	2 - Brookfield Road (SE)	653	1	168	60
	3 - A28 (SW)	518	105	2	2
	4 - Chart Road (NW)	119	58	9	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.01	116.54	45.7	F	1415	1415
2 - Brookfield Road (SE)	1.04	173.93	43.4	F	883	883
3 - A28 (SW)	1.05	203.31	35.7	F	627	627
4 - Chart Road (NW)	0.97	181.63	8.8	F	187	187

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1415	354	166	1400	1.011	1334	1223	0.0	20.3	38.152	E
2 - Brookfield Road (SE)	883	221	707	922	0.957	841	792	0.0	10.5	35.381	E
3 - A28 (SW)	627	157	737	660	0.950	592	811	0.0	8.8	42.253	E
4 - Chart Road (NW)	187	47	1213	242	0.771	176	116	0.0	2.7	49.312	E

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 - A28 (NE)	1415	354	167	1400	1.011	1375	1223	20.3	30.3	75.418	F
2 - Brookfield Road (SE)	883	221	729	862	1.025	839	813	10.5	21.5	82.557	F
3 - A28 (SW)	627	157	737	612	1.025	592	830	8.8	17.6	96.966	F
4 - Chart Road (NW)	187	47	1212	207	0.902	178	118	2.7	4.9	99.672	F

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 - A28 (NE)	1415	354	167	1400	1.011	1382	1223	30.3	38.4	97.471	F
2 - Brookfield Road (SE)	883	221	733	849	1.039	839	816	21.5	32.5	128.401	F
3 - A28 (SW)	627	157	738	601	1.044	591	834	17.6	26.5	149.654	F
4 - Chart Road (NW)	187	47	1211	197	0.949	179	118	4.9	6.9	143.471	F

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 - A28 (NE)	1415	354	167	1399	1.011	1386	1223	38.4	45.7	116.537	F
2 - Brookfield Road (SE)	883	221	735	845	1.044	839	818	32.5	43.4	173.930	F
3 - A28 (SW)	627	157	738	596	1.052	591	836	26.5	35.7	203.306	F
4 - Chart Road (NW)	187	47	1211	192	0.970	179	118	6.9	8.8	181.633	F

2032 Base + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	309.92	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	309.92	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D28	2032 Base + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1402	100.000
2 - Brookfield Road (SE)		FLAT	✓	944	100.000
3 - A28 (SW)		FLAT	✓	566	100.000
4 - Chart Road (NW)		FLAT	✓	330	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	655	704	43
	2 - Brookfield Road (SE)	699	0	218	27
	3 - A28 (SW)	460	98	9	0
	4 - Chart Road (NW)	241	66	22	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	7	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	1.00	104.25	40.1	F	1402	1402
2 - Brookfield Road (SE)	1.15	475.12	121.8	F	944	944
3 - A28 (SW)	1.14	466.41	71.1	F	566	566
4 - Chart Road (NW)	1.12	442.84	39.0	F	330	330

Main Results for each time segment

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 - A28 (NE)	1402	350	170	1398	1.003	1326	1223	0.0	19.0	36.727	E
2 - Brookfield Road (SE)	944	236	734	857	1.101	828	762	0.0	29.1	76.028	F
3 - A28 (SW)	566	141	677	522	1.084	493	884	0.0	18.1	84.539	F
4 - Chart Road (NW)	330	82	1106	314	1.050	287	65	0.0	10.8	92.306	F

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 - A28 (NE)	1402	350	171	1397	1.003	1368	1223	19.0	27.6	70.385	F
2 - Brookfield Road (SE)	944	236	756	825	1.145	822	782	29.1	59.6	206.584	F
3 - A28 (SW)	566	141	674	498	1.135	494	904	18.1	36.0	215.312	F
4 - Chart Road (NW)	330	82	1103	297	1.111	291	66	10.8	20.4	218.283	F

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 - A28 (NE)	1402	350	172	1397	1.004	1375	1223	27.6	34.3	88.970	F
2 - Brookfield Road (SE)	944	236	760	819	1.153	818	786	59.6	91.2	341.244	F
3 - A28 (SW)	566	141	671	498	1.135	497	907	36.0	53.2	338.978	F
4 - Chart Road (NW)	330	82	1102	296	1.114	293	66	20.4	29.5	329.543	F

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 - A28 (NE)	1402	350	171	1397	1.003	1379	1223	34.3	40.1	104.252	F
2 - Brookfield Road (SE)	944	236	762	822	1.149	821	788	91.2	121.8	475.122	F
3 - A28 (SW)	566	141	674	495	1.143	494	909	53.2	71.1	466.407	F
4 - Chart Road (NW)	330	82	1102	294	1.123	292	66	29.5	39.0	442.837	F

2032 Base + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	264.97	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	264.97	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D29	2032 Base + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1485	100.000
2 - Brookfield Road (SE)		FLAT	✓	900	100.000
3 - A28 (SW)		FLAT	✓	681	100.000
4 - Chart Road (NW)		FLAT	✓	187	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	676	750	59
	2 - Brookfield Road (SE)	653	1	185	60
	3 - A28 (SW)	555	122	2	2
	4 - Chart Road (NW)	119	58	9	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.07	248.44	105.3	F	1485	1485
2 - Brookfield Road (SE)	1.08	263.94	67.1	F	900	900
3 - A28 (SW)	1.10	311.36	59.2	F	681	681
4 - Chart Road (NW)	0.99	232.17	11.3	F	187	187

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1485	371	177	1394	1.065	1352	1223	0.0	33.2	53.937	F
2 - Brookfield Road (SE)	900	225	747	886	1.015	834	782	0.0	16.3	49.069	E
3 - A28 (SW)	681	170	718	667	1.021	623	864	0.0	14.4	57.820	F
4 - Chart Road (NW)	187	47	1228	217	0.860	172	113	0.0	3.8	66.796	F

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 - A28 (NE)	1485	371	178	1393	1.066	1386	1223	33.2	57.8	127.275	F
2 - Brookfield Road (SE)	900	225	766	842	1.068	832	798	16.3	33.2	121.053	F
3 - A28 (SW)	681	170	717	631	1.080	622	881	14.4	29.1	142.496	F
4 - Chart Road (NW)	187	47	1226	194	0.963	175	114	3.8	6.7	135.506	F

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 - A28 (NE)	1485	371	179	1393	1.066	1389	1223	57.8	81.7	188.175	F
2 - Brookfield Road (SE)	900	225	768	835	1.077	831	800	33.2	50.4	192.498	F
3 - A28 (SW)	681	170	716	626	1.088	623	882	29.1	43.8	224.788	F
4 - Chart Road (NW)	187	47	1225	188	0.994	176	114	6.7	9.3	190.352	F

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 - A28 (NE)	1485	371	179	1393	1.066	1391	1223	81.7	105.3	248.440	F
2 - Brookfield Road (SE)	900	225	768	835	1.078	833	801	50.4	67.1	263.945	F
3 - A28 (SW)	681	170	718	621	1.096	619	883	43.8	59.2	311.363	F
4 - Chart Road (NW)	187	47	1223	188	0.995	179	114	9.3	11.3	232.168	F

2032 Base + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	356.66	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	356.66	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D30	2032 Base + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1411	100.000
2 - Brookfield Road (SE)		FLAT	✓	945	100.000
3 - A28 (SW)		FLAT	✓	599	100.000
4 - Chart Road (NW)		FLAT	✓	330	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	655	713	43
	2 - Brookfield Road (SE)	699	0	219	27
	3 - A28 (SW)	488	103	9	0
	4 - Chart Road (NW)	241	66	22	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	6	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	1.01	116.20	45.4	F	1411	1411
2 - Brookfield Road (SE)	1.17	538.42	136.2	F	945	945
3 - A28 (SW)	1.17	555.13	88.0	F	599	599
4 - Chart Road (NW)	1.15	504.27	43.9	F	330	330

Main Results for each time segment

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 - A28 (NE)	1411	353	171	1397	1.010	1329	1223	0.0	20.3	38.399	E
2 - Brookfield Road (SE)	945	236	739	838	1.128	812	761	0.0	33.1	85.770	F
3 - A28 (SW)	599	150	665	535	1.118	511	887	0.0	21.9	94.703	F
4 - Chart Road (NW)	330	82	1112	306	1.077	282	64	0.0	11.9	101.122	F

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 - A28 (NE)	1411	353	172	1397	1.010	1371	1223	20.3	30.2	75.627	F
2 - Brookfield Road (SE)	945	236	762	810	1.167	808	781	33.1	67.4	235.772	F
3 - A28 (SW)	599	150	663	513	1.168	510	907	21.9	44.1	250.520	F
4 - Chart Road (NW)	330	82	1107	292	1.129	288	65	11.9	22.5	241.669	F

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 - A28 (NE)	1411	353	172	1397	1.010	1379	1223	30.2	38.3	97.492	F
2 - Brookfield Road (SE)	945	236	766	807	1.171	807	785	67.4	102.0	387.079	F
3 - A28 (SW)	599	150	662	512	1.168	511	910	44.1	65.9	401.824	F
4 - Chart Road (NW)	330	82	1108	289	1.140	287	65	22.5	33.1	371.396	F

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 - A28 (NE)	1411	353	172	1397	1.010	1382	1223	38.3	45.4	116.204	F
2 - Brookfield Road (SE)	945	236	768	809	1.169	808	786	102.0	136.2	538.416	F
3 - A28 (SW)	599	150	663	511	1.171	510	913	65.9	88.0	555.135	F
4 - Chart Road (NW)	330	82	1108	288	1.146	287	66	33.1	43.9	504.269	F

2032 Base + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	285.21	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	285.21	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D31	2032 Base + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1499	100.000
2 - Brookfield Road (SE)		FLAT	✓	903	100.000
3 - A28 (SW)		FLAT	✓	688	100.000
4 - Chart Road (NW)		FLAT	✓	187	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	676	764	59
	2 - Brookfield Road (SE)	653	1	188	60
	3 - A28 (SW)	560	124	2	2
	4 - Chart Road (NW)	119	58	9	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.08	277.84	118.5	F	1499	1499
2 - Brookfield Road (SE)	1.08	275.33	70.2	F	903	903
3 - A28 (SW)	1.10	327.26	62.8	F	688	688
4 - Chart Road (NW)	1.00	237.11	11.5	F	187	187

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1499	375	178	1393	1.076	1355	1223	0.0	36.0	57.390	F
2 - Brookfield Road (SE)	903	226	754	884	1.021	834	779	0.0	17.1	50.794	F
3 - A28 (SW)	688	172	715	669	1.029	627	874	0.0	15.2	59.768	F
4 - Chart Road (NW)	187	47	1230	215	0.869	171	112	0.0	3.9	68.774	F

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 - A28 (NE)	1499	375	179	1392	1.077	1387	1223	36.0	64.0	138.737	F
2 - Brookfield Road (SE)	903	226	772	841	1.073	832	794	17.1	34.8	126.081	F
3 - A28 (SW)	688	172	715	633	1.086	626	890	15.2	30.8	148.680	F
4 - Chart Road (NW)	187	47	1227	193	0.968	175	113	3.9	6.9	139.530	F

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 - A28 (NE)	1499	375	180	1392	1.077	1389	1223	64.0	91.4	208.451	F
2 - Brookfield Road (SE)	903	226	774	834	1.082	831	796	34.8	52.8	200.998	F
3 - A28 (SW)	688	172	713	630	1.093	626	891	30.8	46.2	235.257	F
4 - Chart Road (NW)	187	47	1227	187	0.998	176	113	6.9	9.5	195.364	F

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 - A28 (NE)	1499	375	180	1392	1.077	1390	1223	91.4	118.5	277.845	F
2 - Brookfield Road (SE)	903	226	774	835	1.081	833	796	52.8	70.2	275.332	F
3 - A28 (SW)	688	172	715	624	1.103	622	892	46.2	62.8	327.261	F
4 - Chart Road (NW)	187	47	1224	188	0.996	179	113	9.5	11.5	237.113	F

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Matalan Roundabout (Proposed) v4.0.j10
Path: X:\Projects\220000\226730 - Possingham Farm\Modelling\Modelling in Response to KCC\Modelling - Escort Education Only
Report generation date: 18/09/2024 15:56:41

Summary of junction performance

	AM		
	Queue (PCU)	Delay (s)	RFC
	AM - 2023 Obs + Cttd + Dev		
1 - A28 (NE)	4.9	10.55	0.83
2 - Brookfield Road (SE)	91.7	341.69	1.12
3 - A28 (SW)	202.1	742.29	1.27
4 - Chart Road (NW)	36.5	444.63	1.13
	AM - 2023 Obs + Cttd + Dev (Sens.Test)		
1 - A28 (NE)	5.0	10.86	0.83
2 - Brookfield Road (SE)	94.3	351.62	1.12
3 - A28 (SW)	229.2	837.72	1.30
4 - Chart Road (NW)	39.0	479.13	1.15
	AM - 2032 Base + Cttd + Dev		
1 - A28 (NE)	6.8	14.13	0.87
2 - Brookfield Road (SE)	118.8	419.54	1.15
3 - A28 (SW)	260.5	991.43	1.35
4 - Chart Road (NW)	56.6	679.80	1.24
	AM - 2032 Base + Cttd + Dev (Sens.Test)		
1 - A28 (NE)	7.1	14.63	0.88
2 - Brookfield Road (SE)	121.5	429.47	1.17
3 - A28 (SW)	286.3	1083.61	1.39
4 - Chart Road (NW)	60.8	741.03	1.26

	PM		
	Queue (PCU)	Delay (s)	RFC
	PM - 2023 Obs + Cttd + Dev		
1 - A28 (NE)	22.1	43.09	0.97
2 - Brookfield Road (SE)	0.7	3.00	0.42
3 - A28 (SW)	1.7	6.38	0.63
4 - Chart Road (NW)	0.4	7.52	0.26
	PM - 2023 Obs + Cttd + Dev (Sens.Test)		
1 - A28 (NE)	25.7	49.51	0.98
2 - Brookfield Road (SE)	0.7	3.04	0.42
3 - A28 (SW)	1.8	6.46	0.64
4 - Chart Road (NW)	0.4	7.59	0.27
	PM - 2032 Base + Cttd + Dev		
1 - A28 (NE)	66.9	115.64	1.02
2 - Brookfield Road (SE)	11.3	45.78	0.94
3 - A28 (SW)	17.1	62.63	0.98
4 - Chart Road (NW)	2.9	60.56	0.78
	PM - 2032 Base + Cttd + Dev (Sens.Test)		
1 - A28 (NE)	77.7	132.30	1.03
2 - Brookfield Road (SE)	13.6	54.43	0.96
3 - A28 (SW)	20.6	74.06	0.99
4 - Chart Road (NW)	3.4	70.58	0.81

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.

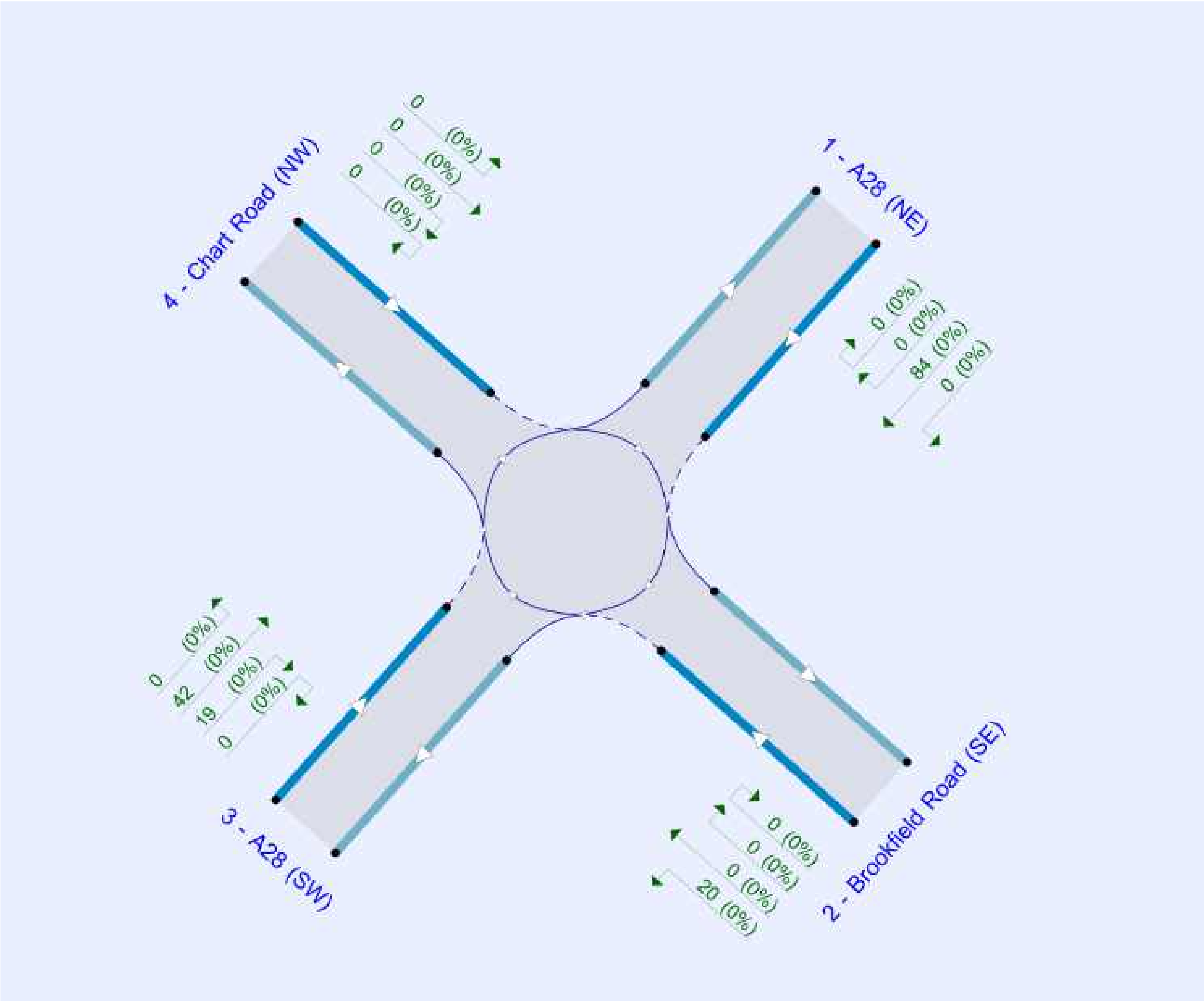
File summary

File Description

Title	Possingham Farm, Ashford
Location	Matalan Roundabout
Site number	
Date	18/09/2024
Version	Dev Flows -> Escort Education Only
Status	Proposed Junction Layout
Identifier	
Client	
Jobnumber	
Enumerator	David Noyce
Description	Observed flows from surveys of Tuesday, 28th March 2023. A28(NE) exit restriction based on observations and is directly related to the A28(SW) entry capacity of the Louden Way signalised juntion.

Units

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



Flows show original traffic demand (PCU/hr).

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D1	2023 Observed	AM	FLAT	08:00	09:00	60	15			
D2	2023 Observed	PM	FLAT	16:30	17:30	60	15			
D3	: Committed	AM	FLAT	08:00	09:00	60	15			
D4	: Committed	PM	FLAT	16:30	17:30	60	15			
D5	: Dev	AM	FLAT	08:00	09:00	60	15			
D6	: Dev	PM	FLAT	16:30	17:30	60	15			
D7	: Dev (Sensitivity Test)	AM	FLAT	08:00	09:00	60	15			
D8	: Dev (Sensitivity Test)	PM	FLAT	16:30	17:30	60	15			
D10	2023 Obs + Cttd	AM	FLAT	08:00	09:00	60	15		Simple	D1+D3
D11	2023 Obs + Cttd	PM	FLAT	16:30	17:30	60	15		Simple	D2+D4
D12	2023 Obs + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D5
D13	2023 Obs + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D6
D14	2023 Obs + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D7
D15	2023 Obs + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D8
D20	2032 Base	AM	FLAT	08:00	09:00	60	15		Simple	D1*1.070
D21	2032 Base	PM	FLAT	16:30	17:30	60	15		Simple	D2*1.073
D22	2032 Base + Cttd	AM	FLAT	08:00	09:00	60	15		Simple	D20+D3
D23	2032 Base + Cttd	PM	FLAT	16:30	17:30	60	15		Simple	D21+D4
D24	2032 Base + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D5
D25	2032 Base + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D6
D26	2032 Base + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D7
D27	2032 Base + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D8

AM - 2023 Obs + Cttd + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D12,D14,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	318.45	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	318.45	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1662
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D12	2023 Obs + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1683	100.000
2 - Brookfield Road (SE)		FLAT	✓	968	100.000
3 - A28 (SW)		FLAT	✓	1077	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	653	989	40
	2 - Brookfield Road (SE)	739	0	204	26
	3 - A28 (SW)	978	92	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	3	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	3	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.83	10.55	4.9	B	1683	1683
2 - Brookfield Road (SE)	1.12	341.69	91.7	F	968	968
3 - A28 (SW)	1.27	742.29	202.1	F	1077	1077
4 - Chart Road (NW)	1.13	444.63	36.5	F	308	308

Main Results for each time segment

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 - A28 (NE)	1683	421	155	2033	0.828	1664	1662	0.0	4.7	9.631	A
2 - Brookfield Road (SE)	968	242	1043	881	1.099	851	776	0.0	29.3	74.492	F
3 - A28 (SW)	1077	269	712	921	1.169	901	1182	0.0	44.2	99.135	F
4 - Chart Road (NW)	308	77	1550	294	1.048	267	62	0.0	10.2	94.500	F

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 - A28 (NE)	1683	421	156	2032	0.828	1682	1662	4.7	4.8	10.551	B
2 - Brookfield Road (SE)	968	242	1055	867	1.117	863	783	29.3	55.6	188.292	F
3 - A28 (SW)	1077	269	722	884	1.219	883	1196	44.2	92.8	290.361	F
4 - Chart Road (NW)	308	77	1542	282	1.091	276	63	10.2	18.3	212.972	F

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 - A28 (NE)	1683	421	154	2034	0.827	1682	1662	4.8	4.8	10.541	B
2 - Brookfield Road (SE)	968	242	1055	886	1.093	884	782	55.6	76.7	277.358	F
3 - A28 (SW)	1077	269	738	868	1.241	868	1200	92.8	145.2	504.813	F
4 - Chart Road (NW)	308	77	1542	276	1.115	273	64	18.3	27.0	323.330	F

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 - A28 (NE)	1683	421	151	2036	0.827	1682	1662	4.8	4.9	10.502	B
2 - Brookfield Road (SE)	968	242	1054	910	1.064	908	779	76.7	91.7	341.691	F
3 - A28 (SW)	1077	269	758	850	1.268	850	1205	145.2	202.1	742.289	F
4 - Chart Road (NW)	308	77	1543	272	1.133	270	64	27.0	36.5	444.635	F

AM - 2023 Obs + Cttd + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D12,D14,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	352.27	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	352.27	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1662
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D14	2023 Obs + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1692	100.000
2 - Brookfield Road (SE)		FLAT	✓	969	100.000
3 - A28 (SW)		FLAT	✓	1110	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	653	998	40
	2 - Brookfield Road (SE)	739	0	205	26
	3 - A28 (SW)	1006	97	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	3	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	3	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.83	10.86	5.0	B	1692	1692
2 - Brookfield Road (SE)	1.12	351.62	94.3	F	969	969
3 - A28 (SW)	1.30	837.72	229.2	F	1110	1110
4 - Chart Road (NW)	1.15	479.13	39.0	F	308	308

Main Results for each time segment

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 - A28 (NE)	1692	423	157	2031	0.833	1672	1662	0.0	4.8	9.869	A
2 - Brookfield Road (SE)	969	242	1052	871	1.113	843	778	0.0	31.5	79.332	F
3 - A28 (SW)	1110	278	705	930	1.194	911	1190	0.0	49.8	108.667	F
4 - Chart Road (NW)	308	77	1554	290	1.062	265	62	0.0	10.8	98.846	F

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 - A28 (NE)	1692	423	158	2031	0.833	1691	1662	4.8	5.0	10.858	B
2 - Brookfield Road (SE)	969	242	1063	864	1.122	861	785	31.5	58.7	199.406	F
3 - A28 (SW)	1110	278	719	891	1.247	890	1205	49.8	105.0	324.293	F
4 - Chart Road (NW)	308	77	1546	279	1.103	274	63	10.8	19.4	225.538	F

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 - A28 (NE)	1692	423	155	2033	0.832	1691	1662	5.0	5.0	10.838	B
2 - Brookfield Road (SE)	969	242	1063	888	1.092	886	783	58.7	79.5	288.424	F
3 - A28 (SW)	1110	278	739	871	1.275	871	1210	105.0	164.9	569.555	F
4 - Chart Road (NW)	308	77	1546	273	1.128	271	64	19.4	28.8	345.559	F

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 - A28 (NE)	1692	423	152	2035	0.831	1691	1662	5.0	5.0	10.794	B
2 - Brookfield Road (SE)	969	242	1063	912	1.063	910	781	79.5	94.3	351.623	F
3 - A28 (SW)	1110	278	758	853	1.301	853	1215	164.9	229.2	837.716	F
4 - Chart Road (NW)	308	77	1547	268	1.148	267	64	28.8	39.0	479.134	F

AM - 2032 Base + Cttd + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D12,D14,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	419.94	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	419.94	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1662
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D24	2032 Base + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1773	100.000
2 - Brookfield Road (SE)		FLAT	✓	1030	100.000
3 - A28 (SW)		FLAT	✓	1110	100.000
4 - Chart Road (NW)		FLAT	✓	330	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	696	1034	43
	2 - Brookfield Road (SE)	785	0	218	27
	3 - A28 (SW)	1004	98	9	0
	4 - Chart Road (NW)	241	66	22	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	3	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	3	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.87	14.13	6.8	B	1773	1773
2 - Brookfield Road (SE)	1.15	419.54	118.8	F	1030	1030
3 - A28 (SW)	1.35	991.43	260.5	F	1110	1110
4 - Chart Road (NW)	1.24	679.80	56.6	F	330	330

Main Results for each time segment

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 - A28 (NE)	1773	443	159	2030	0.873	1747	1662	0.0	6.4	12.204	B
2 - Brookfield Road (SE)	1030	257	1087	893	1.154	870	819	0.0	40.0	93.430	F
3 - A28 (SW)	1110	277	729	896	1.238	880	1229	0.0	57.3	127.067	F
4 - Chart Road (NW)	330	82	1543	299	1.104	277	66	0.0	13.1	110.220	F

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 - A28 (NE)	1773	443	158	2031	0.873	1771	1662	6.4	6.7	14.131	B
2 - Brookfield Road (SE)	1030	257	1102	894	1.152	893	827	40.0	74.3	239.240	F
3 - A28 (SW)	1110	277	747	859	1.292	858	1248	57.3	120.2	383.902	F
4 - Chart Road (NW)	330	82	1538	285	1.157	282	67	13.1	25.2	273.876	F

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 - A28 (NE)	1773	443	153	2035	0.871	1772	1662	6.7	6.8	14.081	B
2 - Brookfield Road (SE)	1030	257	1102	929	1.109	928	823	74.3	99.9	344.127	F
3 - A28 (SW)	1110	277	775	838	1.324	838	1255	120.2	188.0	675.410	F
4 - Chart Road (NW)	330	82	1545	271	1.218	270	68	25.2	40.2	462.921	F

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 - A28 (NE)	1773	443	149	2037	0.870	1773	1662	6.8	6.8	14.006	B
2 - Brookfield Road (SE)	1030	257	1101	955	1.078	955	821	99.9	118.8	419.543	F
3 - A28 (SW)	1110	277	796	820	1.354	820	1260	188.0	260.5	991.433	F
4 - Chart Road (NW)	330	82	1547	265	1.245	264	68	40.2	56.6	679.797	F

AM - 2032 Base + Cttd + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D12,D14,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	455.38	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	455.38	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1662
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D26	2032 Base + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1782	100.000
2 - Brookfield Road (SE)		FLAT	✓	1031	100.000
3 - A28 (SW)		FLAT	✓	1143	100.000
4 - Chart Road (NW)		FLAT	✓	330	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	696	1043	43
	2 - Brookfield Road (SE)	785	0	219	27
	3 - A28 (SW)	1032	103	9	0
	4 - Chart Road (NW)	241	66	22	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	3	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	3	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.88	14.63	7.1	B	1782	1782
2 - Brookfield Road (SE)	1.17	429.47	121.5	F	1031	1031
3 - A28 (SW)	1.39	1083.61	286.3	F	1143	1143
4 - Chart Road (NW)	1.26	741.03	60.8	F	330	330

Main Results for each time segment

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 - A28 (NE)	1782	445	160	2029	0.878	1755	1662	0.0	6.6	12.564	B
2 - Brookfield Road (SE)	1031	258	1095	884	1.166	863	820	0.0	42.0	98.016	F
3 - A28 (SW)	1143	286	722	905	1.263	890	1236	0.0	63.0	136.961	F
4 - Chart Road (NW)	330	82	1547	296	1.115	275	65	0.0	13.7	114.642	F

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 - A28 (NE)	1782	445	158	2031	0.877	1780	1662	6.6	6.9	14.631	B
2 - Brookfield Road (SE)	1031	258	1110	891	1.157	890	828	42.0	77.3	249.662	F
3 - A28 (SW)	1143	286	744	870	1.314	869	1256	63.0	131.4	415.415	F
4 - Chart Road (NW)	330	82	1546	277	1.192	274	67	13.7	27.7	300.303	F

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 - A28 (NE)	1782	445	153	2034	0.876	1781	1662	6.9	7.0	14.597	B
2 - Brookfield Road (SE)	1031	258	1110	930	1.109	929	824	77.3	102.9	354.957	F
3 - A28 (SW)	1143	286	775	842	1.357	842	1264	131.4	206.6	736.754	F
4 - Chart Road (NW)	330	82	1549	267	1.234	266	68	27.7	43.5	507.701	F

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 - A28 (NE)	1782	445	150	2037	0.875	1782	1662	7.0	7.1	14.517	B
2 - Brookfield Road (SE)	1031	258	1110	957	1.077	956	822	102.9	121.5	429.467	F
3 - A28 (SW)	1143	286	796	824	1.387	824	1270	206.6	286.3	1083.613	F
4 - Chart Road (NW)	330	82	1551	261	1.263	261	68	43.5	60.8	741.031	F

PM - 2023 Obs + Cttd + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D13,D15,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	23.66	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	23.66	C

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1680
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D13	2023 Obs + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1949	100.000
2 - Brookfield Road (SE)		FLAT	✓	882	100.000
3 - A28 (SW)		FLAT	✓	974	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	700	1193	55
	2 - Brookfield Road (SE)	651	1	174	56
	3 - A28 (SW)	855	115	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	1	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	1	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	0.97	43.09	22.1	E	1949	1949
2 - Brookfield Road (SE)	0.42	3.00	0.7	A	882	882
3 - A28 (SW)	0.63	6.38	1.7	A	974	974
4 - Chart Road (NW)	0.26	7.52	0.4	A	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1949	487	180	2015	0.967	1888	1608	0.0	15.0	22.697	C
2 - Brookfield Road (SE)	882	220	1221	2135	0.413	879	847	0.0	0.7	2.912	A
3 - A28 (SW)	974	244	760	1547	0.630	968	1339	0.0	1.7	6.206	A
4 - Chart Road (NW)	174	44	1616	664	0.262	173	112	0.0	0.4	7.397	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1949	487	181	2014	0.967	1934	1617	15.0	18.7	36.364	E
2 - Brookfield Road (SE)	882	220	1250	2107	0.419	882	865	0.7	0.7	2.991	A
3 - A28 (SW)	974	244	764	1545	0.631	974	1368	1.7	1.7	6.372	A
4 - Chart Road (NW)	174	44	1624	658	0.264	174	114	0.4	0.4	7.521	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 - A28 (NE)	1949	487	181	2014	0.967	1940	1617	18.7	20.8	40.560	E
2 - Brookfield Road (SE)	882	220	1254	2103	0.419	882	867	0.7	0.7	3.000	A
3 - A28 (SW)	974	244	764	1544	0.631	974	1372	1.7	1.7	6.376	A
4 - Chart Road (NW)	174	44	1624	658	0.264	174	114	0.4	0.4	7.522	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 - A28 (NE)	1949	487	181	2014	0.967	1943	1617	20.8	22.1	43.091	E
2 - Brookfield Road (SE)	882	220	1256	2101	0.420	882	868	0.7	0.7	3.004	A
3 - A28 (SW)	974	244	764	1544	0.631	974	1374	1.7	1.7	6.377	A
4 - Chart Road (NW)	174	44	1624	658	0.264	174	114	0.4	0.4	7.522	A

PM - 2023 Obs + Cttd + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D13,D15,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	26.86	D

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	26.86	D

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1680
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D15	2023 Obs + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1963	100.000
2 - Brookfield Road (SE)		FLAT	✓	885	100.000
3 - A28 (SW)		FLAT	✓	981	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	700	1207	55
	2 - Brookfield Road (SE)	651	1	177	56
	3 - A28 (SW)	860	117	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	1	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	1	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	0.98	49.51	25.7	E	1963	1963
2 - Brookfield Road (SE)	0.42	3.04	0.7	A	885	885
3 - A28 (SW)	0.64	6.46	1.8	A	981	981
4 - Chart Road (NW)	0.27	7.59	0.4	A	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1963	491	182	2014	0.975	1897	1613	0.0	16.4	24.090	C
2 - Brookfield Road (SE)	885	221	1231	2125	0.416	882	848	0.0	0.7	2.942	A
3 - A28 (SW)	981	245	760	1547	0.634	975	1353	0.0	1.7	6.276	A
4 - Chart Road (NW)	174	44	1622	660	0.264	173	112	0.0	0.4	7.462	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1963	491	183	2013	0.975	1944	1622	16.4	21.0	40.159	E
2 - Brookfield Road (SE)	885	221	1262	2095	0.422	885	866	0.7	0.7	3.026	A
3 - A28 (SW)	981	245	764	1545	0.635	981	1383	1.7	1.7	6.450	A
4 - Chart Road (NW)	174	44	1631	654	0.266	174	114	0.4	0.4	7.590	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 - A28 (NE)	1963	491	183	2013	0.975	1951	1622	21.0	23.8	45.834	E
2 - Brookfield Road (SE)	885	221	1266	2091	0.423	885	868	0.7	0.7	3.037	A
3 - A28 (SW)	981	245	764	1545	0.635	981	1387	1.7	1.7	6.455	A
4 - Chart Road (NW)	174	44	1631	654	0.266	174	114	0.4	0.4	7.591	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 - A28 (NE)	1963	491	183	2013	0.975	1955	1622	23.8	25.7	49.511	E
2 - Brookfield Road (SE)	885	221	1268	2089	0.423	885	870	0.7	0.7	3.042	A
3 - A28 (SW)	981	245	764	1544	0.635	981	1389	1.7	1.8	6.455	A
4 - Chart Road (NW)	174	44	1631	654	0.266	174	114	0.4	0.4	7.591	A

PM - 2032 Base + Cttd + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D13,D15,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	84.62	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	84.62	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1680
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D25	2032 Base + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	2045	100.000
2 - Brookfield Road (SE)		FLAT	✓	942	100.000
3 - A28 (SW)		FLAT	✓	1017	100.000
4 - Chart Road (NW)		FLAT	✓	187	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	746	1240	59
	2 - Brookfield Road (SE)	695	1	185	60
	3 - A28 (SW)	891	122	2	2
	4 - Chart Road (NW)	119	58	9	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	1	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	1	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.02	115.64	66.9	F	2045	2045
2 - Brookfield Road (SE)	0.94	45.78	11.3	E	942	942
3 - A28 (SW)	0.98	62.63	17.1	F	1017	1017
4 - Chart Road (NW)	0.78	60.56	2.9	F	187	187

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	2045	511	190	2008	1.018	1936	1680	0.0	27.2	34.026	D
2 - Brookfield Road (SE)	942	235	1241	1271	0.741	931	885	0.0	2.8	10.453	B
3 - A28 (SW)	1017	254	805	1239	0.821	1000	1367	0.0	4.2	14.366	B
4 - Chart Road (NW)	187	47	1686	407	0.459	183	119	0.0	0.8	16.091	C

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 - A28 (NE)	2045	511	190	2008	1.018	1986	1680	27.2	42.0	70.431	F
2 - Brookfield Road (SE)	942	235	1273	1085	0.868	930	903	2.8	5.7	22.044	C
3 - A28 (SW)	1017	254	806	1106	0.920	1000	1397	4.2	8.4	30.074	D
4 - Chart Road (NW)	187	47	1686	295	0.632	184	120	0.8	1.6	31.761	D

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 - A28 (NE)	2045	511	190	2008	1.018	1993	1680	42.0	54.9	94.128	F
2 - Brookfield Road (SE)	942	235	1278	1025	0.919	930	906	5.7	8.5	34.099	D
3 - A28 (SW)	1017	254	806	1061	0.959	1000	1402	8.4	12.7	46.546	E
4 - Chart Road (NW)	187	47	1686	259	0.722	184	120	1.6	2.3	46.711	E

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 - A28 (NE)	2045	511	190	2008	1.018	1997	1680	54.9	66.9	115.642	F
2 - Brookfield Road (SE)	942	235	1280	997	0.945	930	907	8.5	11.3	45.784	E
3 - A28 (SW)	1017	254	806	1040	0.978	1000	1404	12.7	17.1	62.628	F
4 - Chart Road (NW)	187	47	1686	241	0.775	184	120	2.3	2.9	60.563	F

PM - 2032 Base + Cttd + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D13,D15,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	97.96	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	97.96	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1680
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D27	2032 Base + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	2059	100.000
2 - Brookfield Road (SE)		FLAT	✓	945	100.000
3 - A28 (SW)		FLAT	✓	1024	100.000
4 - Chart Road (NW)		FLAT	✓	187	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	746	1254	59
	2 - Brookfield Road (SE)	695	1	188	60
	3 - A28 (SW)	896	124	2	2
	4 - Chart Road (NW)	119	58	9	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	1	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	1	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	1.03	132.30	77.7	F	2059	2059
2 - Brookfield Road (SE)	0.96	54.43	13.6	F	945	945
3 - A28 (SW)	0.99	74.06	20.6	F	1024	1024
4 - Chart Road (NW)	0.81	70.58	3.4	F	187	187

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	2059	515	191	2007	1.026	1941	1680	0.0	29.5	36.051	E
2 - Brookfield Road (SE)	945	236	1249	1212	0.779	931	883	0.0	3.4	12.508	B
3 - A28 (SW)	1024	256	803	1204	0.851	1004	1377	0.0	5.1	16.795	C
4 - Chart Road (NW)	187	47	1688	372	0.502	183	118	0.0	1.0	18.920	C

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 - A28 (NE)	2059	515	191	2007	1.026	1989	1680	29.5	47.1	77.048	F
2 - Brookfield Road (SE)	945	236	1280	1056	0.894	931	901	3.4	6.9	26.443	D
3 - A28 (SW)	1024	256	804	1088	0.941	1004	1407	5.1	10.1	35.662	E
4 - Chart Road (NW)	187	47	1688	277	0.674	183	120	1.0	1.9	37.401	E

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 - A28 (NE)	2059	515	191	2007	1.026	1996	1680	47.1	62.8	105.594	F
2 - Brookfield Road (SE)	945	236	1284	1007	0.939	931	903	6.9	10.2	40.729	E
3 - A28 (SW)	1024	256	804	1050	0.975	1003	1411	10.1	15.3	55.138	F
4 - Chart Road (NW)	187	47	1688	246	0.759	184	120	1.9	2.7	54.919	F

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 - A28 (NE)	2059	515	191	2007	1.026	1999	1680	62.8	77.7	132.298	F
2 - Brookfield Road (SE)	945	236	1286	983	0.961	931	904	10.2	13.6	54.425	F
3 - A28 (SW)	1024	256	804	1034	0.991	1003	1413	15.3	20.6	74.060	F
4 - Chart Road (NW)	187	47	1687	232	0.807	184	120	2.7	3.4	70.578	F

Junctions 10
ARCADY 10 - Roundabout Module
Version: 10.1.1.1905 © Copyright TRL Software Limited, 2023
For sales and distribution information, program advice and maintenance, contact TRL Software: +44 (0)1344 379777 software@trl.co.uk trlsoftware.com
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Filename: Matalan Roundabout (Proposed) v4.1.j10
Path: X:\Projects\220000\226730 - Possingham Farm\Modelling\Modelling in Response to KCC\Modelling - Escort Education Only
Report generation date: 19/09/2024 10:40:05

Summary of junction performance

	AM		
	Queue (PCU)	Delay (s)	RFC
	AM - 2023 Obs + Dev		
1 - A28 (NE)	1.9	5.34	0.65
2 - Brookfield Road (SE)	0.5	2.15	0.34
3 - A28 (SW)	0.5	3.67	0.34
4 - Chart Road (NW)	0.5	5.91	0.33
	AM - 2023 Obs + Dev (Sens.Test)		
1 - A28 (NE)	2.0	5.44	0.66
2 - Brookfield Road (SE)	0.5	2.17	0.34
3 - A28 (SW)	0.6	3.77	0.36
4 - Chart Road (NW)	0.5	6.11	0.34
	AM - 2032 Base + Dev		
1 - A28 (NE)	2.4	6.22	0.70
2 - Brookfield Road (SE)	0.6	2.30	0.37
3 - A28 (SW)	0.6	3.92	0.37
4 - Chart Road (NW)	0.6	6.66	0.37
	AM - 2032 Base + Dev (Sens.Test)		
1 - A28 (NE)	2.5	6.35	0.71
2 - Brookfield Road (SE)	0.6	2.31	0.37
3 - A28 (SW)	0.7	4.05	0.39
4 - Chart Road (NW)	0.6	6.92	0.38

	PM		
	Queue (PCU)	Delay (s)	RFC
	PM - 2023 Obs + Dev		
1 - A28 (NE)	2.2	5.83	0.69
2 - Brookfield Road (SE)	0.5	2.12	0.33
3 - A28 (SW)	0.7	3.91	0.41
4 - Chart Road (NW)	0.2	5.06	0.19
	PM - 2023 Obs + Dev (Sens.Test)		
1 - A28 (NE)	2.3	5.98	0.70
2 - Brookfield Road (SE)	0.5	2.14	0.33
3 - A28 (SW)	0.7	3.94	0.41
4 - Chart Road (NW)	0.2	5.09	0.20
	PM - 2032 Base + Dev		
1 - A28 (NE)	2.9	7.00	0.74
2 - Brookfield Road (SE)	0.6	2.26	0.36
3 - A28 (SW)	0.8	4.27	0.44
4 - Chart Road (NW)	0.3	5.58	0.22
	PM - 2032 Base + Dev (Sens.Test)		
1 - A28 (NE)	3.0	7.22	0.75
2 - Brookfield Road (SE)	0.6	2.29	0.36
3 - A28 (SW)	0.8	4.30	0.45
4 - Chart Road (NW)	0.3	5.61	0.22

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.

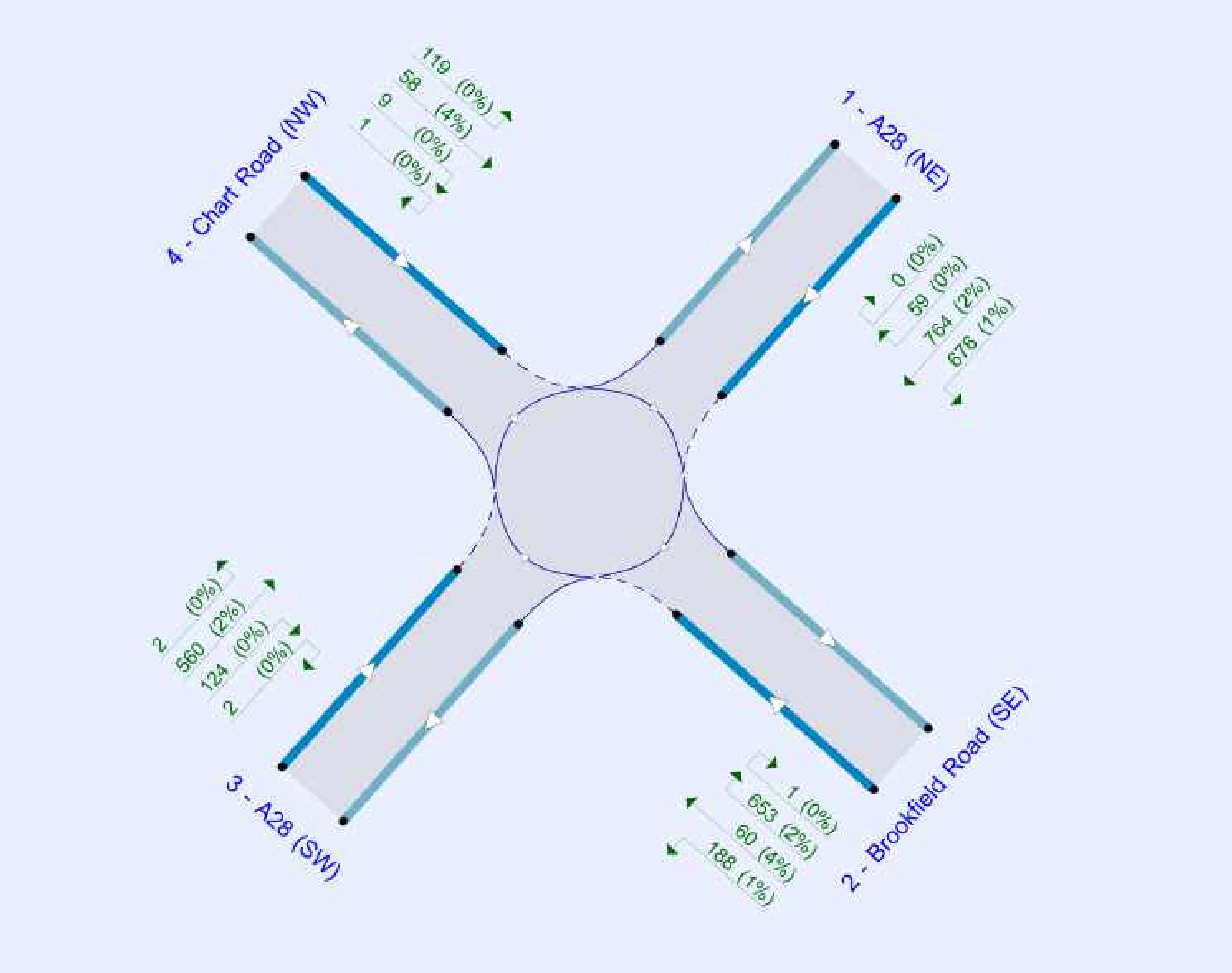
File summary

File Description

Title	Possingham Farm, Ashford
Location	Matalan Roundabout
Site number	
Date	18/09/2024
Version	Dev Flows -> Escort Education Only
Status	Proposed Junction Layout
Identifier	
Client	
Jobnumber	
Enumerator	David Noyce
Description	Observed flows from surveys of Tuesday, 28th March 2023. A28(NE) exit restriction based on observations and is directly related to the A28(SW) entry capacity of the Louden Way signalised juntion.

Units

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



Flows show original traffic demand (PCU/hr).

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D1	2023 Observed	AM	FLAT	08:00	09:00	60	15			
D2	2023 Observed	PM	FLAT	16:30	17:30	60	15			
D3	: Committed	AM	FLAT	08:00	09:00	60	15			
D4	: Committed	PM	FLAT	16:30	17:30	60	15			
D5	: Dev	AM	FLAT	08:00	09:00	60	15			
D6	: Dev	PM	FLAT	16:30	17:30	60	15			
D7	: Dev (Sensitivity Test)	AM	FLAT	08:00	09:00	60	15			
D8	: Dev (Sensitivity Test)	PM	FLAT	16:30	17:30	60	15			
D10	2023 Obs + Cttd	AM	FLAT	08:00	09:00	60	15		Simple	D1+D3
D11	2023 Obs + Cttd	PM	FLAT	16:30	17:30	60	15		Simple	D2+D4
D12	2023 Obs + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D5
D13	2023 Obs + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D6
D14	2023 Obs + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D7
D15	2023 Obs + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D8
D16	2023 Obs + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D5
D17	2023 Obs + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D6
D18	2023 Obs + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D7
D19	2023 Obs + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D8
D20	2032 Base	AM	FLAT	08:00	09:00	60	15		Simple	D1*1.070
D21	2032 Base	PM	FLAT	16:30	17:30	60	15		Simple	D2*1.073
D22	2032 Base + Cttd	AM	FLAT	08:00	09:00	60	15		Simple	D20+D3
D23	2032 Base + Cttd	PM	FLAT	16:30	17:30	60	15		Simple	D21+D4
D24	2032 Base + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D5
D25	2032 Base + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D6
D26	2032 Base + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D7
D27	2032 Base + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D8
D28	2032 Base + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D5
D29	2032 Base + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D6
D30	2032 Base + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D7
D31	2032 Base + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D8

AM - 2023 Obs + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D16,D18,D28,D30	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	4.18	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.18	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1662
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D16	2023 Obs + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1312	100.000
2 - Brookfield Road (SE)		FLAT	✓	882	100.000
3 - A28 (SW)		FLAT	✓	533	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	612	659	40
	2 - Brookfield Road (SE)	653	0	204	26
	3 - A28 (SW)	434	92	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	7	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.65	5.34	1.9	A	1312	1312
2 - Brookfield Road (SE)	0.34	2.15	0.5	A	882	882
3 - A28 (SW)	0.34	3.67	0.5	A	533	533
4 - Chart Road (NW)	0.33	5.91	0.5	A	308	308

Main Results for each time segment

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 - A28 (NE)	1312	328	182	2014	0.651	1304	1307	0.0	1.9	5.224	A
2 - Brookfield Road (SE)	882	221	724	2613	0.338	880	761	0.0	0.5	2.144	A
3 - A28 (SW)	533	133	717	1577	0.338	531	888	0.0	0.5	3.649	A
4 - Chart Road (NW)	308	77	1183	934	0.330	306	66	0.0	0.5	5.851	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 - A28 (NE)	1312	328	183	2013	0.651	1311	1312	1.9	1.9	5.339	A
2 - Brookfield Road (SE)	882	221	729	2609	0.338	882	765	0.5	0.5	2.154	A
3 - A28 (SW)	533	133	719	1576	0.339	533	892	0.5	0.5	3.668	A
4 - Chart Road (NW)	308	77	1186	932	0.331	308	66	0.5	0.5	5.909	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 - A28 (NE)	1312	328	183	2013	0.651	1311	1312	1.9	1.9	5.339	A
2 - Brookfield Road (SE)	882	221	729	2608	0.338	882	765	0.5	0.5	2.154	A
3 - A28 (SW)	533	133	719	1576	0.339	533	892	0.5	0.5	3.668	A
4 - Chart Road (NW)	308	77	1186	932	0.331	308	66	0.5	0.5	5.910	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 - A28 (NE)	1312	328	183	2013	0.651	1311	1312	1.9	1.9	5.340	A
2 - Brookfield Road (SE)	882	221	729	2608	0.338	882	765	0.5	0.5	2.154	A
3 - A28 (SW)	533	133	719	1576	0.339	533	892	0.5	0.5	3.668	A
4 - Chart Road (NW)	308	77	1186	932	0.331	308	66	0.5	0.5	5.910	A

AM - 2023 Obs + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D16,D18,D28,D30	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	4.26	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.26	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1662
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D18	2023 Obs + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1321	100.000
2 - Brookfield Road (SE)		FLAT	✓	883	100.000
3 - A28 (SW)		FLAT	✓	566	100.000
4 - Chart Road (NW)		FLAT	✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	612	668	40
	2 - Brookfield Road (SE)	653	0	205	26
	3 - A28 (SW)	462	97	8	0
	4 - Chart Road (NW)	225	62	21	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	6	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.66	5.44	2.0	A	1321	1321
2 - Brookfield Road (SE)	0.34	2.17	0.5	A	883	883
3 - A28 (SW)	0.36	3.77	0.6	A	566	566
4 - Chart Road (NW)	0.34	6.11	0.5	A	308	308

Main Results for each time segment

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 - A28 (NE)	1321	330	187	2010	0.657	1313	1335	0.0	2.0	5.313	A
2 - Brookfield Road (SE)	883	221	733	2604	0.339	881	766	0.0	0.5	2.156	A
3 - A28 (SW)	566	142	717	1577	0.359	564	898	0.0	0.6	3.755	A
4 - Chart Road (NW)	308	77	1215	914	0.337	306	66	0.0	0.5	6.046	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 - A28 (NE)	1321	330	188	2010	0.657	1320	1340	2.0	2.0	5.433	A
2 - Brookfield Road (SE)	883	221	738	2600	0.340	883	770	0.5	0.5	2.166	A
3 - A28 (SW)	566	142	719	1576	0.359	566	902	0.6	0.6	3.774	A
4 - Chart Road (NW)	308	77	1219	911	0.338	308	66	0.5	0.5	6.111	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 - A28 (NE)	1321	330	188	2010	0.657	1320	1340	2.0	2.0	5.436	A
2 - Brookfield Road (SE)	883	221	738	2600	0.340	883	770	0.5	0.5	2.166	A
3 - A28 (SW)	566	142	719	1576	0.359	566	902	0.6	0.6	3.774	A
4 - Chart Road (NW)	308	77	1219	911	0.338	308	66	0.5	0.5	6.111	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 - A28 (NE)	1321	330	188	2010	0.657	1320	1340	2.0	2.0	5.436	A
2 - Brookfield Road (SE)	883	221	738	2600	0.340	883	770	0.5	0.5	2.166	A
3 - A28 (SW)	566	142	719	1576	0.359	566	902	0.6	0.6	3.774	A
4 - Chart Road (NW)	308	77	1219	911	0.338	308	66	0.5	0.5	6.112	A

AM - 2032 Base + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D16,D18,D28,D30	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	4.72	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.72	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1662
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D28	2032 Base + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1402	100.000
2 - Brookfield Road (SE)		FLAT	✓	944	100.000
3 - A28 (SW)		FLAT	✓	566	100.000
4 - Chart Road (NW)		FLAT	✓	330	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	655	704	43
	2 - Brookfield Road (SE)	699	0	218	27
	3 - A28 (SW)	460	98	9	0
	4 - Chart Road (NW)	241	66	22	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	7	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.70	6.22	2.4	A	1402	1402
2 - Brookfield Road (SE)	0.37	2.30	0.6	A	944	944
3 - A28 (SW)	0.37	3.92	0.6	A	566	566
4 - Chart Road (NW)	0.37	6.66	0.6	A	330	330

Main Results for each time segment

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 - A28 (NE)	1402	350	194	2005	0.699	1392	1394	0.0	2.4	6.023	A
2 - Brookfield Road (SE)	944	236	773	2566	0.368	942	813	0.0	0.6	2.287	A
3 - A28 (SW)	566	141	767	1542	0.367	563	947	0.0	0.6	3.900	A
4 - Chart Road (NW)	330	82	1260	886	0.372	327	70	0.0	0.6	6.574	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 - A28 (NE)	1402	350	195	2005	0.699	1402	1399	2.4	2.4	6.213	A
2 - Brookfield Road (SE)	944	236	778	2561	0.369	944	818	0.6	0.6	2.300	A
3 - A28 (SW)	566	141	769	1541	0.367	566	953	0.6	0.6	3.924	A
4 - Chart Road (NW)	330	82	1264	883	0.373	330	70	0.6	0.6	6.660	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 - A28 (NE)	1402	350	195	2005	0.699	1402	1399	2.4	2.4	6.216	A
2 - Brookfield Road (SE)	944	236	778	2561	0.369	944	818	0.6	0.6	2.300	A
3 - A28 (SW)	566	141	769	1541	0.367	566	953	0.6	0.6	3.924	A
4 - Chart Road (NW)	330	82	1264	883	0.373	330	70	0.6	0.6	6.660	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 - A28 (NE)	1402	350	195	2005	0.699	1402	1399	2.4	2.4	6.216	A
2 - Brookfield Road (SE)	944	236	778	2561	0.369	944	818	0.6	0.6	2.300	A
3 - A28 (SW)	566	141	769	1541	0.367	566	953	0.6	0.6	3.924	A
4 - Chart Road (NW)	330	82	1264	883	0.373	330	70	0.6	0.6	6.660	A

AM - 2032 Base + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D16,D18,D28,D30	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	4.82	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.82	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1662
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D30	2032 Base + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1411	100.000
2 - Brookfield Road (SE)		FLAT	✓	945	100.000
3 - A28 (SW)		FLAT	✓	599	100.000
4 - Chart Road (NW)		FLAT	✓	330	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	655	713	43
	2 - Brookfield Road (SE)	699	0	219	27
	3 - A28 (SW)	488	103	9	0
	4 - Chart Road (NW)	241	66	22	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	3	5	9
	2 - Brookfield Road (SE)	3	0	3	16
	3 - A28 (SW)	6	4	0	0
	4 - Chart Road (NW)	2	3	5	0

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 - A28 (NE)	0.71	6.35	2.5	A	1411	1411
2 - Brookfield Road (SE)	0.37	2.31	0.6	A	945	945
3 - A28 (SW)	0.39	4.05	0.7	A	599	599
4 - Chart Road (NW)	0.38	6.92	0.6	A	330	330

Main Results for each time segment

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 - A28 (NE)	1411	353	199	2002	0.705	1401	1422	0.0	2.4	6.142	A
2 - Brookfield Road (SE)	945	236	782	2557	0.370	943	818	0.0	0.6	2.300	A
3 - A28 (SW)	599	150	767	1542	0.388	596	957	0.0	0.7	4.019	A
4 - Chart Road (NW)	330	82	1293	865	0.381	327	70	0.0	0.6	6.820	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 - A28 (NE)	1411	353	200	2001	0.705	1411	1427	2.4	2.5	6.341	A
2 - Brookfield Road (SE)	945	236	787	2552	0.370	945	823	0.6	0.6	2.313	A
3 - A28 (SW)	599	150	769	1541	0.389	599	963	0.7	0.7	4.047	A
4 - Chart Road (NW)	330	82	1297	863	0.382	330	70	0.6	0.6	6.917	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 - A28 (NE)	1411	353	200	2001	0.705	1411	1427	2.5	2.5	6.347	A
2 - Brookfield Road (SE)	945	236	787	2552	0.370	945	823	0.6	0.6	2.313	A
3 - A28 (SW)	599	150	769	1541	0.389	599	963	0.7	0.7	4.047	A
4 - Chart Road (NW)	330	82	1297	863	0.382	330	70	0.6	0.6	6.917	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 - A28 (NE)	1411	353	200	2001	0.705	1411	1427	2.5	2.5	6.347	A
2 - Brookfield Road (SE)	945	236	787	2552	0.370	945	823	0.6	0.6	2.313	A
3 - A28 (SW)	599	150	769	1541	0.389	599	963	0.7	0.7	4.047	A
4 - Chart Road (NW)	330	82	1297	863	0.382	330	70	0.6	0.6	6.917	A

PM - 2023 Obs + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D17,D19,D29,D31	100.000	100.000

Junction Network

Junctions

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

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.36	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1680
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D17	2023 Obs + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1389	100.000
2 - Brookfield Road (SE)		FLAT	✓	840	100.000
3 - A28 (SW)		FLAT	✓	638	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	630	703	55
	2 - Brookfield Road (SE)	609	1	174	56
	3 - A28 (SW)	519	115	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	0.69	5.83	2.2	A	1389	1389
2 - Brookfield Road (SE)	0.33	2.12	0.5	A	840	840
3 - A28 (SW)	0.41	3.91	0.7	A	638	638
4 - Chart Road (NW)	0.19	5.06	0.2	A	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1389	347	180	2015	0.689	1380	1235	0.0	2.2	5.671	A
2 - Brookfield Road (SE)	840	210	765	2574	0.326	838	796	0.0	0.5	2.111	A
3 - A28 (SW)	638	160	720	1575	0.405	636	882	0.0	0.7	3.881	A
4 - Chart Road (NW)	174	44	1242	897	0.194	173	114	0.0	0.2	5.027	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1389	347	181	2014	0.689	1389	1239	2.2	2.2	5.829	A
2 - Brookfield Road (SE)	840	210	769	2569	0.327	840	800	0.5	0.5	2.120	A
3 - A28 (SW)	638	160	722	1573	0.406	638	887	0.7	0.7	3.908	A
4 - Chart Road (NW)	174	44	1246	894	0.195	174	114	0.2	0.2	5.057	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 - A28 (NE)	1389	347	181	2014	0.689	1389	1239	2.2	2.2	5.832	A
2 - Brookfield Road (SE)	840	210	769	2569	0.327	840	800	0.5	0.5	2.120	A
3 - A28 (SW)	638	160	722	1573	0.406	638	887	0.7	0.7	3.908	A
4 - Chart Road (NW)	174	44	1246	894	0.195	174	114	0.2	0.2	5.057	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 - A28 (NE)	1389	347	181	2014	0.689	1389	1239	2.2	2.2	5.832	A
2 - Brookfield Road (SE)	840	210	769	2569	0.327	840	800	0.5	0.5	2.120	A
3 - A28 (SW)	638	160	722	1573	0.406	638	887	0.7	0.7	3.908	A
4 - Chart Road (NW)	174	44	1246	894	0.195	174	114	0.2	0.2	5.057	A

PM - 2023 Obs + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D17,D19,D29,D31	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	4.44	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.44	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1680
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D19	2023 Obs + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1403	100.000
2 - Brookfield Road (SE)		FLAT	✓	843	100.000
3 - A28 (SW)		FLAT	✓	645	100.000
4 - Chart Road (NW)		FLAT	✓	174	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	630	717	55
	2 - Brookfield Road (SE)	609	1	177	56
	3 - A28 (SW)	524	117	2	2
	4 - Chart Road (NW)	111	54	8	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	0.70	5.98	2.3	A	1403	1403
2 - Brookfield Road (SE)	0.33	2.14	0.5	A	843	843
3 - A28 (SW)	0.41	3.94	0.7	A	645	645
4 - Chart Road (NW)	0.20	5.09	0.2	A	174	174

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1403	351	182	2013	0.697	1394	1240	0.0	2.3	5.804	A
2 - Brookfield Road (SE)	843	211	778	2561	0.329	841	797	0.0	0.5	2.131	A
3 - A28 (SW)	645	161	720	1575	0.410	643	899	0.0	0.7	3.908	A
4 - Chart Road (NW)	174	44	1249	893	0.195	173	114	0.0	0.2	5.057	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1403	351	183	2013	0.697	1403	1244	2.3	2.3	5.976	A
2 - Brookfield Road (SE)	843	211	783	2556	0.330	843	802	0.5	0.5	2.140	A
3 - A28 (SW)	645	161	722	1573	0.410	645	904	0.7	0.7	3.936	A
4 - Chart Road (NW)	174	44	1253	890	0.196	174	114	0.2	0.2	5.088	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 - A28 (NE)	1403	351	183	2013	0.697	1403	1244	2.3	2.3	5.978	A
2 - Brookfield Road (SE)	843	211	783	2556	0.330	843	802	0.5	0.5	2.140	A
3 - A28 (SW)	645	161	722	1573	0.410	645	904	0.7	0.7	3.936	A
4 - Chart Road (NW)	174	44	1253	890	0.196	174	114	0.2	0.2	5.088	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 - A28 (NE)	1403	351	183	2013	0.697	1403	1244	2.3	2.3	5.978	A
2 - Brookfield Road (SE)	843	211	783	2556	0.330	843	802	0.5	0.5	2.140	A
3 - A28 (SW)	645	161	722	1573	0.410	645	904	0.7	0.7	3.936	A
4 - Chart Road (NW)	174	44	1253	890	0.196	174	114	0.2	0.2	5.088	A

PM - 2032 Base + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D17,D19,D29,D31	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	5.04	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.04	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1680
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D29	2032 Base + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1485	100.000
2 - Brookfield Road (SE)		FLAT	✓	900	100.000
3 - A28 (SW)		FLAT	✓	681	100.000
4 - Chart Road (NW)		FLAT	✓	187	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	676	750	59
	2 - Brookfield Road (SE)	653	1	185	60
	3 - A28 (SW)	555	122	2	2
	4 - Chart Road (NW)	119	58	9	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	0.74	7.00	2.9	A	1485	1485
2 - Brookfield Road (SE)	0.36	2.26	0.6	A	900	900
3 - A28 (SW)	0.44	4.27	0.8	A	681	681
4 - Chart Road (NW)	0.22	5.58	0.3	A	187	187

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1485	371	192	2006	0.740	1474	1322	0.0	2.8	6.718	A
2 - Brookfield Road (SE)	900	225	814	2526	0.356	897	851	0.0	0.6	2.249	A
3 - A28 (SW)	681	170	773	1538	0.443	678	939	0.0	0.8	4.232	A
4 - Chart Road (NW)	187	47	1329	843	0.222	186	122	0.0	0.3	5.533	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1485	371	193	2006	0.740	1485	1327	2.8	2.8	6.998	A
2 - Brookfield Road (SE)	900	225	820	2520	0.357	900	857	0.6	0.6	2.263	A
3 - A28 (SW)	681	170	775	1537	0.443	681	945	0.8	0.8	4.270	A
4 - Chart Road (NW)	187	47	1333	840	0.222	187	122	0.3	0.3	5.576	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 - A28 (NE)	1485	371	193	2006	0.740	1485	1327	2.8	2.9	7.004	A
2 - Brookfield Road (SE)	900	225	820	2520	0.357	900	857	0.6	0.6	2.263	A
3 - A28 (SW)	681	170	775	1537	0.443	681	945	0.8	0.8	4.270	A
4 - Chart Road (NW)	187	47	1333	840	0.222	187	122	0.3	0.3	5.576	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 - A28 (NE)	1485	371	193	2006	0.740	1485	1327	2.9	2.9	7.004	A
2 - Brookfield Road (SE)	900	225	820	2520	0.357	900	857	0.6	0.6	2.263	A
3 - A28 (SW)	681	170	775	1537	0.443	681	945	0.8	0.8	4.270	A
4 - Chart Road (NW)	187	47	1333	840	0.222	187	122	0.3	0.3	5.576	A

PM - 2032 Base + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A28 (NE) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D17,D19,D29,D31	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Matalan Roundabout	Standard Roundabout		1, 2, 3, 4	5.16	A

Junction Network

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

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE)		
2	Brookfield Road (SE)		
3	A28 (SW)		
4	Chart Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE)	3.25	9.00	34.0	16.0	45.0	22.5		
2 - Brookfield Road (SE)	8.10	10.98	25.7	25.0	45.0	13.0		
3 - A28 (SW)	3.73	10.38	20.8	16.0	45.0	33.5		
4 - Chart Road (NW)	3.50	8.31	10.8	16.0	45.0	24.5		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - A28 (NE)	✓		1680
2 - Brookfield Road (SE)			
3 - A28 (SW)			
4 - Chart Road (NW)			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE)	0.719	2144
2 - Brookfield Road (SE)	0.963	3310
3 - A28 (SW)	0.694	2074
4 - Chart Road (NW)	0.625	1673

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D31	2032 Base + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE)		FLAT	✓	1499	100.000
2 - Brookfield Road (SE)		FLAT	✓	903	100.000
3 - A28 (SW)		FLAT	✓	688	100.000
4 - Chart Road (NW)		FLAT	✓	187	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	676	764	59
	2 - Brookfield Road (SE)	653	1	188	60
	3 - A28 (SW)	560	124	2	2
	4 - Chart Road (NW)	119	58	9	1

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1 - A28 (NE)	2 - Brookfield Road (SE)	3 - A28 (SW)	4 - Chart Road (NW)
From	1 - A28 (NE)	0	1	2	0
	2 - Brookfield Road (SE)	2	0	1	4
	3 - A28 (SW)	2	0	0	0
	4 - Chart Road (NW)	0	4	0	0

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 - A28 (NE)	0.75	7.22	3.0	A	1499	1499
2 - Brookfield Road (SE)	0.36	2.29	0.6	A	903	903
3 - A28 (SW)	0.45	4.30	0.8	A	688	688
4 - Chart Road (NW)	0.22	5.61	0.3	A	187	187

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1499	375	194	2005	0.748	1487	1327	0.0	2.9	6.902	A
2 - Brookfield Road (SE)	903	226	828	2513	0.359	900	853	0.0	0.6	2.272	A
3 - A28 (SW)	688	172	773	1538	0.447	685	956	0.0	0.8	4.264	A
4 - Chart Road (NW)	187	47	1336	839	0.223	186	122	0.0	0.3	5.570	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A28 (NE)	1499	375	195	2004	0.748	1499	1332	2.9	3.0	7.211	A
2 - Brookfield Road (SE)	903	226	834	2507	0.360	903	859	0.6	0.6	2.286	A
3 - A28 (SW)	688	172	775	1537	0.448	688	962	0.8	0.8	4.304	A
4 - Chart Road (NW)	187	47	1340	836	0.224	187	122	0.3	0.3	5.614	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 - A28 (NE)	1499	375	195	2004	0.748	1499	1332	3.0	3.0	7.217	A
2 - Brookfield Road (SE)	903	226	834	2507	0.360	903	859	0.6	0.6	2.286	A
3 - A28 (SW)	688	172	775	1537	0.448	688	962	0.8	0.8	4.304	A
4 - Chart Road (NW)	187	47	1340	836	0.224	187	122	0.3	0.3	5.614	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 - A28 (NE)	1499	375	195	2004	0.748	1499	1332	3.0	3.0	7.217	A
2 - Brookfield Road (SE)	903	226	834	2507	0.360	903	859	0.6	0.6	2.286	A
3 - A28 (SW)	688	172	775	1537	0.448	688	962	0.8	0.8	4.304	A
4 - Chart Road (NW)	187	47	1340	836	0.224	187	122	0.3	0.3	5.614	A

Appendix IDR4 Loudon Way Traffic Signals Modelling – Sensitivity Tests

Land North of Possingham Farmhouse, Ashford, Great Chart, Kent

Hodson Development Ltd

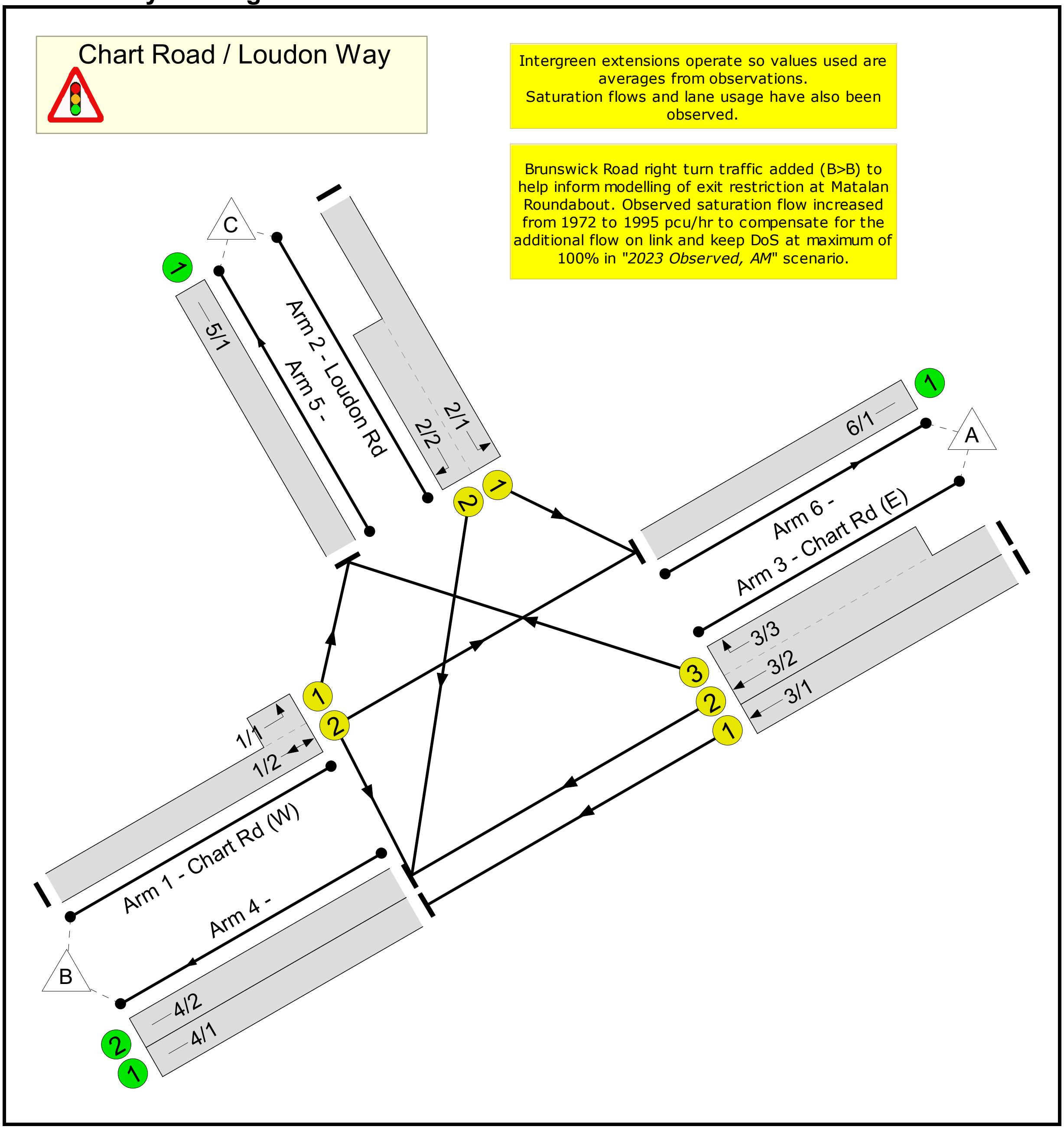
SLR Project No.: 425.001542.00001

24 September 2024

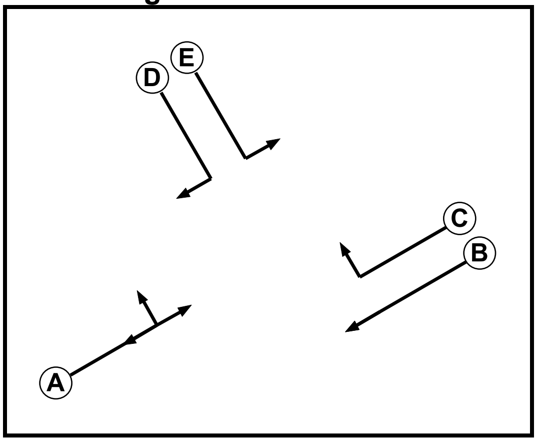
User and Project Details

Project:	**Possingham Farm, Ashford**
Title:	**A28 Chart Road / Loudon Way Junction**
Design Layout Ref:	Existing Junction Layout
Model Assumptions:	Intergreens are observed averages
Flow Details:	Observed flows from surveys of Tuesday, 28th March 2023
Additional detail:	Dev Flows -> Escort Education Only
File name:	A28_Loudon (Existing) v4.0.lsg3x
Author:	David Noyce
Company:	Vectos / SLR
Address:	Summit House, 12 Red Lion Square, London WC1R 4QH

Junction Layout Diagram



Phase Diagram



Phase Input Data

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

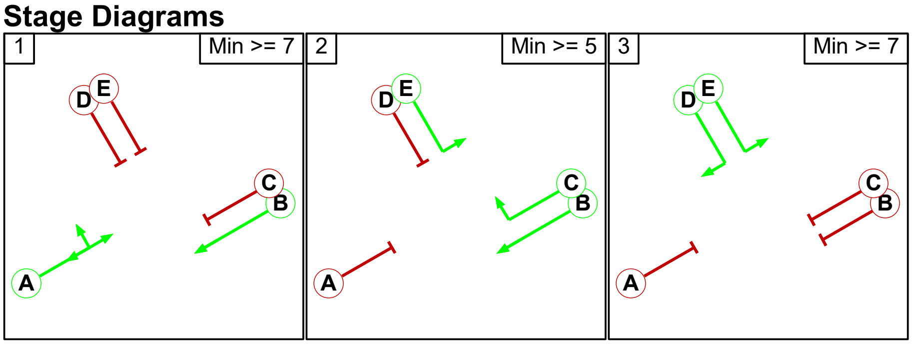
Intergreens

	Starting Phase					
		A	B	C	D	E
Terminating Phase	A		-	6	8	8
	B	-		-	8	-
	C	5	-		8	-
	D	5	5	5		-
	E	5	-	-	-	

Stage Data

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

Stage Diagrams



Phase Delays

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

Lane Input Data

Junction: Chart Road / Loudon Way												
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 (Chart Rd (W))	U	A	2	3	11.1	Geom	-	3.00	0.00	Y	Arm 5 Left	16.50
1/2 (Chart Rd (W))	U	A	2	3	98.3	User	1995	-	-	-	-	-
2/1 (Loudon Rd)	U	E	2	3	60.0	User	1890	-	-	-	-	-
2/2 (Loudon Rd)	U	D	2	3	8.0	User	2012	-	-	-	-	-
3/1 (Chart Rd (E))	U	B	2	3	73.9	User	1859	-	-	-	-	-
3/2 (Chart Rd (E))	U	B	2	3	14.6	User	1859	-	-	-	-	-
3/3 (Chart Rd (E))	U	C	2	3	14.6	User	1846	-	-	-	-	-

Junction: Chart Road / Loudon Way		
Lane	Custom Occupancy per Flow Group (PCU)	
	AM Peak Hour	PM Peak Hour
1/1 (Chart Rd (W) Lane 1)	2.1	2.2

Give-Way Lane Input Data

Junction: Chart Road / Loudon Way
There are no Opposed Lanes in this Junction

Scenario 1: '2023 Observed, AM'
(FG5: '2023 Observed, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

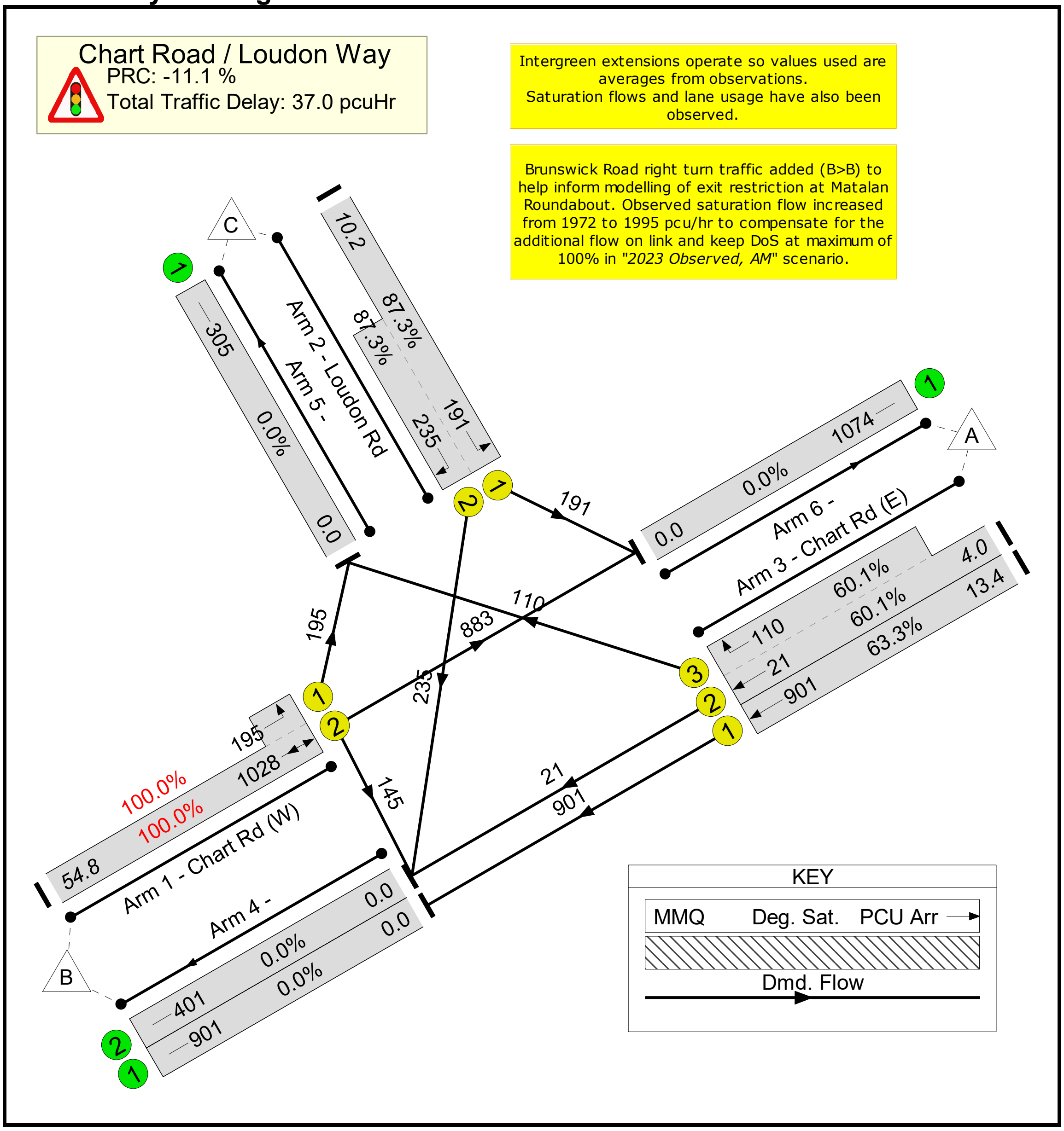
Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	922	110	1032
	B	883	145	195	1223
	C	191	235	0	426
	Tot.	1074	1302	305	2681

Stage Timings

Stage	1	2	3
Duration	68	8	14
Change Point	0	73	89

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**100.0%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**100.0%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	68	5	73	1223	1995:1755	1028+195	100.0 : 100.0%	72.3	54.8
2/1+2/2	Loudon Rd Right Left	E D	30:14	81:97	0	426	1890:2012	219+269	87.3 : 87.3%	66.7	10.2
3/1	Chart Rd (E) Ahead	B	84	5	89	901	1859	1424	63.3%	9.3	13.4
3/2+3/3	Chart Rd (E) Ahead Right	B C	84:10	5:79	89	131	1859:1846	35+183	60.1 : 60.1%	61.1	4.0

C1 PRC for Signalled Lanes (%): -11.1 Total Delay for Signalled Lanes (pcuHr): 37.02 Cycle Time (s): 111
PRC Over All Lanes (%): -11.1 Total Delay Over All Lanes(pcuHr): 37.02

Scenario 2: '2023 Observed, PM'
(FG6: '2023 Observed, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

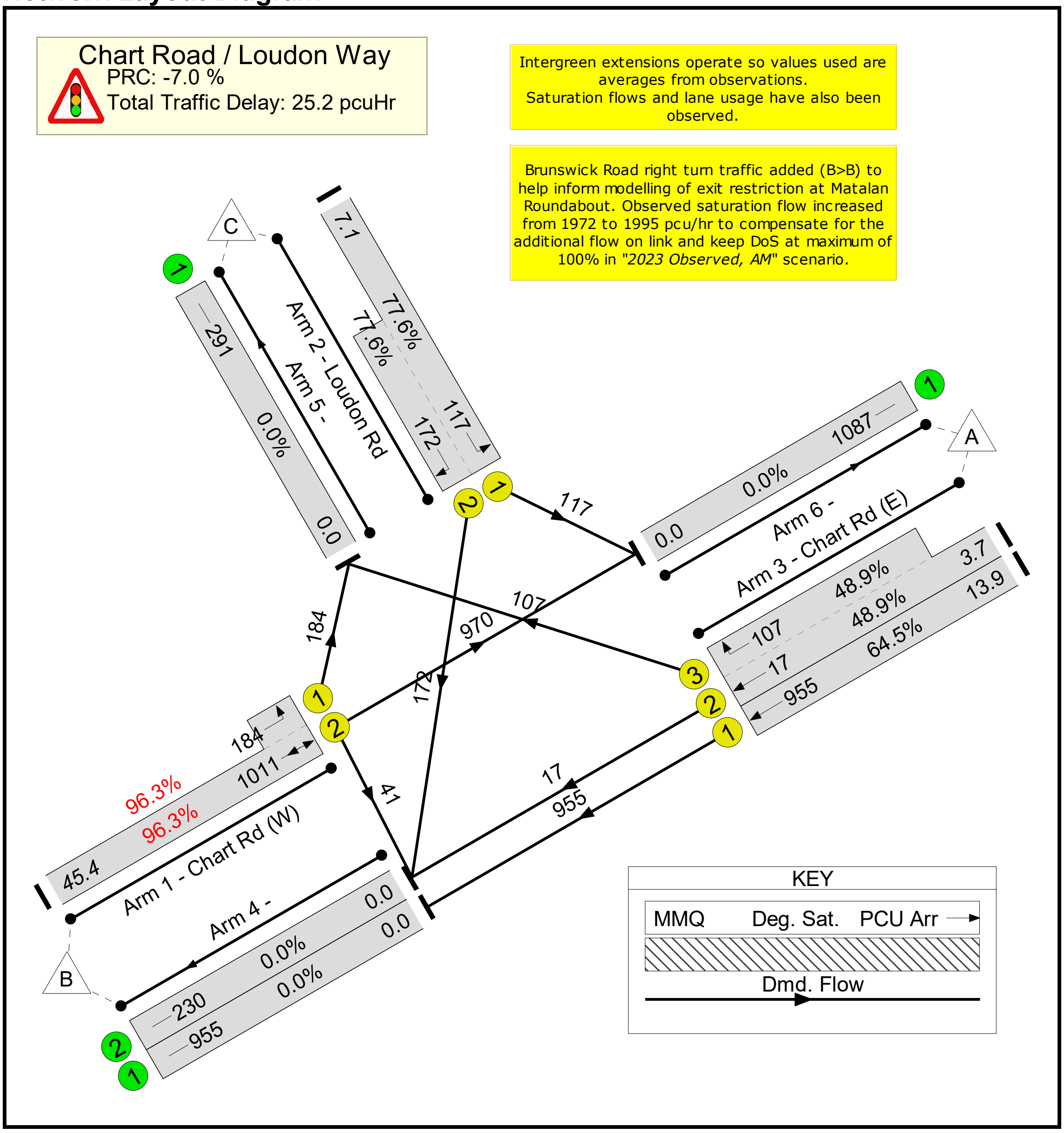
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	972	107	1079
	B	970	41	184	1195
	C	117	172	0	289
	Tot.	1087	1185	291	2563

Stage Timings

Stage	1	2	3
Duration	74	11	12
Change Point	0	79	98

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**96.3%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**96.3%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	74	5	79	1195	1972:1755	1050+191	96.3 : 96.3%	47.8	45.4
2/1+2/2	Loudon Rd Right Left	E D	31:12	87:106	0	289	1890:2012	151+222	77.6 : 77.6%	64.7	7.1
3/1	Chart Rd (E) Ahead	B	93	5	98	955	1859	1481	64.5%	8.4	13.9
3/2+3/3	Chart Rd (E) Ahead Right	B C	93:13	5:85	98	124	1859:1846	35+219	48.9 : 48.9%	56.1	3.7

C1 PRC for Signalled Lanes (%): -7.0 Total Delay for Signalled Lanes (pcuHr): 25.23 Cycle Time (s): 118
PRC Over All Lanes (%): -7.0 Total Delay Over All Lanes(pcuHr): 25.23

Scenario 4: '2023 Obs + Cttd, AM'
(FG13: '2023 Obs + Committed, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

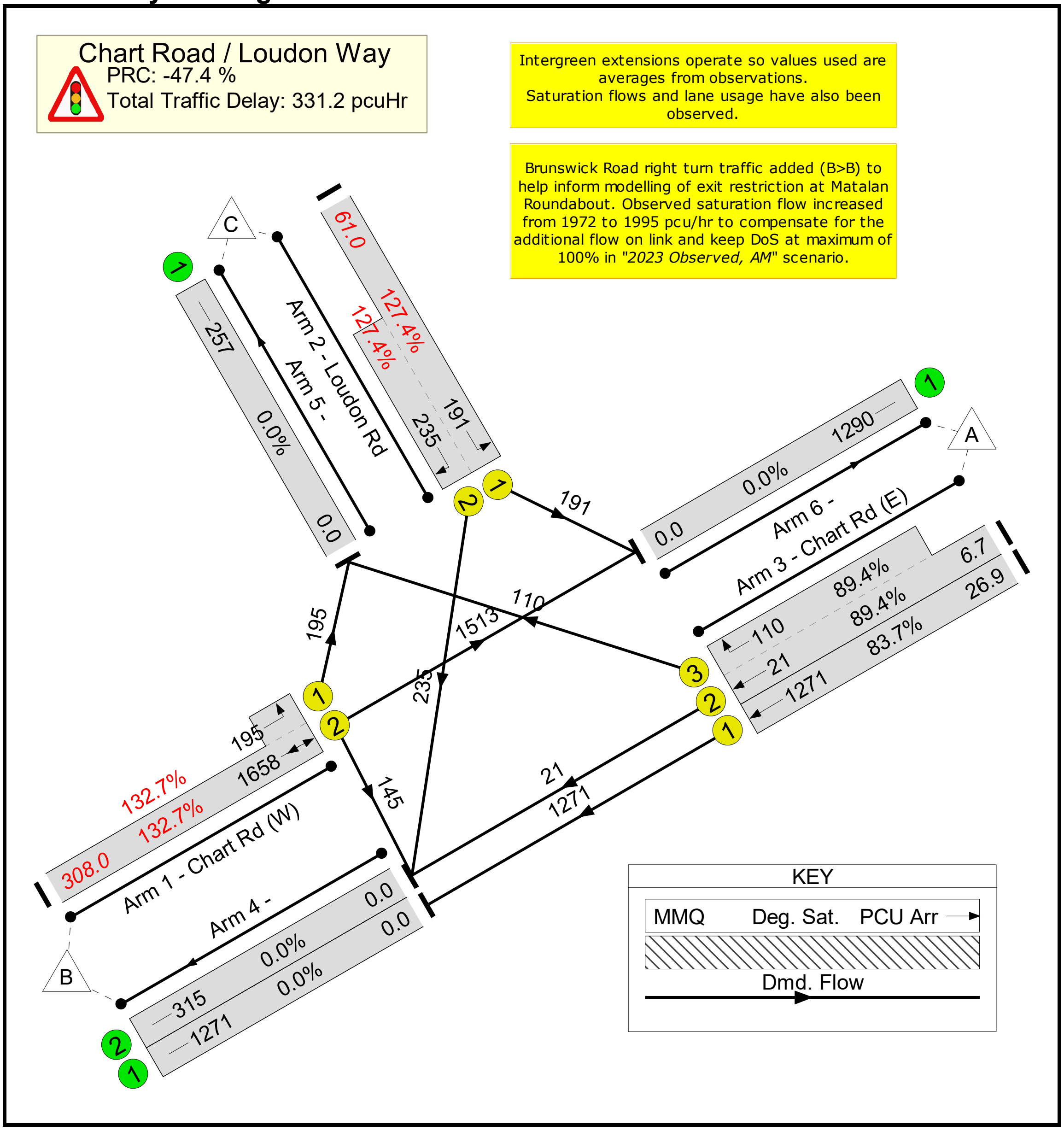
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1292	110	1402
	B	1513	145	195	1853
	C	191	235	0	426
	Tot.	1704	1672	305	3681

Stage Timings

Stage	1	2	3
Duration	84	5	10
Change Point	0	89	102

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**132.7%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**132.7%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	84	5	89	1853	1995:1755	1250+147	132.7 : 132.7%	511.9	308.0
2/1+2/2	Loudon Rd Right Left	E D	23:10	97:110	0	426	1890:2012	150+184	127.4 : 127.4%	491.8	61.0
3/1	Chart Rd (E) Ahead	B	97	5	102	1271	1859	1518	83.7%	13.5	26.9
3/2+3/3	Chart Rd (E) Ahead Right	B C	97:7	5:95	102	131	1859:1846	23+123	89.4 : 89.4%	130.3	6.7

C1 PRC for Signalled Lanes (%): -47.4 Total Delay for Signalled Lanes (pcuHr): 331.18 Cycle Time (s): 120
PRC Over All Lanes (%): -47.4 Total Delay Over All Lanes(pcuHr): 331.18

Scenario 5: '2023 Obs + Cttd, PM'
(FG14: '2023 Obs + Committed, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

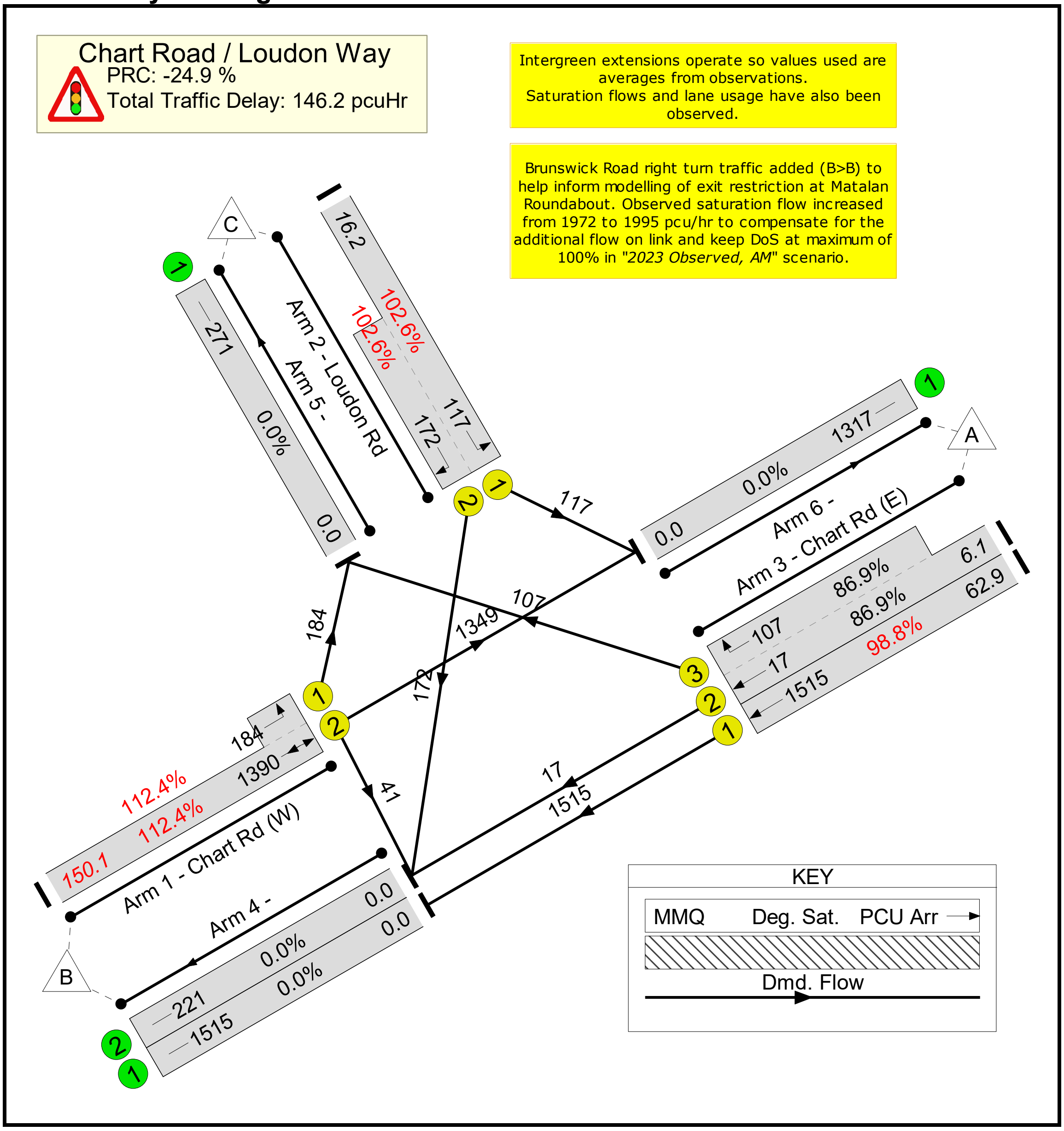
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1532	107	1639
	B	1349	41	184	1574
	C	117	172	0	289
	Tot.	1466	1745	291	3502

Stage Timings

Stage	1	2	3
Duration	85	5	9
Change Point	0	90	103

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**112.4%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**112.4%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	85	5	90	1574	1972:1755	1236+164	112.4 : 112.4%	246.5	150.1
2/1+2/2	Loudon Rd Right Left	E D	22:9	98:111	0	289	1890:2012	114+168	102.6 : 102.6%	182.5	16.2
3/1	Chart Rd (E) Ahead	B	98	5	103	1515	1859	1534	98.8%	46.4	62.9
3/2+3/3	Chart Rd (E) Ahead Right	B C	98:7	5:96	103	124	1859:1846	20+123	86.9 : 86.9%	123.7	6.1

C1 PRC for Signalled Lanes (%): -24.9 Total Delay for Signalled Lanes (pcuHr): 146.20 Cycle Time (s): 120
PRC Over All Lanes (%): -24.9 Total Delay Over All Lanes(pcuHr): 146.20

Scenario 6: '2023 Obs + Cttd + Dev, AM'
(FG15: '2023 Obs + Committed + Dev, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

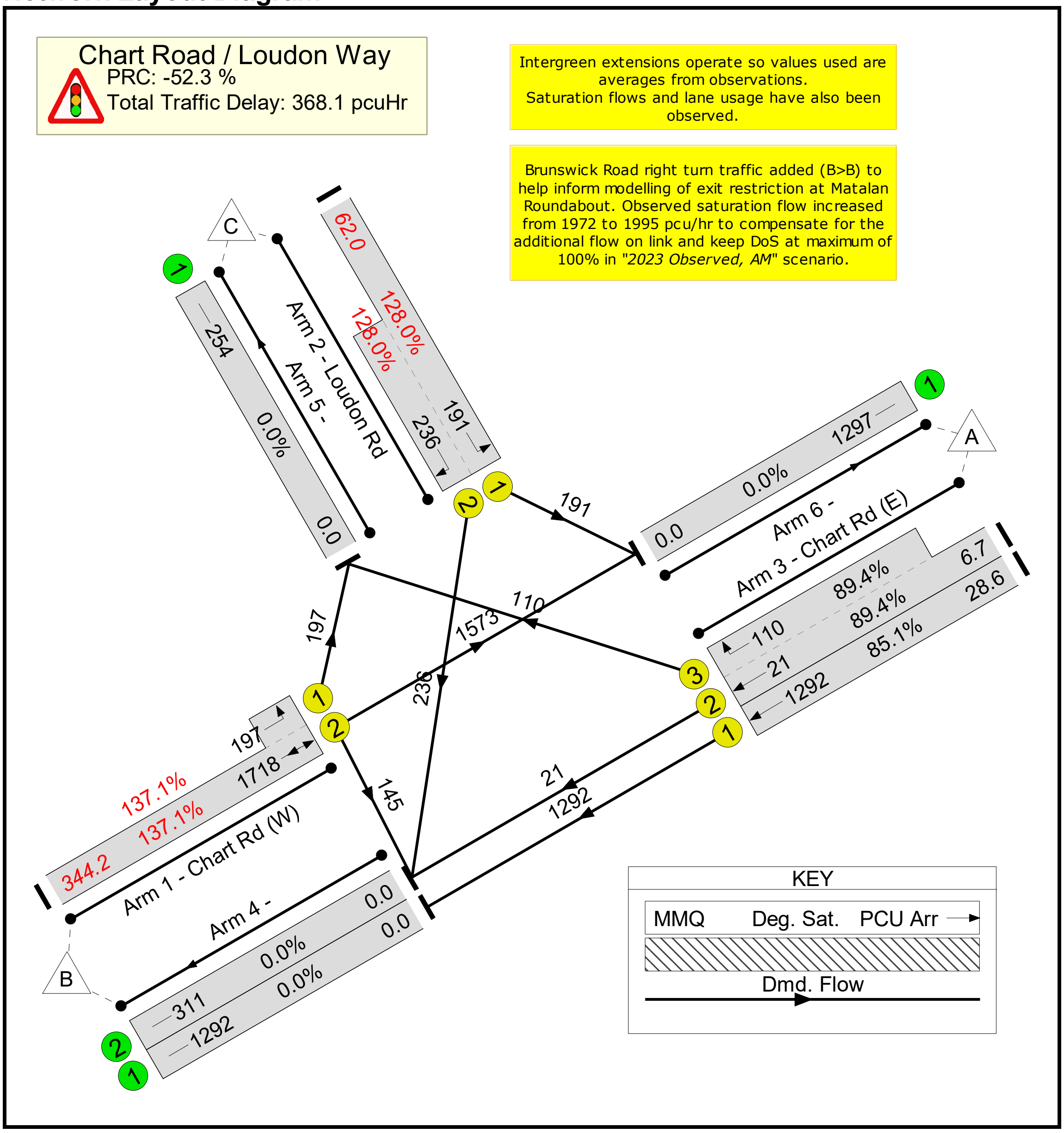
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1313	110	1423
	B	1573	145	197	1915
	C	191	236	0	427
	Tot.	1764	1694	307	3765

Stage Timings

Stage	1	2	3
Duration	84	5	10
Change Point	0	89	102

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**137.1%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**137.1%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	84	5	89	1915	1995:1755	1253+144	137.1 : 137.1%	562.2	344.2
2/1+2/2	Loudon Rd Right Left	E D	23:10	97:110	0	427	1890:2012	149+184	128.0 : 128.0%	498.4	62.0
3/1	Chart Rd (E) Ahead	B	97	5	102	1292	1859	1518	85.1%	14.4	28.6
3/2+3/3	Chart Rd (E) Ahead Right	B C	97:7	5:95	102	131	1859:1846	23+123	89.4 : 89.4%	130.3	6.7

C1 PRC for Signalled Lanes (%): -52.3 Total Delay for Signalled Lanes (pcuHr): 368.09 Cycle Time (s): 120
PRC Over All Lanes (%): -52.3 Total Delay Over All Lanes(pcuHr): 368.09

Scenario 7: '2023 Obs + Cttd + Dev, PM'
(FG16: '2023 Obs + Committed + Dev, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

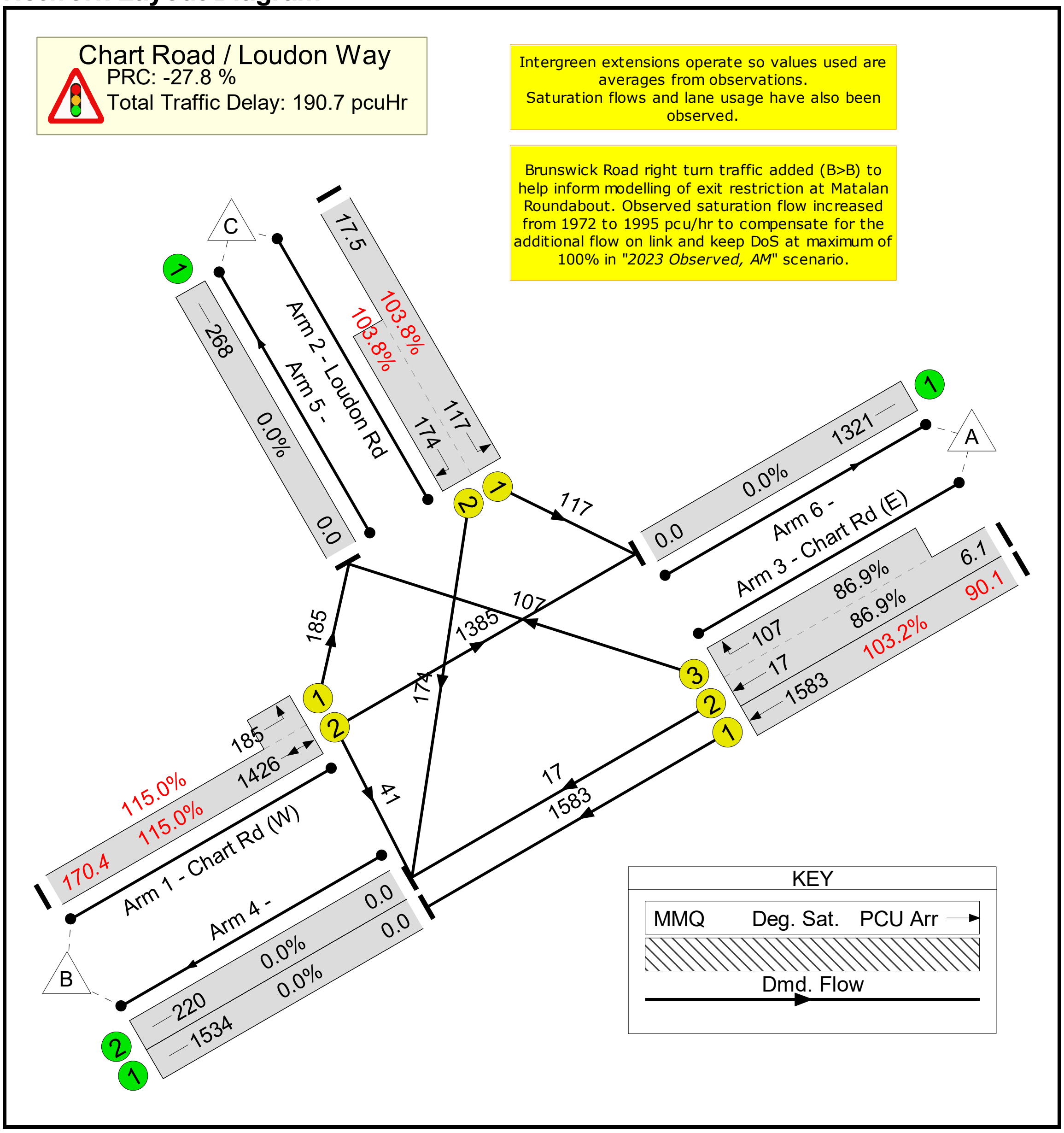
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	1600	107	1707
	B	1385	41	185	1611
	C	117	174	0	291
	Tot.	1502	1815	292	3609

Stage Timings

Stage	1	2	3
Duration	85	5	9
Change Point	0	90	103

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**115.0%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**115.0%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	85	5	90	1611	1972:1755	1240+161	115.0 : 115.0%	285.4	170.4
2/1+2/2	Loudon Rd Right Left	E D	22:9	98:111	0	291	1890:2012	113+168	103.8 : 103.8%	196.4	17.5
3/1	Chart Rd (E) Ahead	B	98	5	103	1583	1859	1534	103.2%	97.5	90.1
3/2+3/3	Chart Rd (E) Ahead Right	B C	98:7	5:96	103	124	1859:1846	20+123	86.9 : 86.9%	123.7	6.1

C1 PRC for Signalled Lanes (%): -27.8 Total Delay for Signalled Lanes (pcuHr): 190.72 Cycle Time (s): 120
PRC Over All Lanes (%): -27.8 Total Delay Over All Lanes(pcuHr): 190.72

Scenario 8: '2023 Obs + Cttd + Dev (Sens.Test), AM'
(FG17: '2023 Obs + Committed + Dev (Sens.Test), AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

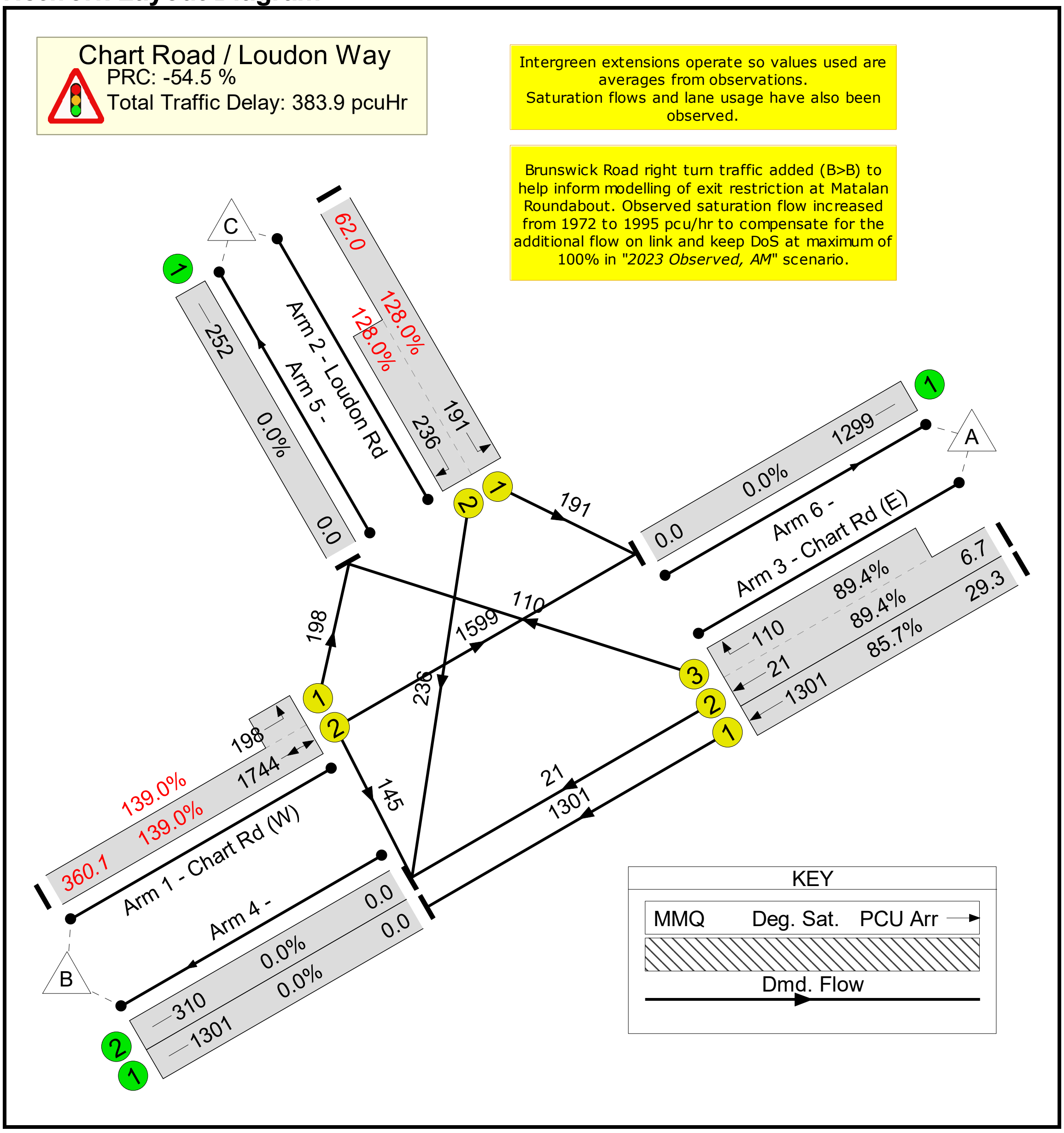
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1322	110	1432
	B	1599	145	198	1942
	C	191	236	0	427
	Tot.	1790	1703	308	3801

Stage Timings

Stage	1	2	3
Duration	84	5	10
Change Point	0	89	102

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**139.0%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**139.0%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	84	5	89	1942	1995:1755	1254+142	139.0 : 139.0%	583.4	360.1
2/1+2/2	Loudon Rd Right Left	E D	23:10	97:110	0	427	1890:2012	149+184	128.0 : 128.0%	498.4	62.0
3/1	Chart Rd (E) Ahead	B	97	5	102	1301	1859	1518	85.7%	14.8	29.3
3/2+3/3	Chart Rd (E) Ahead Right	B C	97:7	5:95	102	131	1859:1846	23+123	89.4 : 89.4%	130.3	6.7

C1 PRC for Signalled Lanes (%): -54.5 Total Delay for Signalled Lanes (pcuHr): 383.90 Cycle Time (s): 120
PRC Over All Lanes (%): -54.5 Total Delay Over All Lanes(pcuHr): 383.90

Scenario 9: '2023 Obs + Cttd + Dev (Sens.Test), PM'
(FG18: '2023 Obs + Committed + Dev (Sens.Test), PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

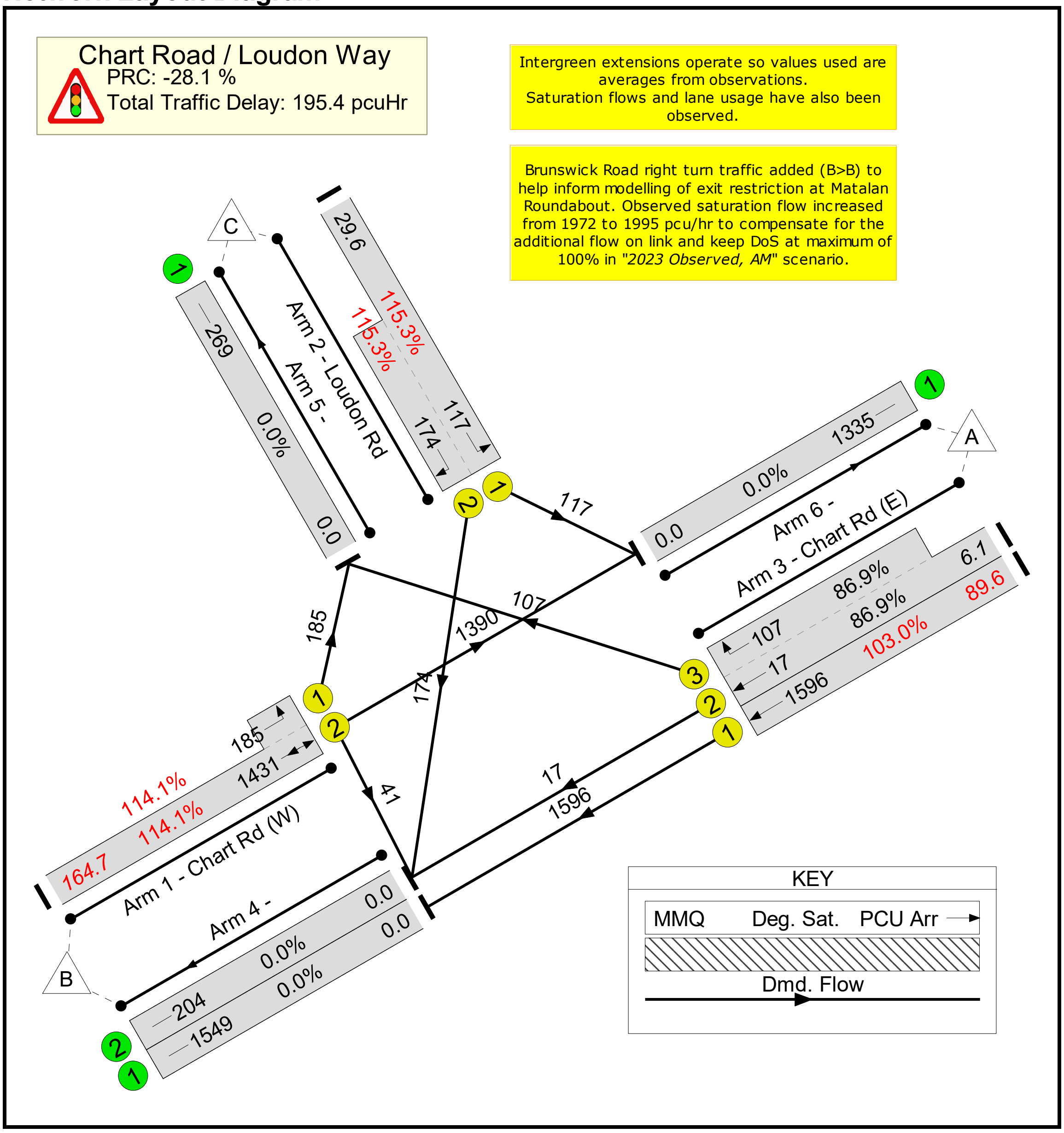
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1613	107	1720
	B	1390	41	185	1616
	C	117	174	0	291
	Tot.	1507	1828	292	3627

Stage Timings

Stage	1	2	3
Duration	86	5	8
Change Point	0	91	104

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**115.3%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**115.3%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	86	5	91	1616	1972:1755	1254+162	114.1 : 114.1%	270.6	164.7
2/1+2/2	Loudon Rd Right Left	E D	21:8	99:112	0	291	1890:2012	101+151	115.3 : 115.3%	346.6	29.6
3/1	Chart Rd (E) Ahead	B	99	5	104	1596	1859	1549	103.0%	94.0	89.6
3/2+3/3	Chart Rd (E) Ahead Right	B C	99:7	5:97	104	124	1859:1846	20+123	86.9 : 86.9%	123.7	6.1

C1 PRC for Signalled Lanes (%): -28.1 Total Delay for Signalled Lanes (pcuHr): 195.43 Cycle Time (s): 120
PRC Over All Lanes (%): -28.1 Total Delay Over All Lanes(pcuHr): 195.43

Scenario 11: '2032 Base + Cttd, AM'
(FG22: '2032 Base + Committed, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

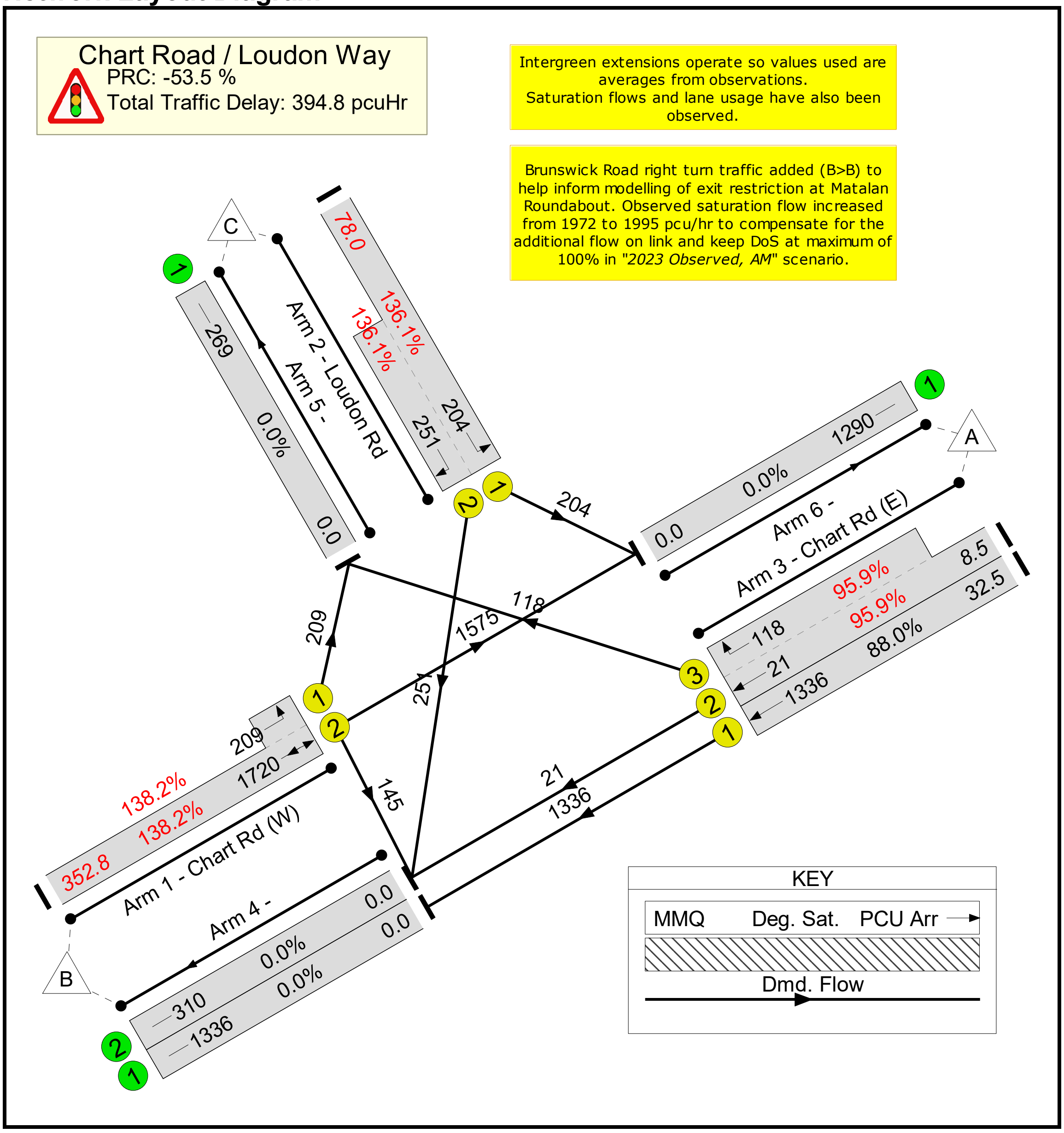
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1357	118	1475
	B	1575	145	209	1929
	C	204	251	0	455
	Tot.	1779	1753	327	3859

Stage Timings

Stage	1	2	3
Duration	84	5	10
Change Point	0	89	102

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**138.2%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**138.2%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	84	5	89	1929	1995:1755	1245+151	138.2 : 138.2%	573.9	352.8
2/1+2/2	Loudon Rd Right Left	E D	23:10	97:110	0	455	1890:2012	150+184	136.1 : 136.1%	590.9	78.0
3/1	Chart Rd (E) Ahead	B	97	5	102	1336	1859	1518	88.0%	16.7	32.5
3/2+3/3	Chart Rd (E) Ahead Right	B C	97:7	5:95	102	139	1859:1846	22+123	95.9 : 95.9%	166.6	8.5

C1 PRC for Signalled Lanes (%): -53.5 Total Delay for Signalled Lanes (pcuHr): 394.81 Cycle Time (s): 120
PRC Over All Lanes (%): -53.5 Total Delay Over All Lanes(pcuHr): 394.81

Scenario 12: '2032 Base + Cttd, PM'
(FG23: '2032 Base + Committed, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

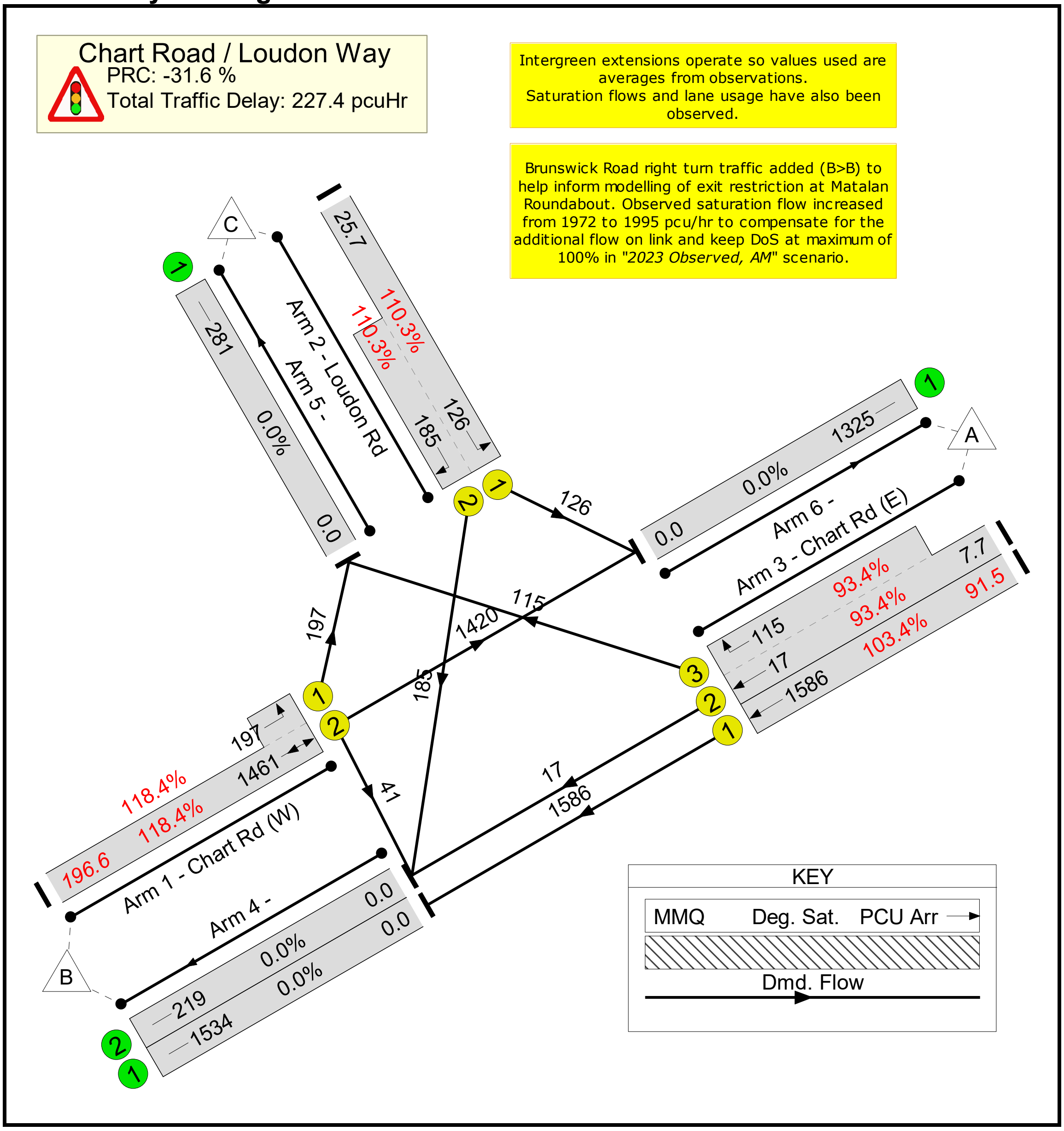
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1603	115	1718
	B	1420	41	197	1658
	C	126	185	0	311
	Tot.	1546	1829	312	3687

Stage Timings

Stage	1	2	3
Duration	85	5	9
Change Point	0	90	103

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**118.4%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**118.4%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	85	5	90	1658	1972:1755	1234+166	118.4 : 118.4%	333.3	196.6
2/1+2/2	Loudon Rd Right Left	E D	22:9	98:111	0	311	1890:2012	114+168	110.3 : 110.3%	278.2	25.7
3/1	Chart Rd (E) Ahead	B	98	5	103	1586	1859	1534	103.4%	100.3	91.5
3/2+3/3	Chart Rd (E) Ahead Right	B C	98:7	5:96	103	132	1859:1846	18+123	93.4 : 93.4%	154.6	7.7

C1	PRC for Signalled Lanes (%):	-31.6	Total Delay for Signalled Lanes (pcuHr):	227.42	Cycle Time (s):	120
	PRC Over All Lanes (%):	-31.6	Total Delay Over All Lanes(pcuHr):	227.42		

Scenario 13: '2032 Base + Cttd + Dev, AM'
(FG24: '2032 Base + Committed + Dev, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

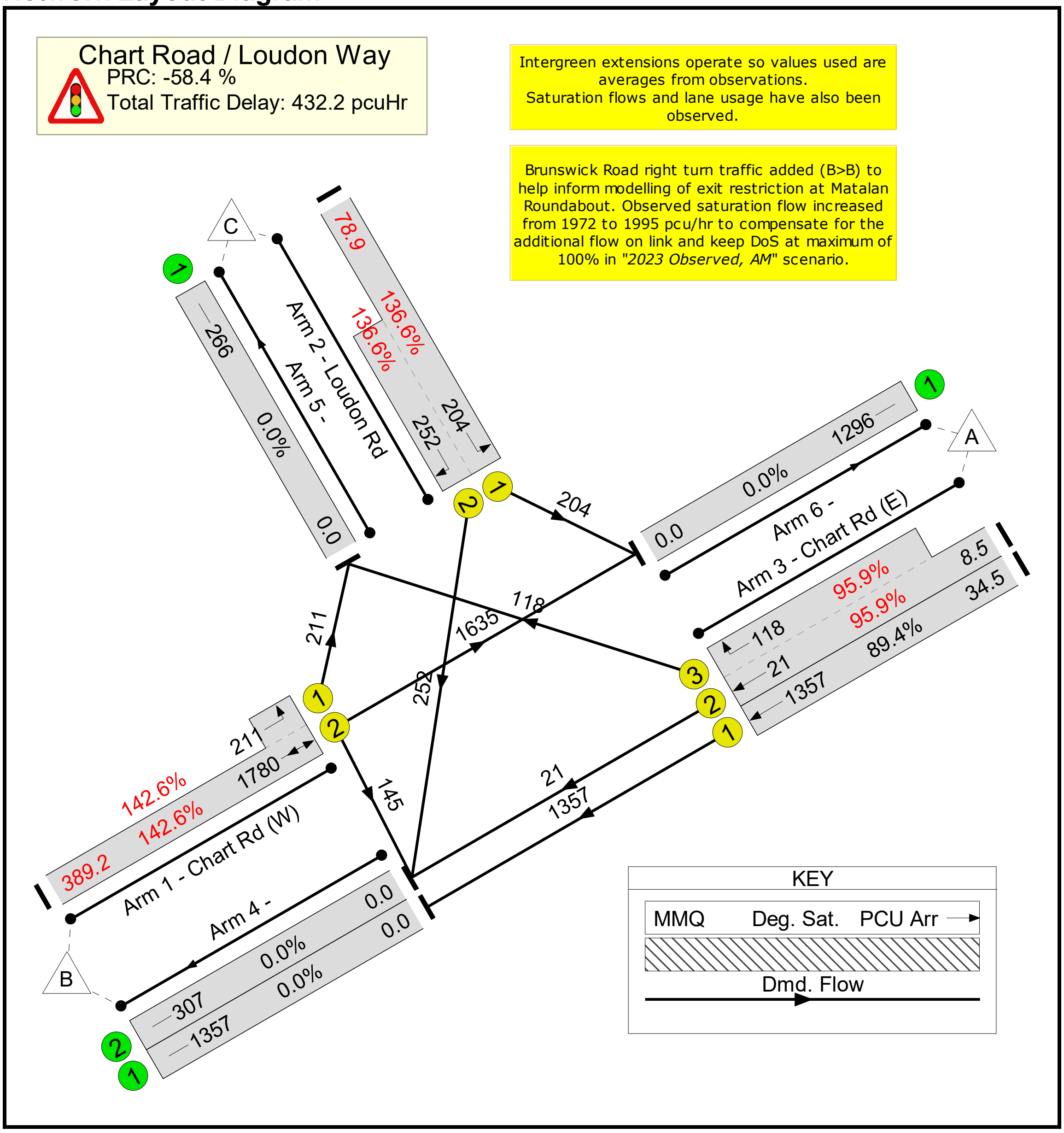
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1378	118	1496
	B	1635	145	211	1991
	C	204	252	0	456
	Tot.	1839	1775	329	3943

Stage Timings

Stage	1	2	3
Duration	84	5	10
Change Point	0	89	102

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**142.6%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**142.6%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	84	5	89	1991	1995:1755	1248+148	142.6 : 142.6%	620.9	389.2
2/1+2/2	Loudon Rd Right Left	E D	23:10	97:110	0	456	1890:2012	149+184	136.6 : 136.6%	596.8	78.9
3/1	Chart Rd (E) Ahead	B	97	5	102	1357	1859	1518	89.4%	18.1	34.5
3/2+3/3	Chart Rd (E) Ahead Right	B C	97:7	5:95	102	139	1859:1846	22+123	95.9 : 95.9%	166.6	8.5

C1 PRC for Signalled Lanes (%): -58.4 Total Delay for Signalled Lanes (pcuHr): 432.23 Cycle Time (s): 120
PRC Over All Lanes (%): -58.4 Total Delay Over All Lanes(pcuHr): 432.23

Scenario 14: '2032 Base + Cttd + Dev, PM'
(FG25: '2032 Base + Committed + Dev, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

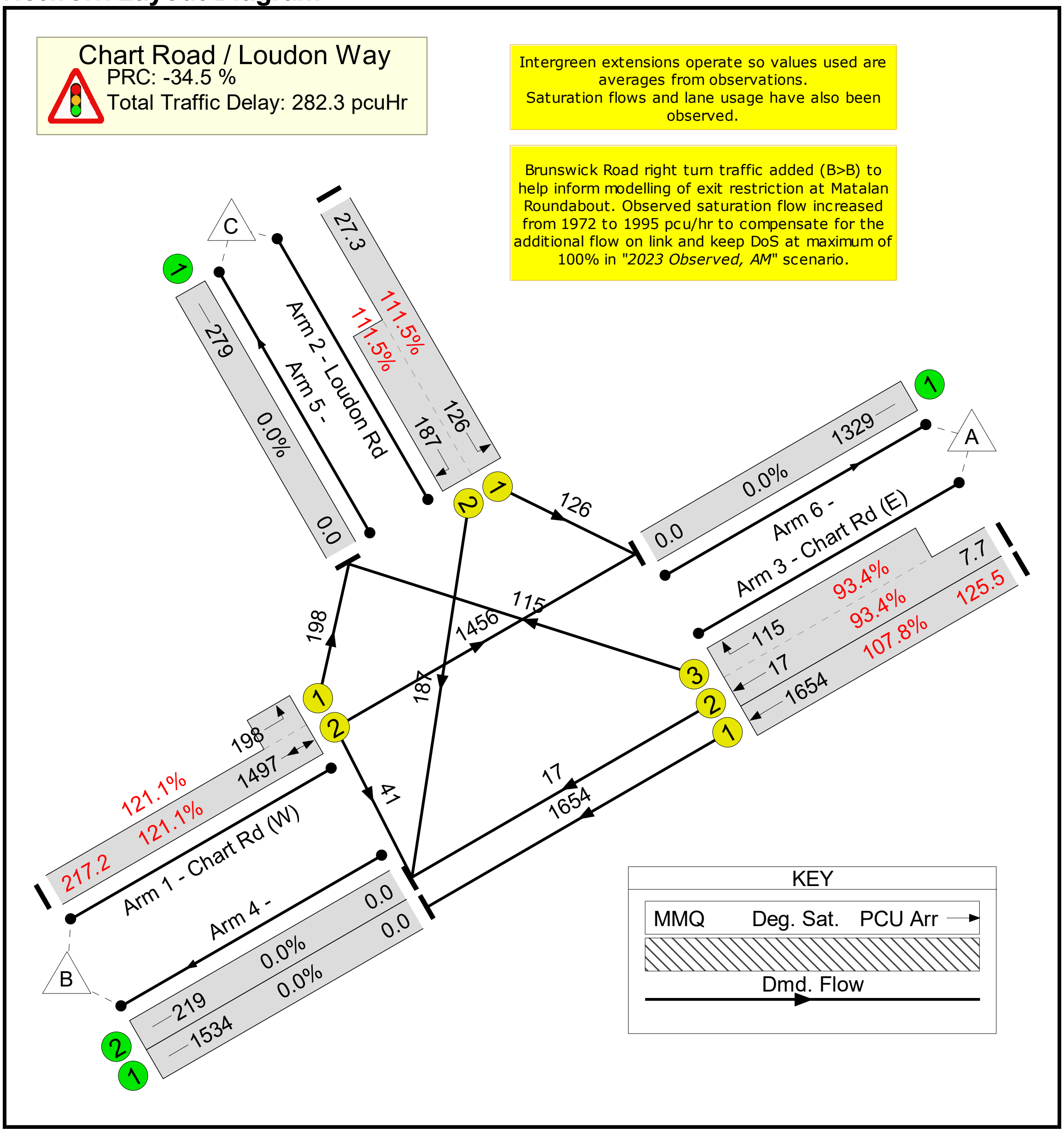
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1671	115	1786
	B	1456	41	198	1695
	C	126	187	0	313
	Tot.	1582	1899	313	3794

Stage Timings

Stage	1	2	3
Duration	85	5	9
Change Point	0	90	103

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**121.1%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**121.1%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	85	5	90	1695	1972:1755	1237+164	121.1 : 121.1%	369.0	217.2
2/1+2/2	Loudon Rd Right Left	E D	22:9	98:111	0	313	1890:2012	113+168	111.5 : 111.5%	293.9	27.3
3/1	Chart Rd (E) Ahead	B	98	5	103	1654	1859	1534	107.8%	168.4	125.5
3/2+3/3	Chart Rd (E) Ahead Right	B C	98:7	5:96	103	132	1859:1846	18+123	93.4 : 93.4%	154.6	7.7

C1 PRC for Signalled Lanes (%): -34.5 Total Delay for Signalled Lanes (pcuHr): 282.33 Cycle Time (s): 120
PRC Over All Lanes (%): -34.5 Total Delay Over All Lanes(pcuHr): 282.33

Scenario 15: '2032 Base + Cttd + Dev (Sens.Test), AM'
(FG26: '2032 Base + Committed + Dev (Sens.Test), AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

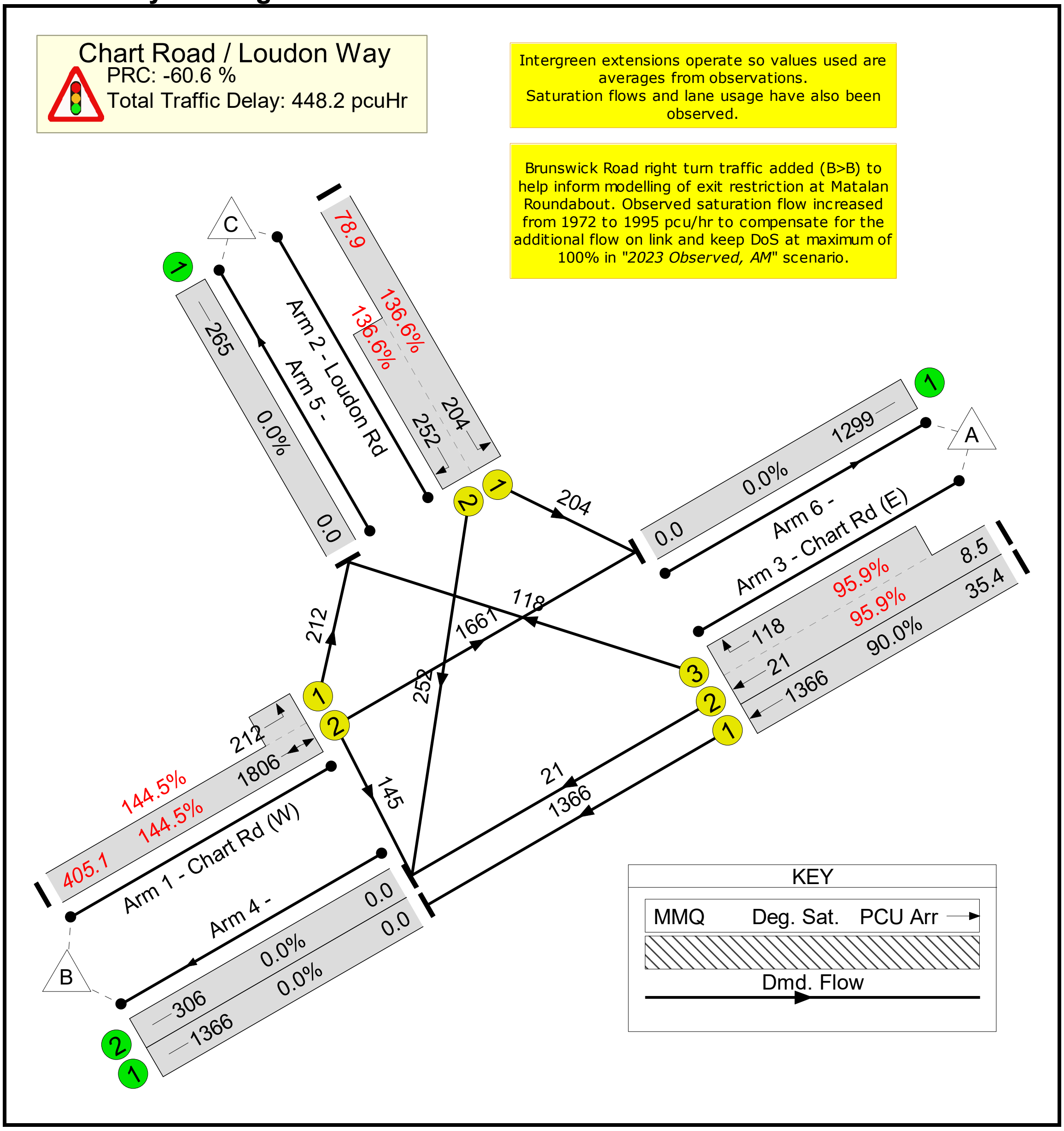
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1387	118	1505
	B	1661	145	212	2018
	C	204	252	0	456
	Tot.	1865	1784	330	3979

Stage Timings

Stage	1	2	3
Duration	84	5	10
Change Point	0	89	102

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**144.5%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**144.5%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	84	5	89	2018	1995:1755	1250+147	144.5 : 144.5%	640.5	405.1
2/1+2/2	Loudon Rd Right Left	E D	23:10	97:110	0	456	1890:2012	149+184	136.6 : 136.6%	596.8	78.9
3/1	Chart Rd (E) Ahead	B	97	5	102	1366	1859	1518	90.0%	18.8	35.4
3/2+3/3	Chart Rd (E) Ahead Right	B C	97:7	5:95	102	139	1859:1846	22+123	95.9 : 95.9%	166.6	8.5

C1	PRC for Signalled Lanes (%):	-60.6	Total Delay for Signalled Lanes (pcuHr):	448.17	Cycle Time (s):	120
	PRC Over All Lanes (%):	-60.6	Total Delay Over All Lanes(pcuHr):	448.17		

Scenario 16: '2032 Base + Cttd + Dev (Sens.Test), PM'
(FG27: '2032 Base + Committed + Dev (Sens.Test), PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

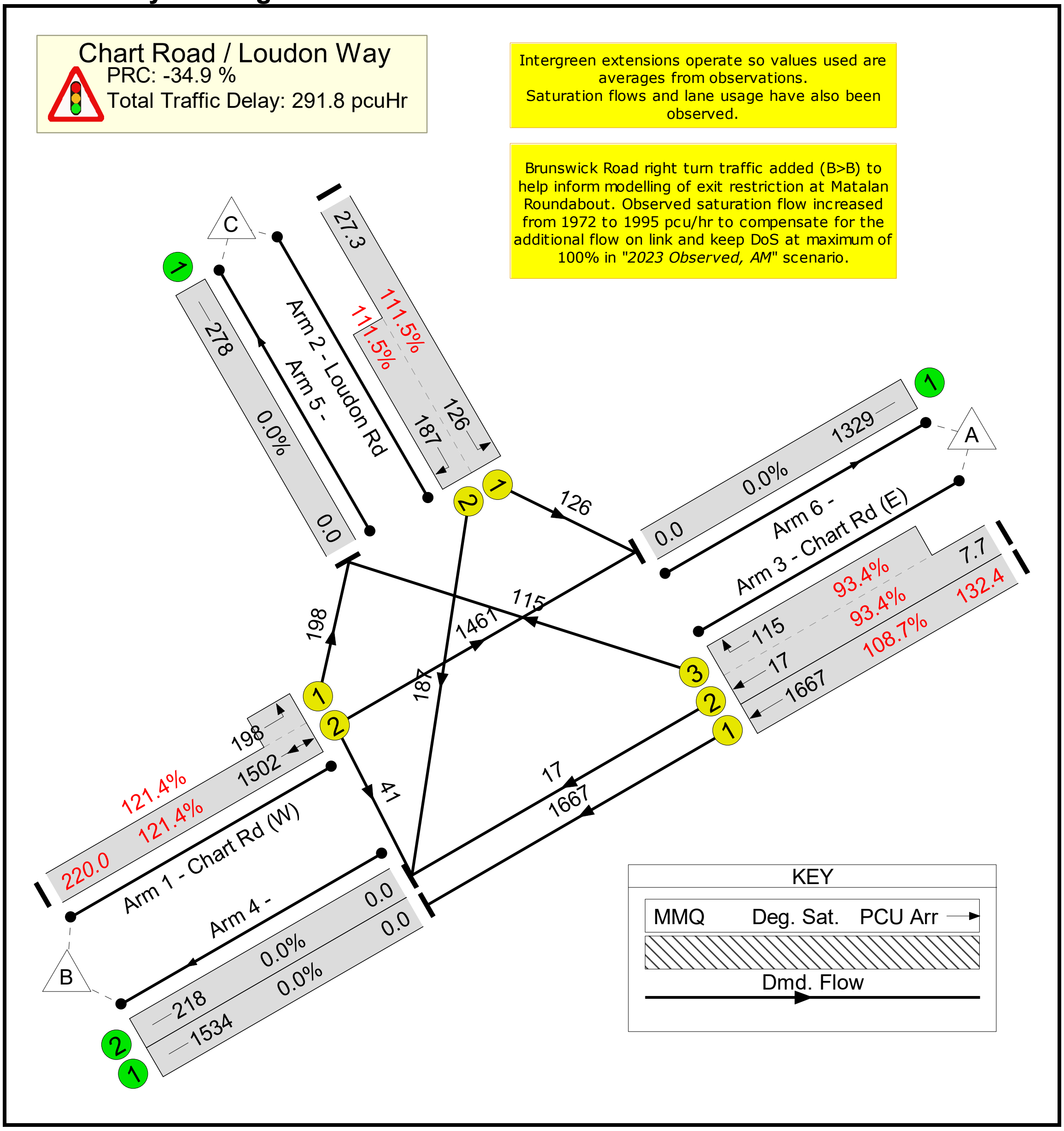
Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1684	115	1799
	B	1461	41	198	1700
	C	126	187	0	313
	Tot.	1587	1912	313	3812

Stage Timings

Stage	1	2	3
Duration	85	5	9
Change Point	0	90	103

Network Layout Diagram



Link Results

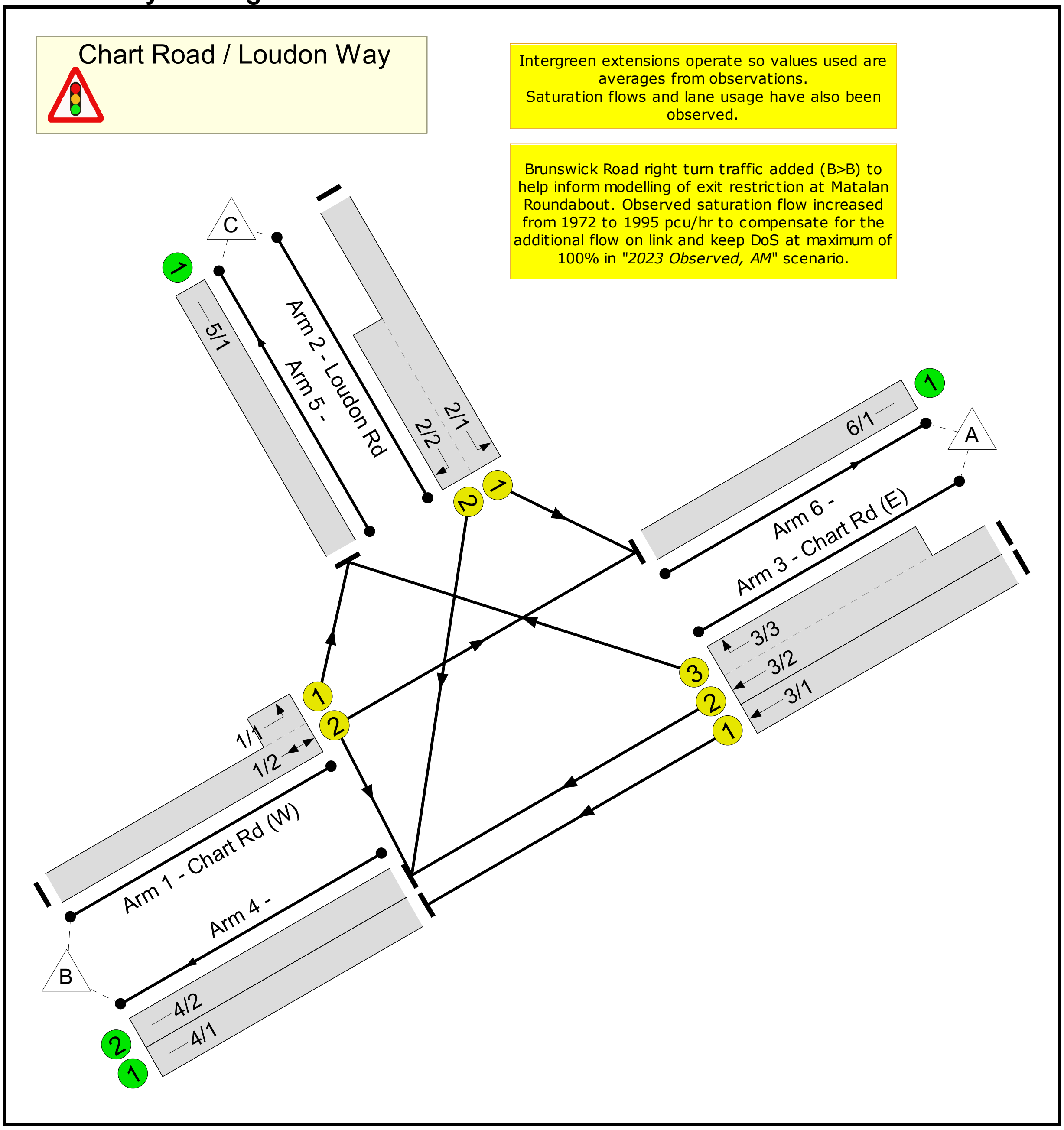
Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**121.4%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**121.4%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	85	5	90	1700	1972:1755	1237+163	121.4 : 121.4%	373.7	220.0
2/1+2/2	Loudon Rd Right Left	E D	22:9	98:111	0	313	1890:2012	113+168	111.5 : 111.5%	293.9	27.3
3/1	Chart Rd (E) Ahead	B	98	5	103	1667	1859	1534	108.7%	181.6	132.4
3/2+3/3	Chart Rd (E) Ahead Right	B C	98:7	5:96	103	132	1859:1846	18+123	93.4 : 93.4%	154.6	7.7

C1	PRC for Signalled Lanes (%):	-34.9	Total Delay for Signalled Lanes (pcuHr):	291.80	Cycle Time (s):	120
	PRC Over All Lanes (%):	-34.9	Total Delay Over All Lanes(pcuHr):	291.80		

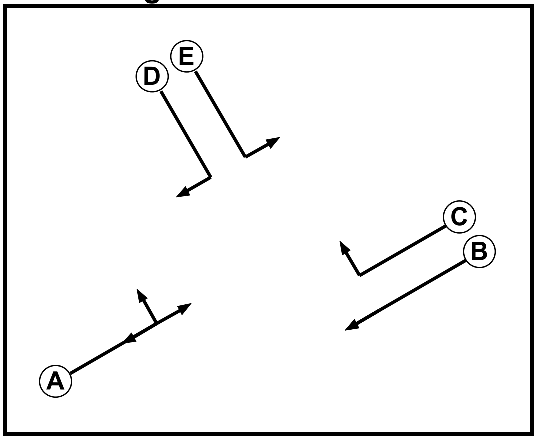
User and Project Details

Project:	**Possingham Farm, Ashford**
Title:	**A28 Chart Road / Loudon Way Junction**
Design Layout Ref:	Existing Junction Layout
Model Assumptions:	Intergreens are observed averages
Flow Details:	Observed flows from surveys of Tuesday, 28th March 2023
Additional detail:	Dev Flows -> Escort Education Only
File name:	A28_Loudon (Existing) v4.1.lsg3x
Author:	David Noyce
Company:	Vectos / SLR
Address:	Summit House, 12 Red Lion Square, London WC1R 4QH

Junction Layout Diagram



Phase Diagram



Phase Input Data

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

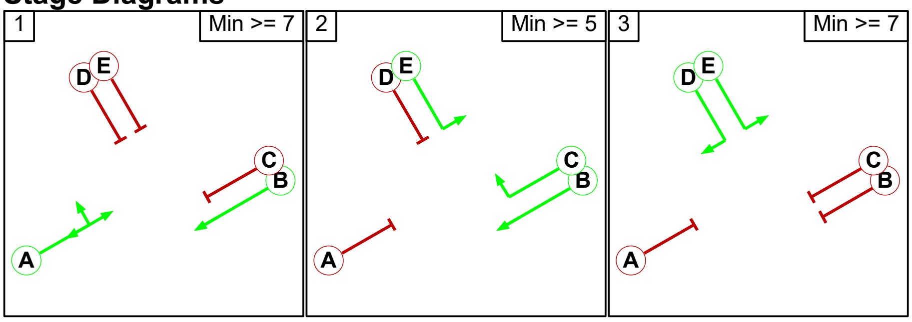
Intergreens

		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		-	6	8	8
	B	-		-	8	-
	C	5	-		8	-
	D	5	5	5		-
	E	5	-	-	-	

Stage Data

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

Stage Diagrams



Phase Delays

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

Lane Input Data

Junction: Chart Road / Loudon Way												
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 (Chart Rd (W))	U	A	2	3	11.1	Geom	-	3.00	0.00	Y	Arm 5 Left	16.50
1/2 (Chart Rd (W))	U	A	2	3	98.3	User	1995	-	-	-	-	-
2/1 (Loudon Rd)	U	E	2	3	60.0	User	1890	-	-	-	-	-
2/2 (Loudon Rd)	U	D	2	3	8.0	User	2012	-	-	-	-	-
3/1 (Chart Rd (E))	U	B	2	3	73.9	User	1859	-	-	-	-	-
3/2 (Chart Rd (E))	U	B	2	3	14.6	User	1859	-	-	-	-	-
3/3 (Chart Rd (E))	U	C	2	3	14.6	User	1846	-	-	-	-	-

Junction: Chart Road / Loudon Way		
Lane	Custom Occupancy per Flow Group (PCU)	
	AM Peak Hour	PM Peak Hour
1/1 (Chart Rd (W) Lane 1)	2.1	2.2

Give-Way Lane Input Data

Junction: Chart Road / Loudon Way
There are no Opposed Lanes in this Junction

Scenario 1: '2023 Observed, AM'
(FG5: '2023 Observed, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

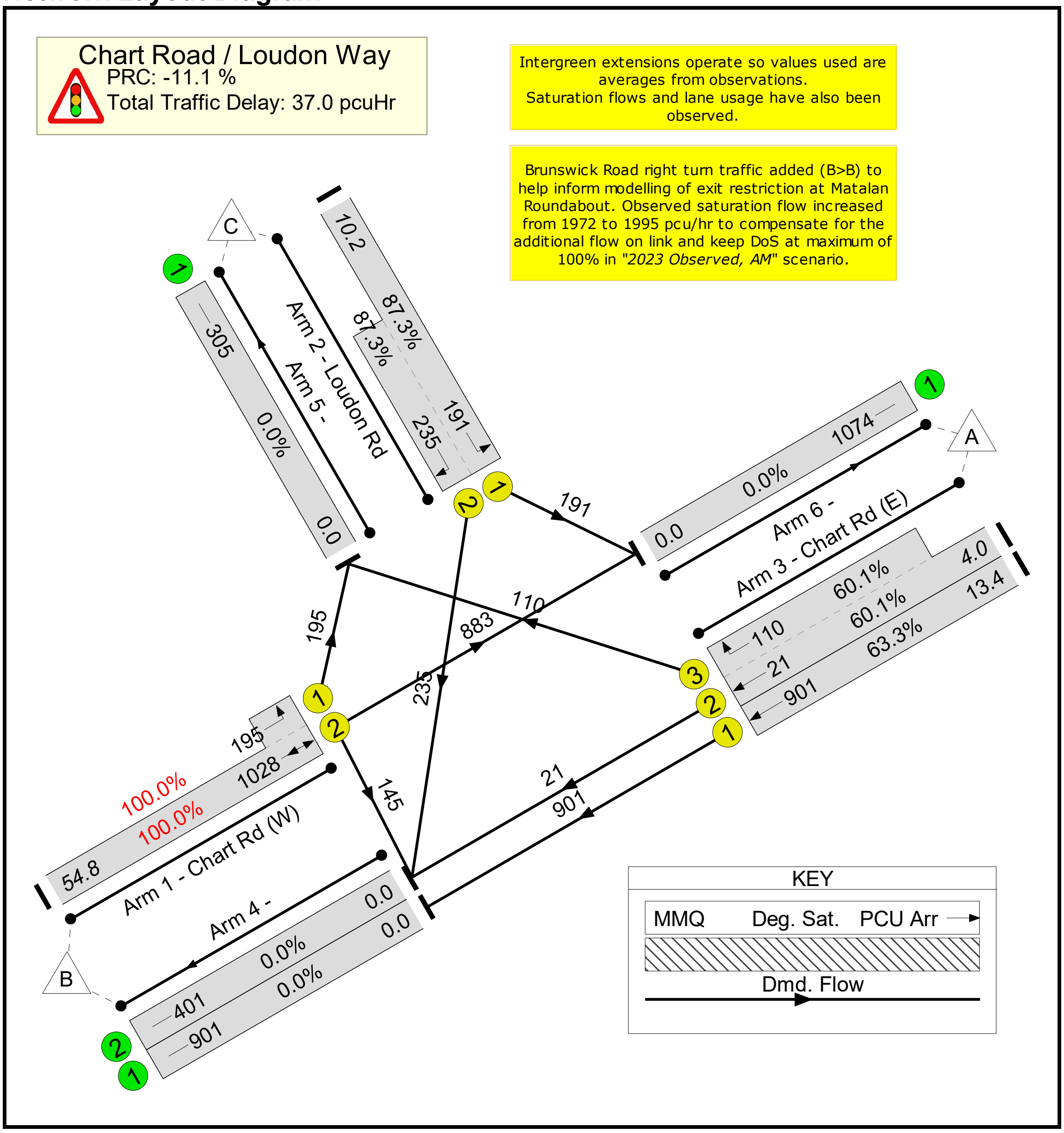
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	922	110	1032
	B	883	145	195	1223
	C	191	235	0	426
	Tot.	1074	1302	305	2681

Stage Timings

Stage	1	2	3
Duration	68	8	14
Change Point	0	73	89

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**100.0%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**100.0%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	68	5	73	1223	1995:1755	1028+195	100.0 : 100.0%	72.3	54.8
2/1+2/2	Loudon Rd Right Left	E D	30:14	81:97	0	426	1890:2012	219+269	87.3 : 87.3%	66.7	10.2
3/1	Chart Rd (E) Ahead	B	84	5	89	901	1859	1424	63.3%	9.3	13.4
3/2+3/3	Chart Rd (E) Ahead Right	B C	84:10	5:79	89	131	1859:1846	35+183	60.1 : 60.1%	61.1	4.0

C1 PRC for Signalled Lanes (%): -11.1 Total Delay for Signalled Lanes (pcuHr): 37.02 Cycle Time (s): 111
PRC Over All Lanes (%): -11.1 Total Delay Over All Lanes(pcuHr): 37.02

Scenario 2: '2023 Observed, PM'
(FG6: '2023 Observed, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

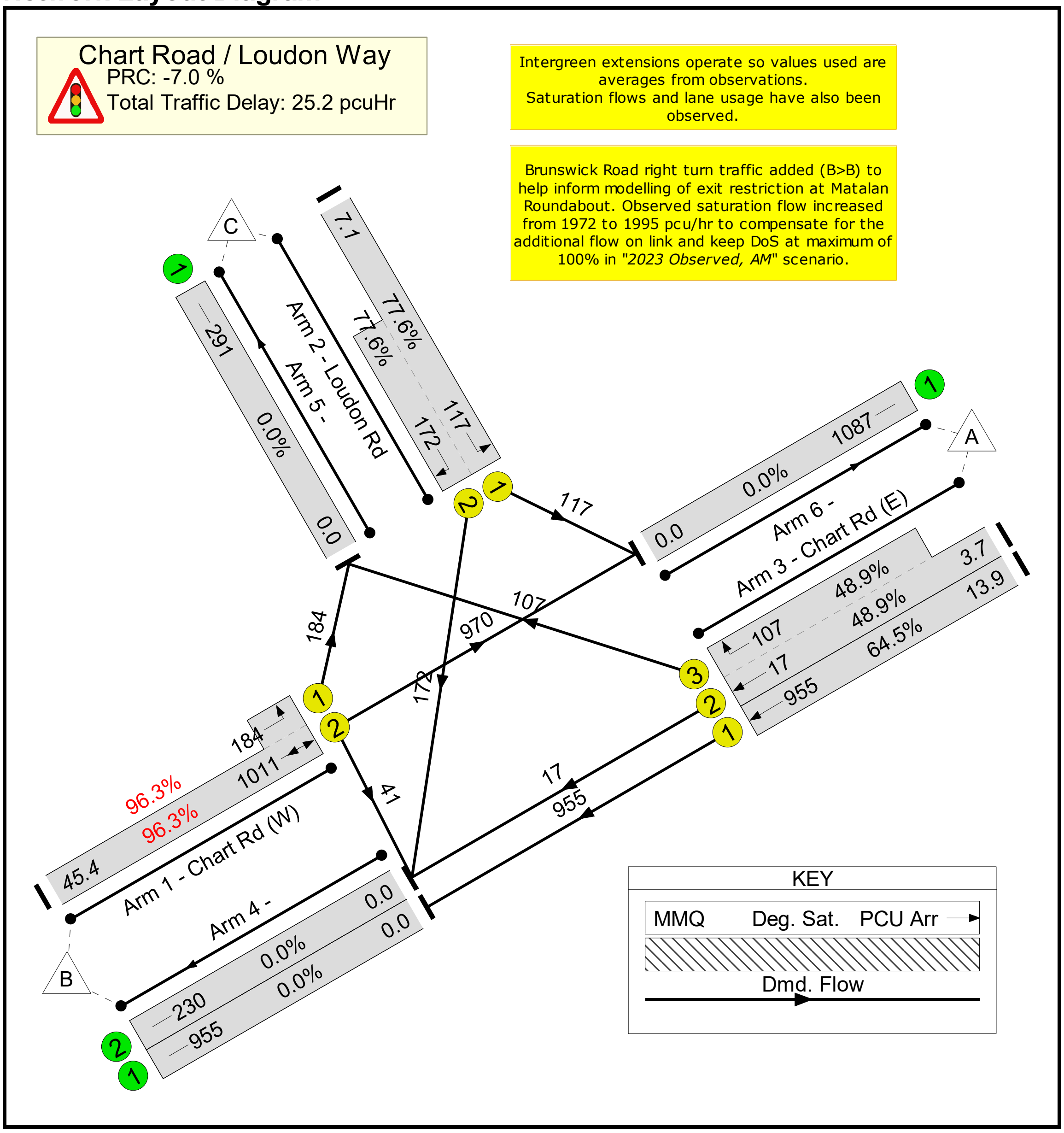
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	972	107	1079
	B	970	41	184	1195
	C	117	172	0	289
	Tot.	1087	1185	291	2563

Stage Timings

Stage	1	2	3
Duration	74	11	12
Change Point	0	79	98

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**96.3%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**96.3%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	74	5	79	1195	1972:1755	1050+191	96.3 : 96.3%	47.8	45.4
2/1+2/2	Loudon Rd Right Left	E D	31:12	87:106	0	289	1890:2012	151+222	77.6 : 77.6%	64.7	7.1
3/1	Chart Rd (E) Ahead	B	93	5	98	955	1859	1481	64.5%	8.4	13.9
3/2+3/3	Chart Rd (E) Ahead Right	B C	93:13	5:85	98	124	1859:1846	35+219	48.9 : 48.9%	56.1	3.7

C1 PRC for Signalled Lanes (%): -7.0 Total Delay for Signalled Lanes (pcuHr): 25.23 Cycle Time (s): 118
PRC Over All Lanes (%): -7.0 Total Delay Over All Lanes(pcuHr): 25.23

Scenario 3: '2023 Obs + Dev, AM'
(FG19: '2023 Obs + Dev, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

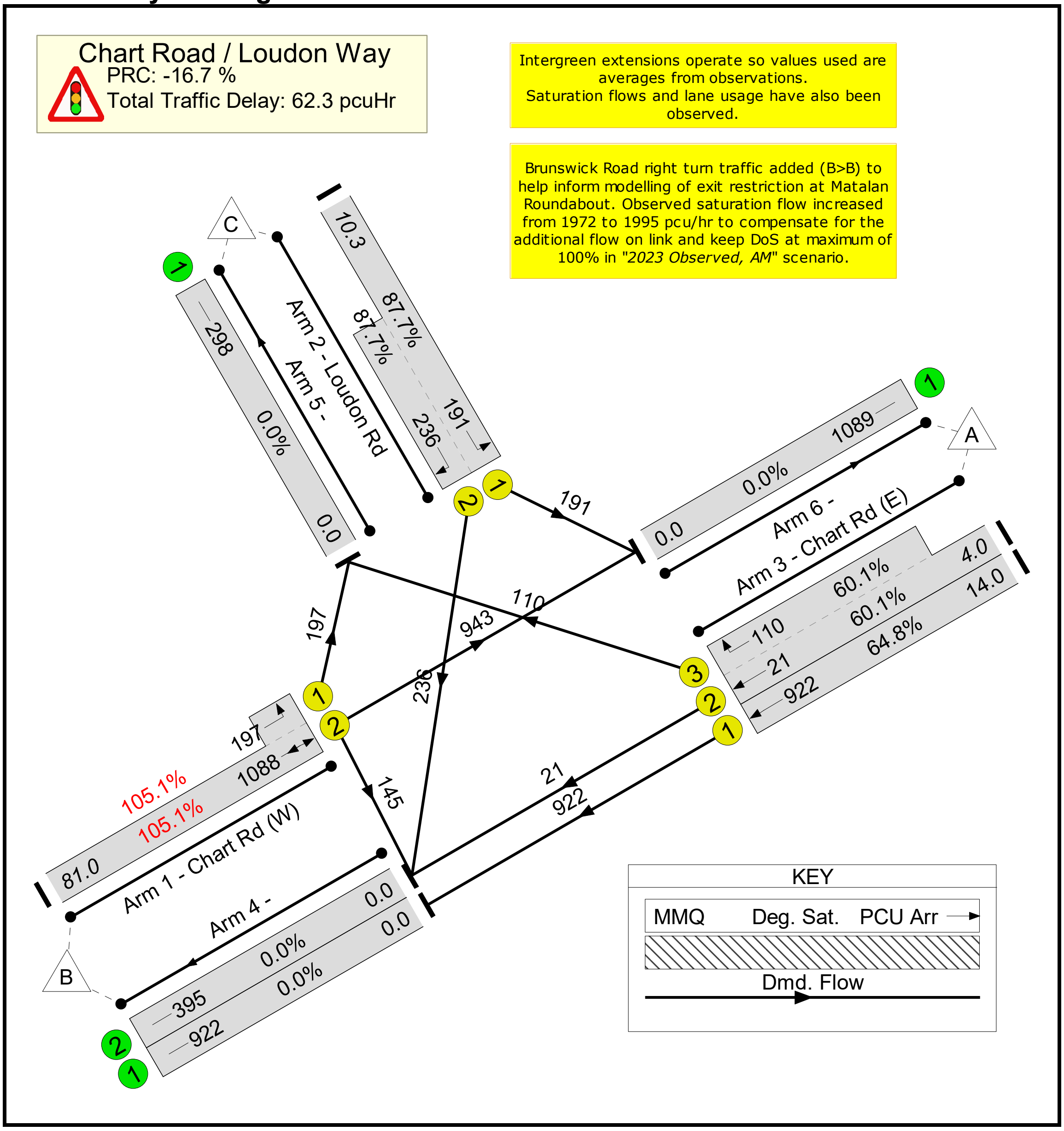
Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	943	110	1053
	B	943	145	197	1285
	C	191	236	0	427
	Tot.	1134	1324	307	2765

Stage Timings

Stage	1	2	3
Duration	68	8	14
Change Point	0	73	89

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**105.1%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**105.1%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	68	5	73	1285	1995:1755	1036+188	105.1 : 105.1%	139.0	81.0
2/1+2/2	Loudon Rd Right Left	E D	30:14	81:97	0	427	1890:2012	218+269	87.7 : 87.7%	67.4	10.3
3/1	Chart Rd (E) Ahead	B	84	5	89	922	1859	1424	64.8%	9.6	14.0
3/2+3/3	Chart Rd (E) Ahead Right	B C	84:10	5:79	89	131	1859:1846	35+183	60.1 : 60.1%	61.1	4.0

C1 PRC for Signalled Lanes (%): -16.7 Total Delay for Signalled Lanes (pcuHr): 62.31 Cycle Time (s): 111
PRC Over All Lanes (%): -16.7 Total Delay Over All Lanes(pcuHr): 62.31

Scenario 4: '2023 Obs + Dev, PM'
(FG20: '2023 Obs + Dev, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

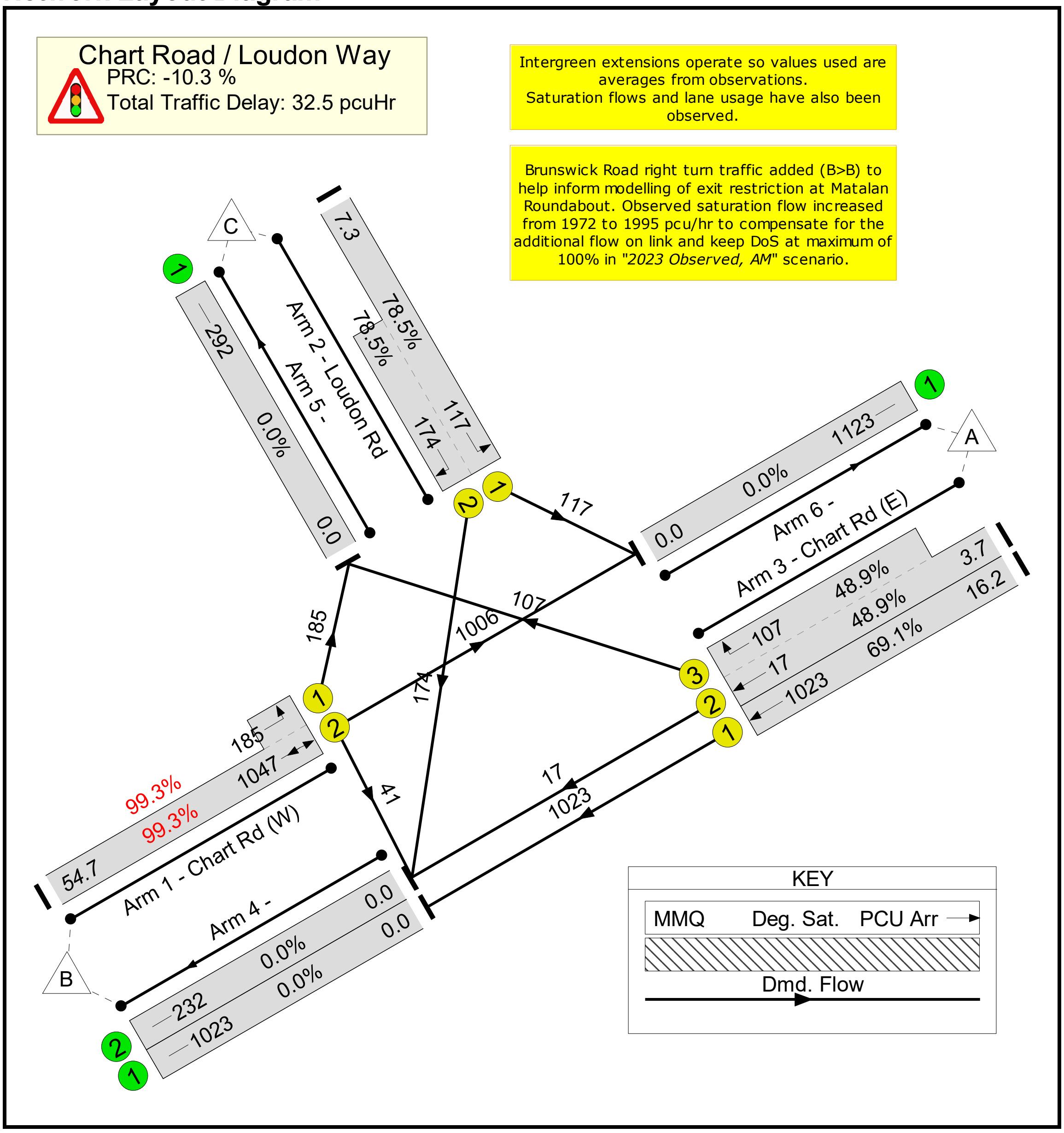
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1040	107	1147
	B	1006	41	185	1232
	C	117	174	0	291
	Tot.	1123	1255	292	2670

Stage Timings

Stage	1	2	3
Duration	74	11	12
Change Point	0	79	98

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**99.3%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**99.3%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	74	5	79	1232	1972:1755	1055+186	99.3 : 99.3%	66.0	54.7
2/1+2/2	Loudon Rd Right Left	E D	31:12	87:106	0	291	1890:2012	149+222	78.5 : 78.5%	65.6	7.3
3/1	Chart Rd (E) Ahead	B	93	5	98	1023	1859	1481	69.1%	9.3	16.2
3/2+3/3	Chart Rd (E) Ahead Right	B C	93:13	5:85	98	124	1859:1846	35+219	48.9 : 48.9%	56.1	3.7

C1 PRC for Signalled Lanes (%): -10.3 Total Delay for Signalled Lanes (pcuHr): 32.48 Cycle Time (s): 118
PRC Over All Lanes (%): -10.3 Total Delay Over All Lanes(pcuHr): 32.48

Scenario 5: '2023 Obs + Dev (Sens.Test), AM'
(FG21: '2023 Obs + Dev (Sens.Test), AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

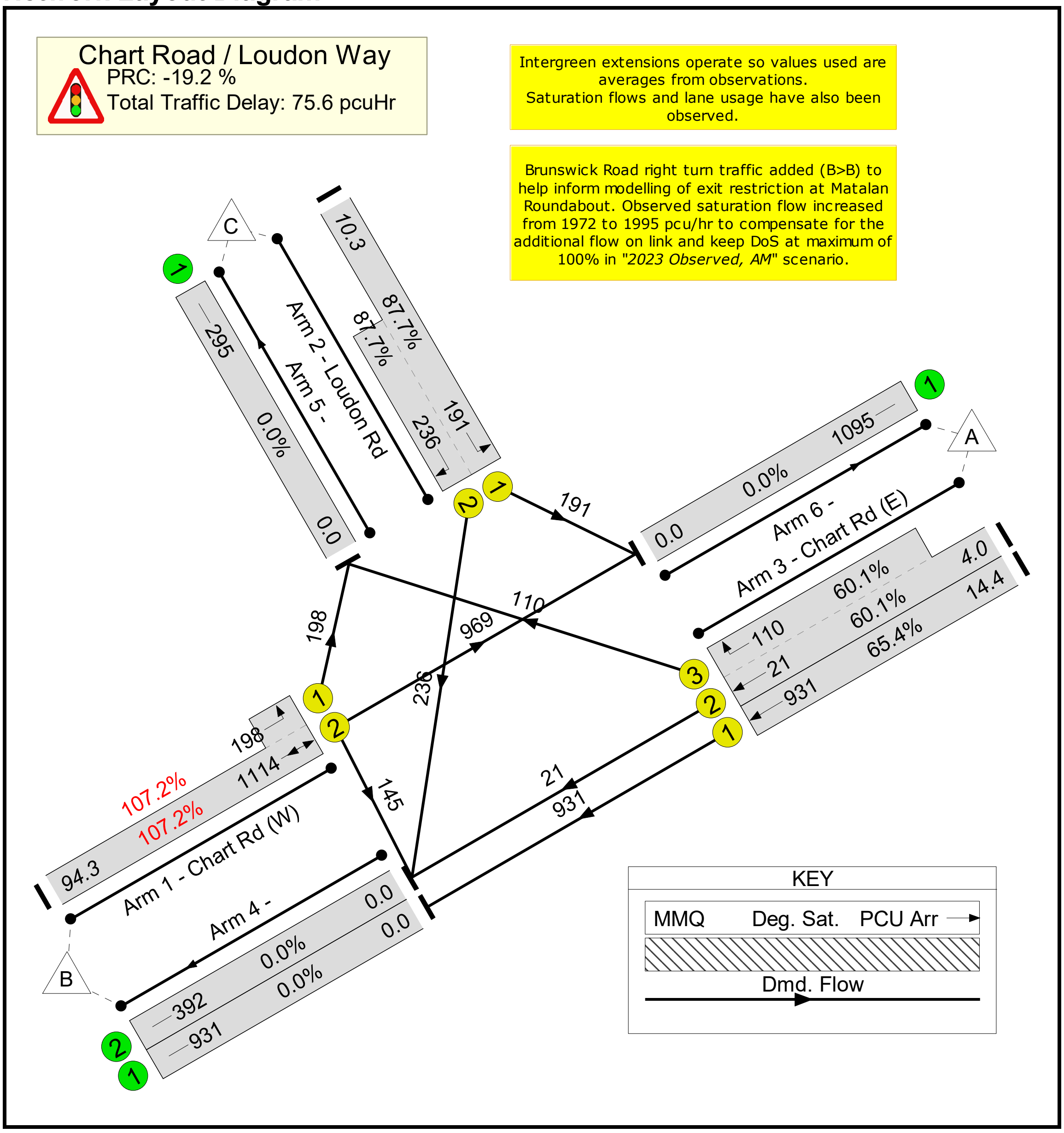
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	952	110	1062
	B	969	145	198	1312
	C	191	236	0	427
	Tot.	1160	1333	308	2801

Stage Timings

Stage	1	2	3
Duration	68	8	14
Change Point	0	73	89

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**107.2%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**107.2%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	68	5	73	1312	1995:1755	1039+185	107.2 : 107.2%	172.4	94.3
2/1+2/2	Loudon Rd Right Left	E D	30:14	81:97	0	427	1890:2012	218+269	87.7 : 87.7%	67.4	10.3
3/1	Chart Rd (E) Ahead	B	84	5	89	931	1859	1424	65.4%	9.7	14.4
3/2+3/3	Chart Rd (E) Ahead Right	B C	84:10	5:79	89	131	1859:1846	35+183	60.1 : 60.1%	61.1	4.0

C1 PRC for Signalled Lanes (%): -19.2 Total Delay for Signalled Lanes (pcuHr): 75.55 Cycle Time (s): 111
PRC Over All Lanes (%): -19.2 Total Delay Over All Lanes(pcuHr): 75.55

Scenario 6: '2023 Obs + Dev (Sens.Test), PM'
(FG22: '2023 Obs + Dev (Sens.Test), PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

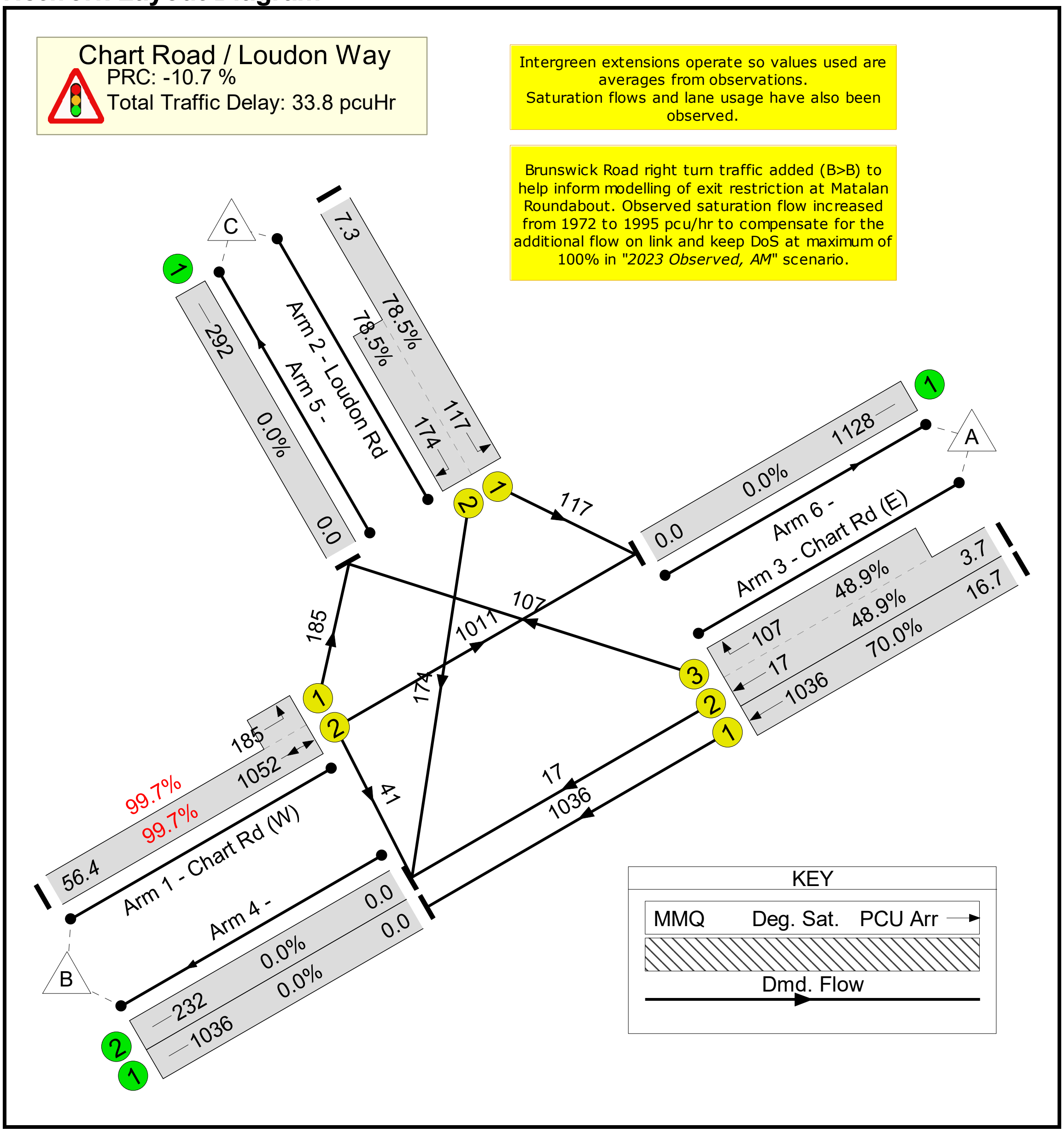
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1053	107	1160
	B	1011	41	185	1237
	C	117	174	0	291
	Tot.	1128	1268	292	2688

Stage Timings

Stage	1	2	3
Duration	74	11	12
Change Point	0	79	98

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**99.7%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**99.7%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	74	5	79	1237	1972:1755	1055+186	99.7 : 99.7%	69.3	56.4
2/1+2/2	Loudon Rd Right Left	E D	31:12	87:106	0	291	1890:2012	149+222	78.5 : 78.5%	65.6	7.3
3/1	Chart Rd (E) Ahead	B	93	5	98	1036	1859	1481	70.0%	9.5	16.7
3/2+3/3	Chart Rd (E) Ahead Right	B C	93:13	5:85	98	124	1859:1846	35+219	48.9 : 48.9%	56.1	3.7

C1 PRC for Signalled Lanes (%): -10.7 Total Delay for Signalled Lanes (pcuHr): 33.81 Cycle Time (s): 118
PRC Over All Lanes (%): -10.7 Total Delay Over All Lanes(pcuHr): 33.81

Scenario 8: '2032 Base, AM'
(FG24: '2032 Base, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

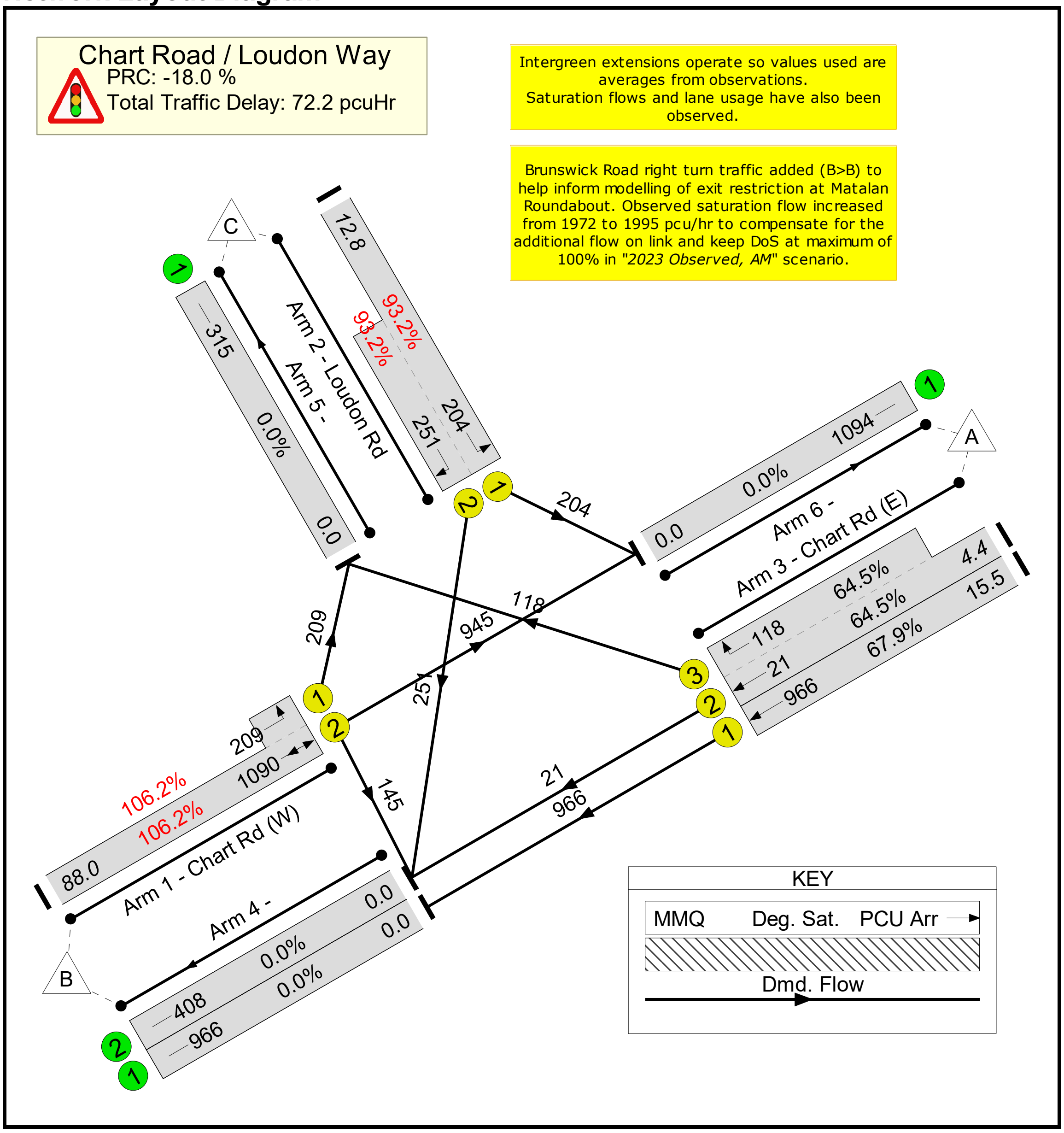
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	987	118	1105
	B	945	145	209	1299
	C	204	251	0	455
	Tot.	1149	1383	327	2859

Stage Timings

Stage	1	2	3
Duration	68	8	14
Change Point	0	73	89

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**106.2%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**106.2%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	68	5	73	1299	1995:1755	1026+197	106.2 : 106.2%	156.8	88.0
2/1+2/2	Loudon Rd Right Left	E D	30:14	81:97	0	455	1890:2012	219+269	93.2 : 93.2%	82.1	12.8
3/1	Chart Rd (E) Ahead	B	84	5	89	966	1859	1424	67.9%	10.3	15.5
3/2+3/3	Chart Rd (E) Ahead Right	B C	84:10	5:79	89	139	1859:1846	33+183	64.5 : 64.5%	64.3	4.4

C1 PRC for Signalled Lanes (%): -18.0 Total Delay for Signalled Lanes (pcuHr): 72.21 Cycle Time (s): 111
PRC Over All Lanes (%): -18.0 Total Delay Over All Lanes(pcuHr): 72.21

Scenario 9: '2032 Base, PM'
(FG25: '2032 Base, PM', Plan 1: 'Network Control Plan 1')

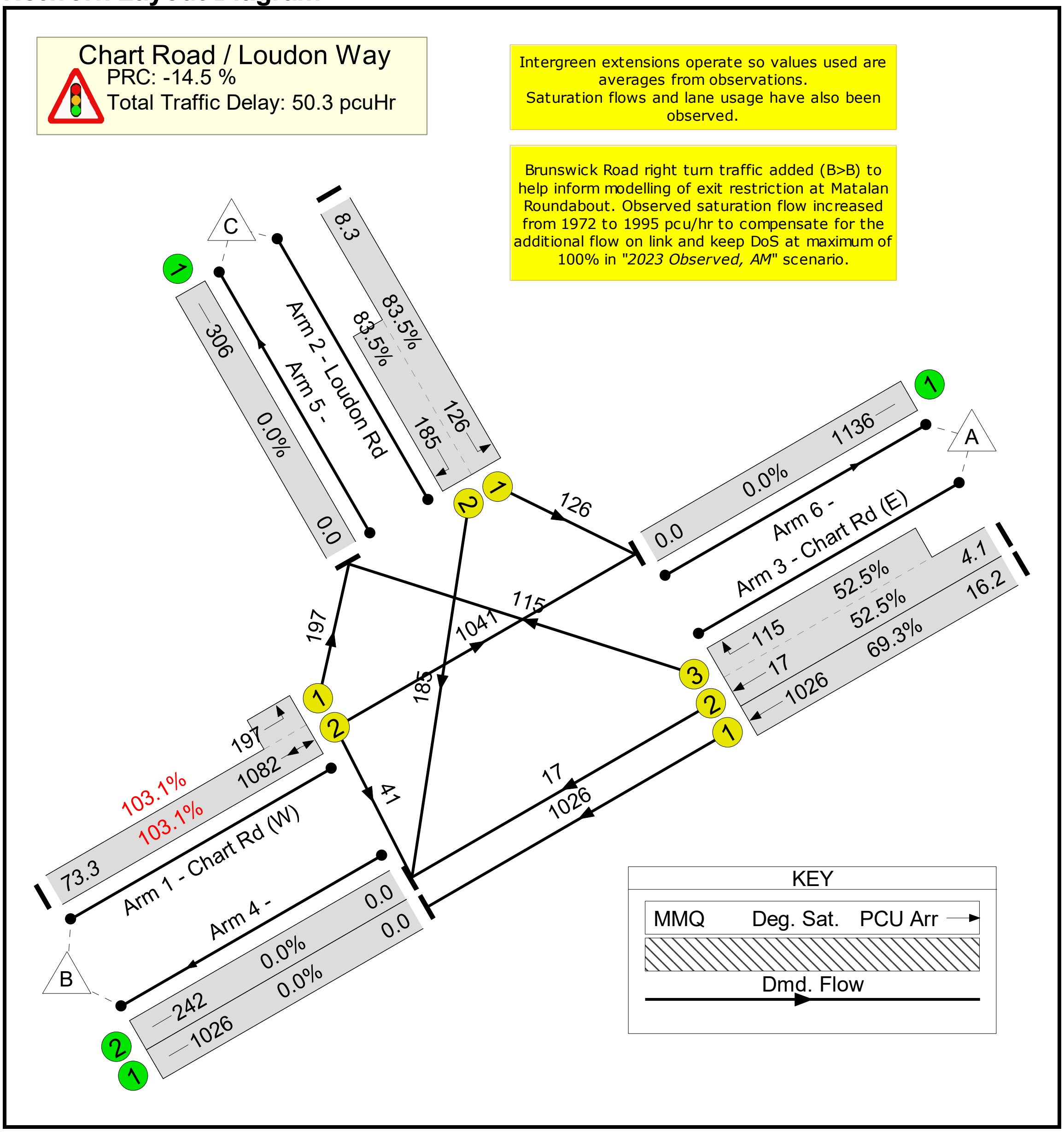
Traffic Flows, Desired
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1043	115	1158
	B	1041	41	197	1279
	C	126	185	0	311
	Tot.	1167	1269	312	2748

Stage Timings

Stage	1	2	3
Duration	74	11	12
Change Point	0	79	98

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**103.1%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**103.1%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	74	5	79	1279	1972:1755	1050+191	103.1 : 103.1%	110.7	73.3
2/1+2/2	Loudon Rd Right Left	E D	31:12	87:106	0	311	1890:2012	151+222	83.5 : 83.5%	71.4	8.3
3/1	Chart Rd (E) Ahead	B	93	5	98	1026	1859	1481	69.3%	9.4	16.2
3/2+3/3	Chart Rd (E) Ahead Right	B C	93:13	5:85	98	132	1859:1846	32+219	52.5 : 52.5%	57.9	4.1

C1 PRC for Signalled Lanes (%): -14.5 Total Delay for Signalled Lanes (pcuHr): 50.31 Cycle Time (s): 118
PRC Over All Lanes (%): -14.5 Total Delay Over All Lanes(pcuHr): 50.31

Scenario 10: '2032 Base + Dev, AM'
(FG32: '2032 Base + Dev, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

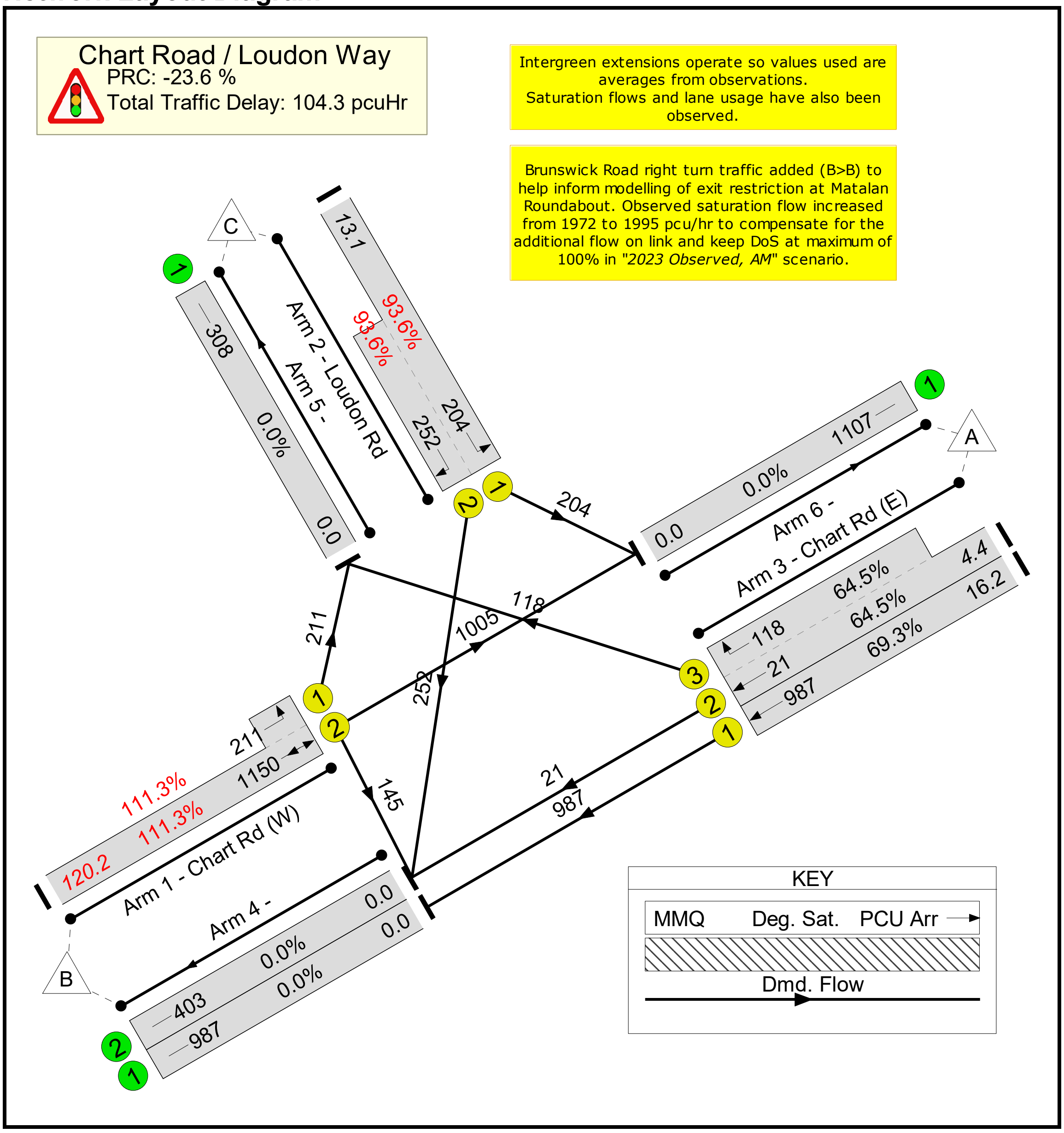
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1008	118	1126
	B	1005	145	211	1361
	C	204	252	0	456
	Tot.	1209	1405	329	2943

Stage Timings

Stage	1	2	3
Duration	68	8	14
Change Point	0	73	89

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**111.3%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**111.3%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	68	5	73	1361	1995:1755	1033+190	111.3 : 111.3%	233.7	120.2
2/1+2/2	Loudon Rd Right Left	E D	30:14	81:97	0	456	1890:2012	218+269	93.6 : 93.6%	83.6	13.1
3/1	Chart Rd (E) Ahead	B	84	5	89	987	1859	1424	69.3%	10.6	16.2
3/2+3/3	Chart Rd (E) Ahead Right	B C	84:10	5:79	89	139	1859:1846	33+183	64.5 : 64.5%	64.3	4.4

C1 PRC for Signalled Lanes (%): -23.6 Total Delay for Signalled Lanes (pcuHr): 104.33 Cycle Time (s): 111
PRC Over All Lanes (%): -23.6 Total Delay Over All Lanes(pcuHr): 104.33

Scenario 11: '2032 Base + Dev, PM'
(FG33: '2032 Base + Dev, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

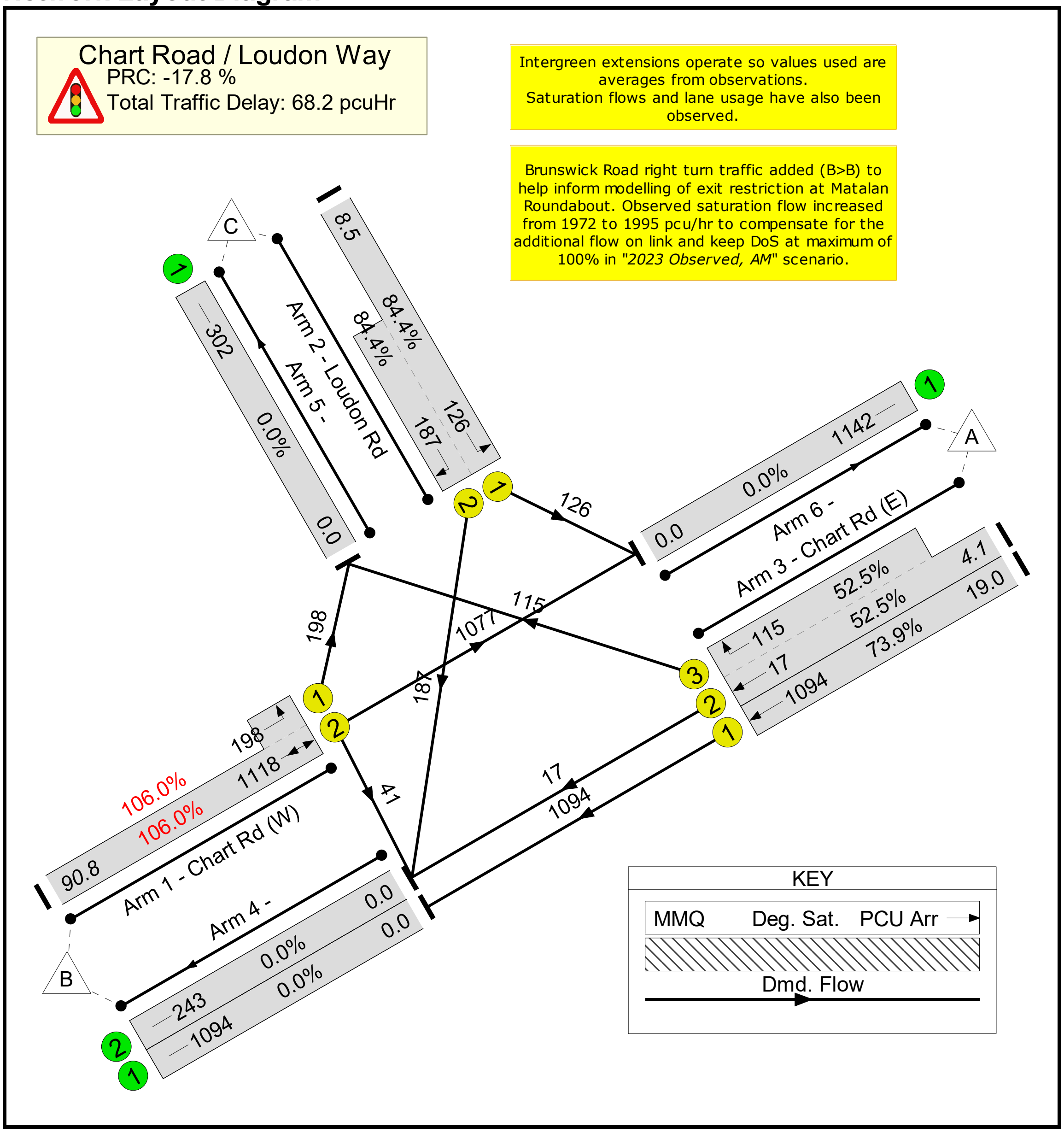
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1111	115	1226
	B	1077	41	198	1316
	C	126	187	0	313
	Tot.	1203	1339	313	2855

Stage Timings

Stage	1	2	3
Duration	74	11	12
Change Point	0	79	98

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**106.0%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**106.0%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	74	5	79	1316	1972:1755	1054+187	106.0 : 106.0%	154.7	90.8
2/1+2/2	Loudon Rd Right Left	E D	31:12	87:106	0	313	1890:2012	149+222	84.4 : 84.4%	72.9	8.5
3/1	Chart Rd (E) Ahead	B	93	5	98	1094	1859	1481	73.9%	10.6	19.0
3/2+3/3	Chart Rd (E) Ahead Right	B C	93:13	5:85	98	132	1859:1846	32+219	52.5 : 52.5%	57.9	4.1

C1 PRC for Signalled Lanes (%): -17.8 Total Delay for Signalled Lanes (pcuHr): 68.23 Cycle Time (s): 118
PRC Over All Lanes (%): -17.8 Total Delay Over All Lanes(pcuHr): 68.23

Scenario 12: '2032 Base + Dev (Sens.Test), AM'
(FG34: '2032 Base + Dev (Sens.Test), AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

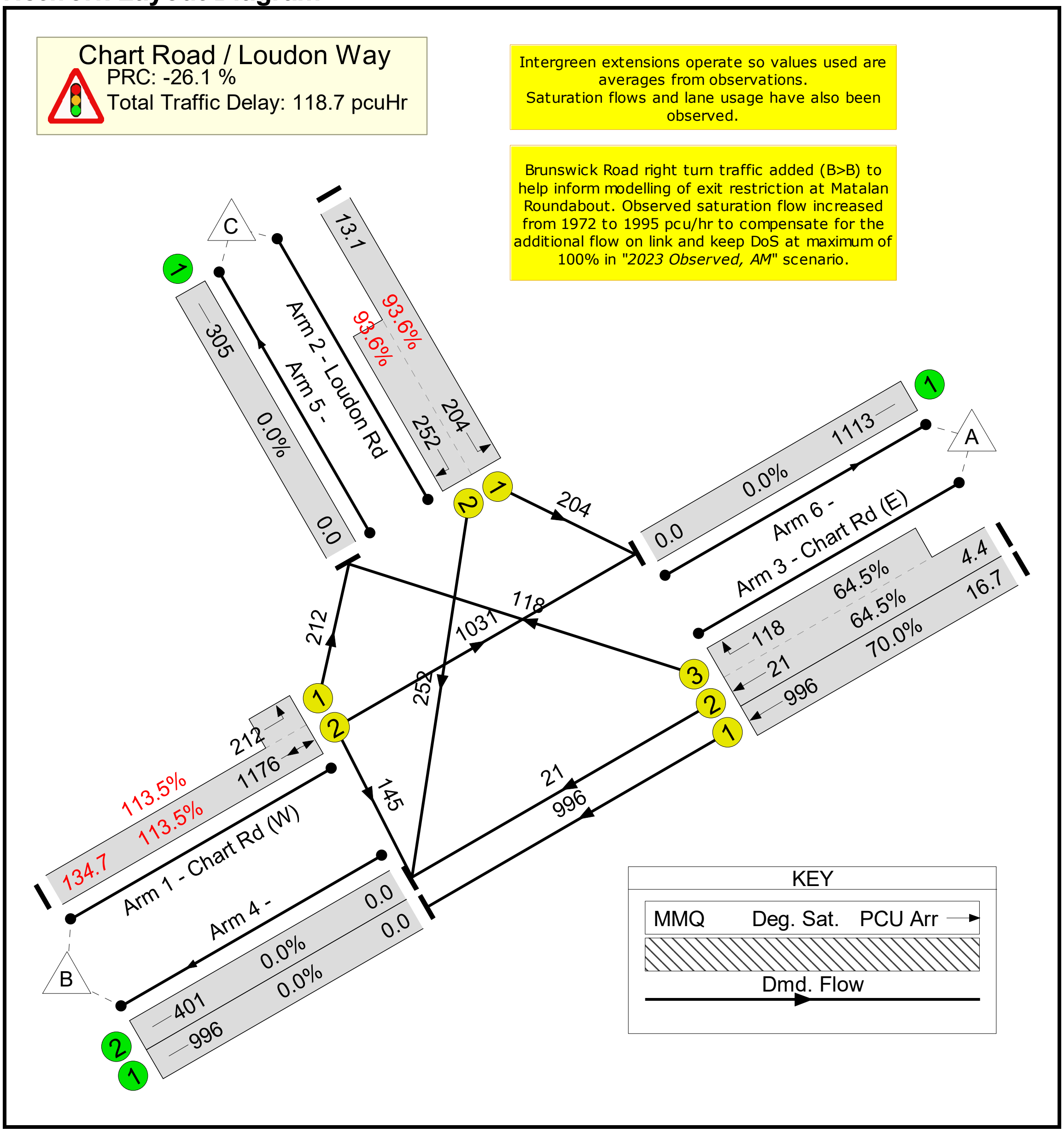
Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1017	118	1135
	B	1031	145	212	1388
	C	204	252	0	456
	Tot.	1235	1414	330	2979

Stage Timings

Stage	1	2	3
Duration	68	8	14
Change Point	0	73	89

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**113.5%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**113.5%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	68	5	73	1388	1995:1755	1036+187	113.5 : 113.5%	266.3	134.7
2/1+2/2	Loudon Rd Right Left	E D	30:14	81:97	0	456	1890:2012	218+269	93.6 : 93.6%	83.6	13.1
3/1	Chart Rd (E) Ahead	B	84	5	89	996	1859	1424	70.0%	10.7	16.7
3/2+3/3	Chart Rd (E) Ahead Right	B C	84:10	5:79	89	139	1859:1846	33+183	64.5 : 64.5%	64.3	4.4

C1 PRC for Signalled Lanes (%): -26.1 Total Delay for Signalled Lanes (pcuHr): 118.73 Cycle Time (s): 111
PRC Over All Lanes (%): -26.1 Total Delay Over All Lanes(pcuHr): 118.73

Scenario 13: '2032 Base + Dev (Sens.Test), PM'
(FG35: '2032 Base + Dev (Sens.Test), PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

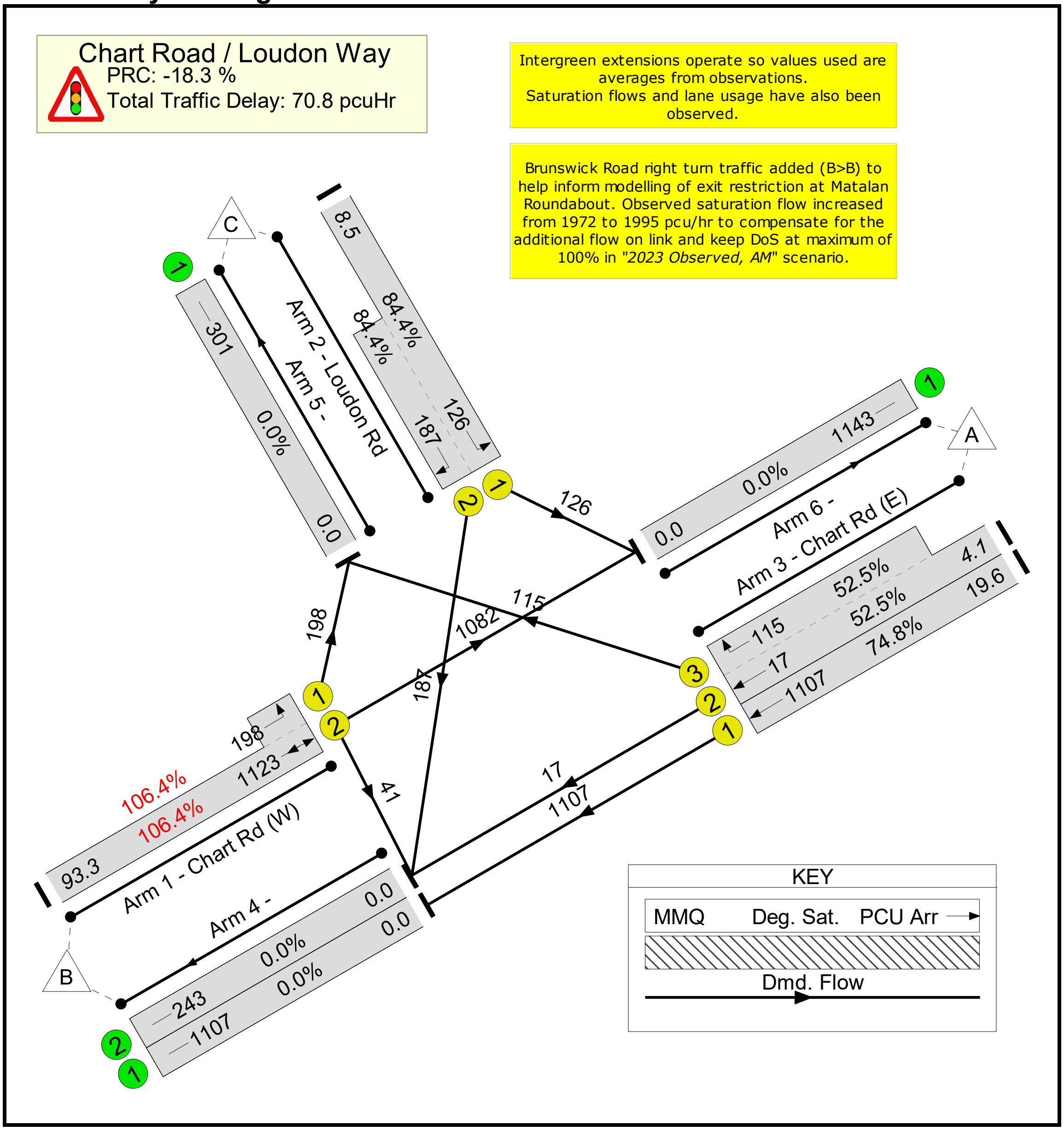
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	1124	115	1239
	B	1082	41	198	1321
	C	126	187	0	313
	Tot.	1208	1352	313	2873

Stage Timings

Stage	1	2	3
Duration	74	11	12
Change Point	0	79	98

Network Layout Diagram



Link Results

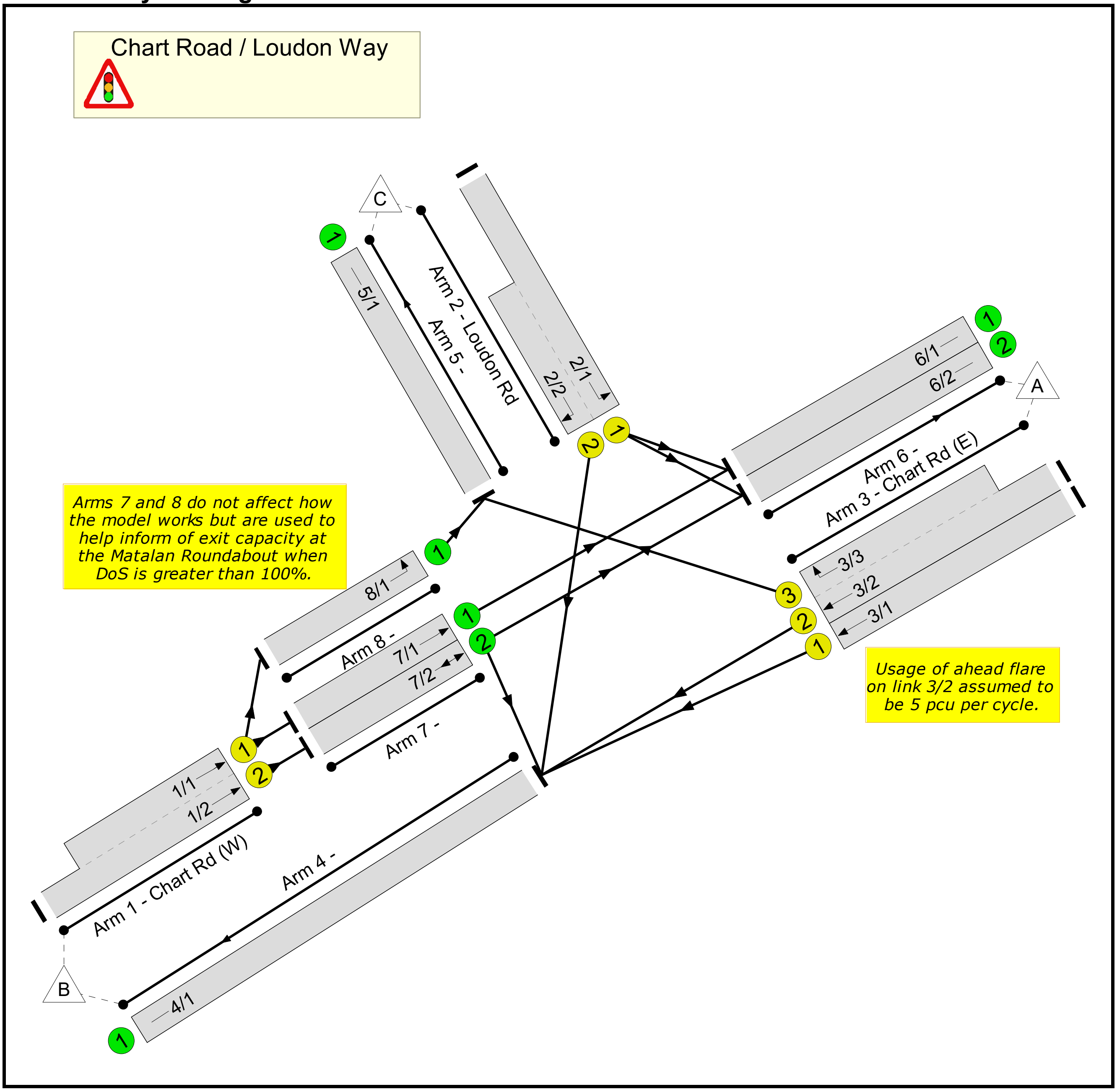
Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**106.4%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**106.4%**	-	-
1/2+1/1	Chart Rd (W) U-Turn Left Ahead	A	74	5	79	1321	1972:1755	1055+186	106.4 : 106.4%	160.9	93.3
2/1+2/2	Loudon Rd Right Left	E D	31:12	87:106	0	313	1890:2012	149+222	84.4 : 84.4%	72.9	8.5
3/1	Chart Rd (E) Ahead	B	93	5	98	1107	1859	1481	74.8%	10.8	19.6
3/2+3/3	Chart Rd (E) Ahead Right	B C	93:13	5:85	98	132	1859:1846	32+219	52.5 : 52.5%	57.9	4.1

C1 PRC for Signalled Lanes (%): -18.3 Total Delay for Signalled Lanes (pcuHr): 70.82 Cycle Time (s): 118
PRC Over All Lanes (%): -18.3 Total Delay Over All Lanes(pcuHr): 70.82

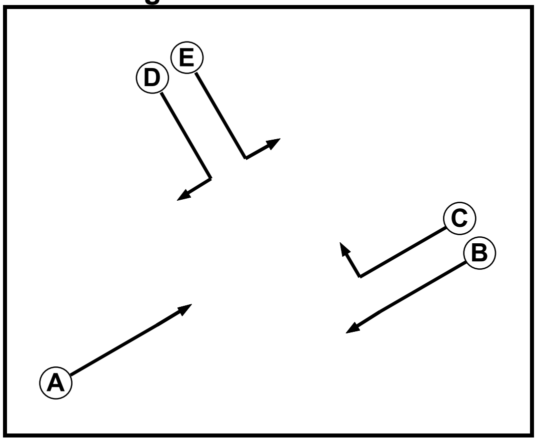
User and Project Details

Project:	**Possingham Farm, Ashford**
Title:	**A28 Chart Road / Loudon Way Junction**
Design Layout Ref:	Proposed Junction Layout
Model Assumptions:	Intergreens are observed averages
Flow Details:	Observed flows from surveys of Tuesday, 28th March 2023
Additional detail:	Dev Flows -> Escort Education Only
File name:	A28_Loudon (Proposed) v4.0.lsg3x
Author:	David Noyce
Company:	Vectos / SLR
Address:	Summit House, 12 Red Lion Square, London WC1R 4QH

Junction Layout Diagram



Phase Diagram



Phase Input Data

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

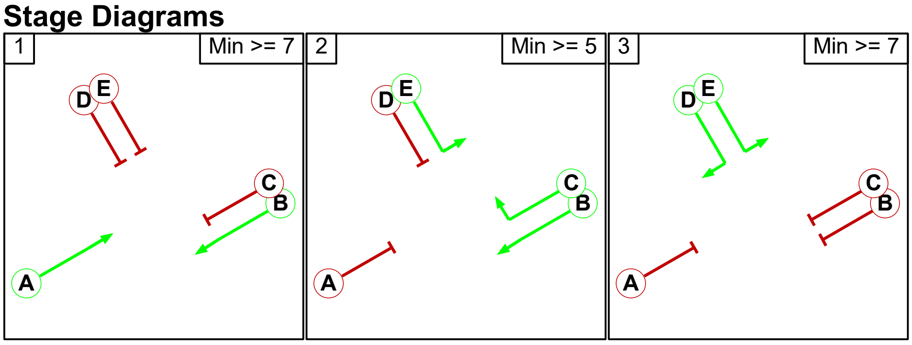
Intergreens

Terminating Phase \ Starting Phase	A	B	C	D	E
A		-	6	8	8
B	-		-	8	-
C	5	-		8	-
D	5	5	5		-
E	5	-	-	-	

Stage Data

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

Stage Diagrams



Phase Delays

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

Lane Input Data

Junction: Chart Road / Loudon Way												
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 (Chart Rd (W))	U	A	2	3	11.1	Geom	-	3.00	0.00	Y	Arm 7 Ahead	Inf
											Arm 8 Ahead	16.50
1/2 (Chart Rd (W))	U	A	2	3	98.3	User	1995	-	-	-	-	-
2/1 (Loudon Rd)	U	E	2	3	60.0	User	1890	-	-	-	-	-
2/2 (Loudon Rd)	U	D	2	3	8.0	User	2012	-	-	-	-	-
3/1 (Chart Rd (E))	U	B	2	3	73.9	User	1859	-	-	-	-	-
3/2 (Chart Rd (E))	U	B	2	3	15.0	User	1859	-	-	-	-	-
3/3 (Chart Rd (E))	U	C	2	3	15.0	User	1846	-	-	-	-	-

Give-Way Lane Input Data

Junction: Chart Road / Loudon Way
There are no Opposed Lanes in this Junction

Scenario 1: '2023 Obs + Cttd + Dev, AM'
(FG15: '2023 Obs + Committed + Dev, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

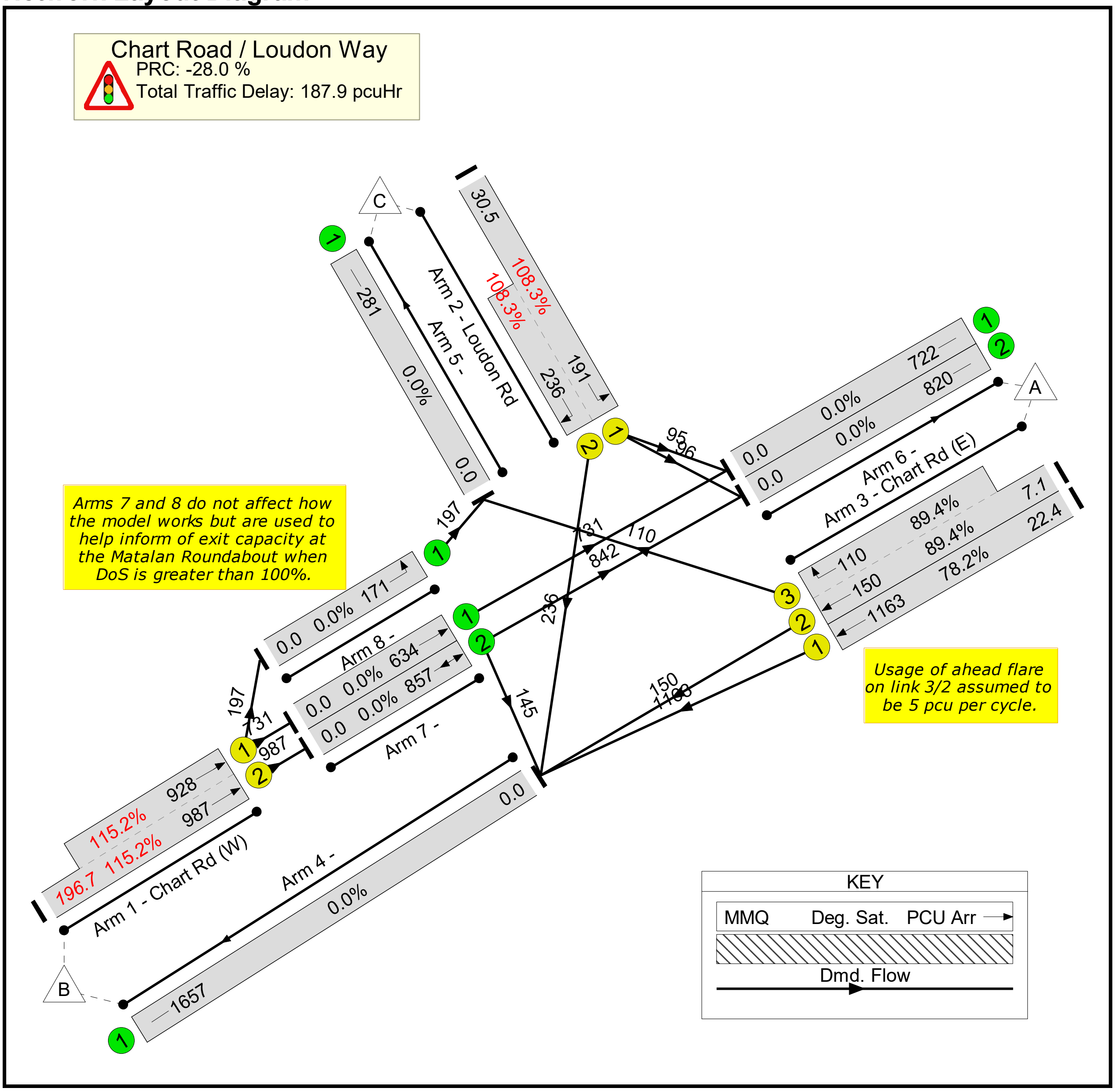
Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1313	110	1423
	B	1573	145	197	1915
	C	191	236	0	427
	Tot.	1764	1694	307	3765

Stage Timings

Stage	1	2	3
Duration	82	5	12
Change Point	0	87	100

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**115.2%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**115.2%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	82	5	87	1915	1995:1879	857+805	115.2 : 115.2%	283.1	196.7
2/1+2/2	Loudon Rd Right Left	E D	25:12	95:108	0	427	1890:2012	176+218	108.3 : 108.3%	237.7	30.5
3/1	Chart Rd (E) Ahead	B	95	5	100	1163	1859	1487	78.2%	11.9	22.4
3/2+3/3	Chart Rd (E) Ahead Right	B C	95:7	5:93	100	260	1859:1846	168+123	89.4 : 89.4%	72.7	7.1

C1 PRC for Signalled Lanes (%): -28.0 Total Delay for Signalled Lanes (pcuHr): 187.88 Cycle Time (s): 120
PRC Over All Lanes (%): -28.0 Total Delay Over All Lanes(pcuHr): 187.88

Scenario 2: '2023 Obs + Cttd + Dev, PM'
(FG16: '2023 Obs + Committed + Dev, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

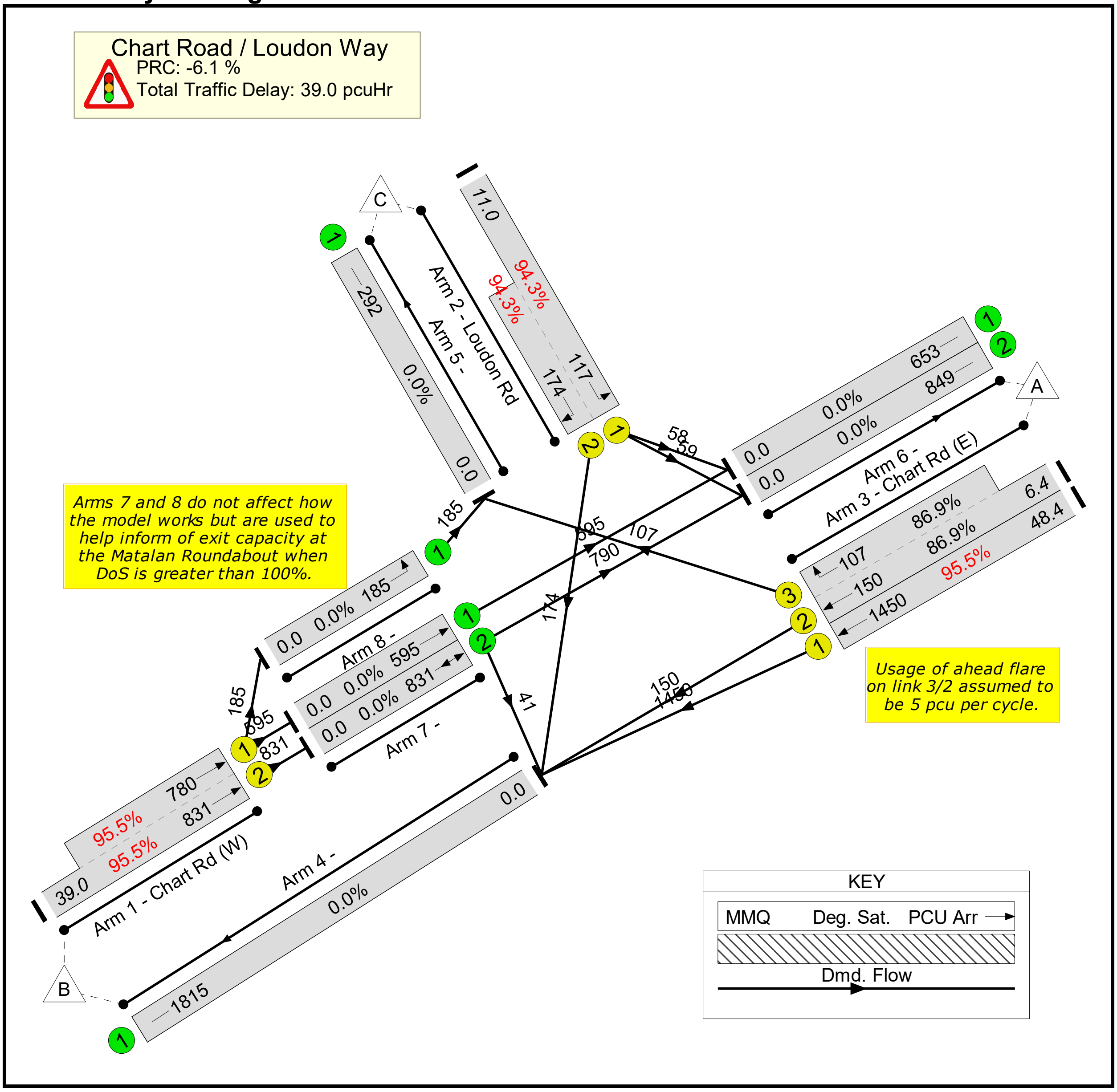
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1600	107	1707
	B	1385	41	185	1611
	C	117	174	0	291
	Tot.	1502	1815	292	3609

Stage Timings

Stage	1	2	3
Duration	84	5	10
Change Point	0	89	102

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**95.5%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**95.5%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	84	5	89	1611	1972:1875	870+817	95.5 : 95.5%	29.0	39.0
2/1+2/2	Loudon Rd Right Left	E D	23:10	97:110	0	291	1890:2012	124+184	94.3 : 94.3%	113.4	11.0
3/1	Chart Rd (E) Ahead	B	97	5	102	1450	1859	1518	95.5%	30.3	48.4
3/2+3/3	Chart Rd (E) Ahead Right	B C	97:7	5:95	102	257	1859:1846	173+123	86.9 : 86.9%	64.9	6.4

C1 PRC for Signalled Lanes (%): -6.1 Total Delay for Signalled Lanes (pcuHr): 38.99 Cycle Time (s): 120
PRC Over All Lanes (%): -6.1 Total Delay Over All Lanes(pcuHr): 38.99

Scenario 3: '2023 Obs + Cttd + Dev (Sens.Test), AM'
(FG17: '2023 Obs + Committed + Dev (Sens.Test), AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

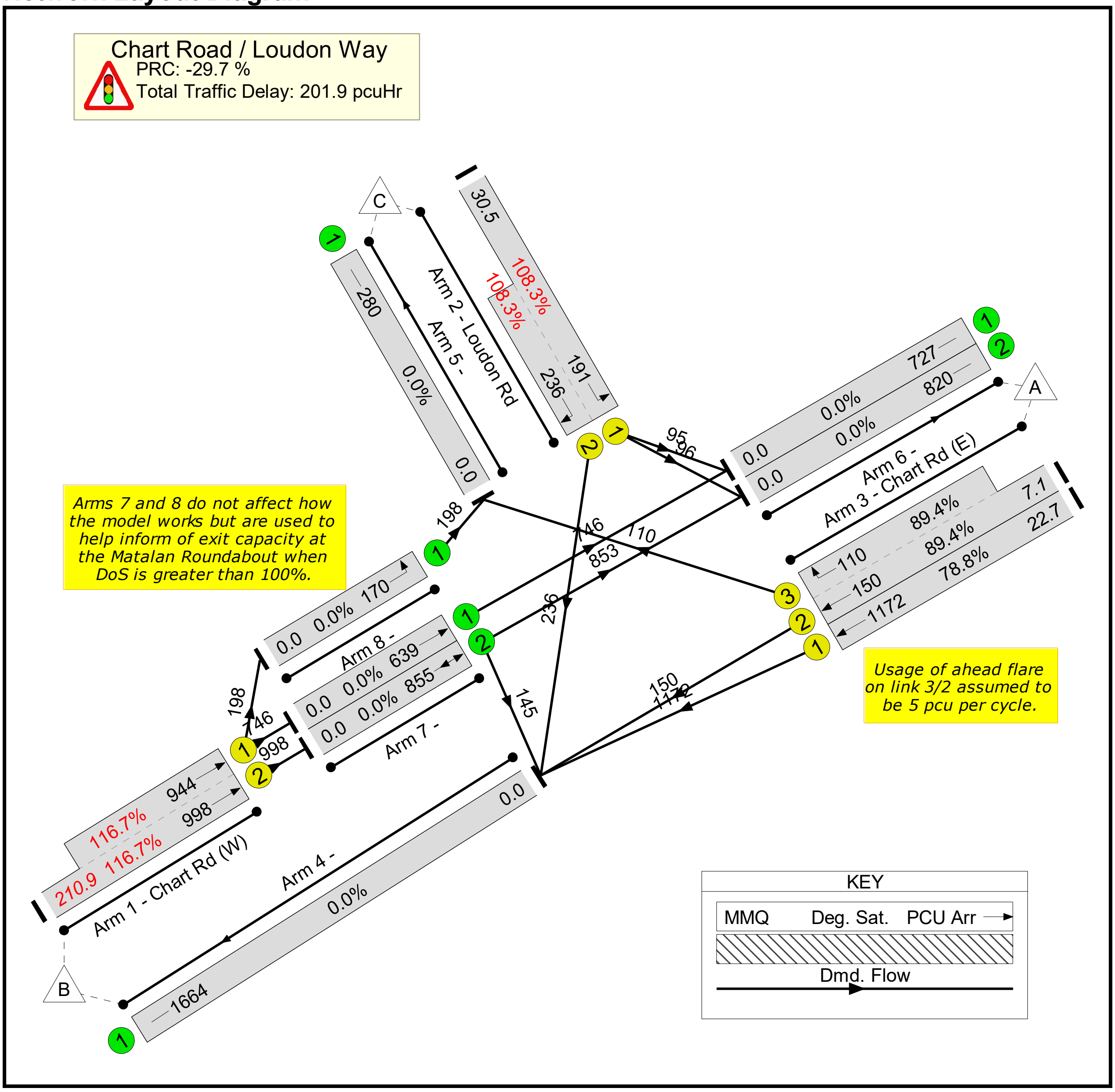
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1322	110	1432
	B	1599	145	198	1942
	C	191	236	0	427
	Tot.	1790	1703	308	3801

Stage Timings

Stage	1	2	3
Duration	82	5	12
Change Point	0	87	100

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**116.7%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**116.7%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	82	5	87	1942	1995:1879	855+809	116.7 : 116.7%	304.9	210.9
2/1+2/2	Loudon Rd Right Left	E D	25:12	95:108	0	427	1890:2012	176+218	108.3 : 108.3%	237.7	30.5
3/1	Chart Rd (E) Ahead	B	95	5	100	1172	1859	1487	78.8%	12.1	22.7
3/2+3/3	Chart Rd (E) Ahead Right	B C	95:7	5:93	100	260	1859:1846	168+123	89.4 : 89.4%	72.7	7.1

C1	PRC for Signalled Lanes (%):	-29.7	Total Delay for Signalled Lanes (pcuHr):	201.90	Cycle Time (s):	120
	PRC Over All Lanes (%):	-29.7	Total Delay Over All Lanes(pcuHr):	201.90		

Scenario 4: '2023 Obs + Cttd + Dev (Sens.Test), PM'
(FG18: '2023 Obs + Committed + Dev (Sens.Test), PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

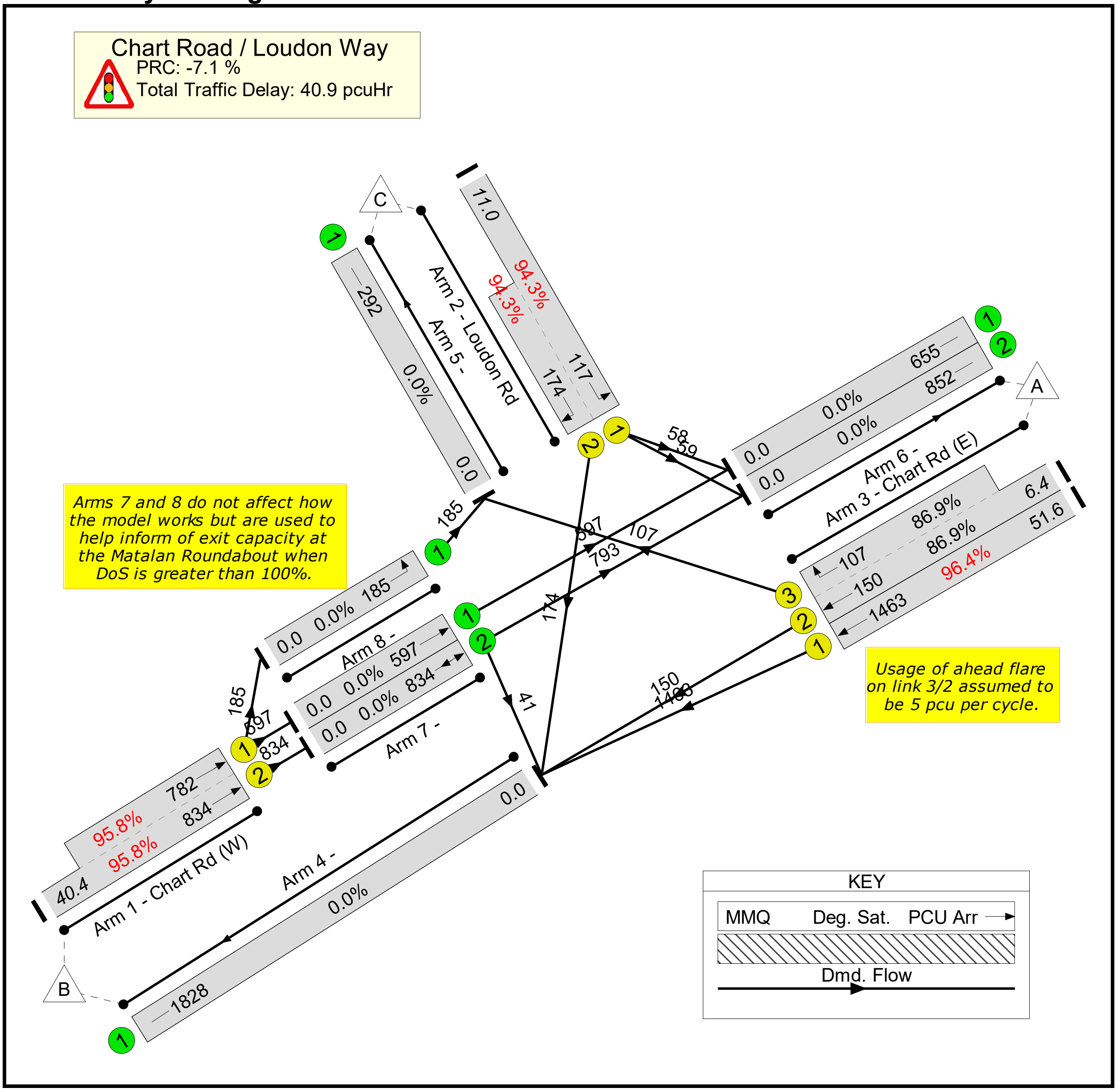
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1613	107	1720
	B	1390	41	185	1616
	C	117	174	0	291
	Tot.	1507	1828	292	3627

Stage Timings

Stage	1	2	3
Duration	84	5	10
Change Point	0	89	102

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**96.4%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**96.4%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	84	5	89	1616	1972:1875	870+816	95.8 : 95.8%	30.1	40.4
2/1+2/2	Loudon Rd Right Left	E D	23:10	97:110	0	291	1890:2012	124+184	94.3 : 94.3%	113.4	11.0
3/1	Chart Rd (E) Ahead	B	97	5	102	1463	1859	1518	96.4%	33.5	51.6
3/2+3/3	Chart Rd (E) Ahead Right	B C	97:7	5:95	102	257	1859:1846	173+123	86.9 : 86.9%	64.9	6.4

C1 PRC for Signalled Lanes (%): -7.1 Total Delay for Signalled Lanes (pcuHr): 40.94 Cycle Time (s): 120
PRC Over All Lanes (%): -7.1 Total Delay Over All Lanes(pcuHr): 40.94

Scenario 6: '2032 Base + Cttd + Dev, AM'
(FG24: '2032 Base + Committed + Dev, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

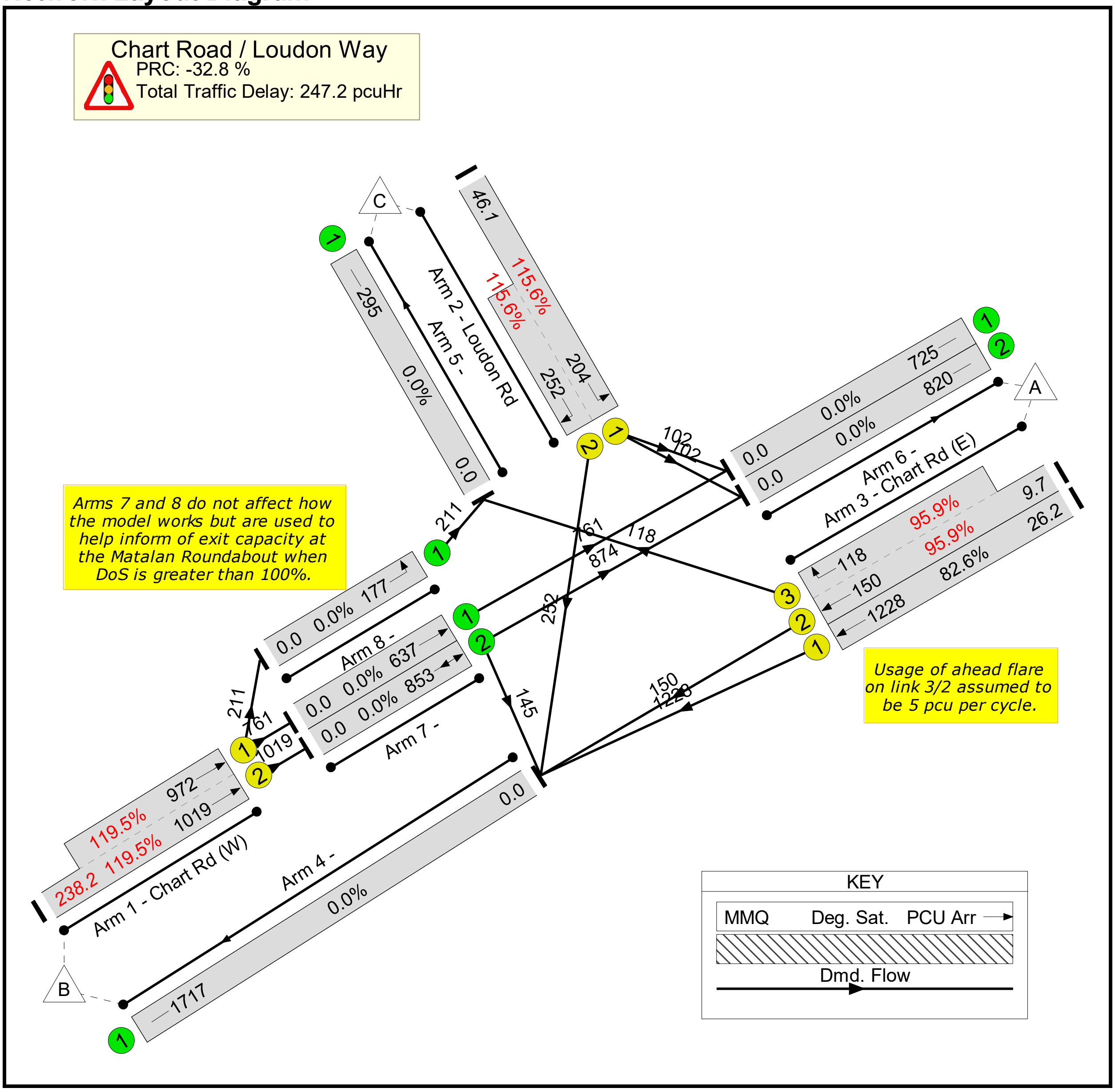
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1378	118	1496
	B	1635	145	211	1991
	C	204	252	0	456
	Tot.	1839	1775	329	3943

Stage Timings

Stage	1	2	3
Duration	82	5	12
Change Point	0	87	100

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**119.5%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**119.5%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	82	5	87	1991	1995:1878	853+813	119.5 : 119.5%	345.9	238.2
2/1+2/2	Loudon Rd Right Left	E D	25:12	95:108	0	456	1890:2012	176+218	115.6 : 115.6%	342.4	46.1
3/1	Chart Rd (E) Ahead	B	95	5	100	1228	1859	1487	82.6%	13.9	26.2
3/2+3/3	Chart Rd (E) Ahead Right	B C	95:7	5:93	100	268	1859:1846	156+123	95.9 : 95.9%	104.0	9.7

C1 PRC for Signalled Lanes (%): -32.8 Total Delay for Signalled Lanes (pcuHr): 247.16 Cycle Time (s): 120
PRC Over All Lanes (%): -32.8 Total Delay Over All Lanes(pcuHr): 247.16

Scenario 7: '2032 Base + Cttd + Dev, PM'
(FG25: '2032 Base + Committed + Dev, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

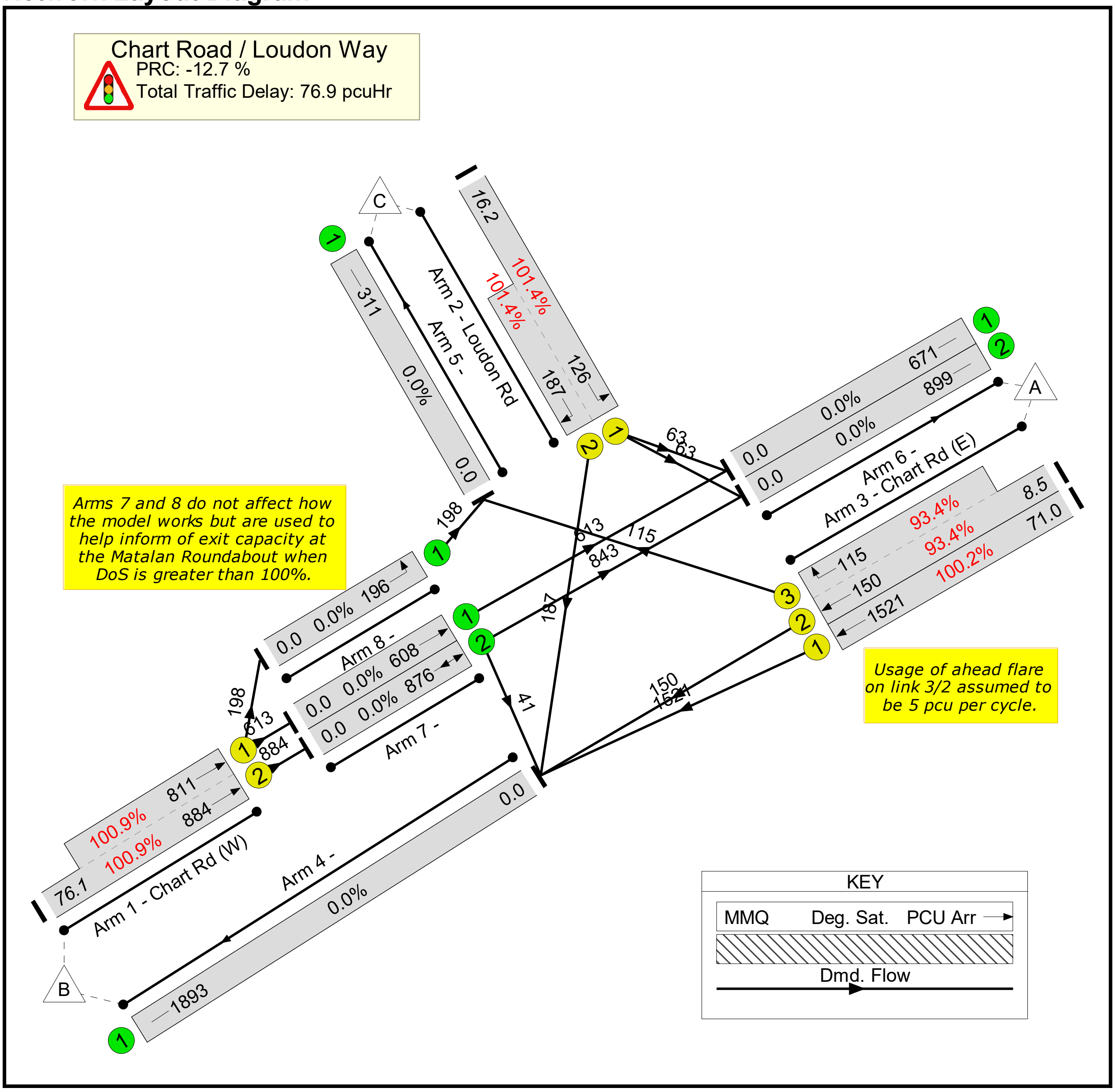
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1671	115	1786
	B	1456	41	198	1695
	C	126	187	0	313
	Tot.	1582	1899	313	3794

Stage Timings

Stage	1	2	3
Duration	84	5	10
Change Point	0	89	102

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**101.4%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**101.4%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	84	5	89	1695	1972:1873	876+804	100.9 : 100.9%	65.8	76.1
2/1+2/2	Loudon Rd Right Left	E D	23:10	97:110	0	313	1890:2012	124+184	101.4 : 101.4%	165.0	16.2
3/1	Chart Rd (E) Ahead	B	97	5	102	1521	1859	1518	100.2%	59.2	71.0
3/2+3/3	Chart Rd (E) Ahead Right	B C	97:7	5:95	102	265	1859:1846	161+123	93.4 : 93.4%	89.6	8.5

C1 PRC for Signalled Lanes (%): -12.7 Total Delay for Signalled Lanes (pcuHr): 76.95 Cycle Time (s): 120
PRC Over All Lanes (%): -12.7 Total Delay Over All Lanes(pcuHr): 76.95

Scenario 8: '2032 Base + Cttd + Dev (Sens.Test), AM'
(FG26: '2032 Base + Committed + Dev (Sens.Test), AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

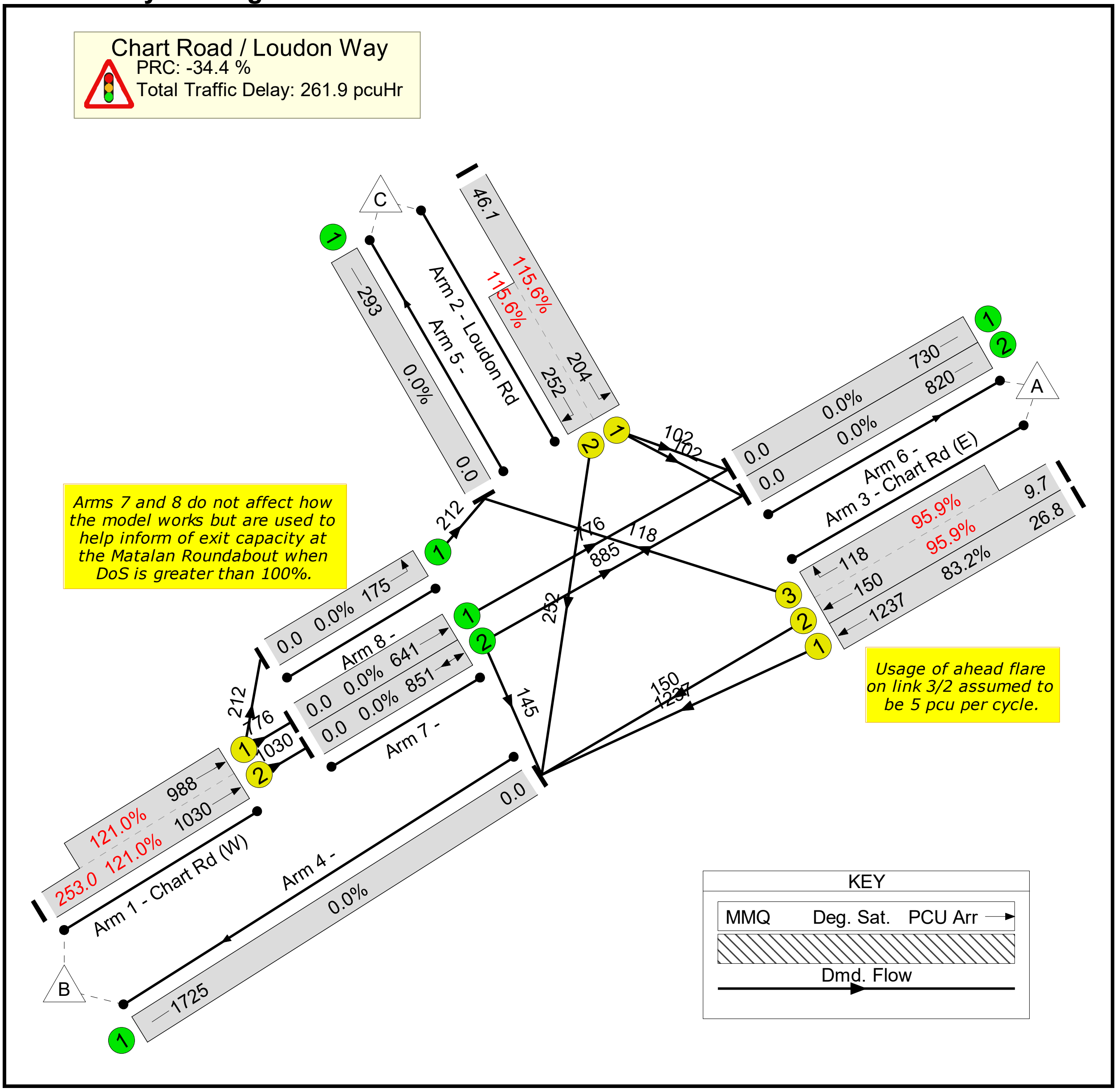
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1387	118	1505
	B	1661	145	212	2018
	C	204	252	0	456
	Tot.	1865	1784	330	3979

Stage Timings

Stage	1	2	3
Duration	82	5	12
Change Point	0	87	100

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**121.0%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**121.0%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	82	5	87	2018	1995:1878	851+817	121.0 : 121.0%	367.3	253.0
2/1+2/2	Loudon Rd Right Left	E D	25:12	95:108	0	456	1890:2012	176+218	115.6 : 115.6%	342.4	46.1
3/1	Chart Rd (E) Ahead	B	95	5	100	1237	1859	1487	83.2%	14.2	26.8
3/2+3/3	Chart Rd (E) Ahead Right	B C	95:7	5:93	100	268	1859:1846	156+123	95.9 : 95.9%	104.0	9.7

C1 PRC for Signalled Lanes (%): -34.4 Total Delay for Signalled Lanes (pcuHr): 261.87 Cycle Time (s): 120
PRC Over All Lanes (%): -34.4 Total Delay Over All Lanes(pcuHr): 261.87

Scenario 9: '2032 Base + Cttd + Dev (Sens.Test), PM'
(FG27: '2032 Base + Committed + Dev (Sens.Test), PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

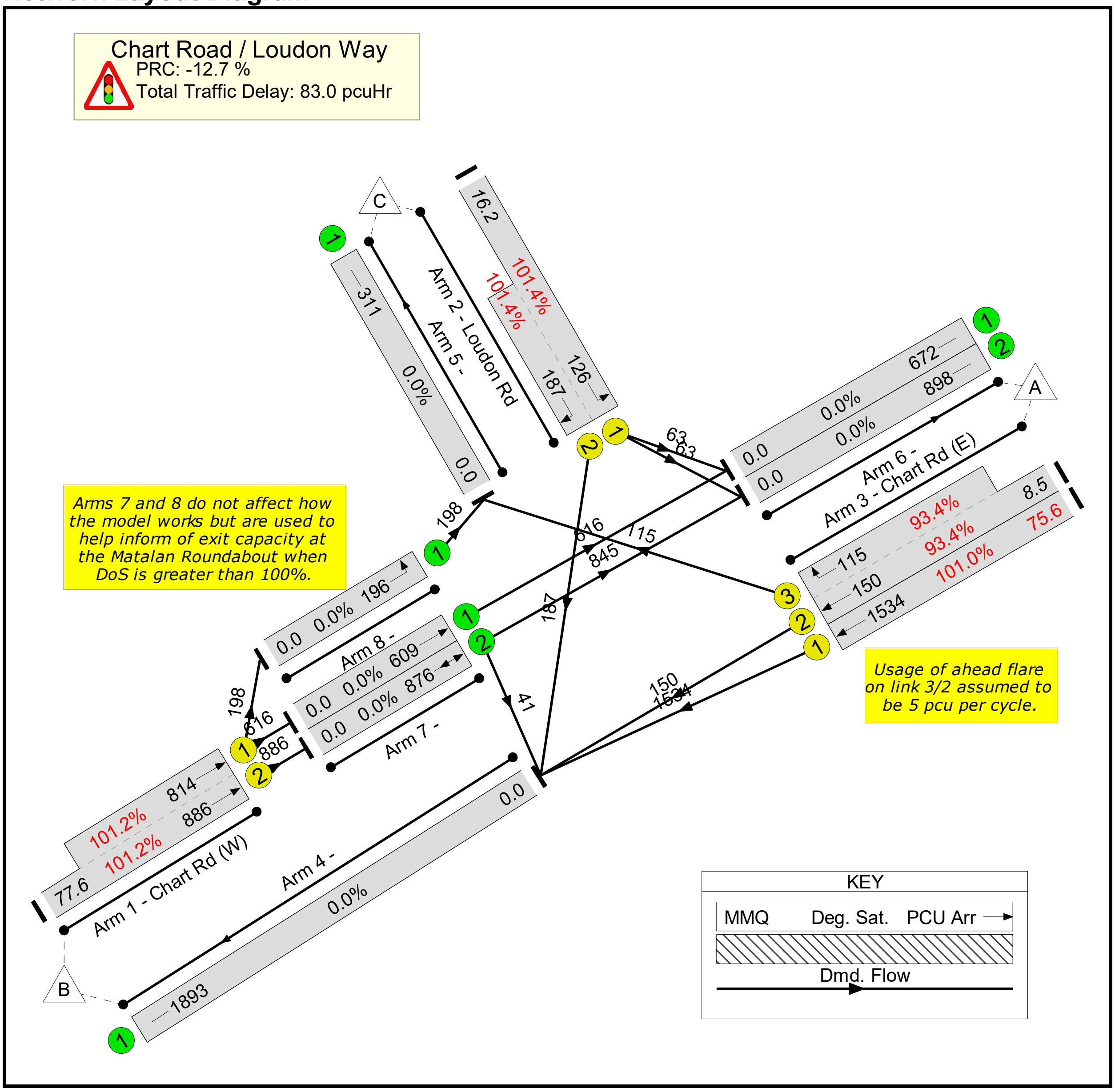
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1684	115	1799
	B	1461	41	198	1700
	C	126	187	0	313
	Tot.	1587	1912	313	3812

Stage Timings

Stage	1	2	3
Duration	84	5	10
Change Point	0	89	102

Network Layout Diagram



Link Results

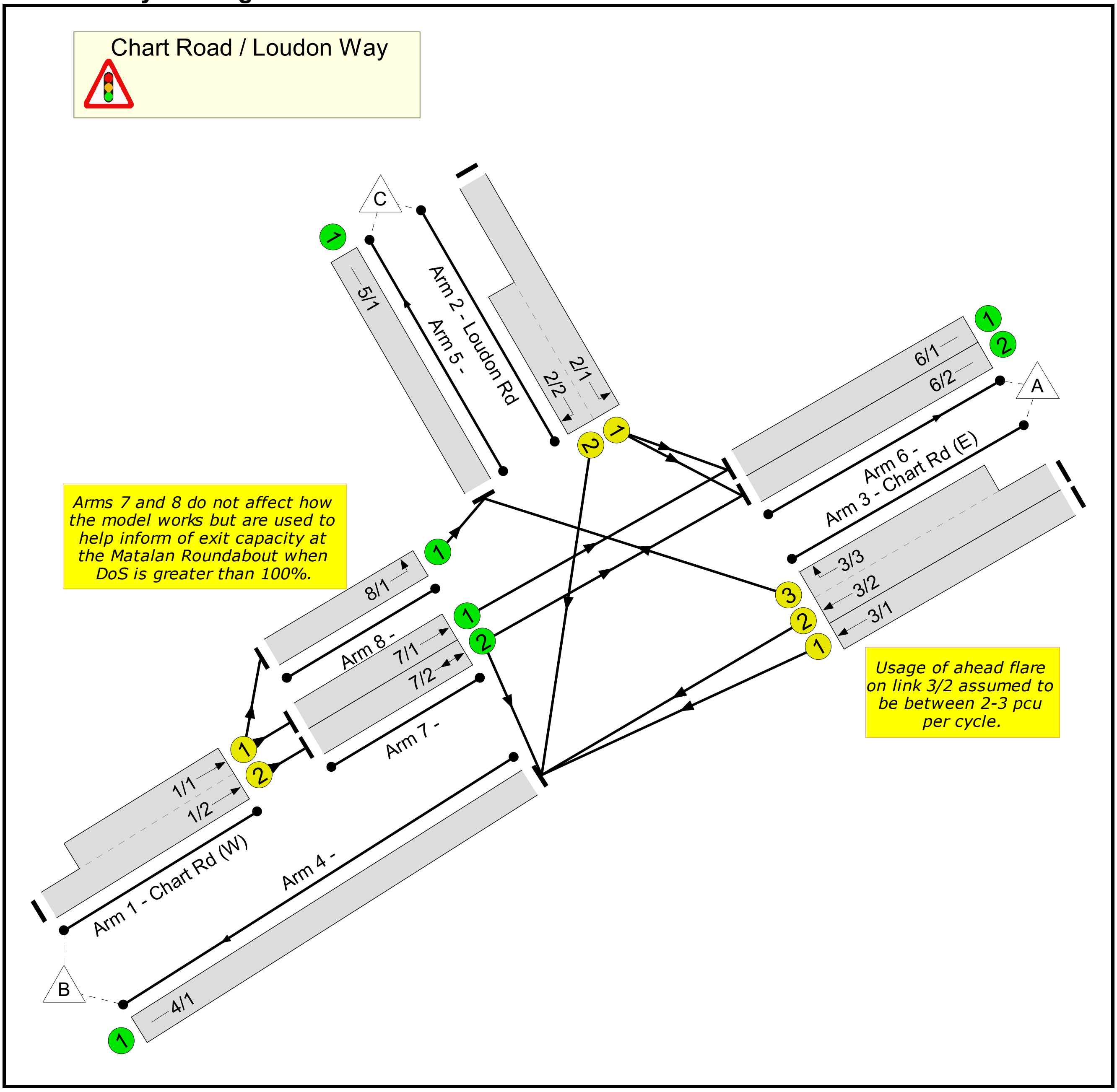
Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**101.4%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**101.4%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	84	5	89	1700	1972:1874	876+804	101.2 : 101.2%	69.0	77.6
2/1+2/2	Loudon Rd Right Left	E D	23:10	97:110	0	313	1890:2012	124+184	101.4 : 101.4%	165.0	16.2
3/1	Chart Rd (E) Ahead	B	97	5	102	1534	1859	1518	101.0%	69.1	75.6
3/2+3/3	Chart Rd (E) Ahead Right	B C	97:7	5:95	102	265	1859:1846	161+123	93.4 : 93.4%	89.6	8.5

C1 PRC for Signalled Lanes (%): -12.7 Total Delay for Signalled Lanes (pcuHr): 82.98 Cycle Time (s): 120
PRC Over All Lanes (%): -12.7 Total Delay Over All Lanes(pcuHr): 82.98

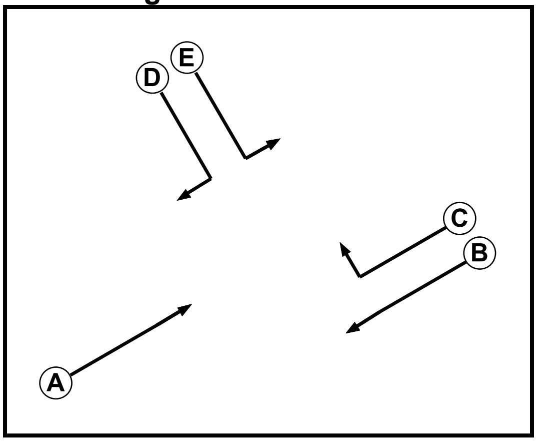
User and Project Details

Project:	**Possingham Farm, Ashford**
Title:	**A28 Chart Road / Loudon Way Junction**
Design Layout Ref:	Proposed Junction Layout
Model Assumptions:	Intergreens are observed averages
Flow Details:	Observed flows from surveys of Tuesday, 28th March 2023
Additional detail:	Dev Flows -> Escort Education Only
File name:	A28_Loudon (Proposed) v4.1.lsg3x
Author:	David Noyce
Company:	Vectos / SLR
Address:	Summit House, 12 Red Lion Square, London WC1R 4QH

Junction Layout Diagram



Phase Diagram



Phase Input Data

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

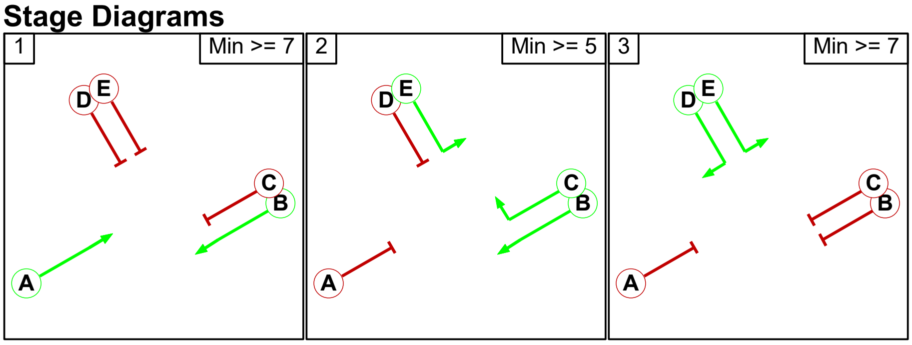
Intergreens

	Starting Phase					
Terminating Phase		A	B	C	D	E
	A		-	6	8	8
	B	-		-	8	-
	C	5	-		8	-
	D	5	5	5		-
	E	5	-	-	-	

Stage Data

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

Stage Diagrams



Phase Delays

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

Lane Input Data

Junction: Chart Road / Loudon Way												
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 (Chart Rd (W))	U	A	2	3	11.1	Geom	-	3.00	0.00	Y	Arm 7 Ahead	Inf
											Arm 8 Ahead	16.50
1/2 (Chart Rd (W))	U	A	2	3	98.3	User	1995	-	-	-	-	-
2/1 (Loudon Rd)	U	E	2	3	60.0	User	1890	-	-	-	-	-
2/2 (Loudon Rd)	U	D	2	3	8.0	User	2012	-	-	-	-	-
3/1 (Chart Rd (E))	U	B	2	3	73.9	User	1859	-	-	-	-	-
3/2 (Chart Rd (E))	U	B	2	3	15.0	User	1859	-	-	-	-	-
3/3 (Chart Rd (E))	U	C	2	3	15.0	User	1846	-	-	-	-	-

Give-Way Lane Input Data

Junction: Chart Road / Loudon Way
There are no Opposed Lanes in this Junction

Scenario 1: '2023 Obs + Dev, AM'
(FG19: '2023 Obs + Dev, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

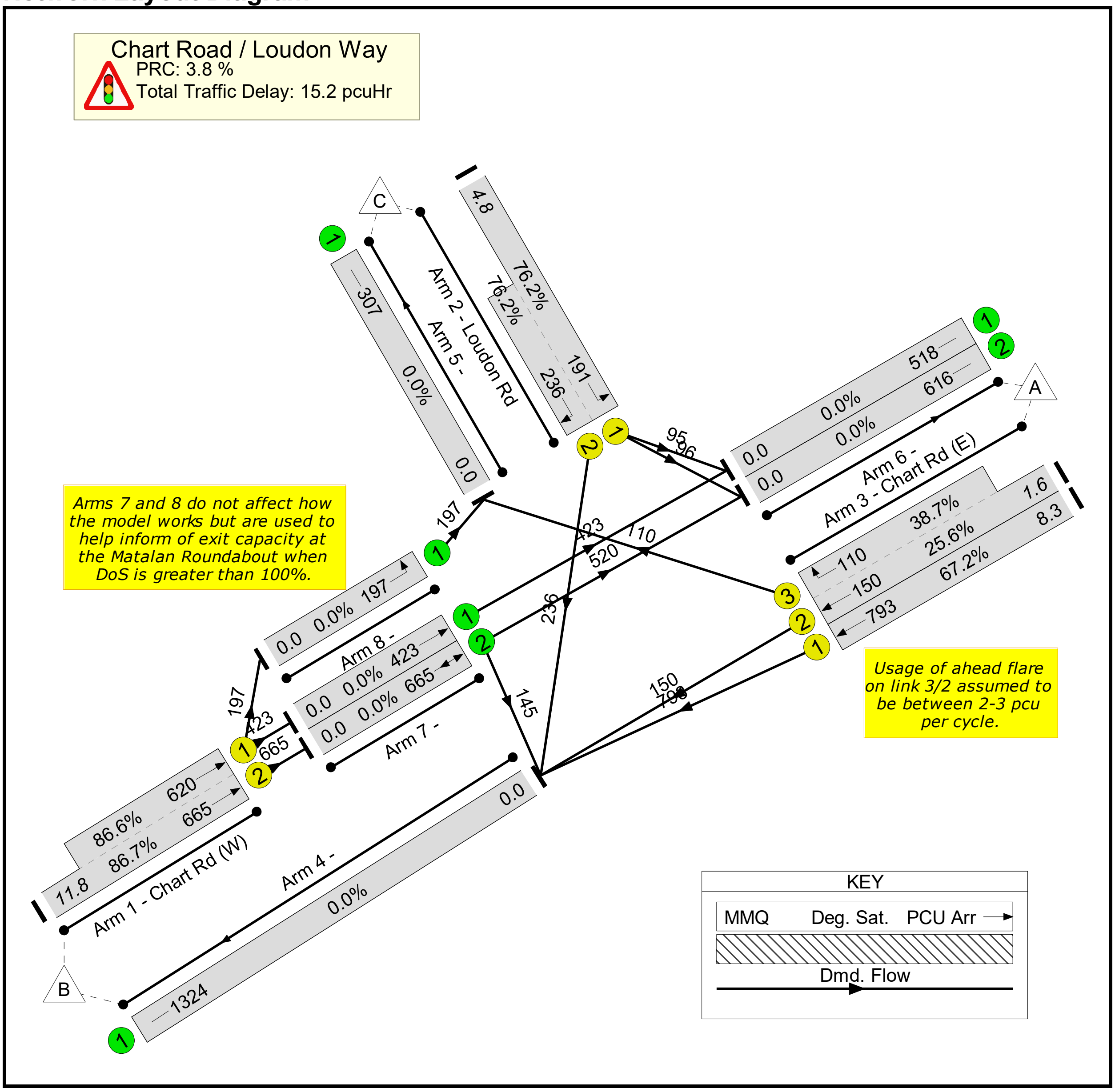
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	943	110	1053
	B	943	145	197	1285
	C	191	236	0	427
	Tot.	1134	1324	307	2765

Stage Timings

Stage	1	2	3
Duration	19	5	7
Change Point	0	24	37

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**86.7%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**86.7%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	19	5	24	1285	1995:1861	767+716	86.7 : 86.6%	23.6	11.8
2/1+2/2	Loudon Rd Right Left	E D	20:7	32:45	0	427	1890:2012	251+310	76.2 : 76.2%	29.5	4.8
3/1	Chart Rd (E) Ahead	B	32	5	37	793	1859	1180	67.2%	10.7	8.3
3/2+3/3	Chart Rd (E) Ahead Right	B C	32:7	5:30	37	260	1859:1846	587+284	25.6 : 38.7%	13.5	1.6

C1 PRC for Signalled Lanes (%): 3.8 Total Delay for Signalled Lanes (pcuHr): 15.24 Cycle Time (s): 52
PRC Over All Lanes (%): 3.8 Total Delay Over All Lanes(pcuHr): 15.24

Scenario 2: '2023 Obs + Dev, PM'
(FG20: '2023 Obs + Dev, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

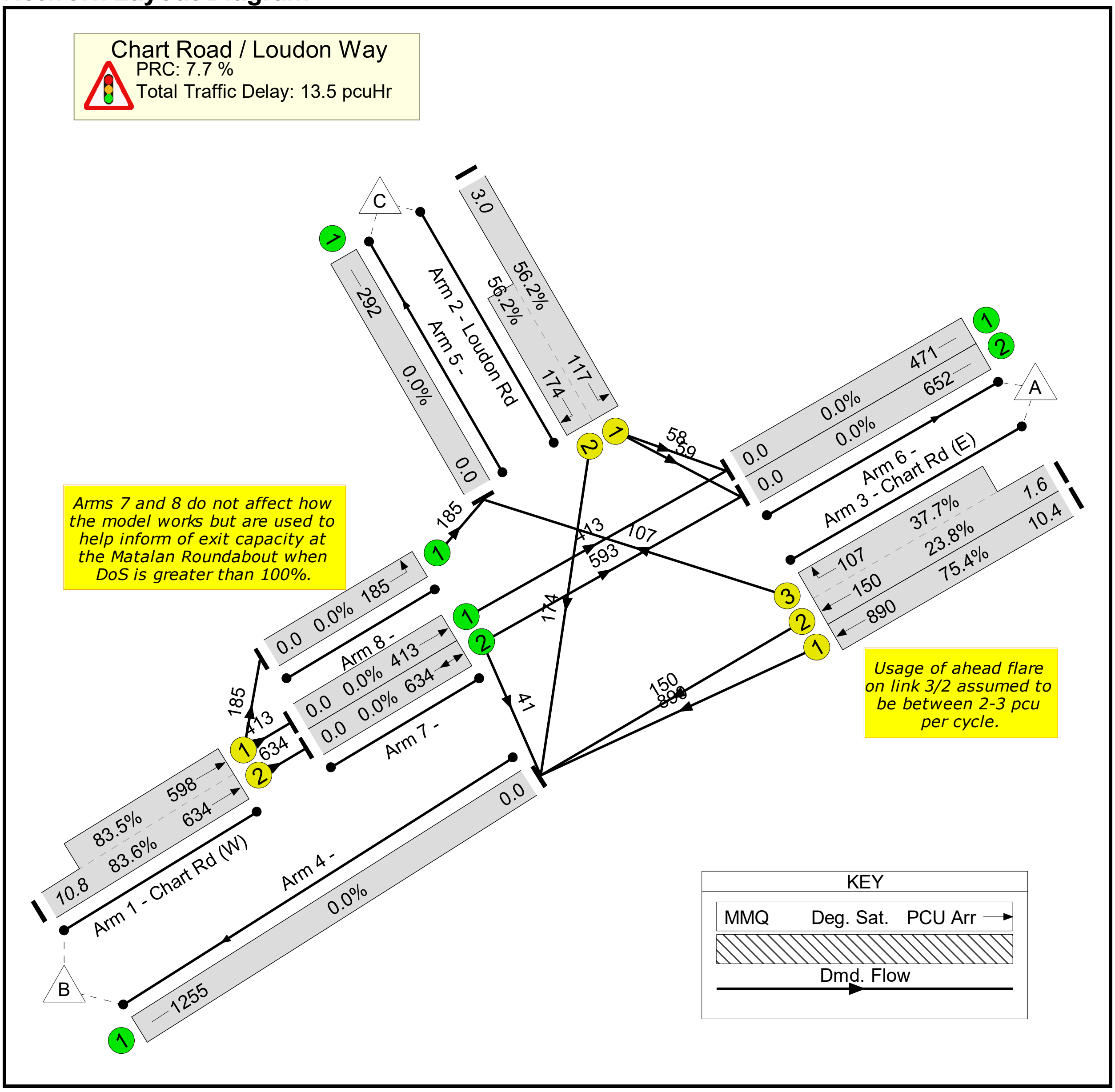
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1040	107	1147
	B	1006	41	185	1232
	C	117	174	0	291
	Tot.	1123	1255	292	2670

Stage Timings

Stage	1	2	3
Duration	19	5	7
Change Point	0	24	37

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**83.6%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**83.6%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	19	5	24	1232	1972:1863	758+717	83.6 : 83.5%	21.8	10.8
2/1+2/2	Loudon Rd Right Left	E D	20:7	32:45	0	291	1890:2012	208+310	56.2 : 56.2%	24.1	3.0
3/1	Chart Rd (E) Ahead	B	32	5	37	890	1859	1180	75.4%	12.8	10.4
3/2+3/3	Chart Rd (E) Ahead Right	B C	32:7	5:30	37	257	1859:1846	629+284	23.8 : 37.7%	13.2	1.6

C1	PRC for Signalled Lanes (%):	7.7	Total Delay for Signalled Lanes (pcuHr):	13.50	Cycle Time (s):	52
	PRC Over All Lanes (%):	7.7	Total Delay Over All Lanes(pcuHr):	13.50		

Scenario 3: '2023 Obs + Dev (Sens.Test), AM'
(FG21: '2023 Obs + Dev (Sens.Test), AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

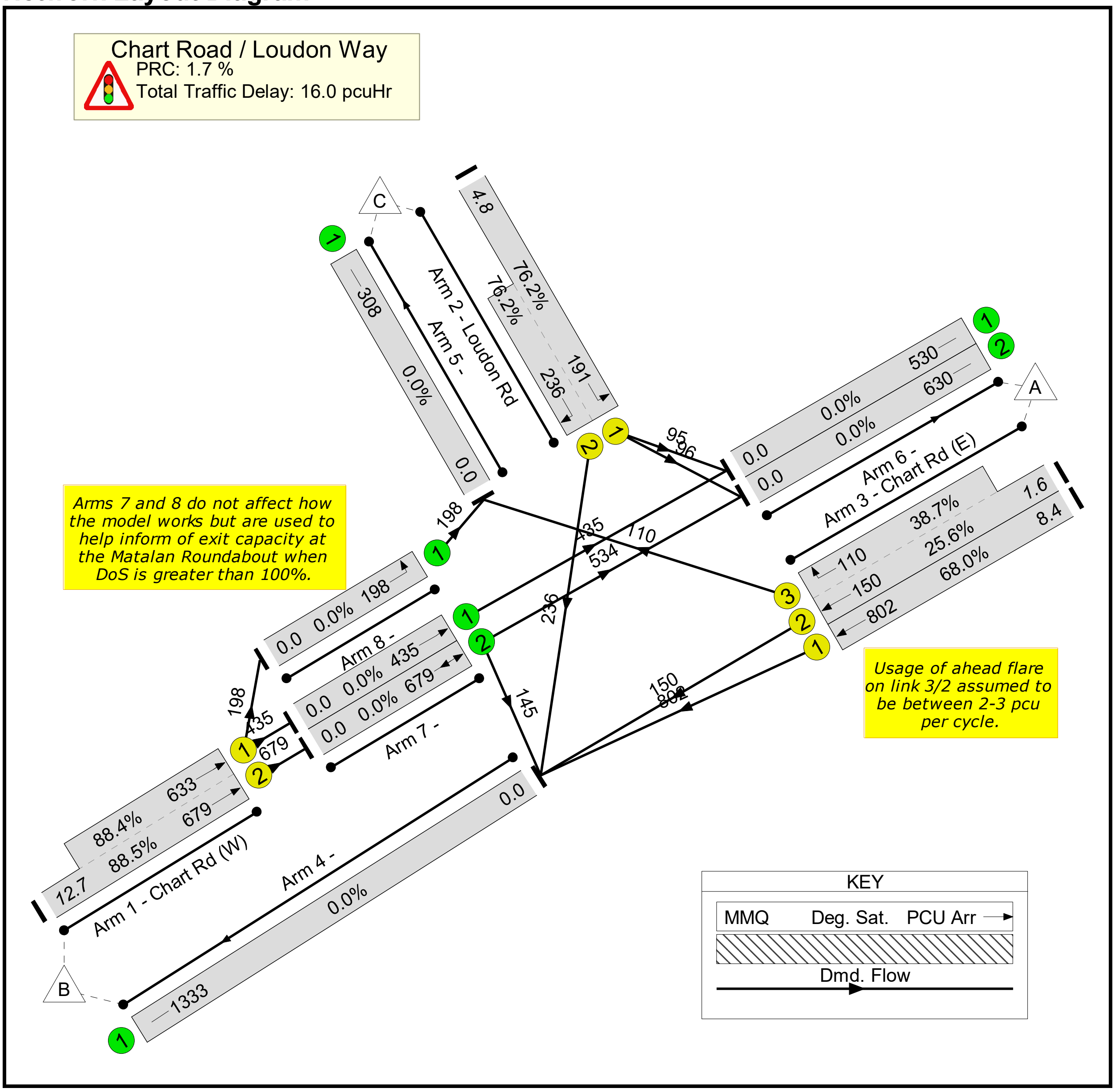
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	952	110	1062
	B	969	145	198	1312
	C	191	236	0	427
	Tot.	1160	1333	308	2801

Stage Timings

Stage	1	2	3
Duration	19	5	7
Change Point	0	24	37

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**88.5%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**88.5%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	19	5	24	1312	1995:1862	767+716	88.5 : 88.4%	25.0	12.7
2/1+2/2	Loudon Rd Right Left	E D	20:7	32:45	0	427	1890:2012	251+310	76.2 : 76.2%	29.5	4.8
3/1	Chart Rd (E) Ahead	B	32	5	37	802	1859	1180	68.0%	10.8	8.4
3/2+3/3	Chart Rd (E) Ahead Right	B C	32:7	5:30	37	260	1859:1846	587+284	25.6 : 38.7%	13.5	1.6

C1	PRC for Signalled Lanes (%):	1.7	Total Delay for Signalled Lanes (pcuHr):	16.00	Cycle Time (s):	52
	PRC Over All Lanes (%):	1.7	Total Delay Over All Lanes(pcuHr):	16.00		

Scenario 4: '2023 Obs + Dev (Sens.Test), PM'
(FG22: '2023 Obs + Dev (Sens.Test), PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

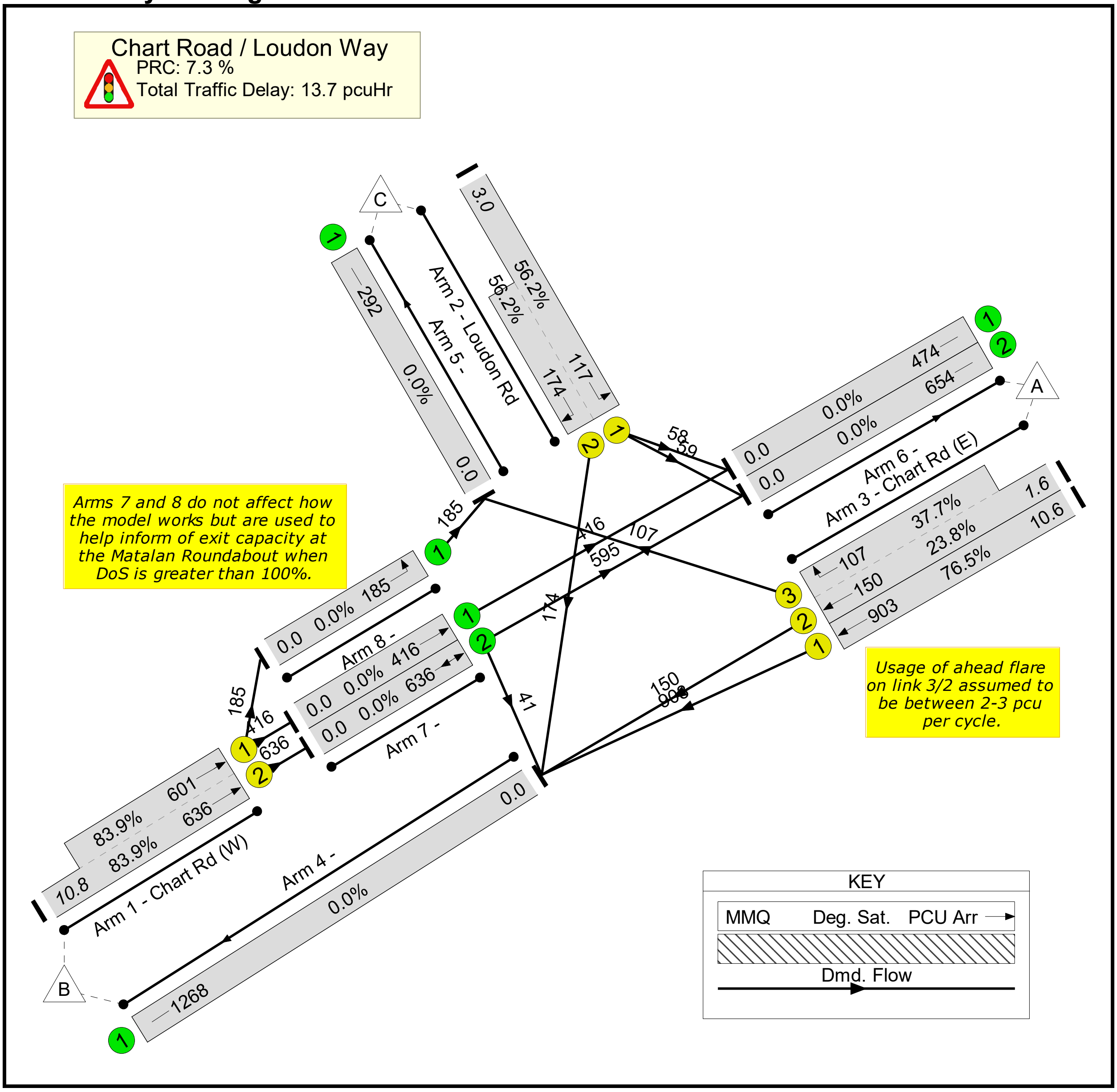
Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1053	107	1160
	B	1011	41	185	1237
	C	117	174	0	291
	Tot.	1128	1268	292	2688

Stage Timings

Stage	1	2	3
Duration	19	5	7
Change Point	0	24	37

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**83.9%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**83.9%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	19	5	24	1237	1972:1863	758+717	83.9 : 83.9%	21.9	10.8
2/1+2/2	Loudon Rd Right Left	E D	20:7	32:45	0	291	1890:2012	208+310	56.2 : 56.2%	24.1	3.0
3/1	Chart Rd (E) Ahead	B	32	5	37	903	1859	1180	76.5%	13.2	10.6
3/2+3/3	Chart Rd (E) Ahead Right	B C	32:7	5:30	37	257	1859:1846	629+284	23.8 : 37.7%	13.2	1.6

C1 PRC for Signalled Lanes (%): 7.3 Total Delay for Signalled Lanes (pcuHr): 13.73 Cycle Time (s): 52
PRC Over All Lanes (%): 7.3 Total Delay Over All Lanes(pcuHr): 13.73

Scenario 6: '2032 Base + Dev, AM'
(FG32: '2032 Base + Dev, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

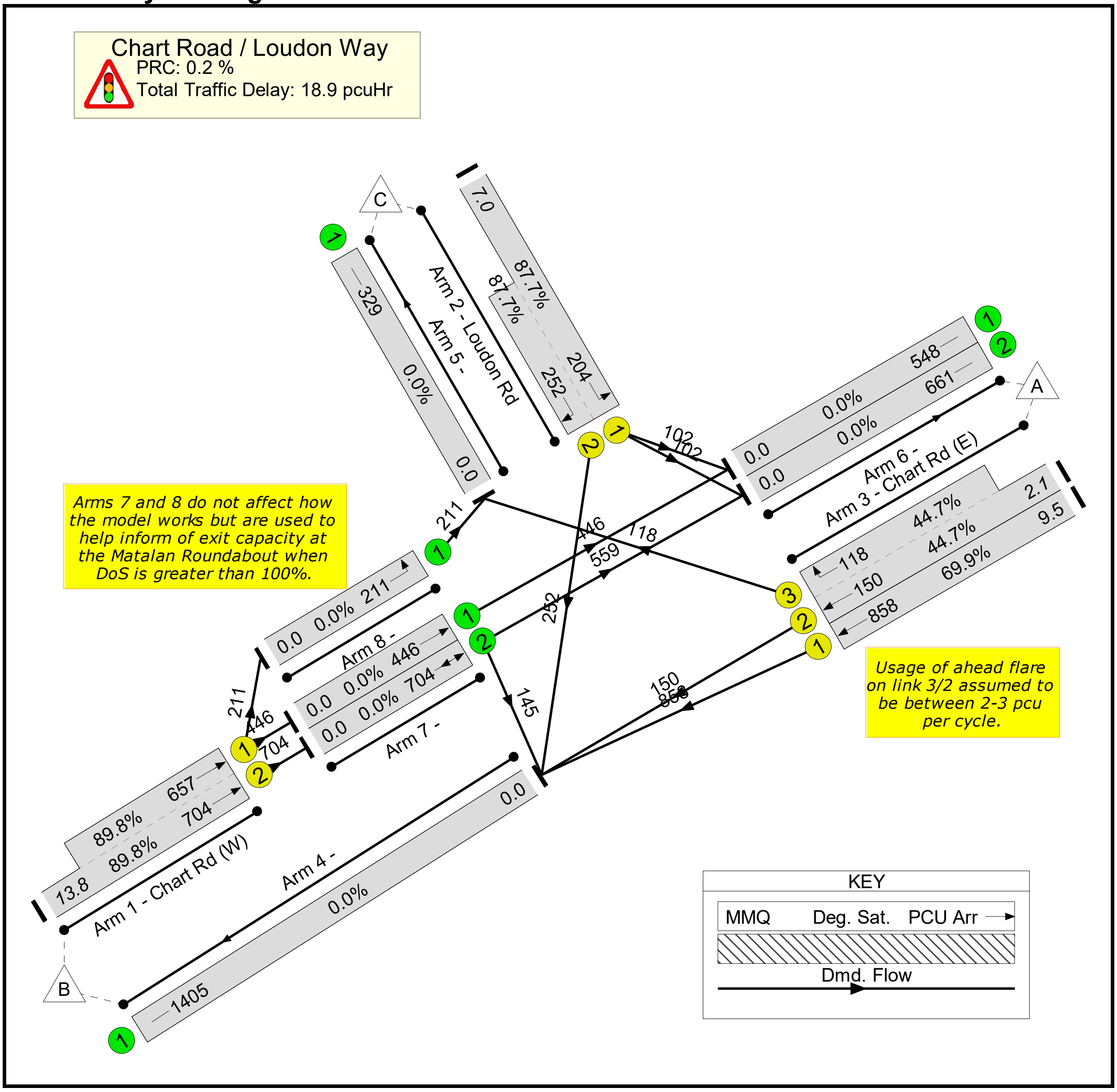
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1008	118	1126
	B	1005	145	211	1361
	C	204	252	0	456
	Tot.	1209	1405	329	2943

Stage Timings

Stage	1	2	3
Duration	23	5	7
Change Point	0	28	41

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**89.8%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**89.8%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	23	5	28	1361	1995:1861	784+732	89.8 : 89.8%	25.2	13.8
2/1+2/2	Loudon Rd Right Left	E D	20:7	36:49	0	456	1890:2012	233+287	87.7 : 87.7%	44.0	7.0
3/1	Chart Rd (E) Ahead	B	36	5	41	858	1859	1228	69.9%	10.8	9.5
3/2+3/3	Chart Rd (E) Ahead Right	B C	36:7	5:34	41	268	1859:1846	335+264	44.7 : 44.7%	17.1	2.1

C1 PRC for Signalled Lanes (%): 0.2 Total Delay for Signalled Lanes (pcuHr): 18.95 Cycle Time (s): 56
PRC Over All Lanes (%): 0.2 Total Delay Over All Lanes(pcuHr): 18.95

Scenario 7: '2032 Base + Dev, PM'
(FG33: '2032 Base + Dev, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

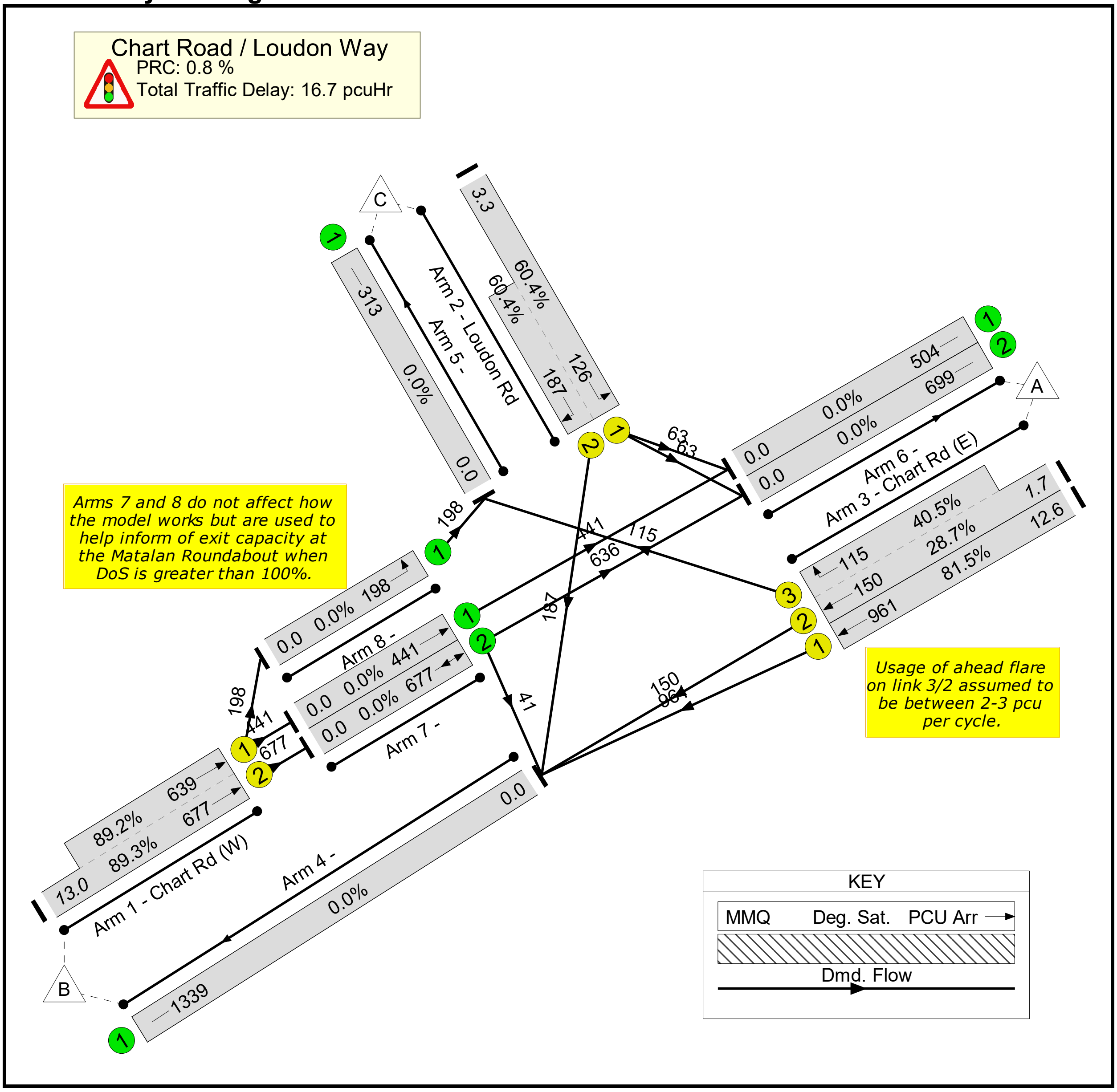
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1111	115	1226
	B	1077	41	198	1316
	C	126	187	0	313
	Tot.	1203	1339	313	2855

Stage Timings

Stage	1	2	3
Duration	19	5	7
Change Point	0	24	37

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**89.3%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**89.3%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	19	5	24	1316	1972:1863	758+717	89.3 : 89.2%	25.8	13.0
2/1+2/2	Loudon Rd Right Left	E D	20:7	32:45	0	313	1890:2012	209+310	60.4 : 60.4%	25.0	3.3
3/1	Chart Rd (E) Ahead	B	32	5	37	961	1859	1180	81.5%	15.3	12.6
3/2+3/3	Chart Rd (E) Ahead Right	B C	32:7	5:30	37	265	1859:1846	522+284	28.7 : 40.5%	14.1	1.7

C1 PRC for Signalled Lanes (%): 0.8 Total Delay for Signalled Lanes (pcuHr): 16.71 Cycle Time (s): 52
PRC Over All Lanes (%): 0.8 Total Delay Over All Lanes(pcuHr): 16.71

Scenario 8: '2032 Base + Dev (Sens.Test), AM'
(FG34: '2032 Base + Dev (Sens.Test), AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

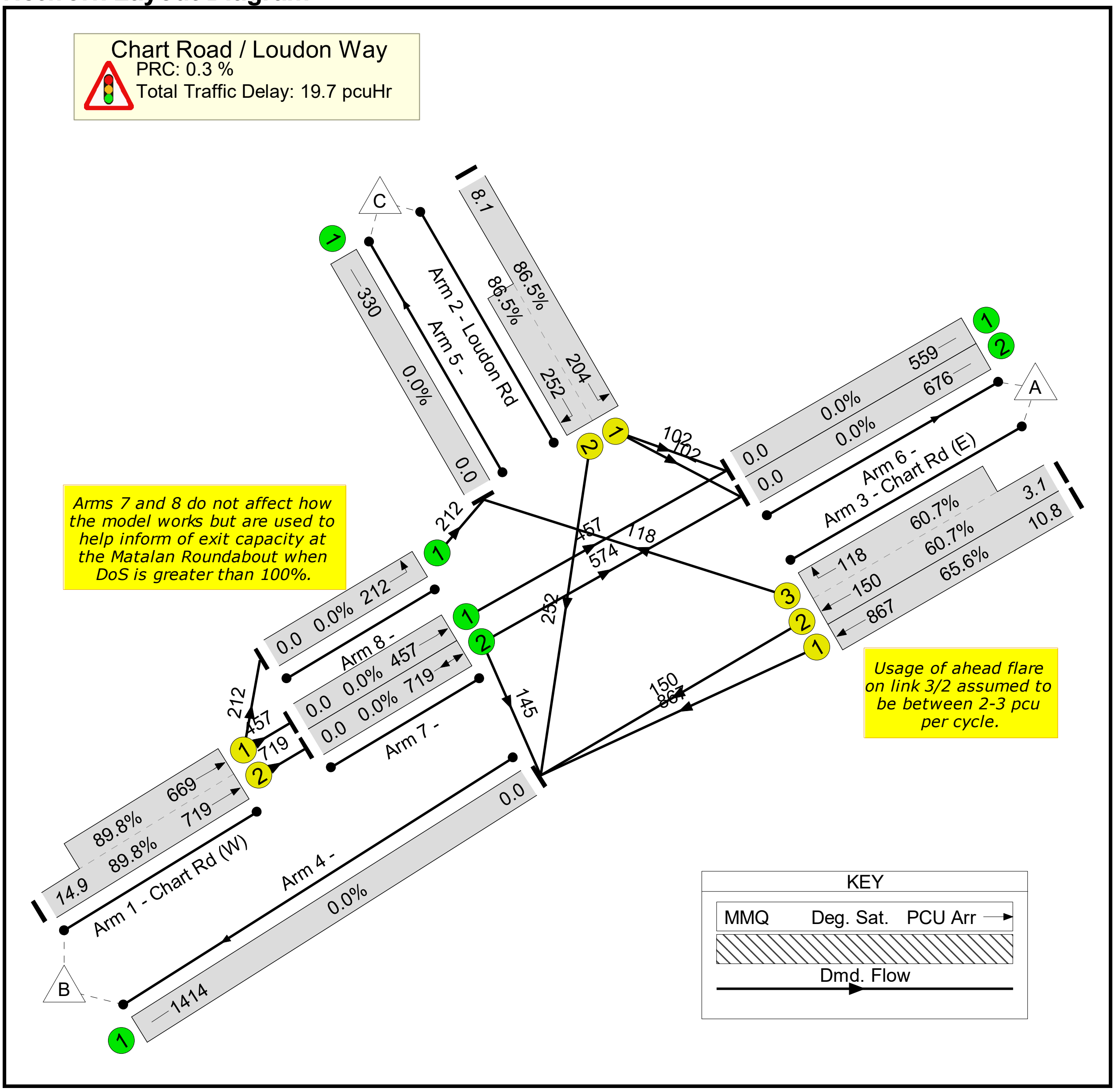
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1017	118	1135
	B	1031	145	212	1388
	C	204	252	0	456
	Tot.	1235	1414	330	2979

Stage Timings

Stage	1	2	3
Duration	40	5	10
Change Point	0	45	58

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**89.8%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**89.8%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	40	5	45	1388	1995:1861	801+745	89.8 : 89.8%	23.4	14.9
2/1+2/2	Loudon Rd Right Left	E D	23:10	53:66	0	456	1890:2012	236+291	86.5 : 86.5%	49.9	8.1
3/1	Chart Rd (E) Ahead	B	53	5	58	867	1859	1321	65.6%	9.9	10.8
3/2+3/3	Chart Rd (E) Ahead Right	B C	53:7	5:51	58	268	1859:1846	247+194	60.7 : 60.7%	26.6	3.1

C1	PRC for Signalled Lanes (%):	0.3	Total Delay for Signalled Lanes (pcuHr):	19.70	Cycle Time (s):	76
	PRC Over All Lanes (%):	0.3	Total Delay Over All Lanes(pcuHr):	19.70		

Scenario 9: '2032 Base + Dev (Sens.Test), PM'
(FG35: '2032 Base + Dev (Sens.Test), PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

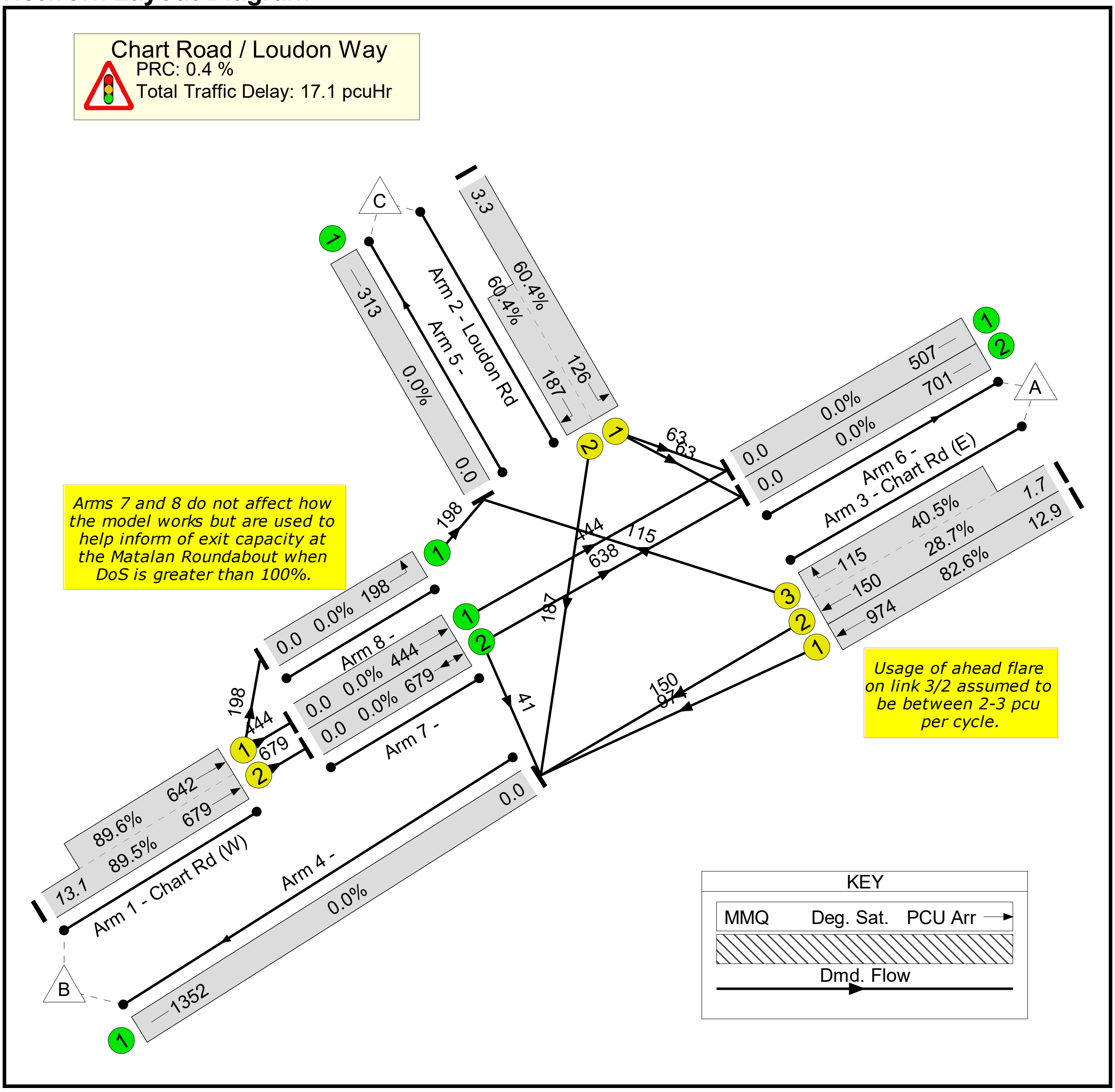
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1124	115	1239
	B	1082	41	198	1321
	C	126	187	0	313
	Tot.	1208	1352	313	2873

Stage Timings

Stage	1	2	3
Duration	19	5	7
Change Point	0	24	37

Network Layout Diagram



Link Results

Item	Lane Description	Full Phase	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A28 Chart Road / Loudon Way Junction	-	-	-	-	-	-	-	-	**89.6%**	-	-
Chart Road / Loudon Way	-	-	-	-	-	-	-	-	**89.6%**	-	-
1/2+1/1	Chart Rd (W) Ahead Ahead2	A	19	5	24	1321	1972:1863	758+717	89.5 : 89.6%	26.1	13.1
2/1+2/2	Loudon Rd Right Left	E D	20:7	32:45	0	313	1890:2012	209+310	60.4 : 60.4%	25.0	3.3
3/1	Chart Rd (E) Ahead	B	32	5	37	974	1859	1180	82.6%	15.8	12.9
3/2+3/3	Chart Rd (E) Ahead Right	B C	32:7	5:30	37	265	1859:1846	522+284	28.7 : 40.5%	14.1	1.7

C1 PRC for Signalled Lanes (%): 0.4 Total Delay for Signalled Lanes (pcuHr): 17.08 Cycle Time (s): 52
PRC Over All Lanes (%): 0.4 Total Delay Over All Lanes(pcuHr): 17.08

Appendix IDR5 Tank Roundabout Modelling – Sensitivity Tests

Land North of Possingham Farmhouse, Ashford, Great Chart, Kent

Hodson Development Ltd
SLR Project No.: 425.001542.00001

24 September 2024

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.1.1.1905

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: Tank Roundabout (Existing) v3.0.j10
Path: X:\Projects\220000\226730 - Possingham Farm\Modelling\Modelling in Response to KCC\Modelling - Escort Education Only
Report generation date: 18/09/2024 13:55:18

Summary of junction performance

	AM		
	Queue (PCU)	Delay (s)	RFC
	AM - 2023 Observed		
1 - A28 (NE) Templer Way	16.8	60.60	0.96
2 - Chart Road (East)	13.5	128.72	0.97
3 - Carlton Way (South)	4.7	121.68	0.81
4 - A28 (SW) Chart Road	4.9	16.61	0.83
5 - Sir Henry Brackenbury Road (NW)	2.4	78.46	0.72
	AM - 2023 Obs + Cttd		
1 - A28 (NE) Templer Way	236.8	630.21	1.19
2 - Chart Road (East)	65.5	632.33	1.18
3 - Carlton Way (South)	29.8	822.92	1.22
4 - A28 (SW) Chart Road	387.4	923.24	1.29
5 - Sir Henry Brackenbury Road (NW)	74.4	6068.73	2.94
	AM - 2023 Obs + Cttd + Dev		
1 - A28 (NE) Templer Way	257.5	690.84	1.21
2 - Chart Road (East)	70.6	668.21	1.20
3 - Carlton Way (South)	29.1	800.58	1.21
4 - A28 (SW) Chart Road	447.0	1064.26	1.34
5 - Sir Henry Brackenbury Road (NW)	75.0	6181.64	2.97
	AM - 2023 Obs + Cttd + Dev (Sens.Test)		

1 - A28 (NE) Templer Way	266.1	716.18	1.22
2 - Chart Road (East)	73.1	686.15	1.20
3 - Carlton Way (South)	28.8	791.42	1.20
4 - A28 (SW) Chart Road	472.8	1125.43	1.35
5 - Sir Henry Brackenbury Road (NW)	75.2	6228.67	2.98
	AM - 2032 Base + Cttd		
1 - A28 (NE) Templer Way	313.9	835.08	1.26
2 - Chart Road (East)	89.9	850.92	1.26
3 - Carlton Way (South)	37.5	1000.50	1.28
4 - A28 (SW) Chart Road	464.8	1107.85	1.35
5 - Sir Henry Brackenbury Road (NW)	82.9	6784.39	3.16
	AM - 2032 Base + Cttd + Dev		
1 - A28 (NE) Templer Way	334.2	896.45	1.28
2 - Chart Road (East)	95.4	887.42	1.27
3 - Carlton Way (South)	36.8	975.97	1.27
4 - A28 (SW) Chart Road	524.5	1249.64	1.39
5 - Sir Henry Brackenbury Road (NW)	83.4	6897.00	3.19
	AM - 2032 Base + Cttd + Dev (Sens.Test)		
1 - A28 (NE) Templer Way	342.6	922.07	1.29
2 - Chart Road (East)	98.1	905.66	1.28
3 - Carlton Way (South)	36.5	965.89	1.27
4 - A28 (SW) Chart Road	550.4	1311.10	1.41
5 - Sir Henry Brackenbury Road (NW)	83.6	6944.62	3.20

	PM		
	Queue (PCU)	Delay (s)	RFC
	PM - 2023 Observed		
1 - A28 (NE) Templer Way	8.3	34.07	0.90
2 - Chart Road (East)	4.8	56.25	0.84
3 - Carlton Way (South)	6.3	115.72	0.89
4 - A28 (SW) Chart Road	9.7	31.73	0.91
5 - Sir Henry Brackenbury Road (NW)	1.3	83.43	0.59
	PM - 2023 Obs + Cttd		
1 - A28 (NE) Templer Way	412.4	1215.69	1.38
2 - Chart Road (East)	31.6	365.05	1.08
3 - Carlton Way (South)	51.3	1030.14	1.32
4 - A28 (SW) Chart Road	234.8	574.17	1.18
5 - Sir Henry Brackenbury Road (NW)	16.0	1199.84	1.32
	PM - 2023 Obs + Cttd + Dev		
1 - A28 (NE) Templer Way	449.6	1335.30	1.42
2 - Chart Road (East)	61.8	665.90	1.19
3 - Carlton Way (South)	52.9	1069.11	1.32
4 - A28 (SW) Chart Road	267.2	650.20	1.20
5 - Sir Henry Brackenbury Road (NW)	16.8	1282.04	1.35
	PM - 2023 Obs + Cttd + Dev (Sens.Test)		
1 - A28 (NE) Templer Way	456.4	1356.04	1.43
2 - Chart Road (East)	68.0	728.45	1.21
3 - Carlton Way (South)	53.2	1076.17	1.32
4 - A28 (SW) Chart Road	270.5	657.61	1.20
5 - Sir Henry Brackenbury Road (NW)	16.9	1294.68	1.36
	PM - 2032 Base + Cttd		
1 - A28 (NE) Templer Way	482.8	1426.17	1.45
2 - Chart Road (East)	49.9	549.09	1.15
3 - Carlton Way (South)	66.1	1312.10	1.41
4 - A28 (SW) Chart Road	318.9	777.20	1.24

5 - Sir Henry Brackenbury Road (NW)	20.0	1461.40	1.41
	PM - 2032 Base + Cttd + Dev		
1 - A28 (NE) Templer Way	519.6	1545.78	1.49
2 - Chart Road (East)	82.4	873.05	1.26
3 - Carlton Way (South)	66.9	1330.22	1.41
4 - A28 (SW) Chart Road	352.1	855.03	1.27
5 - Sir Henry Brackenbury Road (NW)	20.9	1558.34	1.45
	PM - 2032 Base + Cttd + Dev (Sens.Test)		
1 - A28 (NE) Templer Way	526.3	1566.55	1.49
2 - Chart Road (East)	88.9	937.51	1.28
3 - Carlton Way (South)	67.1	1335.85	1.41
4 - A28 (SW) Chart Road	355.4	862.56	1.27
5 - Sir Henry Brackenbury Road (NW)	21.0	1572.37	1.45

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.

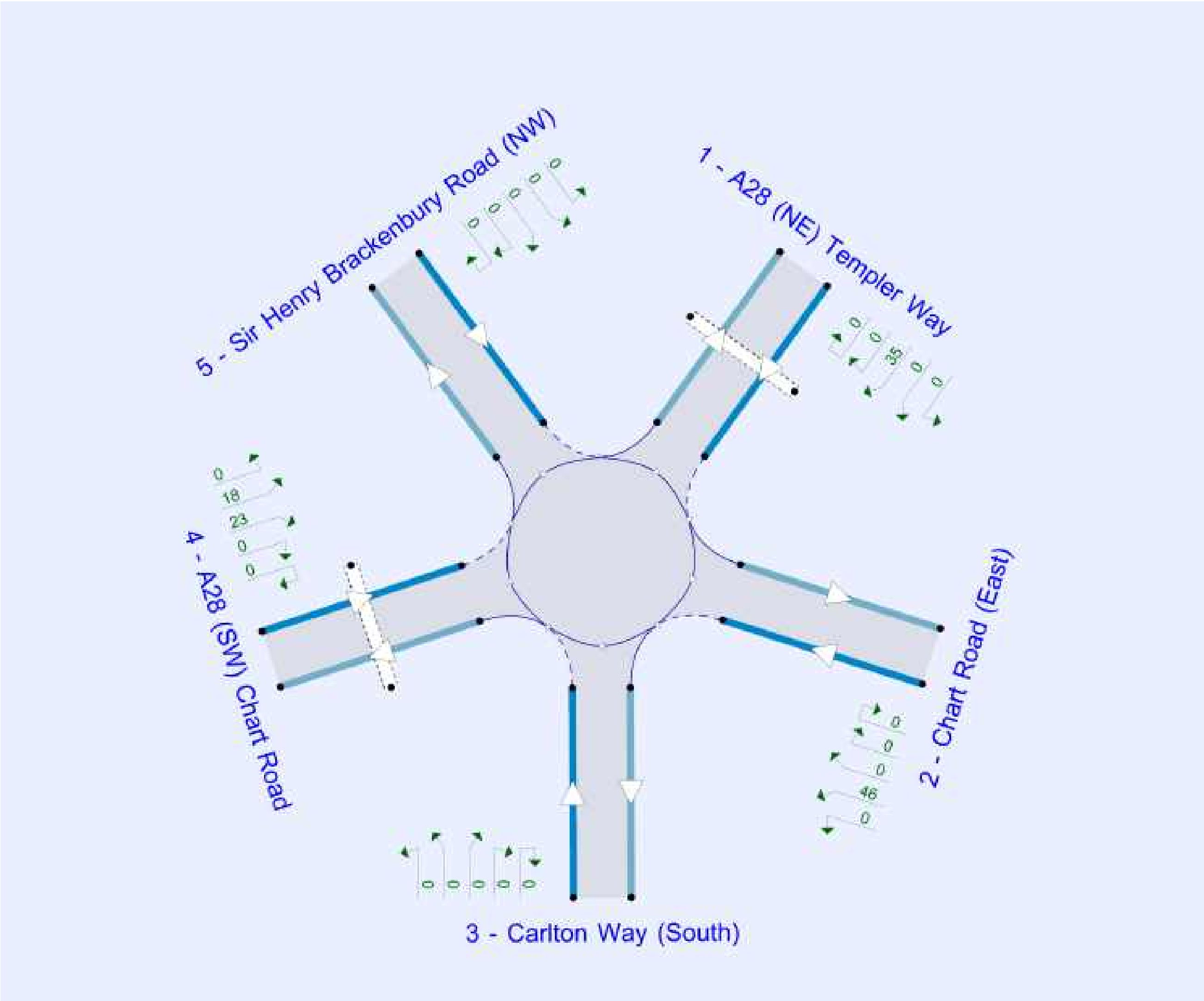
File summary

File Description

Title	Possingham Farm, Ashford
Location	Tank Roundabout
Site number	
Date	18/09/2024
Version	Dev Flows -> Escort Education Only
Status	Existing Junction Layout
Identifier	
Client	
Jobnumber	
Enumerator	David Noyce
Description	Observed flows from surveys of Tuesday, 28th March 2023. Calibrated to surveyed average queue lengths.

Units

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



Flows show original traffic demand (PCU/hr).

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D1	2023 Observed	AM	FLAT	08:00	09:00	60	15	✓		
D2	2023 Observed	PM	FLAT	16:30	17:30	60	15	✓		
D3	: Committed	AM	FLAT	08:00	09:00	60	15			
D4	: Committed	PM	FLAT	16:30	17:30	60	15			
D5	: Dev	AM	FLAT	08:00	09:00	60	15			
D6	: Dev	PM	FLAT	16:30	17:30	60	15			
D7	: Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15			
D8	: Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15			
D10	2023 Obs + Cttd	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3
D11	2023 Obs + Cttd	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4
D12	2023 Obs + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D5
D13	2023 Obs + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D6
D14	2023 Obs + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D7
D15	2023 Obs + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D8
D20	2032 Base	AM	FLAT	08:00	09:00	60	15		Simple	D1*1.070
D21	2032 Base	PM	FLAT	16:30	17:30	60	15		Simple	D2*1.073
D22	2032 Base + Cttd	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3
D23	2032 Base + Cttd	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4
D24	2032 Base + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D5
D25	2032 Base + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D6
D26	2032 Base + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D7
D27	2032 Base + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D8

AM - 2023 Observed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D10,D12,D14,D22,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	57.32	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	57.32	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically
D1	2023 Observed	AM	FLAT	08:00	09:00	60	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1059	100.000
2 - Chart Road (East)		FLAT	✓	400	100.000
3 - Carlton Way (South)		FLAT	✓	150	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1084	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	115	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	13.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	19.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	61	157	827	14
	2 - Chart Road (East)	15	0	61	296	28
	3 - Carlton Way (South)	107	25	0	14	4
	4 - A28 (SW) Chart Road	759	308	8	0	9
	5 - Sir Henry Brackenbury Road (NW)	41	57	1	16	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	6	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	4	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	0.96	60.60	16.8	F	1059	1059
2 - Chart Road (East)	0.97	128.72	13.5	F	400	400
3 - Carlton Way (South)	0.81	121.68	4.7	F	150	150
4 - A28 (SW) Chart Road	0.83	16.61	4.9	C	1084	1084
5 - Sir Henry Brackenbury Road (NW)	0.72	78.46	2.4	F	115	115

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	1059	265	404	13.00	1116	0.949	1015	898	0.0	10.9	31.055	
2 - Chart Road (East)	400	100	981		434	0.923	374	438	0.0	6.5	50.260	
3 - Carlton Way (South)	150	38	1138		209	0.719	139	216	0.0	2.7	62.030	
4 - A28 (SW) Chart Road	1084	271	180	19.00	1308	0.829	1066	1098	0.0	4.6	14.449	
5 - Sir Henry Brackenbury Road (NW)	115	29	1194		174	0.660	108	52	0.0	1.7	51.201	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	1059	265	413	13.00	1109	0.955	1047	917	10.9	13.9	50.088	
2 - Chart Road (East)	400	100	1011		417	0.959	387	448	6.5	9.6	90.608	
3 - Carlton Way (South)	150	38	1176		190	0.791	146	223	2.7	3.7	97.433	
4 - A28 (SW) Chart Road	1084	271	188	19.00	1309	0.828	1083	1134	4.6	4.7	16.345	
5 - Sir Henry Brackenbury Road (NW)	115	29	1217		161	0.712	113	54	1.7	2.1	71.578	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1059	265	414	13.00	1108	0.956	1052	920	13.9	15.7	56.630	
2 - Chart Road (East)	400	100	1016		414	0.965	391	450	9.6	11.8	112.579	
3 - Carlton Way (South)	150	38	1183		186	0.807	148	225	3.7	4.3	112.739	
4 - A28 (SW) Chart Road	1084	271	190	19.00	1308	0.829	1084	1141	4.7	4.8	16.530	
5 - Sir Henry Brackenbury Road (NW)	115	29	1219		160	0.718	114	54	2.1	2.3	76.480	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1059	265	414	13.00	1108	0.956	1054	920	15.7	16.8	60.597	
2 - Chart Road (East)	400	100	1019		413	0.968	393	450	11.8	13.5	128.717	
3 - Carlton Way (South)	150	38	1186		184	0.815	148	225	4.3	4.7	121.677	
4 - A28 (SW) Chart Road	1084	271	191	19.00	1307	0.829	1084	1144	4.8	4.9	16.614	
5 - Sir Henry Brackenbury Road (NW)	115	29	1220		160	0.720	115	54	2.3	2.4	78.458	

AM - 2023 Obs + Cttd, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D10,D12,D14,D22,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	934.16	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	934.16	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D10	2023 Obs + Cttd	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1429	100.000
2 - Chart Road (East)		FLAT	✓	400	100.000
3 - Carlton Way (South)		FLAT	✓	150	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1714	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	115	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	61	157	1197	14
	2 - Chart Road (East)	15	0	61	296	28
	3 - Carlton Way (South)	107	25	0	14	4
	4 - A28 (SW) Chart Road	1389	308	8	0	9
	5 - Sir Henry Brackenbury Road (NW)	41	57	1	16	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	4	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	2	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	1.19	630.21	236.8	F	1429	1429
2 - Chart Road (East)	1.18	632.33	65.5	F	400	400
3 - Carlton Way (South)	1.22	822.92	29.8	F	150	150
4 - A28 (SW) Chart Road	1.29	923.24	387.4	F	1714	1714
5 - Sir Henry Brackenbury Road (NW)	2.94	6068.73	74.4	F	115	115

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1429	357	291	0.00	1197	1.194	1177	1180	0.0	62.9	104.109	
2 - Chart Road (East)	400	100	1140		348	1.151	329	329	0.0	17.8	119.269	
3 - Carlton Way (South)	150	38	1282		135	1.109	117	186	0.0	8.3	177.220	
4 - A28 (SW) Chart Road	1714	429	153	0.00	1333	1.286	1319	1246	0.0	98.7	140.388	
5 - Sir Henry Brackenbury Road (NW)	115	29	1427		47	2.442	45	45	0.0	17.6	856.412	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1429	357	291	0.00	1198	1.193	1197	1190	62.9	121.0	284.313	
2 - Chart Road (East)	400	100	1158		338	1.183	336	330	17.8	33.9	299.841	
3 - Carlton Way (South)	150	38	1304		124	1.207	120	189	8.3	15.7	414.845	
4 - A28 (SW) Chart Road	1714	429	157	0.00	1330	1.289	1330	1267	98.7	194.8	403.106	
5 - Sir Henry Brackenbury Road (NW)	115	29	1441		40	2.909	39	45	17.6	36.5	2571.410	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1429	357	291	0.00	1198	1.193	1197	1190	121.0	178.9	456.972	
2 - Chart Road (East)	400	100	1158		338	1.184	337	330	33.9	49.7	466.199	
3 - Carlton Way (South)	150	38	1305		124	1.214	122	189	15.7	22.8	621.473	
4 - A28 (SW) Chart Road	1714	429	158	0.00	1329	1.290	1329	1269	194.8	291.1	662.736	
5 - Sir Henry Brackenbury Road (NW)	115	29	1442		39	2.930	39	46	36.5	55.4	4326.620	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1429	357	291	0.00	1198	1.193	1197	1190	178.9	236.8	630.213	
2 - Chart Road (East)	400	100	1158		338	1.185	337	330	49.7	65.5	632.333	
3 - Carlton Way (South)	150	38	1306		123	1.216	122	190	22.8	29.8	822.917	
4 - A28 (SW) Chart Road	1714	429	159	0.00	1329	1.290	1329	1269	291.1	387.4	923.237	
5 - Sir Henry Brackenbury Road (NW)	115	29	1442		39	2.937	39	46	55.4	74.4	6068.734	

AM - 2023 Obs + Cttd + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D10,D12,D14,D22,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	1025.38	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1025.38	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D12	2023 Obs + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1439	100.000
2 - Chart Road (East)		FLAT	✓	411	100.000
3 - Carlton Way (South)		FLAT	✓	150	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1774	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	115	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	61	157	1207	14
	2 - Chart Road (East)	15	0	61	307	28
	3 - Carlton Way (South)	107	25	0	14	4
	4 - A28 (SW) Chart Road	1417	340	8	0	9
	5 - Sir Henry Brackenbury Road (NW)	41	57	1	16	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	4	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	2	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	1.21	690.84	257.5	F	1439	1439
2 - Chart Road (East)	1.20	668.21	70.6	F	411	411
3 - Carlton Way (South)	1.21	800.58	29.1	F	150	150
4 - A28 (SW) Chart Road	1.34	1064.26	447.0	F	1774	1774
5 - Sir Henry Brackenbury Road (NW)	2.97	6181.64	75.0	F	115	115

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1439	360	307	0.00	1186	1.213	1168	1166	0.0	67.8	112.071	
2 - Chart Road (East)	411	103	1131		353	1.166	335	344	0.0	19.1	123.866	
3 - Carlton Way (South)	150	38	1282		136	1.107	117	183	0.0	8.3	176.132	
4 - A28 (SW) Chart Road	1774	444	152	0.00	1333	1.331	1321	1246	0.0	113.2	159.499	
5 - Sir Henry Brackenbury Road (NW)	115	29	1429		46	2.507	43	44	0.0	17.9	883.485	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1439	360	306	0.00	1186	1.213	1186	1175	67.8	131.1	309.423	
2 - Chart Road (East)	411	103	1147		344	1.196	342	345	19.1	36.5	314.499	
3 - Carlton Way (South)	150	38	1302		125	1.199	121	186	8.3	15.5	408.136	
4 - A28 (SW) Chart Road	1774	444	157	0.00	1330	1.334	1330	1266	113.2	224.3	462.371	
5 - Sir Henry Brackenbury Road (NW)	115	29	1442		39	2.940	39	45	17.9	36.9	2628.844	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1439	360	306	0.00	1186	1.213	1186	1175	131.1	194.4	499.832	
2 - Chart Road (East)	411	103	1148		343	1.197	343	345	36.5	53.6	491.342	
3 - Carlton Way (South)	150	38	1304		124	1.205	123	187	15.5	22.4	607.227	
4 - A28 (SW) Chart Road	1774	444	158	0.00	1329	1.335	1329	1268	224.3	335.6	762.894	
5 - Sir Henry Brackenbury Road (NW)	115	29	1442		39	2.960	39	45	36.9	55.9	4411.836	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1439	360	306	0.00	1186	1.213	1186	1175	194.4	257.5	690.840	
2 - Chart Road (East)	411	103	1148		343	1.197	343	345	53.6	70.6	668.206	
3 - Carlton Way (South)	150	38	1304		124	1.207	123	187	22.4	29.1	800.577	
4 - A28 (SW) Chart Road	1774	444	159	0.00	1329	1.335	1328	1268	335.6	447.0	1064.257	
5 - Sir Henry Brackenbury Road (NW)	115	29	1443		39	2.968	39	45	55.9	75.0	6181.638	

AM - 2023 Obs + Cttd + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D10,D12,D14,D22,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	1065.15	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1065.15	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D14	2023 Obs + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1443	100.000
2 - Chart Road (East)		FLAT	✓	416	100.000
3 - Carlton Way (South)		FLAT	✓	150	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1800	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	115	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	**2 - Chart Road (East)**	**3 - Carlton Way (South)**	**4 - A28 (SW) Chart Road**	**5 - Sir Henry Brackenbury Road (NW)**
From	**1 - A28 (NE) Templer Way**	0	61	157	1211	14
	2 - Chart Road (East)	15	0	61	312	28
	3 - Carlton Way (South)	107	25	0	14	4
	4 - A28 (SW) Chart Road	1429	354	8	0	9
	5 - Sir Henry Brackenbury Road (NW)	41	57	1	16	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	4	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	2	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	1.22	716.18	266.1	F	1443	1443
2 - Chart Road (East)	1.20	686.15	73.1	F	416	416
3 - Carlton Way (South)	1.20	791.42	28.8	F	150	150
4 - A28 (SW) Chart Road	1.35	1125.43	472.8	F	1800	1800
5 - Sir Henry Brackenbury Road (NW)	2.98	6228.67	75.2	F	115	115

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1443	361	313	0.00	1181	1.221	1164	1160	0.0	69.8	115.429	
2 - Chart Road (East)	416	104	1127		355	1.173	337	350	0.0	19.7	126.117	
3 - Carlton Way (South)	150	38	1282		136	1.106	117	182	0.0	8.3	175.682	
4 - A28 (SW) Chart Road	1800	450	152	0.00	1333	1.350	1322	1246	0.0	119.5	167.848	
5 - Sir Henry Brackenbury Road (NW)	115	29	1430		45	2.532	43	44	0.0	18.0	894.070	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1443	361	313	0.00	1182	1.221	1181	1168	69.8	135.3	319.956	
2 - Chart Road (East)	416	104	1143		346	1.202	344	351	19.7	37.7	321.764	
3 - Carlton Way (South)	150	38	1302		125	1.195	121	185	8.3	15.4	405.376	
4 - A28 (SW) Chart Road	1800	450	157	0.00	1330	1.354	1330	1266	119.5	237.1	488.149	
5 - Sir Henry Brackenbury Road (NW)	115	29	1442		39	2.953	39	45	18.0	37.0	2651.891	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1443	361	313	0.00	1182	1.221	1181	1169	135.3	200.7	517.765	
2 - Chart Road (East)	416	104	1143		346	1.203	345	351	37.7	55.4	503.887	
3 - Carlton Way (South)	150	38	1303		125	1.201	123	185	15.4	22.2	601.384	
4 - A28 (SW) Chart Road	1800	450	159	0.00	1329	1.355	1329	1267	237.1	354.9	806.378	
5 - Sir Henry Brackenbury Road (NW)	115	29	1443		39	2.973	39	45	37.0	56.1	4447.000	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1443	361	313	0.00	1182	1.221	1182	1169	200.7	266.1	716.177	
2 - Chart Road (East)	416	104	1143		346	1.203	345	351	55.4	73.1	686.145	
3 - Carlton Way (South)	150	38	1303		125	1.203	123	185	22.2	28.8	791.423	
4 - A28 (SW) Chart Road	1800	450	159	0.00	1328	1.355	1328	1268	354.9	472.8	1125.429	
5 - Sir Henry Brackenbury Road (NW)	115	29	1443		39	2.981	39	45	56.1	75.2	6228.675	

AM - 2032 Base + Cttd, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D10,D12,D14,D22,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	1148.13	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1148.13	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D22	2032 Base + Cttd	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1503	100.000
2 - Chart Road (East)		FLAT	✓	428	100.000
3 - Carlton Way (South)		FLAT	✓	161	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1790	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	123	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	13.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	19.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	65	168	1255	15
	2 - Chart Road (East)	16	0	65	317	30
	3 - Carlton Way (South)	114	27	0	15	4
	4 - A28 (SW) Chart Road	1442	330	9	0	10
	5 - Sir Henry Brackenbury Road (NW)	44	61	1	17	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	4	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	2	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	1.26	835.08	313.9	F	1503	1503
2 - Chart Road (East)	1.26	850.92	89.9	F	428	428
3 - Carlton Way (South)	1.28	1000.50	37.5	F	161	161
4 - A28 (SW) Chart Road	1.35	1107.85	464.8	F	1790	1790
5 - Sir Henry Brackenbury Road (NW)	3.16	6784.39	82.9	F	123	123

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1503	376	297	13.00	1193	1.260	1178	1176	0.0	81.4	131.192	
2 - Chart Road (East)	428	107	1139		348	1.230	333	336	0.0	23.6	147.376	
3 - Carlton Way (South)	161	40	1283		135	1.191	119	189	0.0	10.3	203.324	
4 - A28 (SW) Chart Road	1790	447	156	19.00	1331	1.345	1319	1247	0.0	117.7	165.664	
5 - Sir Henry Brackenbury Road (NW)	123	31	1430		46	2.688	44	45	0.0	19.9	970.201	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1503	376	297	13.00	1193	1.260	1193	1184	81.4	159.0	369.480	
2 - Chart Road (East)	428	107	1153		340	1.257	339	336	23.6	45.8	389.175	
3 - Carlton Way (South)	161	40	1301		126	1.274	123	192	10.3	19.6	490.055	
4 - A28 (SW) Chart Road	1790	447	160	19.00	1328	1.348	1328	1264	117.7	233.2	481.126	
5 - Sir Henry Brackenbury Road (NW)	123	31	1442		39	3.135	39	46	19.9	40.8	2903.351	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1503	376	297	13.00	1193	1.260	1193	1185	159.0	236.5	601.980	
2 - Chart Road (East)	428	107	1153		340	1.258	340	336	45.8	67.9	619.682	
3 - Carlton Way (South)	161	40	1301		126	1.278	124	192	19.6	28.6	746.768	
4 - A28 (SW) Chart Road	1790	447	161	19.00	1327	1.349	1327	1265	233.2	349.0	794.130	
5 - Sir Henry Brackenbury Road (NW)	123	31	1442		39	3.152	39	46	40.8	61.8	4843.516	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1503	376	297	13.00	1193	1.260	1193	1185	236.5	313.9	835.084	
2 - Chart Road (East)	428	107	1154		340	1.258	340	336	67.9	89.9	850.923	
3 - Carlton Way (South)	161	40	1302		125	1.279	125	192	28.6	37.5	1000.497	
4 - A28 (SW) Chart Road	1790	447	162	19.00	1327	1.349	1327	1265	349.0	464.8	1107.851	
5 - Sir Henry Brackenbury Road (NW)	123	31	1442		39	3.158	39	46	61.8	82.9	6784.393	

AM - 2032 Base + Cttd + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D10,D12,D14,D22,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	1239.25	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1239.25	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D24	2032 Base + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1513	100.000
2 - Chart Road (East)		FLAT	✓	439	100.000
3 - Carlton Way (South)		FLAT	✓	161	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1850	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	123	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	13.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	19.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	65	168	1265	15
	2 - Chart Road (East)	16	0	65	328	30
	3 - Carlton Way (South)	114	27	0	15	4
	4 - A28 (SW) Chart Road	1470	362	9	0	10
	5 - Sir Henry Brackenbury Road (NW)	44	61	1	17	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	4	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	2	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	1.28	896.45	334.2	F	1513	1513
2 - Chart Road (East)	1.27	887.42	95.4	F	439	439
3 - Carlton Way (South)	1.27	975.97	36.8	F	161	161
4 - A28 (SW) Chart Road	1.39	1249.64	524.5	F	1850	1850
5 - Sir Henry Brackenbury Road (NW)	3.19	6897.00	83.4	F	123	123

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1513	378	312	13.00	1182	1.280	1168	1163	0.0	86.3	139.487	
2 - Chart Road (East)	439	110	1130		353	1.244	339	350	0.0	25.0	152.070	
3 - Carlton Way (South)	161	40	1282		135	1.187	120	187	0.0	10.2	201.384	
4 - A28 (SW) Chart Road	1850	462	156	19.00	1331	1.390	1321	1247	0.0	132.3	185.129	
5 - Sir Henry Brackenbury Road (NW)	123	31	1431		45	2.747	43	45	0.0	20.1	994.624	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1513	378	311	13.00	1183	1.279	1182	1170	86.3	169.0	395.225	
2 - Chart Road (East)	439	110	1143		346	1.269	345	350	25.0	48.6	404.216	
3 - Carlton Way (South)	161	40	1299		127	1.265	124	189	10.2	19.3	481.621	
4 - A28 (SW) Chart Road	1850	462	160	19.00	1328	1.393	1327	1263	132.3	262.9	541.023	
5 - Sir Henry Brackenbury Road (NW)	123	31	1442		39	3.167	39	45	20.1	41.2	2958.383	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1513	378	311	13.00	1183	1.279	1183	1170	169.0	251.6	645.544	
2 - Chart Road (East)	439	110	1143		346	1.270	345	350	48.6	72.0	645.412	
3 - Carlton Way (South)	161	40	1300		127	1.269	125	189	19.3	28.1	730.461	
4 - A28 (SW) Chart Road	1850	462	161	19.00	1327	1.394	1327	1263	262.9	393.7	894.992	
5 - Sir Henry Brackenbury Road (NW)	123	31	1443		39	3.184	39	46	41.2	62.3	4927.323	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1513	378	311	13.00	1183	1.279	1183	1170	251.6	334.2	896.454	
2 - Chart Road (East)	439	110	1143		346	1.270	345	350	72.0	95.4	887.423	
3 - Carlton Way (South)	161	40	1300		126	1.270	126	189	28.1	36.8	975.971	
4 - A28 (SW) Chart Road	1850	462	162	19.00	1327	1.394	1327	1264	393.7	524.5	1249.639	
5 - Sir Henry Brackenbury Road (NW)	123	31	1443		39	3.190	39	46	62.3	83.4	6897.005	

AM - 2032 Base + Cttd + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D10,D12,D14,D22,D24,D26	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	1278.96	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1278.96	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D26	2032 Base + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1517	100.000
2 - Chart Road (East)		FLAT	✓	444	100.000
3 - Carlton Way (South)		FLAT	✓	161	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1876	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	123	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	13.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	19.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	65	168	1269	15
	2 - Chart Road (East)	16	0	65	333	30
	3 - Carlton Way (South)	114	27	0	15	4
	4 - A28 (SW) Chart Road	1482	376	9	0	10
	5 - Sir Henry Brackenbury Road (NW)	44	61	1	17	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	4	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	2	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	1.29	922.07	342.6	F	1517	1517
2 - Chart Road (East)	1.28	905.66	98.1	F	444	444
3 - Carlton Way (South)	1.27	965.89	36.5	F	161	161
4 - A28 (SW) Chart Road	1.41	1311.10	550.4	F	1876	1876
5 - Sir Henry Brackenbury Road (NW)	3.20	6944.62	83.6	F	123	123

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1517	379	318	13.00	1178	1.288	1164	1157	0.0	88.3	142.969	
2 - Chart Road (East)	444	111	1126		355	1.251	341	356	0.0	25.7	154.391	
3 - Carlton Way (South)	161	40	1282		135	1.185	120	185	0.0	10.2	200.591	
4 - A28 (SW) Chart Road	1876	469	156	19.00	1331	1.410	1321	1246	0.0	138.7	193.606	
5 - Sir Henry Brackenbury Road (NW)	123	31	1432		44	2.770	42	45	0.0	20.2	1004.447	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1517	379	317	13.00	1178	1.288	1178	1164	88.3	173.1	405.994	
2 - Chart Road (East)	444	111	1139		348	1.275	347	356	25.7	49.9	411.696	
3 - Carlton Way (South)	161	40	1298		127	1.261	124	188	10.2	19.2	478.158	
4 - A28 (SW) Chart Road	1876	469	160	19.00	1328	1.413	1327	1262	138.7	275.8	567.034	
5 - Sir Henry Brackenbury Road (NW)	123	31	1443		39	3.181	39	45	20.2	41.3	2981.179	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1517	379	317	13.00	1178	1.288	1178	1164	173.1	257.9	663.740	
2 - Chart Road (East)	444	111	1139		348	1.276	348	356	49.9	74.0	658.248	
3 - Carlton Way (South)	161	40	1299		127	1.265	126	188	19.2	27.9	723.762	
4 - A28 (SW) Chart Road	1876	469	162	19.00	1327	1.414	1327	1263	275.8	413.1	938.737	
5 - Sir Henry Brackenbury Road (NW)	123	31	1443		38	3.198	38	45	41.3	62.4	4962.529	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1517	379	317	13.00	1178	1.288	1178	1164	257.9	342.6	922.074	
2 - Chart Road (East)	444	111	1139		348	1.276	348	356	74.0	98.1	905.656	
3 - Carlton Way (South)	161	40	1299		127	1.266	126	188	27.9	36.5	965.893	
4 - A28 (SW) Chart Road	1876	469	162	19.00	1327	1.414	1327	1263	413.1	550.4	1311.098	
5 - Sir Henry Brackenbury Road (NW)	123	31	1443		38	3.204	38	45	62.4	83.6	6944.616	

PM - 2023 Observed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D11,D13,D15,D23,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	43.36	E

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	43.36	E

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically
D2	2023 Observed	PM	FLAT	16:30	17:30	60	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	924	100.000
2 - Chart Road (East)		FLAT	✓	322	100.000
3 - Carlton Way (South)		FLAT	✓	213	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1154	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	61	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	14.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	14.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	35	58	800	29
	2 - Chart Road (East)	17	0	21	251	33
	3 - Carlton Way (South)	156	43	0	13	1
	4 - A28 (SW) Chart Road	851	277	8	1	17
	5 - Sir Henry Brackenbury Road (NW)	24	27	3	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	2	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	2	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	0.90	34.07	8.3	D	924	924
2 - Chart Road (East)	0.84	56.25	4.8	F	322	322
3 - Carlton Way (South)	0.89	115.72	6.3	F	213	213
4 - A28 (SW) Chart Road	0.91	31.73	9.7	D	1154	1154
5 - Sir Henry Brackenbury Road (NW)	0.59	83.43	1.3	F	61	61

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	924	231	353	14.00	1037	0.891	897	1015	0.0	6.7	23.495	
2 - Chart Road (East)	322	81	882		397	0.811	308	369	0.0	3.5	36.572	
3 - Carlton Way (South)	213	53	1103		257	0.830	199	87	0.0	3.5	55.313	
4 - A28 (SW) Chart Road	1154	289	265	14.00	1273	0.906	1123	1037	0.0	7.6	21.399	
5 - Sir Henry Brackenbury Road (NW)	61	15	1311		125	0.486	58	77	0.0	0.8	50.966	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	924	231	363	14.00	1030	0.897	920	1042	6.7	7.6	31.789	
2 - Chart Road (East)	322	81	904		385	0.836	319	379	3.5	4.3	51.246	
3 - Carlton Way (South)	213	53	1133		241	0.884	207	89	3.5	5.0	91.517	
4 - A28 (SW) Chart Road	1154	289	275	14.00	1266	0.911	1149	1066	7.6	8.8	29.285	
5 - Sir Henry Brackenbury Road (NW)	61	15	1345		107	0.570	60	79	0.8	1.2	73.876	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	924	231	365	14.00	1029	0.898	922	1046	7.6	8.1	33.359	
2 - Chart Road (East)	322	81	906		384	0.839	321	381	4.3	4.6	54.754	
3 - Carlton Way (South)	213	53	1137		239	0.891	210	90	5.0	5.8	106.993	
4 - A28 (SW) Chart Road	1154	289	278	14.00	1264	0.913	1152	1069	8.8	9.4	30.928	
5 - Sir Henry Brackenbury Road (NW)	61	15	1350		104	0.585	61	80	1.2	1.3	80.589	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	924	231	365	14.00	1029	0.898	923	1047	8.1	8.3	34.071	
2 - Chart Road (East)	322	81	907		383	0.840	321	381	4.6	4.8	56.245	
3 - Carlton Way (South)	213	53	1138		239	0.893	211	90	5.8	6.3	115.720	
4 - A28 (SW) Chart Road	1154	289	279	14.00	1264	0.913	1153	1070	9.4	9.7	31.730	
5 - Sir Henry Brackenbury Road (NW)	61	15	1352		103	0.591	61	80	1.3	1.3	83.431	

PM - 2023 Obs + Cttd, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D11,D13,D15,D23,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	856.47	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	856.47	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D11	2023 Obs + Cttd	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1484	100.000
2 - Chart Road (East)		FLAT	✓	322	100.000
3 - Carlton Way (South)		FLAT	✓	213	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1533	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	61	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	35	58	1360	29
	2 - Chart Road (East)	17	0	21	251	33
	3 - Carlton Way (South)	156	43	0	13	1
	4 - A28 (SW) Chart Road	1230	277	8	1	17
	5 - Sir Henry Brackenbury Road (NW)	24	27	3	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	1	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	1	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	1.38	1215.69	412.4	F	1484	1484
2 - Chart Road (East)	1.08	365.05	31.6	F	322	322
3 - Carlton Way (South)	1.32	1030.14	51.3	F	213	213
4 - A28 (SW) Chart Road	1.18	574.17	234.8	F	1533	1533
5 - Sir Henry Brackenbury Road (NW)	1.32	1199.84	16.0	F	61	61

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1484	371	300	0.00	1076	1.379	1066	1183	0.0	104.6	182.559	
2 - Chart Road (East)	322	81	1055		303	1.062	278	310	0.0	11.0	96.145	
3 - Carlton Way (South)	213	53	1265		174	1.222	161	69	0.0	12.9	177.861	
4 - A28 (SW) Chart Road	1533	383	217	0.00	1305	1.174	1284	1209	0.0	62.1	94.596	
5 - Sir Henry Brackenbury Road (NW)	61	15	1437		57	1.075	45	64	0.0	3.9	232.962	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1484	371	302	0.00	1074	1.382	1074	1198	104.6	207.1	528.785	
2 - Chart Road (East)	322	81	1063		299	1.077	292	313	11.0	18.5	206.368	
3 - Carlton Way (South)	213	53	1286		164	1.302	162	70	12.9	25.6	465.297	
4 - A28 (SW) Chart Road	1533	383	220	0.00	1303	1.176	1302	1228	62.1	119.8	258.628	
5 - Sir Henry Brackenbury Road (NW)	61	15	1456		46	1.316	44	66	3.9	8.2	586.761	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1484	371	303	0.00	1074	1.382	1074	1199	207.1	309.8	871.880	
2 - Chart Road (East)	322	81	1063		299	1.077	295	313	18.5	25.2	288.258	
3 - Carlton Way (South)	213	53	1288		162	1.312	162	70	25.6	38.4	746.004	
4 - A28 (SW) Chart Road	1533	383	220	0.00	1303	1.176	1303	1230	119.8	177.3	416.126	
5 - Sir Henry Brackenbury Road (NW)	61	15	1457		46	1.322	45	66	8.2	12.1	899.245	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1484	371	303	0.00	1073	1.383	1073	1199	309.8	412.4	1215.693	
2 - Chart Road (East)	322	81	1063		299	1.077	296	314	25.2	31.6	365.054	
3 - Carlton Way (South)	213	53	1289		162	1.317	161	70	38.4	51.3	1030.140	
4 - A28 (SW) Chart Road	1533	383	220	0.00	1303	1.176	1303	1231	177.3	234.8	574.165	
5 - Sir Henry Brackenbury Road (NW)	61	15	1457		46	1.323	46	67	12.1	16.0	1199.837	

PM - 2023 Obs + Cttd + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D11,D13,D15,D23,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	964.88	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	964.88	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D13	2023 Obs + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1513	100.000
2 - Chart Road (East)		FLAT	✓	361	100.000
3 - Carlton Way (South)		FLAT	✓	213	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1570	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	61	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	35	58	1389	29
	2 - Chart Road (East)	17	0	21	290	33
	3 - Carlton Way (South)	156	43	0	13	1
	4 - A28 (SW) Chart Road	1246	298	8	1	17
	5 - Sir Henry Brackenbury Road (NW)	24	27	3	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	1	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	1	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	1.42	1335.30	449.6	F	1513	1513
2 - Chart Road (East)	1.19	665.90	61.8	F	361	361
3 - Carlton Way (South)	1.32	1069.11	52.9	F	213	213
4 - A28 (SW) Chart Road	1.20	650.20	267.2	F	1570	1570
5 - Sir Henry Brackenbury Road (NW)	1.35	1282.04	16.8	F	61	61

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1513	378	311	0.00	1068	1.417	1058	1173	0.0	113.7	199.104	
2 - Chart Road (East)	361	90	1048		307	1.176	290	321	0.0	17.6	131.581	
3 - Carlton Way (South)	213	53	1273		170	1.251	158	66	0.0	13.7	189.149	
4 - A28 (SW) Chart Road	1570	393	211	0.00	1310	1.199	1291	1220	0.0	69.8	104.288	
5 - Sir Henry Brackenbury Road (NW)	61	15	1440		55	1.106	44	62	0.0	4.1	245.983	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1513	378	314	0.00	1066	1.420	1065	1187	113.7	225.6	579.472	
2 - Chart Road (East)	361	90	1055		303	1.190	301	324	17.6	32.6	323.508	
3 - Carlton Way (South)	213	53	1289		162	1.317	160	67	13.7	26.8	491.209	
4 - A28 (SW) Chart Road	1570	393	214	0.00	1307	1.201	1307	1236	69.8	135.6	289.691	
5 - Sir Henry Brackenbury Road (NW)	61	15	1458		45	1.343	43	63	4.1	8.5	620.526	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1513	378	315	0.00	1065	1.421	1065	1188	225.6	337.6	957.050	
2 - Chart Road (East)	361	90	1055		303	1.190	302	325	32.6	47.2	495.088	
3 - Carlton Way (South)	213	53	1290		161	1.321	161	67	26.8	39.9	779.634	
4 - A28 (SW) Chart Road	1570	393	215	0.00	1307	1.201	1307	1236	135.6	201.4	469.601	
5 - Sir Henry Brackenbury Road (NW)	61	15	1458		45	1.351	44	63	8.5	12.7	956.097	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1513	378	315	0.00	1065	1.421	1065	1188	337.6	449.6	1335.296	
2 - Chart Road (East)	361	90	1055		303	1.190	303	325	47.2	61.8	665.897	
3 - Carlton Way (South)	213	53	1291		161	1.322	161	67	39.9	52.9	1069.109	
4 - A28 (SW) Chart Road	1570	393	215	0.00	1307	1.201	1307	1237	201.4	267.2	650.205	
5 - Sir Henry Brackenbury Road (NW)	61	15	1459		45	1.353	45	63	12.7	16.8	1282.037	

PM - 2023 Obs + Cttd + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D11,D13,D15,D23,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	982.91	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	982.91	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D15	2023 Obs + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1519	100.000
2 - Chart Road (East)		FLAT	✓	368	100.000
3 - Carlton Way (South)		FLAT	✓	213	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1574	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	61	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	35	58	1395	29
	2 - Chart Road (East)	17	0	21	297	33
	3 - Carlton Way (South)	156	43	0	13	1
	4 - A28 (SW) Chart Road	1248	300	8	1	17
	5 - Sir Henry Brackenbury Road (NW)	24	27	3	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	1	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	1	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	1.43	1356.04	456.4	F	1519	1519
2 - Chart Road (East)	1.21	728.45	68.0	F	368	368
3 - Carlton Way (South)	1.32	1076.17	53.2	F	213	213
4 - A28 (SW) Chart Road	1.20	657.61	270.5	F	1574	1574
5 - Sir Henry Brackenbury Road (NW)	1.36	1294.68	16.9	F	61	61

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1519	380	312	0.00	1067	1.424	1057	1172	0.0	115.4	201.978	
2 - Chart Road (East)	368	92	1048		307	1.197	292	322	0.0	19.0	139.130	
3 - Carlton Way (South)	213	53	1274		170	1.256	158	66	0.0	13.8	191.114	
4 - A28 (SW) Chart Road	1574	394	209	0.00	1311	1.201	1292	1222	0.0	70.5	105.224	
5 - Sir Henry Brackenbury Road (NW)	61	15	1440		55	1.109	44	61	0.0	4.2	247.478	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1519	380	315	0.00	1065	1.427	1065	1186	115.4	229.0	588.270	
2 - Chart Road (East)	368	92	1055		304	1.212	302	325	19.0	35.6	348.309	
3 - Carlton Way (South)	213	53	1290		161	1.319	160	67	13.8	27.0	495.588	
4 - A28 (SW) Chart Road	1574	394	213	0.00	1308	1.203	1307	1237	70.5	137.2	292.706	
5 - Sir Henry Brackenbury Road (NW)	61	15	1458		45	1.347	43	62	4.2	8.6	625.307	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1519	380	316	0.00	1064	1.427	1064	1187	229.0	342.6	971.825	
2 - Chart Road (East)	368	92	1054		304	1.212	303	326	35.6	51.8	538.550	
3 - Carlton Way (South)	213	53	1291		161	1.323	161	67	27.0	40.1	785.462	
4 - A28 (SW) Chart Road	1574	394	214	0.00	1308	1.204	1307	1238	137.2	203.8	474.805	
5 - Sir Henry Brackenbury Road (NW)	61	15	1459		45	1.355	44	62	8.6	12.8	964.683	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1519	380	316	0.00	1064	1.427	1064	1187	342.6	456.4	1356.036	
2 - Chart Road (East)	368	92	1054		304	1.211	303	326	51.8	68.0	728.451	
3 - Carlton Way (South)	213	53	1291		161	1.324	161	67	40.1	53.2	1076.172	
4 - A28 (SW) Chart Road	1574	394	214	0.00	1308	1.204	1307	1238	203.8	270.5	657.610	
5 - Sir Henry Brackenbury Road (NW)	61	15	1459		45	1.358	44	62	12.8	16.9	1294.683	

PM - 2032 Base + Cttd, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D11,D13,D15,D23,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	1064.76	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1064.76	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D23	2032 Base + Cttd	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1551	100.000
2 - Chart Road (East)		FLAT	✓	346	100.000
3 - Carlton Way (South)		FLAT	✓	229	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1617	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	65	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	14.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	14.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	38	62	1418	31
	2 - Chart Road (East)	18	0	23	269	35
	3 - Carlton Way (South)	167	46	0	14	1
	4 - A28 (SW) Chart Road	1292	297	9	1	18
	5 - Sir Henry Brackenbury Road (NW)	26	29	3	8	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	1	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	1	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	1.45	1426.17	482.8	F	1551	1551
2 - Chart Road (East)	1.15	549.09	49.9	F	346	346
3 - Carlton Way (South)	1.41	1312.10	66.1	F	229	229
4 - A28 (SW) Chart Road	1.24	777.20	318.9	F	1617	1617
5 - Sir Henry Brackenbury Road (NW)	1.41	1461.40	20.0	F	65	65

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1551	388	305	14.00	1072	1.447	1064	1182	0.0	122.0	211.838	
2 - Chart Road (East)	346	86	1053		305	1.134	285	315	0.0	15.0	118.086	
3 - Carlton Way (South)	229	57	1268		173	1.324	162	70	0.0	16.5	215.730	
4 - A28 (SW) Chart Road	1617	404	220	14.00	1304	1.241	1288	1211	0.0	82.4	121.491	
5 - Sir Henry Brackenbury Road (NW)	65	16	1442		54	1.205	45	66	0.0	5.0	279.291	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1551	388	307	14.00	1071	1.449	1071	1194	122.0	242.2	618.232	
2 - Chart Road (East)	346	86	1060		301	1.148	298	318	15.0	27.0	278.080	
3 - Carlton Way (South)	229	57	1286		163	1.398	163	71	16.5	33.0	584.371	
4 - A28 (SW) Chart Road	1617	404	222	14.00	1302	1.242	1302	1227	82.4	161.3	343.156	
5 - Sir Henry Brackenbury Road (NW)	65	16	1456		46	1.410	45	67	5.0	10.2	702.694	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1551	388	308	14.00	1070	1.449	1070	1194	242.2	362.5	1021.903	
2 - Chart Road (East)	346	86	1060		301	1.148	299	318	27.0	38.5	414.538	
3 - Carlton Way (South)	229	57	1287		163	1.405	162	72	33.0	49.5	946.965	
4 - A28 (SW) Chart Road	1617	404	222	14.00	1302	1.242	1302	1228	161.3	240.1	559.889	
5 - Sir Henry Brackenbury Road (NW)	65	16	1456		46	1.413	46	68	10.2	15.1	1085.495	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1551	388	308	14.00	1070	1.450	1070	1195	362.5	482.8	1426.174	
2 - Chart Road (East)	346	86	1060		301	1.148	300	318	38.5	49.9	549.085	
3 - Carlton Way (South)	229	57	1288		162	1.407	162	72	49.5	66.1	1312.102	
4 - A28 (SW) Chart Road	1617	404	222	14.00	1302	1.242	1302	1228	240.1	318.9	777.202	
5 - Sir Henry Brackenbury Road (NW)	65	16	1456		46	1.413	46	68	15.1	20.0	1461.395	

PM - 2032 Base + Cttd + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D11,D13,D15,D23,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	1175.29	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1175.29	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D25	2032 Base + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1580	100.000
2 - Chart Road (East)		FLAT	✓	385	100.000
3 - Carlton Way (South)		FLAT	✓	229	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1654	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	65	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	14.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	14.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	38	62	1447	31
	2 - Chart Road (East)	18	0	23	308	35
	3 - Carlton Way (South)	167	46	0	14	1
	4 - A28 (SW) Chart Road	1308	318	9	1	18
	5 - Sir Henry Brackenbury Road (NW)	26	29	3	8	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	1	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	1	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	1.49	1545.78	519.6	F	1580	1580
2 - Chart Road (East)	1.26	873.05	82.4	F	385	385
3 - Carlton Way (South)	1.41	1330.22	66.9	F	229	229
4 - A28 (SW) Chart Road	1.27	855.03	352.1	F	1654	1654
5 - Sir Henry Brackenbury Road (NW)	1.45	1558.34	20.9	F	65	65

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1580	395	316	14.00	1064	1.485	1056	1173	0.0	131.1	228.520	
2 - Chart Road (East)	385	96	1046		308	1.247	295	326	0.0	22.4	157.092	
3 - Carlton Way (South)	229	57	1273		170	1.345	160	68	0.0	17.1	223.948	
4 - A28 (SW) Chart Road	1654	414	214	14.00	1308	1.265	1293	1220	0.0	90.3	131.720	
5 - Sir Henry Brackenbury Road (NW)	65	16	1444		53	1.234	45	63	0.0	5.2	292.525	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1580	395	318	14.00	1063	1.487	1063	1184	131.1	260.5	669.078	
2 - Chart Road (East)	385	96	1052		305	1.261	304	329	22.4	42.5	406.446	
3 - Carlton Way (South)	229	57	1287		163	1.405	162	69	17.1	33.7	600.101	
4 - A28 (SW) Chart Road	1654	414	217	14.00	1306	1.267	1305	1233	90.3	177.6	375.415	
5 - Sir Henry Brackenbury Road (NW)	65	16	1458		45	1.441	44	64	5.2	10.6	741.530	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1580	395	319	14.00	1062	1.488	1062	1184	260.5	390.0	1107.149	
2 - Chart Road (East)	385	96	1052		305	1.260	305	329	42.5	62.5	639.560	
3 - Carlton Way (South)	229	57	1288		162	1.407	162	69	33.7	50.3	964.464	
4 - A28 (SW) Chart Road	1654	414	217	14.00	1305	1.267	1305	1233	177.6	264.8	614.908	
5 - Sir Henry Brackenbury Road (NW)	65	16	1458		45	1.446	45	64	10.6	15.8	1152.325	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1580	395	319	14.00	1062	1.488	1062	1184	390.0	519.6	1545.777	
2 - Chart Road (East)	385	96	1052		305	1.260	305	329	62.5	82.4	873.048	
3 - Carlton Way (South)	229	57	1288		162	1.408	162	69	50.3	66.9	1330.221	
4 - A28 (SW) Chart Road	1654	414	217	14.00	1305	1.267	1305	1233	264.8	352.1	855.030	
5 - Sir Henry Brackenbury Road (NW)	65	16	1458		45	1.447	45	64	15.8	20.9	1558.335	

PM - 2032 Base + Cttd + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D11,D13,D15,D23,D25,D27	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	1193.54	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1193.54	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D27	2032 Base + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1586	100.000
2 - Chart Road (East)		FLAT	✓	392	100.000
3 - Carlton Way (South)		FLAT	✓	229	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1658	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	65	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	14.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	14.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	38	62	1453	31
	2 - Chart Road (East)	18	0	23	315	35
	3 - Carlton Way (South)	167	46	0	14	1
	4 - A28 (SW) Chart Road	1310	320	9	1	18
	5 - Sir Henry Brackenbury Road (NW)	26	29	3	8	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	1	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	1	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	1.49	1566.55	526.3	F	1586	1586
2 - Chart Road (East)	1.28	937.51	88.9	F	392	392
3 - Carlton Way (South)	1.41	1335.85	67.1	F	229	229
4 - A28 (SW) Chart Road	1.27	862.56	355.4	F	1658	1658
5 - Sir Henry Brackenbury Road (NW)	1.45	1572.37	21.0	F	65	65

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1586	397	317	14.00	1064	1.491	1056	1172	0.0	132.7	231.420	
2 - Chart Road (East)	392	98	1045		309	1.269	296	327	0.0	23.9	165.138	
3 - Carlton Way (South)	229	57	1274		169	1.349	160	67	0.0	17.2	225.550	
4 - A28 (SW) Chart Road	1658	415	213	14.00	1308	1.268	1294	1221	0.0	91.1	132.704	
5 - Sir Henry Brackenbury Road (NW)	65	16	1444		53	1.237	44	62	0.0	5.3	294.163	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1586	397	319	14.00	1062	1.494	1062	1183	132.7	263.8	677.911	
2 - Chart Road (East)	392	98	1052		305	1.282	304	329	23.9	45.7	432.530	
3 - Carlton Way (South)	229	57	1288		163	1.406	162	68	17.2	33.9	603.544	
4 - A28 (SW) Chart Road	1658	415	216	14.00	1306	1.270	1306	1234	91.1	179.2	378.527	
5 - Sir Henry Brackenbury Road (NW)	65	16	1458		45	1.446	44	63	5.3	10.6	746.953	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1586	397	319	14.00	1062	1.494	1062	1184	263.8	395.0	1121.957	
2 - Chart Road (East)	392	98	1051		305	1.282	305	330	45.7	67.3	684.743	
3 - Carlton Way (South)	229	57	1288		162	1.408	162	68	33.9	50.5	969.049	
4 - A28 (SW) Chart Road	1658	415	216	14.00	1306	1.270	1306	1234	179.2	267.3	620.227	
5 - Sir Henry Brackenbury Road (NW)	65	16	1458		45	1.451	45	64	10.6	15.9	1161.957	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1586	397	320	14.00	1062	1.494	1062	1184	395.0	526.3	1566.551	
2 - Chart Road (East)	392	98	1051		305	1.282	305	330	67.3	88.9	937.511	
3 - Carlton Way (South)	229	57	1288		162	1.409	162	68	50.5	67.1	1335.853	
4 - A28 (SW) Chart Road	1658	415	216	14.00	1306	1.270	1306	1234	267.3	355.4	862.560	
5 - Sir Henry Brackenbury Road (NW)	65	16	1459		45	1.452	45	64	15.9	21.0	1572.375	

Junctions 10
ARCADY 10 - Roundabout Module
Version: 10.1.1.1905 © Copyright TRL Software Limited, 2023
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Filename: Tank Roundabout (Existing) v3.1.j10
Path: X:\Projects\220000\226730 - Possingham Farm\Modelling\Modelling in Response to KCC\Modelling - Escort Education Only
Report generation date: 19/09/2024 10:29:38

Summary of junction performance

	AM		
	Queue (PCU)	Delay (s)	RFC
	AM - 2023 Observed		
1 - A28 (NE) Templer Way	16.8	60.60	0.96
2 - Chart Road (East)	13.5	128.72	0.97
3 - Carlton Way (South)	4.7	121.68	0.81
4 - A28 (SW) Chart Road	4.9	16.61	0.83
5 - Sir Henry Brackenbury Road (NW)	2.4	78.46	0.72
	AM - 2023 Obs + Dev		
1 - A28 (NE) Templer Way	25.5	89.28	0.98
2 - Chart Road (East)	18.1	164.88	1.00
3 - Carlton Way (South)	5.2	136.87	0.84
4 - A28 (SW) Chart Road	6.8	22.31	0.87
5 - Sir Henry Brackenbury Road (NW)	5.6	190.75	0.90
	AM - 2023 Obs + Dev (Sens.Test)		
1 - A28 (NE) Templer Way	30.3	104.30	1.00
2 - Chart Road (East)	20.1	180.42	1.01
3 - Carlton Way (South)	5.4	141.36	0.85
4 - A28 (SW) Chart Road	8.1	26.15	0.89
5 - Sir Henry Brackenbury Road (NW)	9.7	332.19	1.01
	AM - 2032 Base		
1 - A28 (NE) Templer Way	58.4	183.22	1.04
2 - Chart Road (East)	37.7	322.65	1.08

3 - Carlton Way (South)	9.1	221.68	0.94
4 - A28 (SW) Chart Road	7.9	25.45	0.89
5 - Sir Henry Brackenbury Road (NW)	12.9	411.21	1.06
	AM - 2032 Base + Dev		
1 - A28 (NE) Templer Way	75.0	231.96	1.06
2 - Chart Road (East)	42.5	354.90	1.09
3 - Carlton Way (South)	9.0	220.71	0.94
4 - A28 (SW) Chart Road	12.9	40.13	0.94
5 - Sir Henry Brackenbury Road (NW)	35.4	1363.88	1.47
	AM - 2032 Base + Dev (Sens.Test)		
1 - A28 (NE) Templer Way	81.7	252.01	1.06
2 - Chart Road (East)	44.7	370.21	1.10
3 - Carlton Way (South)	9.0	219.90	0.94
4 - A28 (SW) Chart Road	16.9	51.55	0.96
5 - Sir Henry Brackenbury Road (NW)	46.2	2075.03	1.74

	PM		
	Queue (PCU)	Delay (s)	RFC
	PM - 2023 Observed		
1 - A28 (NE) Templer Way	8.3	34.07	0.90
2 - Chart Road (East)	4.8	56.25	0.84
3 - Carlton Way (South)	6.3	115.72	0.89
4 - A28 (SW) Chart Road	9.7	31.73	0.91
5 - Sir Henry Brackenbury Road (NW)	1.3	83.43	0.59
	PM - 2023 Obs + Dev		
1 - A28 (NE) Templer Way	12.8	51.16	0.94
2 - Chart Road (East)	14.3	150.25	0.98
3 - Carlton Way (South)	14.7	262.89	1.02
4 - A28 (SW) Chart Road	12.8	41.08	0.94
5 - Sir Henry Brackenbury Road (NW)	1.9	121.58	0.69
	PM - 2023 Obs + Dev (Sens.Test)		
1 - A28 (NE) Templer Way	13.9	55.37	0.95
2 - Chart Road (East)	18.4	187.36	1.01
3 - Carlton Way (South)	16.8	298.50	1.04
4 - A28 (SW) Chart Road	13.1	41.89	0.94
5 - Sir Henry Brackenbury Road (NW)	1.9	124.45	0.69
	PM - 2032 Base		
1 - A28 (NE) Templer Way	21.1	80.32	0.98
2 - Chart Road (East)	14.1	154.75	0.98
3 - Carlton Way (South)	26.9	448.91	1.12
4 - A28 (SW) Chart Road	23.7	72.03	0.98
5 - Sir Henry Brackenbury Road (NW)	6.1	375.50	0.99
	PM - 2032 Base + Dev		
1 - A28 (NE) Templer Way	38.4	136.30	1.01
2 - Chart Road (East)	42.1	405.38	1.11
3 - Carlton Way (South)	36.5	627.26	1.19
4 - A28 (SW) Chart Road	35.1	101.09	1.00
5 - Sir Henry Brackenbury Road (NW)	9.7	618.86	1.14
	PM - 2032 Base + Dev (Sens.Test)		
1 - A28 (NE) Templer Way	42.5	149.29	1.02
2 - Chart Road (East)	48.7	465.19	1.14
3 - Carlton Way (South)	37.6	648.72	1.19
4 - A28 (SW) Chart Road	36.5	104.45	1.00
5 - Sir Henry Brackenbury Road (NW)	10.1	647.54	1.16

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.

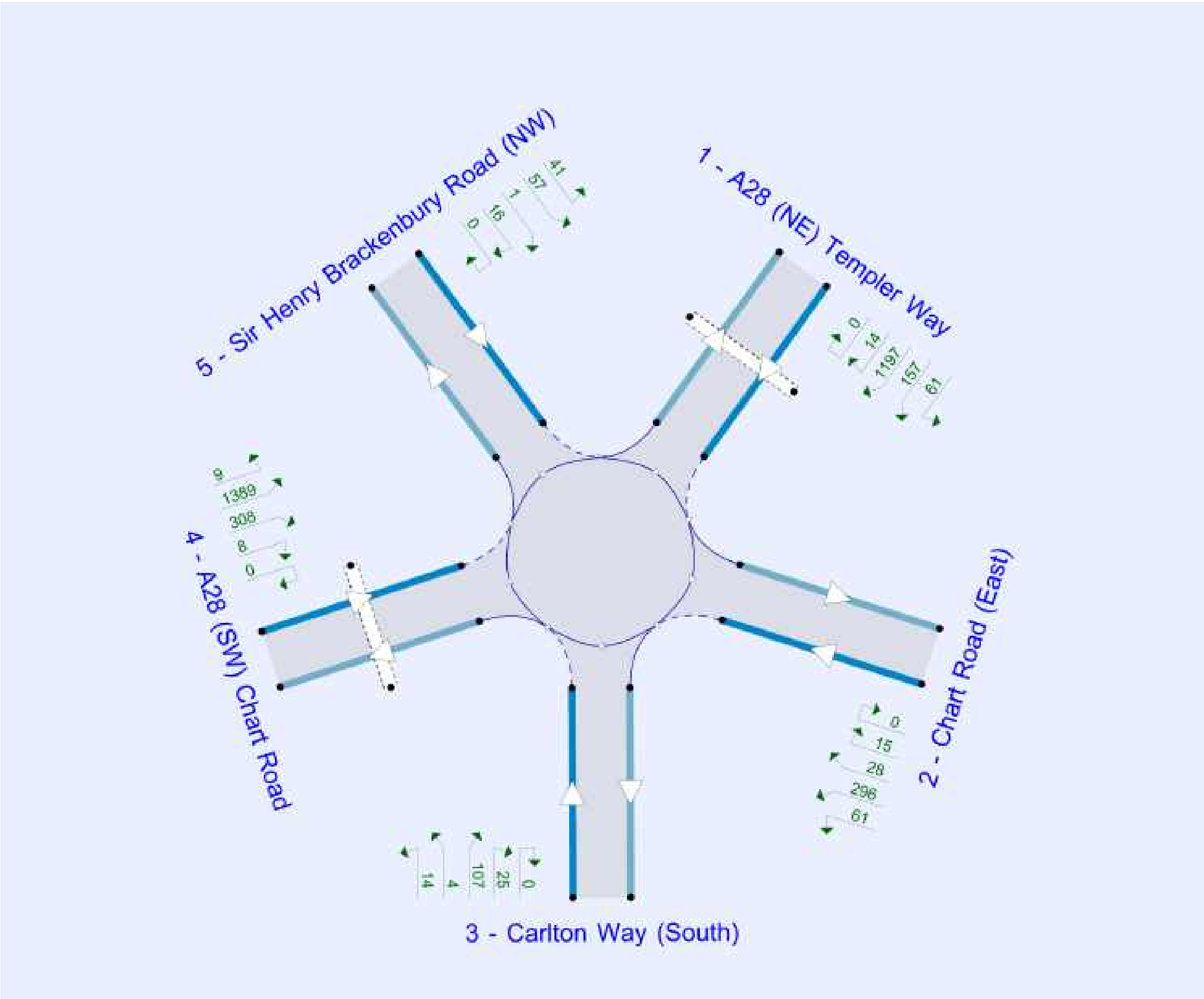
File summary

File Description

Title	Possingham Farm, Ashford
Location	Tank Roundabout
Site number	
Date	19/09/2024
Version	Dev Flows -> Escort Education Only
Status	Existing Junction Layout
Identifier	
Client	
Jobnumber	
Enumerator	David Noyce
Description	Observed flows from surveys of Tuesday, 28th March 2023. Calibrated to surveyed average queue lengths.

Units

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



Flows show original traffic demand (PCU/hr).

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D1	2023 Observed	AM	FLAT	08:00	09:00	60	15	✓		
D2	2023 Observed	PM	FLAT	16:30	17:30	60	15	✓		
D3	: Committed	AM	FLAT	08:00	09:00	60	15			
D4	: Committed	PM	FLAT	16:30	17:30	60	15			
D5	: Dev	AM	FLAT	08:00	09:00	60	15			
D6	: Dev	PM	FLAT	16:30	17:30	60	15			
D7	: Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15			
D8	: Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15			
D10	2023 Obs + Cttd	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3
D11	2023 Obs + Cttd	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4
D12	2023 Obs + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D5
D13	2023 Obs + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D6
D14	2023 Obs + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D3+D7
D15	2023 Obs + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D4+D8
D16	2023 Obs + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D5
D17	2023 Obs + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D6
D18	2023 Obs + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D7
D19	2023 Obs + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D8
D20	2032 Base	AM	FLAT	08:00	09:00	60	15		Simple	D1*1.070
D21	2032 Base	PM	FLAT	16:30	17:30	60	15		Simple	D2*1.073
D22	2032 Base + Cttd	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3
D23	2032 Base + Cttd	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4
D24	2032 Base + Cttd + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D5
D25	2032 Base + Cttd + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D6
D26	2032 Base + Cttd + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D3+D7
D27	2032 Base + Cttd + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D4+D8
D28	2032 Base + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D5
D29	2032 Base + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D6
D30	2032 Base + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D7
D31	2032 Base + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D8

AM - 2023 Observed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D16,D18,D20,D28,D30	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	57.32	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	57.32	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically
D1	2023 Observed	AM	FLAT	08:00	09:00	60	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1059	100.000
2 - Chart Road (East)		FLAT	✓	400	100.000
3 - Carlton Way (South)		FLAT	✓	150	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1084	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	115	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	13.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	19.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	61	157	827	14
	2 - Chart Road (East)	15	0	61	296	28
	3 - Carlton Way (South)	107	25	0	14	4
	4 - A28 (SW) Chart Road	759	308	8	0	9
	5 - Sir Henry Brackenbury Road (NW)	41	57	1	16	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	6	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	4	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	0.96	60.60	16.8	F	1059	1059
2 - Chart Road (East)	0.97	128.72	13.5	F	400	400
3 - Carlton Way (South)	0.81	121.68	4.7	F	150	150
4 - A28 (SW) Chart Road	0.83	16.61	4.9	C	1084	1084
5 - Sir Henry Brackenbury Road (NW)	0.72	78.46	2.4	F	115	115

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	1059	265	404	13.00	1116	0.949	1015	898	0.0	10.9	31.055	
2 - Chart Road (East)	400	100	981		434	0.923	374	438	0.0	6.5	50.260	
3 - Carlton Way (South)	150	38	1138		209	0.719	139	216	0.0	2.7	62.030	
4 - A28 (SW) Chart Road	1084	271	180	19.00	1308	0.829	1066	1098	0.0	4.6	14.449	
5 - Sir Henry Brackenbury Road (NW)	115	29	1194		174	0.660	108	52	0.0	1.7	51.201	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	1059	265	413	13.00	1109	0.955	1047	917	10.9	13.9	50.088	
2 - Chart Road (East)	400	100	1011		417	0.959	387	448	6.5	9.6	90.608	
3 - Carlton Way (South)	150	38	1176		190	0.791	146	223	2.7	3.7	97.433	
4 - A28 (SW) Chart Road	1084	271	188	19.00	1309	0.828	1083	1134	4.6	4.7	16.345	
5 - Sir Henry Brackenbury Road (NW)	115	29	1217		161	0.712	113	54	1.7	2.1	71.578	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1059	265	414	13.00	1108	0.956	1052	920	13.9	15.7	56.630	
2 - Chart Road (East)	400	100	1016		414	0.965	391	450	9.6	11.8	112.579	
3 - Carlton Way (South)	150	38	1183		186	0.807	148	225	3.7	4.3	112.739	
4 - A28 (SW) Chart Road	1084	271	190	19.00	1308	0.829	1084	1141	4.7	4.8	16.530	
5 - Sir Henry Brackenbury Road (NW)	115	29	1219		160	0.718	114	54	2.1	2.3	76.480	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1059	265	414	13.00	1108	0.956	1054	920	15.7	16.8	60.597	
2 - Chart Road (East)	400	100	1019		413	0.968	393	450	11.8	13.5	128.717	
3 - Carlton Way (South)	150	38	1186		184	0.815	148	225	4.3	4.7	121.677	
4 - A28 (SW) Chart Road	1084	271	191	19.00	1307	0.829	1084	1144	4.8	4.9	16.614	
5 - Sir Henry Brackenbury Road (NW)	115	29	1220		160	0.720	115	54	2.3	2.4	78.458	

AM - 2023 Obs + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D16,D18,D20,D28,D30	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	80.03	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	80.03	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D16	2023 Obs + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1069	100.000
2 - Chart Road (East)		FLAT	✓	411	100.000
3 - Carlton Way (South)		FLAT	✓	150	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1144	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	115	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	**2 - Chart Road (East)**	**3 - Carlton Way (South)**	**4 - A28 (SW) Chart Road**	**5 - Sir Henry Brackenbury Road (NW)**
From	**1 - A28 (NE) Templer Way**	0	61	157	837	14
	2 - Chart Road (East)	15	0	61	307	28
	3 - Carlton Way (South)	107	25	0	14	4
	4 - A28 (SW) Chart Road	787	340	8	0	9
	5 - Sir Henry Brackenbury Road (NW)	41	57	1	16	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	6	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	4	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	0.98	89.28	25.5	F	1069	1069
2 - Chart Road (East)	1.00	164.88	18.1	F	411	411
3 - Carlton Way (South)	0.84	136.87	5.2	F	150	150
4 - A28 (SW) Chart Road	0.87	22.31	6.8	C	1144	1144
5 - Sir Henry Brackenbury Road (NW)	0.90	190.75	5.6	F	115	115

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	1069	267	431	0.00	1096	0.975	1015	921	0.0	13.5	36.364	
2 - Chart Road (East)	411	103	980		434	0.947	381	466	0.0	7.5	54.880	
3 - Carlton Way (South)	150	38	1147		204	0.735	139	214	0.0	2.8	65.097	
4 - A28 (SW) Chart Road	1144	286	179	0.00	1315	0.870	1120	1107	0.0	5.9	17.412	
5 - Sir Henry Brackenbury Road (NW)	115	29	1247		145	0.794	105	52	0.0	2.6	77.588	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1069	267	442	0.00	1088	0.982	1048	942	13.5	18.8	65.054	
2 - Chart Road (East)	411	103	1012		417	0.987	394	477	7.5	11.7	105.370	
3 - Carlton Way (South)	150	38	1185		185	0.812	145	221	2.8	4.0	105.415	
4 - A28 (SW) Chart Road	1144	286	187	0.00	1310	0.873	1142	1144	5.9	6.5	21.530	
5 - Sir Henry Brackenbury Road (NW)	115	29	1275		130	0.885	109	53	2.6	4.1	139.105	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1069	267	444	0.00	1087	0.984	1054	946	18.8	22.5	78.903	
2 - Chart Road (East)	411	103	1018		413	0.995	397	480	11.7	15.1	137.720	
3 - Carlton Way (South)	150	38	1193		181	0.830	147	223	4.0	4.7	124.636	
4 - A28 (SW) Chart Road	1144	286	189	0.00	1308	0.874	1143	1151	6.5	6.7	22.086	
5 - Sir Henry Brackenbury Road (NW)	115	29	1278		128	0.897	111	54	4.1	4.9	170.775	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1069	267	445	0.00	1086	0.984	1057	947	22.5	25.5	89.284	
2 - Chart Road (East)	411	103	1021		412	0.999	399	481	15.1	18.1	164.882	
3 - Carlton Way (South)	150	38	1197		179	0.839	148	223	4.7	5.2	136.868	
4 - A28 (SW) Chart Road	1144	286	190	0.00	1308	0.875	1143	1155	6.7	6.8	22.310	
5 - Sir Henry Brackenbury Road (NW)	115	29	1279		128	0.901	113	54	4.9	5.6	190.752	

AM - 2023 Obs + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D16,D18,D20,D28,D30	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	94.72	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	94.72	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D18	2023 Obs + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D1+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1073	100.000
2 - Chart Road (East)		FLAT	✓	416	100.000
3 - Carlton Way (South)		FLAT	✓	150	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1170	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	115	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	61	157	841	14
	2 - Chart Road (East)	15	0	61	312	28
	3 - Carlton Way (South)	107	25	0	14	4
	4 - A28 (SW) Chart Road	799	354	8	0	9
	5 - Sir Henry Brackenbury Road (NW)	41	57	1	16	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	6	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	4	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	1.00	104.30	30.3	F	1073	1073
2 - Chart Road (East)	1.01	180.42	20.1	F	416	416
3 - Carlton Way (South)	0.85	141.36	5.4	F	150	150
4 - A28 (SW) Chart Road	0.89	26.15	8.1	D	1170	1170
5 - Sir Henry Brackenbury Road (NW)	1.01	332.19	9.7	F	115	115

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	1073	268	442	0.00	1088	0.986	1014	929	0.0	14.8	38.786	
2 - Chart Road (East)	416	104	979		434	0.958	384	477	0.0	7.9	56.869	
3 - Carlton Way (South)	150	38	1150		203	0.740	139	213	0.0	2.9	66.227	
4 - A28 (SW) Chart Road	1170	293	179	0.00	1315	0.890	1143	1110	0.0	6.8	19.236	
5 - Sir Henry Brackenbury Road (NW)	115	29	1270		133	0.866	102	52	0.0	3.3	95.647	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1073	268	453	0.00	1080	0.993	1047	952	14.8	21.2	72.133	
2 - Chart Road (East)	416	104	1011		417	0.997	397	489	7.9	12.6	111.659	
3 - Carlton Way (South)	150	38	1188		183	0.818	145	220	2.9	4.1	108.088	
4 - A28 (SW) Chart Road	1170	293	186	0.00	1310	0.893	1167	1147	6.8	7.6	24.847	
5 - Sir Henry Brackenbury Road (NW)	115	29	1300		116	0.988	105	53	3.3	5.9	199.133	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1073	268	455	0.00	1079	0.995	1053	955	21.2	26.1	89.991	
2 - Chart Road (East)	416	104	1017		414	1.005	400	491	12.6	16.6	148.445	
3 - Carlton Way (South)	150	38	1196		179	0.836	147	222	4.1	4.9	128.340	
4 - A28 (SW) Chart Road	1170	293	188	0.00	1309	0.894	1169	1154	7.6	8.0	25.742	
5 - Sir Henry Brackenbury Road (NW)	115	29	1303		114	1.005	107	54	5.9	8.0	272.258	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1073	268	456	0.00	1078	0.995	1057	957	26.1	30.3	104.302	
2 - Chart Road (East)	416	104	1020		412	1.009	402	492	16.6	20.1	180.420	
3 - Carlton Way (South)	150	38	1200		177	0.846	148	222	4.9	5.4	141.362	
4 - A28 (SW) Chart Road	1170	293	189	0.00	1308	0.894	1169	1158	8.0	8.1	26.151	
5 - Sir Henry Brackenbury Road (NW)	115	29	1305		114	1.012	108	54	8.0	9.7	332.192	

AM - 2032 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D16,D18,D20,D28,D30	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	153.57	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	153.57	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Relationship type	Relationship
D20	2032 Base	AM	FLAT	08:00	09:00	60	15	Simple	D1*1.070

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1133	100.000
2 - Chart Road (East)		FLAT	✓	428	100.000
3 - Carlton Way (South)		FLAT	✓	161	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1160	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	123	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	13.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	19.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	65	168	885	15
	2 - Chart Road (East)	16	0	65	317	30
	3 - Carlton Way (South)	114	27	0	15	4
	4 - A28 (SW) Chart Road	812	330	9	0	10
	5 - Sir Henry Brackenbury Road (NW)	44	61	1	17	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	6	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	4	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	1.04	183.22	58.4	F	1133	1133
2 - Chart Road (East)	1.08	322.65	37.7	F	428	428
3 - Carlton Way (South)	0.94	221.68	9.1	F	161	161
4 - A28 (SW) Chart Road	0.89	25.45	7.9	D	1160	1160
5 - Sir Henry Brackenbury Road (NW)	1.06	411.21	12.9	F	123	123

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsile se
1 - A28 (NE) Templer Way	1133	283	424	13.00	1101	1.029	1048	949	0.0	21.2	48.965	
2 - Chart Road (East)	428	107	1012		417	1.027	382	460	0.0	11.4	74.930	
3 - Carlton Way (South)	161	40	1171		192	0.837	144	223	0.0	4.0	84.075	
4 - A28 (SW) Chart Road	1160	290	186	19.00	1310	0.885	1133	1130	0.0	6.6	18.895	
5 - Sir Henry Brackenbury Road (NW)	123	31	1265		135	0.910	107	54	0.0	3.9	103.441	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsile se
1 - A28 (NE) Templer Way	1133	283	433	13.00	1095	1.035	1080	972	21.2	34.6	104.618	
2 - Chart Road (East)	428	107	1042		400	1.069	392	471	11.4	20.5	168.145	
3 - Carlton Way (South)	161	40	1205		175	0.918	152	229	4.0	6.3	153.383	
4 - A28 (SW) Chart Road	1160	290	194	19.00	1305	0.889	1157	1162	6.6	7.4	24.194	
5 - Sir Henry Brackenbury Road (NW)	123	31	1295		119	1.036	110	55	3.9	7.2	226.494	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1133	283	435	13.00	1093	1.037	1084	976	34.6	46.8	145.026	
2 - Chart Road (East)	428	107	1047		398	1.076	393	473	20.5	29.2	246.239	
3 - Carlton Way (South)	161	40	1210		172	0.933	154	230	6.3	7.8	193.062	
4 - A28 (SW) Chart Road	1160	290	196	19.00	1303	0.890	1159	1168	7.4	7.7	25.048	
5 - Sir Henry Brackenbury Road (NW)	123	31	1299		117	1.055	111	56	7.2	10.2	323.564	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1133	283	436	13.00	1092	1.037	1086	977	46.8	58.4	183.220	
2 - Chart Road (East)	428	107	1049		397	1.079	394	473	29.2	37.7	322.650	
3 - Carlton Way (South)	161	40	1212		171	0.939	156	231	7.8	9.1	221.681	
4 - A28 (SW) Chart Road	1160	290	198	19.00	1302	0.891	1159	1170	7.7	7.9	25.454	
5 - Sir Henry Brackenbury Road (NW)	123	31	1301		116	1.064	112	56	10.2	12.9	411.214	

AM - 2032 Base + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D16,D18,D20,D28,D30	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	218.17	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	218.17	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D28	2032 Base + Dev	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D5

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1143	100.000
2 - Chart Road (East)		FLAT	✓	439	100.000
3 - Carlton Way (South)		FLAT	✓	161	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1220	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	123	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	65	168	895	15
	2 - Chart Road (East)	16	0	65	328	30
	3 - Carlton Way (South)	114	27	0	15	4
	4 - A28 (SW) Chart Road	840	362	9	0	10
	5 - Sir Henry Brackenbury Road (NW)	44	61	1	17	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	6	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	4	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	1.06	231.96	75.0	F	1143	1143
2 - Chart Road (East)	1.09	354.90	42.5	F	439	439
3 - Carlton Way (South)	0.94	220.71	9.0	F	161	161
4 - A28 (SW) Chart Road	0.94	40.13	12.9	E	1220	1220
5 - Sir Henry Brackenbury Road (NW)	1.47	1363.88	35.4	F	123	123

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1143	286	444	0.00	1087	1.052	1042	965	0.0	25.2	55.785	
2 - Chart Road (East)	439	110	1005		420	1.044	389	481	0.0	12.6	79.148	
3 - Carlton Way (South)	161	40	1174		191	0.842	144	220	0.0	4.1	85.380	
4 - A28 (SW) Chart Road	1220	305	185	0.00	1311	0.931	1182	1133	0.0	9.5	24.249	
5 - Sir Henry Brackenbury Road (NW)	123	31	1314		109	1.130	95	53	0.0	7.0	183.405	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1143	286	449	0.00	1083	1.056	1073	989	25.2	42.7	125.393	
2 - Chart Road (East)	439	110	1033		405	1.084	398	489	12.6	22.8	181.387	
3 - Carlton Way (South)	161	40	1205		175	0.919	152	226	4.1	6.3	154.879	
4 - A28 (SW) Chart Road	1220	305	193	0.00	1305	0.934	1213	1164	9.5	11.3	35.549	
5 - Sir Henry Brackenbury Road (NW)	123	31	1351		89	1.389	87	55	7.0	16.0	541.772	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1143	286	449	0.00	1083	1.056	1078	992	42.7	59.1	179.600	
2 - Chart Road (East)	439	110	1037		403	1.089	400	490	22.8	32.7	268.810	
3 - Carlton Way (South)	161	40	1210		172	0.932	154	227	6.3	7.9	193.458	
4 - A28 (SW) Chart Road	1220	305	196	0.00	1304	0.936	1216	1168	11.3	12.2	38.494	
5 - Sir Henry Brackenbury Road (NW)	123	31	1357		85	1.442	85	55	16.0	25.6	945.110	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1143	286	449	0.00	1083	1.056	1080	994	59.1	75.0	231.964	
2 - Chart Road (East)	439	110	1039		402	1.091	400	490	32.7	42.5	354.902	
3 - Carlton Way (South)	161	40	1211		171	0.937	156	227	7.9	9.0	220.707	
4 - A28 (SW) Chart Road	1220	305	197	0.00	1303	0.936	1217	1170	12.2	12.9	40.132	
5 - Sir Henry Brackenbury Road (NW)	123	31	1360		84	1.466	84	55	25.6	35.4	1363.885	

AM - 2032 Base + Dev (Sens.Test), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	AM	✓	✓	D1,D16,D18,D20,D28,D30	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	259.03	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	259.03	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-960
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-541
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-523
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-802
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-500

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1408
2 - Chart Road (East)	0.540	963
3 - Carlton Way (South)	0.509	788
4 - A28 (SW) Chart Road	0.675	1436
5 - Sir Henry Brackenbury Road (NW)	0.544	824

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D30	2032 Base + Dev (Sens.Test)	AM	FLAT	08:00	09:00	60	15	✓	Simple	D20+D7

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1147	100.000
2 - Chart Road (East)		FLAT	✓	444	100.000
3 - Carlton Way (South)		FLAT	✓	161	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1246	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	123	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	65	168	899	15
	2 - Chart Road (East)	16	0	65	333	30
	3 - Carlton Way (South)	114	27	0	15	4
	4 - A28 (SW) Chart Road	852	376	9	0	10
	5 - Sir Henry Brackenbury Road (NW)	44	61	1	17	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	2	24	6	0
	2 - Chart Road (East)	0	0	5	3	0
	3 - Carlton Way (South)	40	13	0	17	33
	4 - A28 (SW) Chart Road	4	2	29	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	7	0

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 - A28 (NE) Templer Way	1.06	252.01	81.7	F	1147	1147
2 - Chart Road (East)	1.10	370.21	44.7	F	444	444
3 - Carlton Way (South)	0.94	219.90	9.0	F	161	161
4 - A28 (SW) Chart Road	0.96	51.55	16.9	F	1246	1246
5 - Sir Henry Brackenbury Road (NW)	1.74	2075.03	46.2	F	123	123

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1147	287	451	0.00	1081	1.061	1040	970	0.0	26.9	58.532	
2 - Chart Road (East)	444	111	1002		422	1.052	391	489	0.0	13.1	81.120	
3 - Carlton Way (South)	161	40	1175		190	0.844	144	219	0.0	4.1	85.886	
4 - A28 (SW) Chart Road	1246	311	185	0.00	1311	0.950	1201	1134	0.0	11.2	27.251	
5 - Sir Henry Brackenbury Road (NW)	123	31	1332		99	1.247	88	53	0.0	8.7	236.425	

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1147	287	455	0.00	1079	1.063	1071	994	26.9	46.0	133.781	
2 - Chart Road (East)	444	111	1029		407	1.090	401	496	13.1	24.0	187.677	
3 - Carlton Way (South)	161	40	1205		175	0.920	152	225	4.1	6.3	155.359	
4 - A28 (SW) Chart Road	1246	311	193	0.00	1306	0.954	1235	1164	11.2	14.1	43.040	
5 - Sir Henry Brackenbury Road (NW)	123	31	1373		77	1.606	76	55	8.7	20.5	775.314	

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1147	287	454	0.00	1079	1.063	1075	998	46.0	64.1	193.704	
2 - Chart Road (East)	444	111	1033		405	1.095	402	496	24.0	34.4	279.566	
3 - Carlton Way (South)	161	40	1209		172	0.931	155	226	6.3	7.8	193.349	
4 - A28 (SW) Chart Road	1246	311	196	0.00	1304	0.956	1239	1168	14.1	15.7	48.289	
5 - Sir Henry Brackenbury Road (NW)	123	31	1380		73	1.692	73	55	20.5	33.1	1403.810	

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi l s
1 - A28 (NE) Templer Way	1147	287	454	0.00	1079	1.063	1077	1000	64.1	81.7	252.011	
2 - Chart Road (East)	444	111	1034		405	1.097	403	497	34.4	44.7	370.214	
3 - Carlton Way (South)	161	40	1211		172	0.935	156	226	7.8	9.0	219.902	
4 - A28 (SW) Chart Road	1246	311	197	0.00	1303	0.956	1241	1170	15.7	16.9	51.554	
5 - Sir Henry Brackenbury Road (NW)	123	31	1384		71	1.736	71	55	33.1	46.2	2075.027	

PM - 2023 Observed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D17,D19,D21,D29,D31	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	43.36	E

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	43.36	E

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically
D2	2023 Observed	PM	FLAT	16:30	17:30	60	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	924	100.000
2 - Chart Road (East)		FLAT	✓	322	100.000
3 - Carlton Way (South)		FLAT	✓	213	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1154	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	61	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	14.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	14.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	35	58	800	29
	2 - Chart Road (East)	17	0	21	251	33
	3 - Carlton Way (South)	156	43	0	13	1
	4 - A28 (SW) Chart Road	851	277	8	1	17
	5 - Sir Henry Brackenbury Road (NW)	24	27	3	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	2	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	2	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	0.90	34.07	8.3	D	924	924
2 - Chart Road (East)	0.84	56.25	4.8	F	322	322
3 - Carlton Way (South)	0.89	115.72	6.3	F	213	213
4 - A28 (SW) Chart Road	0.91	31.73	9.7	D	1154	1154
5 - Sir Henry Brackenbury Road (NW)	0.59	83.43	1.3	F	61	61

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	924	231	353	14.00	1037	0.891	897	1015	0.0	6.7	23.495	
2 - Chart Road (East)	322	81	882		397	0.811	308	369	0.0	3.5	36.572	
3 - Carlton Way (South)	213	53	1103		257	0.830	199	87	0.0	3.5	55.313	
4 - A28 (SW) Chart Road	1154	289	265	14.00	1273	0.906	1123	1037	0.0	7.6	21.399	
5 - Sir Henry Brackenbury Road (NW)	61	15	1311		125	0.486	58	77	0.0	0.8	50.966	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	924	231	363	14.00	1030	0.897	920	1042	6.7	7.6	31.789	
2 - Chart Road (East)	322	81	904		385	0.836	319	379	3.5	4.3	51.246	
3 - Carlton Way (South)	213	53	1133		241	0.884	207	89	3.5	5.0	91.517	
4 - A28 (SW) Chart Road	1154	289	275	14.00	1266	0.911	1149	1066	7.6	8.8	29.285	
5 - Sir Henry Brackenbury Road (NW)	61	15	1345		107	0.570	60	79	0.8	1.2	73.876	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	924	231	365	14.00	1029	0.898	922	1046	7.6	8.1	33.359	
2 - Chart Road (East)	322	81	906		384	0.839	321	381	4.3	4.6	54.754	
3 - Carlton Way (South)	213	53	1137		239	0.891	210	90	5.0	5.8	106.993	
4 - A28 (SW) Chart Road	1154	289	278	14.00	1264	0.913	1152	1069	8.8	9.4	30.928	
5 - Sir Henry Brackenbury Road (NW)	61	15	1350		104	0.585	61	80	1.2	1.3	80.589	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	924	231	365	14.00	1029	0.898	923	1047	8.1	8.3	34.071	
2 - Chart Road (East)	322	81	907		383	0.840	321	381	4.6	4.8	56.245	
3 - Carlton Way (South)	213	53	1138		239	0.893	211	90	5.8	6.3	115.720	
4 - A28 (SW) Chart Road	1154	289	279	14.00	1264	0.913	1153	1070	9.4	9.7	31.730	
5 - Sir Henry Brackenbury Road (NW)	61	15	1352		103	0.591	61	80	1.3	1.3	83.431	

PM - 2023 Obs + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D17,D19,D21,D29,D31	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	77.49	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	77.49	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D17	2023 Obs + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	953	100.000
2 - Chart Road (East)		FLAT	✓	361	100.000
3 - Carlton Way (South)		FLAT	✓	213	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1191	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	61	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	35	58	829	29
	2 - Chart Road (East)	17	0	21	290	33
	3 - Carlton Way (South)	156	43	0	13	1
	4 - A28 (SW) Chart Road	867	298	8	1	17
	5 - Sir Henry Brackenbury Road (NW)	24	27	3	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	2	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	2	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	0.94	51.16	12.8	F	953	953
2 - Chart Road (East)	0.98	150.25	14.3	F	361	361
3 - Carlton Way (South)	1.02	262.89	14.7	F	213	213
4 - A28 (SW) Chart Road	0.94	41.08	12.8	E	1191	1191
5 - Sir Henry Brackenbury Road (NW)	0.69	121.58	1.9	F	61	61

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	953	238	371	0.00	1025	0.930	918	1021	0.0	8.9	28.890	
2 - Chart Road (East)	361	90	902		386	0.935	335	386	0.0	6.6	55.820	
3 - Carlton Way (South)	213	53	1151		232	0.917	193	86	0.0	5.0	74.788	
4 - A28 (SW) Chart Road	1191	298	257	0.00	1278	0.932	1153	1086	0.0	9.4	24.631	
5 - Sir Henry Brackenbury Road (NW)	61	15	1335		112	0.543	57	76	0.0	1.0	61.282	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	953	238	381	0.00	1017	0.937	945	1049	8.9	10.9	44.083	
2 - Chart Road (East)	361	90	929		372	0.971	348	397	6.6	9.9	103.046	
3 - Carlton Way (South)	213	53	1188		213	0.998	198	89	5.0	8.7	152.948	
4 - A28 (SW) Chart Road	1191	298	265	0.00	1273	0.936	1184	1121	9.4	11.3	36.313	
5 - Sir Henry Brackenbury Road (NW)	61	15	1371		93	0.656	59	78	1.0	1.5	99.245	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	953	238	383	0.00	1016	0.938	949	1053	10.9	12.1	48.614	
2 - Chart Road (East)	361	90	933		370	0.977	351	399	9.9	12.3	129.861	
3 - Carlton Way (South)	213	53	1195		210	1.015	200	89	8.7	11.8	211.183	
4 - A28 (SW) Chart Road	1191	298	268	0.00	1271	0.937	1187	1127	11.3	12.2	39.382	
5 - Sir Henry Brackenbury Road (NW)	61	15	1376		90	0.678	60	79	1.5	1.8	114.110	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	953	238	384	0.00	1015	0.939	950	1055	12.1	12.8	51.157	
2 - Chart Road (East)	361	90	934		369	0.979	353	400	12.3	14.3	150.248	
3 - Carlton Way (South)	213	53	1198		208	1.023	201	89	11.8	14.7	262.888	
4 - A28 (SW) Chart Road	1191	298	269	0.00	1270	0.938	1189	1130	12.2	12.8	41.083	
5 - Sir Henry Brackenbury Road (NW)	61	15	1378		89	0.688	60	79	1.8	1.9	121.584	

PM - 2023 Obs + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D17,D19,D21,D29,D31	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	87.01	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	87.01	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D19	2023 Obs + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D2+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	959	100.000
2 - Chart Road (East)		FLAT	✓	368	100.000
3 - Carlton Way (South)		FLAT	✓	213	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1195	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	61	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	35	58	835	29
	2 - Chart Road (East)	17	0	21	297	33
	3 - Carlton Way (South)	156	43	0	13	1
	4 - A28 (SW) Chart Road	869	300	8	1	17
	5 - Sir Henry Brackenbury Road (NW)	24	27	3	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	2	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	2	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	0.95	55.37	13.9	F	959	959
2 - Chart Road (East)	1.01	187.36	18.4	F	368	368
3 - Carlton Way (South)	1.04	298.50	16.8	F	213	213
4 - A28 (SW) Chart Road	0.94	41.89	13.1	E	1195	1195
5 - Sir Henry Brackenbury Road (NW)	0.69	124.45	1.9	F	61	61

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	959	240	372	0.00	1024	0.937	922	1021	0.0	9.4	29.967	
2 - Chart Road (East)	368	92	906		384	0.958	338	388	0.0	7.4	60.750	
3 - Carlton Way (South)	213	53	1159		228	0.933	192	86	0.0	5.4	78.883	
4 - A28 (SW) Chart Road	1195	299	256	0.00	1279	0.934	1157	1095	0.0	9.6	24.945	
5 - Sir Henry Brackenbury Road (NW)	61	15	1337		111	0.548	57	76	0.0	1.0	62.259	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	959	240	382	0.00	1016	0.944	950	1049	9.4	11.7	46.799	
2 - Chart Road (East)	368	92	934		369	0.997	351	398	7.4	11.8	118.565	
3 - Carlton Way (South)	213	53	1196		209	1.017	196	88	5.4	9.5	166.265	
4 - A28 (SW) Chart Road	1195	299	263	0.00	1274	0.938	1187	1129	9.6	11.5	36.983	
5 - Sir Henry Brackenbury Road (NW)	61	15	1372		92	0.663	59	78	1.0	1.6	101.537	

Generated on 19/09/2024 10:30:13 using Junctions 10 (10.1.1.1905)

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	959	240	384	0.00	1015	0.945	954	1053	11.7	13.0	52.208	
2 - Chart Road (East)	368	92	938		367	1.003	354	400	11.8	15.3	155.986	
3 - Carlton Way (South)	213	53	1203		206	1.035	198	89	9.5	13.2	235.005	
4 - A28 (SW) Chart Road	1195	299	265	0.00	1273	0.939	1191	1136	11.5	12.5	40.151	
5 - Sir Henry Brackenbury Road (NW)	61	15	1377		89	0.684	60	78	1.6	1.8	116.886	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	959	240	385	0.00	1014	0.946	956	1055	13.0	13.9	55.366	
2 - Chart Road (East)	368	92	940		366	1.006	356	401	15.3	18.4	187.360	
3 - Carlton Way (South)	213	53	1206		204	1.044	199	89	13.2	16.8	298.503	
4 - A28 (SW) Chart Road	1195	299	266	0.00	1272	0.939	1192	1139	12.5	13.1	41.891	
5 - Sir Henry Brackenbury Road (NW)	61	15	1380		88	0.693	60	79	1.8	1.9	124.450	

PM - 2032 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D17,D19,D21,D29,D31	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	121.80	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	121.80	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Relationship type	Relationship
D21	2032 Base	PM	FLAT	16:30	17:30	60	15	Simple	D2*1.073

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	991	100.000
2 - Chart Road (East)		FLAT	✓	346	100.000
3 - Carlton Way (South)		FLAT	✓	229	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1238	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	65	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	14.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	14.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	38	62	858	31
	2 - Chart Road (East)	18	0	23	269	35
	3 - Carlton Way (South)	167	46	0	14	1
	4 - A28 (SW) Chart Road	913	297	9	1	18
	5 - Sir Henry Brackenbury Road (NW)	26	29	3	8	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	2	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	2	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	0.98	80.32	21.1	F	991	991
2 - Chart Road (East)	0.98	154.75	14.1	F	346	346
3 - Carlton Way (South)	1.12	448.91	26.9	F	229	229
4 - A28 (SW) Chart Road	0.98	72.03	23.7	F	1238	1238
5 - Sir Henry Brackenbury Road (NW)	0.99	375.50	6.1	F	65	65

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - A28 (NE) Templer Way	991	248	369	14.00	1026	0.967	944	1061	0.0	11.9	35.158	
2 - Chart Road (East)	346	86	927		373	0.927	321	386	0.0	6.2	55.687	
3 - Carlton Way (South)	229	57	1156		229	0.996	200	91	0.0	7.1	93.478	
4 - A28 (SW) Chart Road	1238	310	269	14.00	1270	0.975	1183	1087	0.0	13.9	32.141	
5 - Sir Henry Brackenbury Road (NW)	65	16	1371		92	0.708	59	81	0.0	1.7	94.022	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	991	248	379	14.00	1019	0.973	975	1090	11.9	16.1	60.824	
2 - Chart Road (East)	346	86	957		356	0.969	332	397	6.2	9.5	103.554	
3 - Carlton Way (South)	229	57	1195		210	1.090	202	94	7.1	13.6	216.927	
4 - A28 (SW) Chart Road	1238	310	274	14.00	1267	0.978	1220	1123	13.9	18.5	55.614	
5 - Sir Henry Brackenbury Road (NW)	65	16	1411		71	0.920	59	84	1.7	3.4	211.439	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	991	248	381	14.00	1017	0.975	980	1096	16.1	18.9	72.194	
2 - Chart Road (East)	346	86	962		353	0.977	336	399	9.5	12.0	132.130	
3 - Carlton Way (South)	229	57	1203		206	1.111	202	95	13.6	20.2	331.778	
4 - A28 (SW) Chart Road	1238	310	275	14.00	1266	0.978	1226	1130	18.5	21.5	65.343	
5 - Sir Henry Brackenbury Road (NW)	65	16	1417		68	0.966	60	84	3.4	4.8	301.536	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	991	248	382	14.00	1016	0.975	983	1098	18.9	21.1	80.319	
2 - Chart Road (East)	346	86	965		352	0.982	337	400	12.0	14.1	154.755	
3 - Carlton Way (South)	229	57	1207		204	1.123	202	95	20.2	26.9	448.912	
4 - A28 (SW) Chart Road	1238	310	275	14.00	1267	0.978	1229	1134	21.5	23.7	72.026	
5 - Sir Henry Brackenbury Road (NW)	65	16	1420		66	0.987	61	84	4.8	6.1	375.496	

PM - 2032 Base + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D17,D19,D21,D29,D31	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	204.34	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	204.34	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D29	2032 Base + Dev	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D6

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1020	100.000
2 - Chart Road (East)		FLAT	✓	385	100.000
3 - Carlton Way (South)		FLAT	✓	229	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1275	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	65	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	38	62	887	31
	2 - Chart Road (East)	18	0	23	308	35
	3 - Carlton Way (South)	167	46	0	14	1
	4 - A28 (SW) Chart Road	929	318	9	1	18
	5 - Sir Henry Brackenbury Road (NW)	26	29	3	8	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	2	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	2	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	1.01	136.30	38.4	F	1020	1020
2 - Chart Road (East)	1.11	405.38	42.1	F	385	385
3 - Carlton Way (South)	1.19	627.26	36.5	F	229	229
4 - A28 (SW) Chart Road	1.00	101.09	35.1	F	1275	1275
5 - Sir Henry Brackenbury Road (NW)	1.14	618.86	9.7	F	65	65

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1020	255	384	0.00	1015	1.005	955	1060	0.0	16.4	43.740	
2 - Chart Road (East)	385	96	938		366	1.049	338	400	0.0	11.7	85.008	
3 - Carlton Way (South)	229	57	1187		214	1.069	192	89	0.0	9.1	116.866	
4 - A28 (SW) Chart Road	1275	319	259	0.00	1277	0.998	1206	1120	0.0	17.3	37.051	
5 - Sir Henry Brackenbury Road (NW)	65	16	1386		84	0.776	57	78	0.0	2.1	112.605	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1020	255	393	0.00	1009	1.011	986	1088	16.4	24.9	86.535	
2 - Chart Road (East)	385	96	969		350	1.098	344	410	11.7	21.9	199.108	
3 - Carlton Way (South)	229	57	1221		196	1.164	192	91	9.1	18.1	289.731	
4 - A28 (SW) Chart Road	1275	319	261	0.00	1276	1.000	1245	1153	17.3	24.7	69.939	
5 - Sir Henry Brackenbury Road (NW)	65	16	1426		63	1.041	55	80	2.1	4.7	288.934	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1020	255	395	0.00	1007	1.013	992	1094	24.9	32.0	113.103	
2 - Chart Road (East)	385	96	974		347	1.108	344	412	21.9	31.9	301.687	
3 - Carlton Way (South)	229	57	1227		194	1.180	192	92	18.1	27.3	456.954	
4 - A28 (SW) Chart Road	1275	319	261	0.00	1276	0.999	1253	1158	24.7	30.4	87.241	
5 - Sir Henry Brackenbury Road (NW)	65	16	1432		59	1.105	56	81	4.7	7.1	455.834	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1020	255	395	0.00	1007	1.013	995	1096	32.0	38.4	136.304	
2 - Chart Road (East)	385	96	977		346	1.112	344	413	31.9	42.1	405.383	
3 - Carlton Way (South)	229	57	1229		193	1.187	192	92	27.3	36.5	627.261	
4 - A28 (SW) Chart Road	1275	319	260	0.00	1276	0.999	1256	1160	30.4	35.1	101.091	
5 - Sir Henry Brackenbury Road (NW)	65	16	1436		57	1.140	55	81	7.1	9.7	618.863	

PM - 2032 Base + Dev (Sens.Test), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	1 - A28 (NE) Templer Way - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	4 - A28 (SW) Chart Road - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Demand Set Relationship	D22 - 2032 Base + Cttd, AM	Demand Set relationships are chained. This may slow down the file.

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	PM	✓	✓	D2,D17,D19,D21,D29,D31	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Tank Roundabout	Standard Roundabout		1, 2, 3, 4, 5	220.52	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	220.52	F

Arms

Arms

Arm	Name	Description	No give-way line
1	A28 (NE) Templer Way		
2	Chart Road (East)		
3	Carlton Way (South)		
4	A28 (SW) Chart Road		
5	Sir Henry Brackenbury Road (NW)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A28 (NE) Templer Way	7.30	8.82	4.0	25.0	51.0	39.0		
2 - Chart Road (East)	3.00	6.57	26.3	11.0	51.0	46.0		
3 - Carlton Way (South)	3.75	6.47	4.6	12.0	51.0	43.0		
4 - A28 (SW) Chart Road	6.75	9.16	13.0	13.0	51.0	53.0		
5 - Sir Henry Brackenbury Road (NW)	3.65	4.61	4.3	45.0	51.0	27.0		

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
1 - A28 (NE) Templer Way	10.00	3.00	2.90	2.00	5.00	8.00	7.00
4 - A28 (SW) Chart Road	15.00	3.00	2.90	2.00	5.00	8.00	7.00

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - A28 (NE) Templer Way	Direct	Calibrated to average surveyed queues	-1075
2 - Chart Road (East)	Direct	Calibrated to average surveyed queues	-631
3 - Carlton Way (South)	Direct	Calibrated to average surveyed queues	-493
4 - A28 (SW) Chart Road	Direct	Calibrated to average surveyed queues	-786
5 - Sir Henry Brackenbury Road (NW)	Direct	Calibrated to average surveyed queues	-485

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A28 (NE) Templer Way	0.723	1293
2 - Chart Road (East)	0.540	873
3 - Carlton Way (South)	0.509	818
4 - A28 (SW) Chart Road	0.675	1452
5 - Sir Henry Brackenbury Road (NW)	0.544	839

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 period length (min)	Time segment length (min)	Run automatically	Relationship type	Relationship
D31	2032 Base + Dev (Sens.Test)	PM	FLAT	16:30	17:30	60	15	✓	Simple	D21+D8

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A28 (NE) Templer Way		FLAT	✓	1026	100.000
2 - Chart Road (East)		FLAT	✓	392	100.000
3 - Carlton Way (South)		FLAT	✓	229	100.000
4 - A28 (SW) Chart Road		FLAT	✓	1279	100.000
5 - Sir Henry Brackenbury Road (NW)		FLAT	✓	65	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - A28 (NE) Templer Way	[FLAT]	0.00
2 - Chart Road (East)		
3 - Carlton Way (South)		
4 - A28 (SW) Chart Road	[FLAT]	0.00
5 - Sir Henry Brackenbury Road (NW)		

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	2	38	62	893	31
	2 - Chart Road (East)	18	0	23	315	35
	3 - Carlton Way (South)	167	46	0	14	1
	4 - A28 (SW) Chart Road	931	320	9	1	18
	5 - Sir Henry Brackenbury Road (NW)	26	29	3	8	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To				
		1 - A28 (NE) Templer Way	2 - Chart Road (East)	3 - Carlton Way (South)	4 - A28 (SW) Chart Road	5 - Sir Henry Brackenbury Road (NW)
From	1 - A28 (NE) Templer Way	0	3	40	2	0
	2 - Chart Road (East)	0	0	16	0	0
	3 - Carlton Way (South)	3	2	0	8	0
	4 - A28 (SW) Chart Road	2	1	75	0	0
	5 - Sir Henry Brackenbury Road (NW)	0	0	0	0	0

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 - A28 (NE) Templer Way	1.02	149.29	42.5	F	1026	1026
2 - Chart Road (East)	1.14	465.19	48.7	F	392	392
3 - Carlton Way (South)	1.19	648.72	37.6	F	229	229
4 - A28 (SW) Chart Road	1.00	104.45	36.5	F	1279	1279
5 - Sir Henry Brackenbury Road (NW)	1.16	647.54	10.1	F	65	65

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1026	257	385	0.00	1014	1.012	957	1060	0.0	17.3	45.427	
2 - Chart Road (East)	392	98	941		365	1.072	339	401	0.0	13.1	91.715	
3 - Carlton Way (South)	229	57	1191		212	1.080	191	88	0.0	9.4	120.751	
4 - A28 (SW) Chart Road	1279	320	257	0.00	1279	1.000	1209	1125	0.0	17.6	37.515	
5 - Sir Henry Brackenbury Road (NW)	65	16	1388		84	0.782	57	78	0.0	2.1	114.291	

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1026	257	394	0.00	1008	1.018	988	1088	17.3	26.8	91.886	
2 - Chart Road (East)	392	98	971		349	1.122	344	411	13.1	24.9	221.689	
3 - Carlton Way (South)	229	57	1224		195	1.172	191	91	9.4	18.8	300.392	
4 - A28 (SW) Chart Road	1279	320	259	0.00	1277	1.002	1248	1157	17.6	25.4	71.392	
5 - Sir Henry Brackenbury Road (NW)	65	16	1427		62	1.053	55	80	2.1	4.8	297.048	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1026	257	396	0.00	1007	1.020	994	1093	26.8	35.0	122.161	
2 - Chart Road (East)	392	98	976		346	1.131	344	413	24.9	36.7	342.353	
3 - Carlton Way (South)	229	57	1229		193	1.187	191	91	18.8	28.1	473.303	
4 - A28 (SW) Chart Road	1279	320	259	0.00	1277	1.002	1255	1161	25.4	31.4	89.629	
5 - Sir Henry Brackenbury Road (NW)	65	16	1434		58	1.119	55	80	4.8	7.4	473.324	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le se
1 - A28 (NE) Templer Way	1026	257	396	0.00	1006	1.020	996	1096	35.0	42.5	149.291	
2 - Chart Road (East)	392	98	978		345	1.135	344	414	36.7	48.7	465.189	
3 - Carlton Way (South)	229	57	1231		192	1.193	191	91	28.1	37.6	648.717	
4 - A28 (SW) Chart Road	1279	320	258	0.00	1277	1.001	1259	1163	31.4	36.5	104.448	
5 - Sir Henry Brackenbury Road (NW)	65	16	1437		57	1.156	55	80	7.4	10.1	647.538	

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