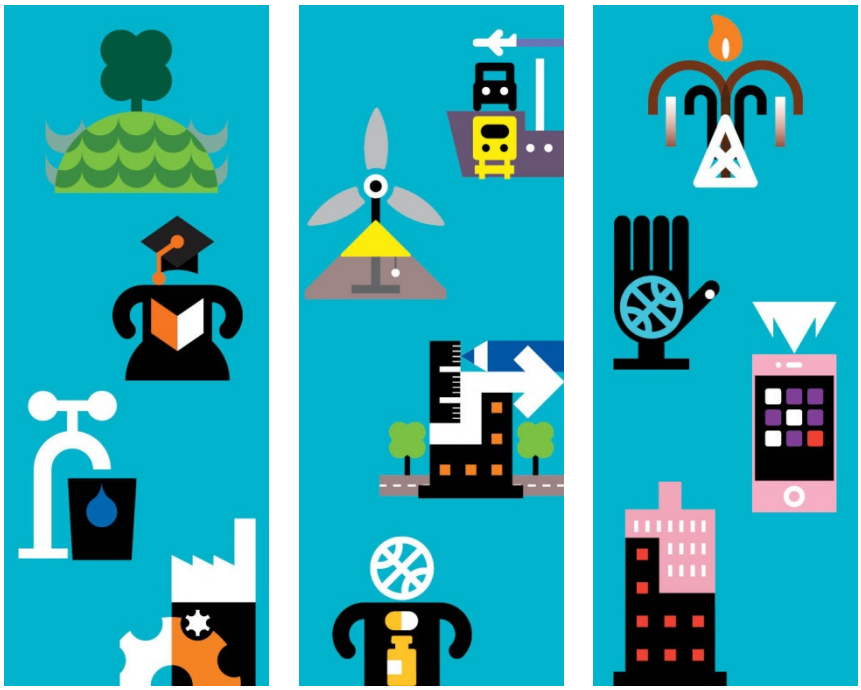

Invicta, Maidstone

Junction Review

May 2016

Maidstone Borough Council

Mott MacDonald

Invicta, Maidstone

Junction Review

May 2016

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1 Introduction

1.1 Background

Mott MacDonald was commissioned by Maidstone Borough Council (MBC) to consider the capacity at the roundabout junction of the A229 Royal Engineers Road which serves the existing Barracks. MBC's brief also asked for a link through the site to Sandling Lane and resulting impacts on the roundabout of Sandling Lane with A229 to be considered. Our proposal responded directly to the brief received from MBC with the tasks as set out below.

1.2 Scope of Work

MBC's brief set out tasks as below which were detailed further in our proposal. The scope of work below refers both to the brief, our proposal as well as the tasks that were carried out within this report.

1. Using all the available information, consider the projected traffic increases and capacity issues at the roundabout junction of the A229 Royal Engineers Road which serves the existing Barrack entry point at 2031.
   a. Collation of all the relevant information to establish base traffic at this 5-arm roundabout. This includes the review of the VISUM modelling data. The Springfield Transport Assessment mentions a Manual Classified Count of this junction dated July 2013. Unless more recent data is available, this will be used for base traffic purposes.
   b. Calculate the growth applicable to the base traffic based on TEMPro for 2031. Discuss the acceptability of adjusting TEMPro growth based on planned development having been included in TEMPro.
   c. Produce flow diagrams for 2031 AM and PM peaks base traffic.

   Dialogue with MBC revealed that the data included in the Springfield Transport Assessment is the most up to date information in the vicinity of this roundabout. The steps above were therefore followed closely for the work carried out and reported in this report.

2. Assess whether the existing junction has capacity to manage an increase in dwelling numbers on the site to both 1,300 dwellings and also 1,500 dwellings. (N.B. There are already a number of residential properties on the site for service personnel and this should be taken into account in any calculation).
   a. Run TRICS with comparable residential sites to establish the likely trip generation of 1,300 and 1,500 dwellings.
   b. Add these trips to the flow diagrams developed in point one above to create two "with development" scenarios. Note, it is expected that the trip generation of the existing residential properties is included in the 2013 counts and therefore in the 2031 'base' flows. Clarification will be sought as to whether these are in addition to the 1,500 / 1,300 dwellings, or whether they will be replaced by the proposed units.
   c. The Springfield TA does not contain an ARCADY model of this 5-arm roundabout. An ARCADY model will therefore have to be established. Given there is no queue data available, it will be difficult to validate the base model. We will endeavour to undertake a site observation in each peak hour and review the base model accordingly. This may cause some difficulty as the existing data is for 2013 with the site observation being 2016.

d. Carry out model runs for future base 2031 and the two “with development” scenarios for both AM and PM peaks.
e. Review results to understand whether the junction could accommodate this quantum of development. Note, at this stage we have not included for any mitigation measures to be considered at this junction. Should the results show for the junction to be over capacity, further inputs would be required to consider potential signalisation of the roundabout.

The work undertaken followed closely the steps as described above. The assessment results revealed that the junction was over capacity. Further work was carried out to identify mitigation measures for this junction.

3. Consider the potential to take a road north through the site exiting onto Sandling Lane in the vicinity of / via the existing access gate adjacent to Sandling Lodge, and the resultant impacts on capacity at the A229 and this northern junction with Sandling Lane.
   a. Review information regarding land ownership, any masterplan drawings which may be available, topographical information, base mapping, and flow data for Sandling Lane.
   b. Sketch up a potential route for a road through the site to Sandling Lane to the north including consideration of a potential site access junction with Sandling Lane.
   c. Prepare flow diagrams for the potential access junction with Sandling Lane.
   d. An assessment based on the access junction sketch will be carried out.
   e. It is understood that no recent flow data is available for the A229 / Sandling Lane roundabout. No allowance has therefore been made in this proposal for assessing this roundabout.
   f. Review results to understand whether the Sandling Lane junction could accommodate this quantum of development.

   It was considered that in the absence of any flow data for Sandling Lane, it would be difficult to estimate whether a junction in this location could accommodate some or all of the development traffic. Also, any potential impacts on Sandling Lane approaching A229 (Junction 7 of the M20) would be difficult to quantify in the absence of traffic data. The emphasis of the work was therefore switched to finding a solution at the A229 Royal Engineers Road roundabout that mitigates the development’s impact.

4. Provide a written report identifying the methodology and approach undertaken, summarising the findings, and drawing the conclusions. The written report should be accompanied by relevant mapping and/or illustrations as deemed appropriate.
   a. The above steps will be summarised in a technical note.
   b. The note will contain the results of the ARCADY modelling as well as information on the potential link to Sandling Lane including potential access junction form.

   This report summarises the work carried out as described above. It includes both ARCADY as well as LinSig results and relevant junction sketches.

1.3 Report Structure

This Technical Note is structured as follows:

- **Chapter 2** contains the traffic flows including 2013 Base Flows, Development Flows for both scenarios, Future Base Flows and Future Base Flows with Development.
- In **Chapter 3,** the existing layout is reviewed, the ARCADY assessment results are presented and capacity issues are identified.
- **Chapter 4** contains the junction layout improvements proposed to mitigate the impact of development.
- The junction layout solution is reviewed in **Chapter 5** including the LinSig assessment results.
- **Chapter 6** summarises the work that has been undertaken.

2 Traffic Flows

2.1 Existing Traffic Flows

In order to calculate the existing traffic flows for 2013, the following report was used:

- Springfield, Maidstone; Transport Assessment produced by Mouchel, December 2013

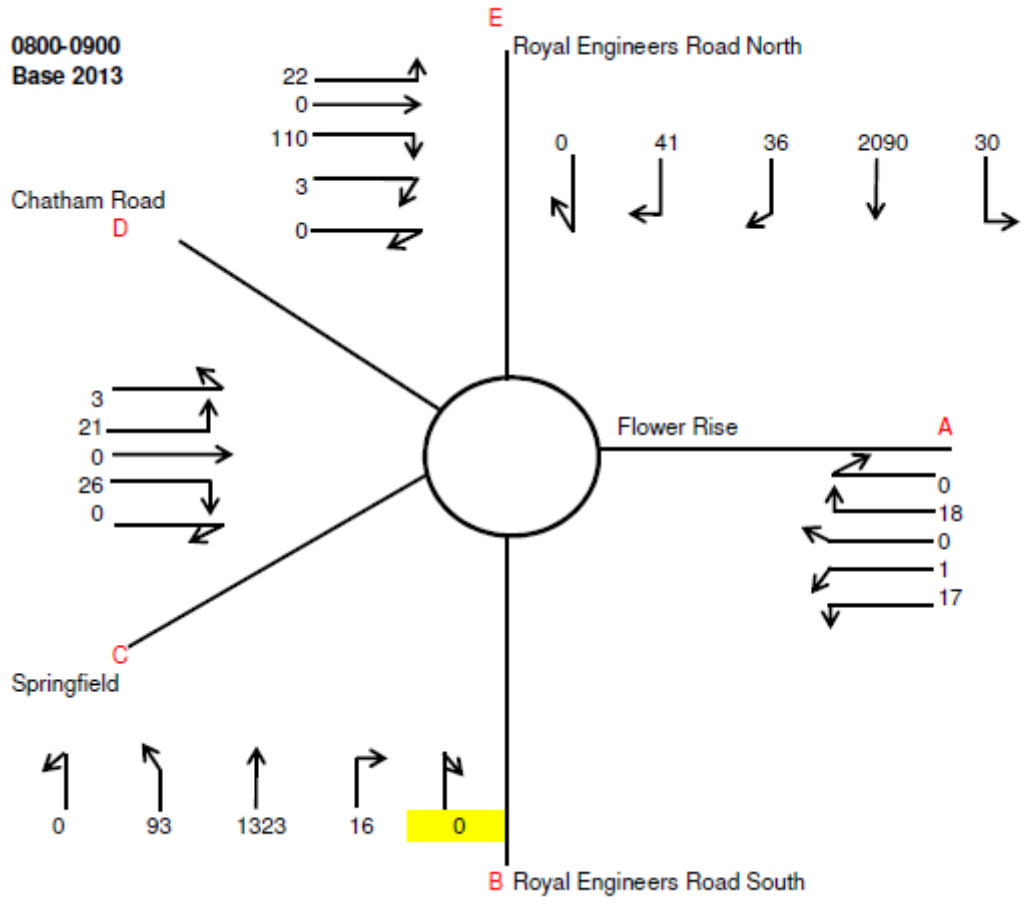
The manual classified counts (MCCs) included in this report were undertaken on Thursday 4th July 2013 from 0700-1900 using video surveys in agreement with KCC. The following junctions were assessed:

- A229 Royal Engineers Road / Chatham Road / Springfield / Flower Rise
- A229 Royal Engineers Road / James Whatman Way / A229 Fairmeadow / Staceys Street

The peak hours were identified as 08:00-09:00 for the AM peak and 17:00-18:00 for the PM peak. These are shown in **Figure 2.1** and **Figure 2.2**.

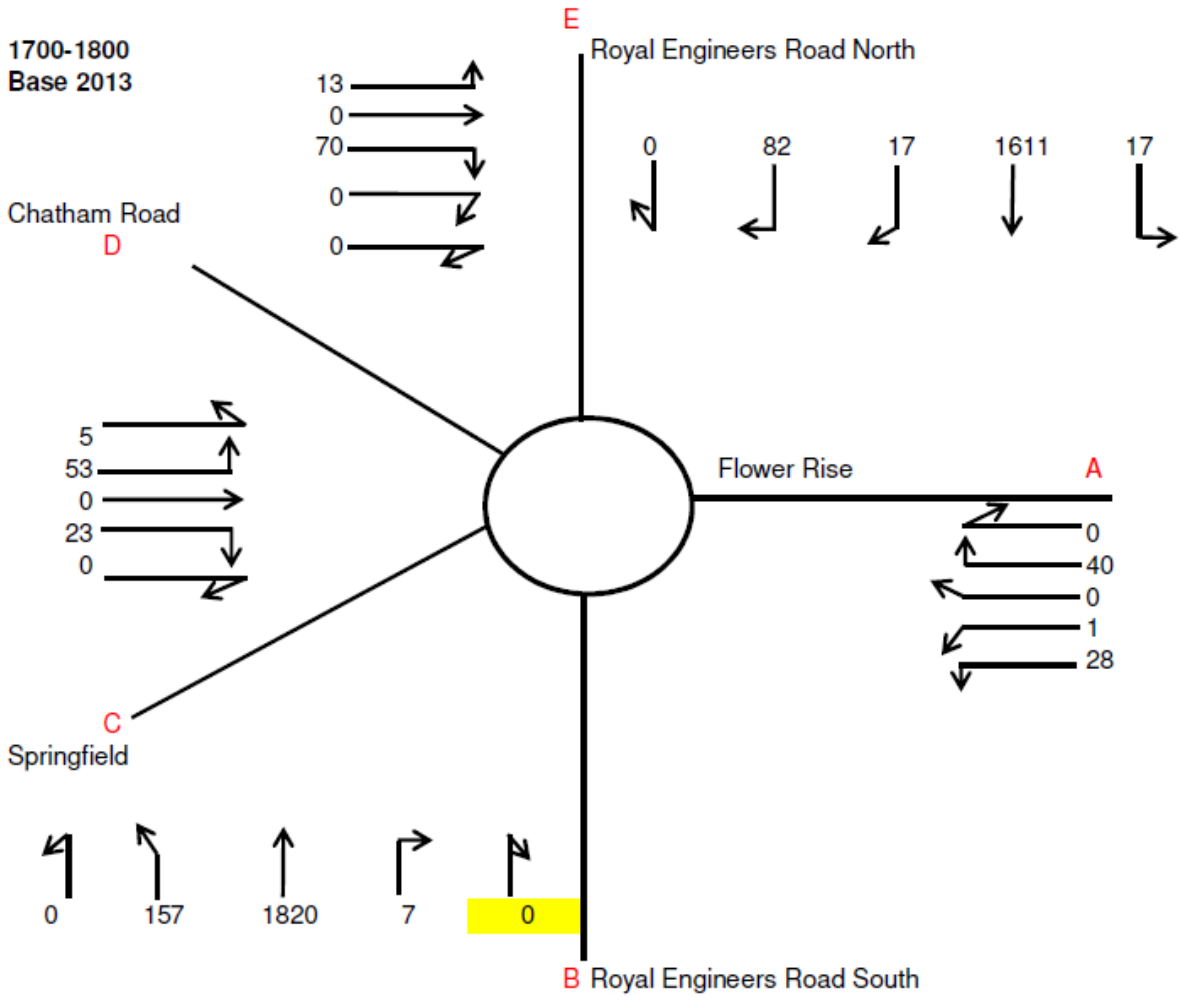
With regards to the traffic flows, it was noted that for Arm B (Royal Engineers Road South) the U-turn and right turn movements would appear to have been misaligned with the right turn movement being 0 (zero) in both peak hours, yet the U-turn movement containing values. This is despite there not being an obvious destination between the A229 / Flower Rise roundabout and the roundabout to the south (A229/Stacey Street). No significant U-turning movements would therefore be expected expect for very few drivers who may have missed the right turn at the southern roundabout. The right turn into Flower Rise however, is unlikely to be 0 (zero) given the opposite movement (traffic out of Flower Rise turning left / south) does contain values. The flows for these two turning movements have therefore been swapped to represent more likely turning patterns.

Figure 2.1: Base 2013 Flows - AM Peak



Source: Springfield, Maidstone; Transport Assessment produced by Mouchel, December 2013

Figure 2.2: Base 2013 Flows - PM Peak



Source: Springfield, Maidstone; Transport Assessment produced by Mouchel, December 2013

2.2 Development Flows

In agreement with Maidstone Borough Council, the TRICS database was interrogated for comparable residential sites to establish the likely trip generation of both 1,300 (Scenario A) and 1,500 dwellings (Scenario B). The derived trip generation was then distributed across the junction in accordance with the existing barrack traffic derived from the arrivals and departures into and out of Flower Rise (Arm A) for the AM and PM peaks, as illustrated in **Figure 2.3** to **Figure 2.6**. Note, the distribution includes the swapping of turning movements as described in **Section 2.1**.

Figure 2.3: Trip Generation Development Flows Scenario A - AM Peak

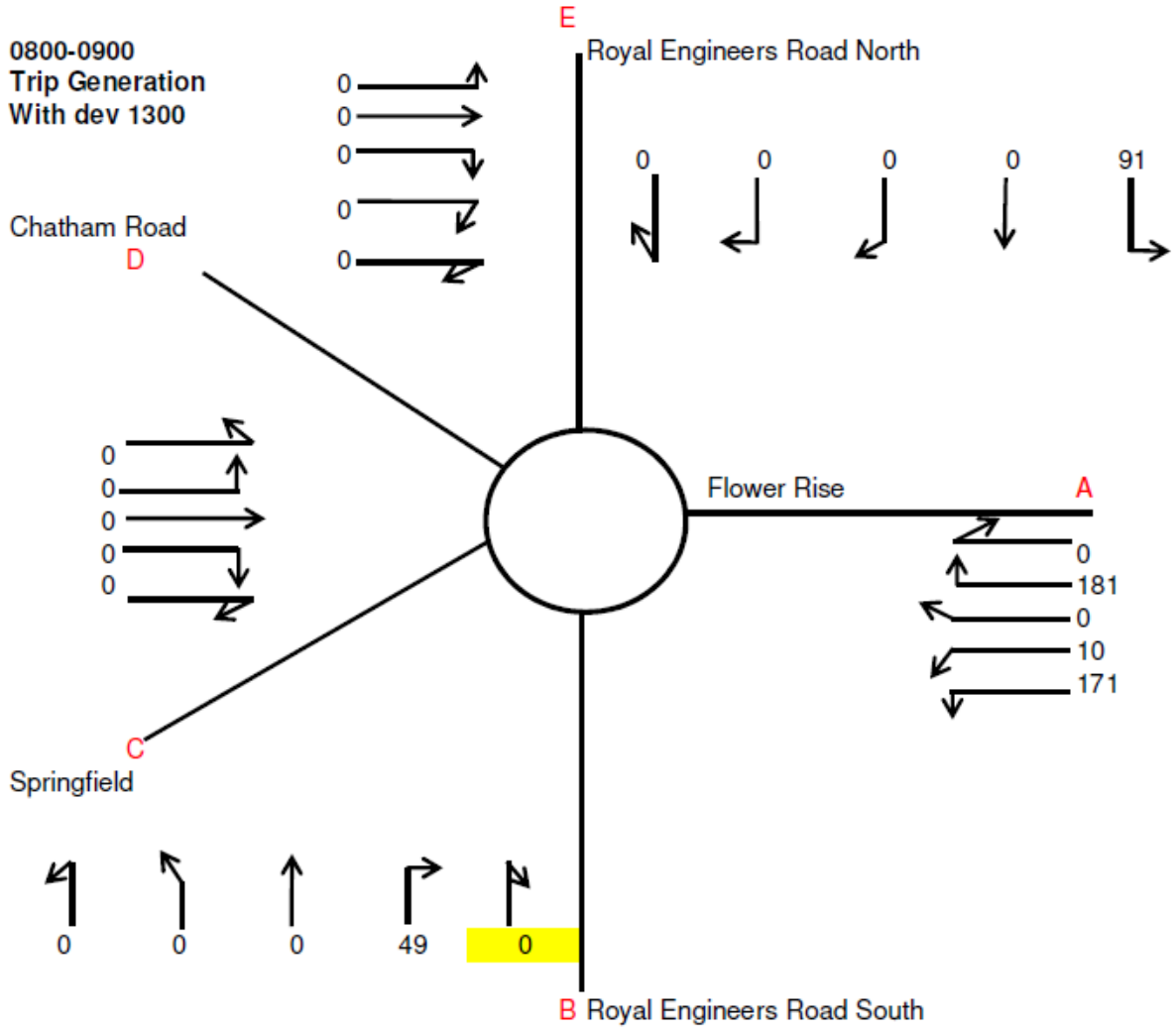


Figure 2.4: Trip Generation Development Flows Scenario A - PM Peak

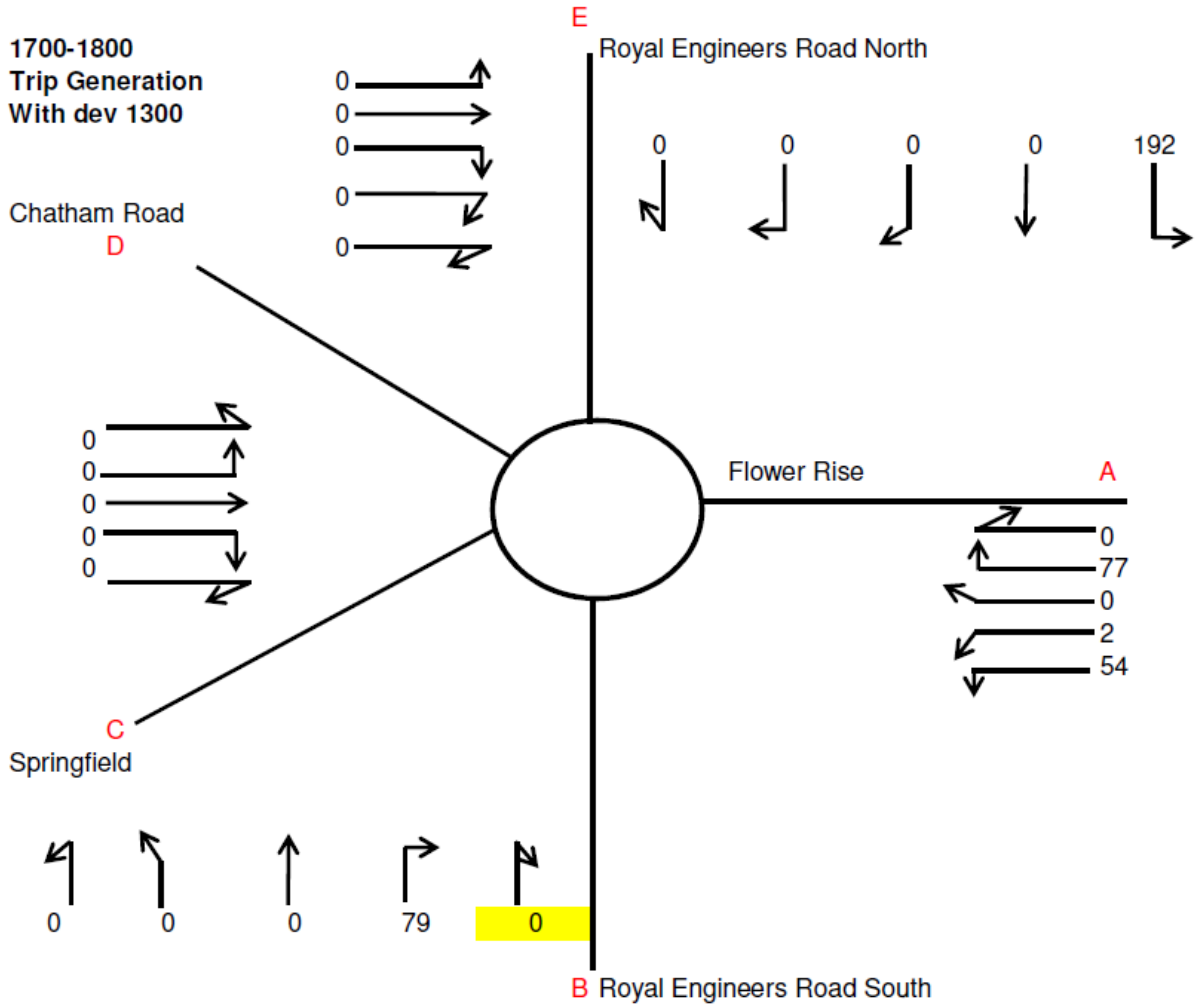


Figure 2.5: Trip Generation Development Flows Scenario B - AM Peak

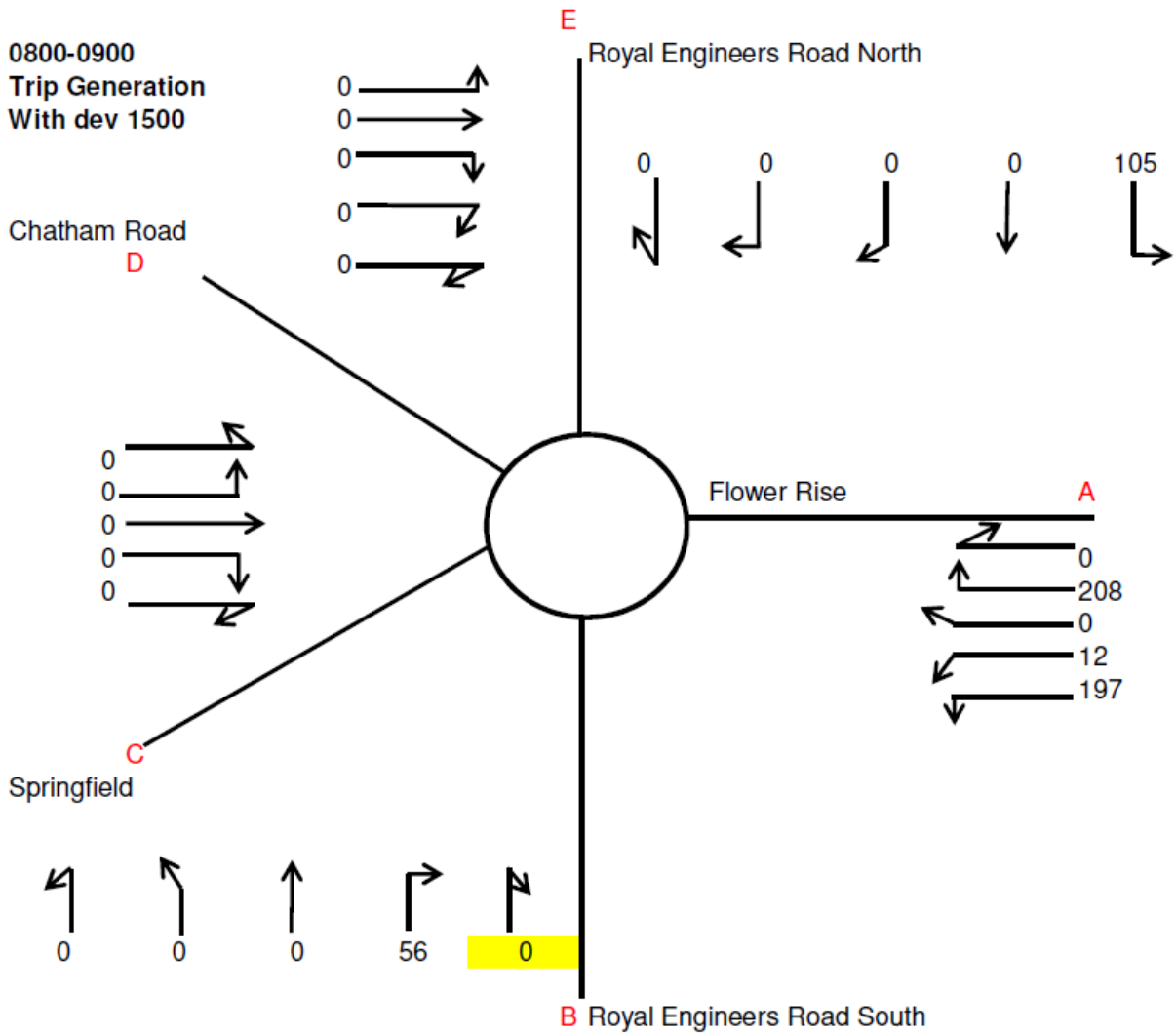
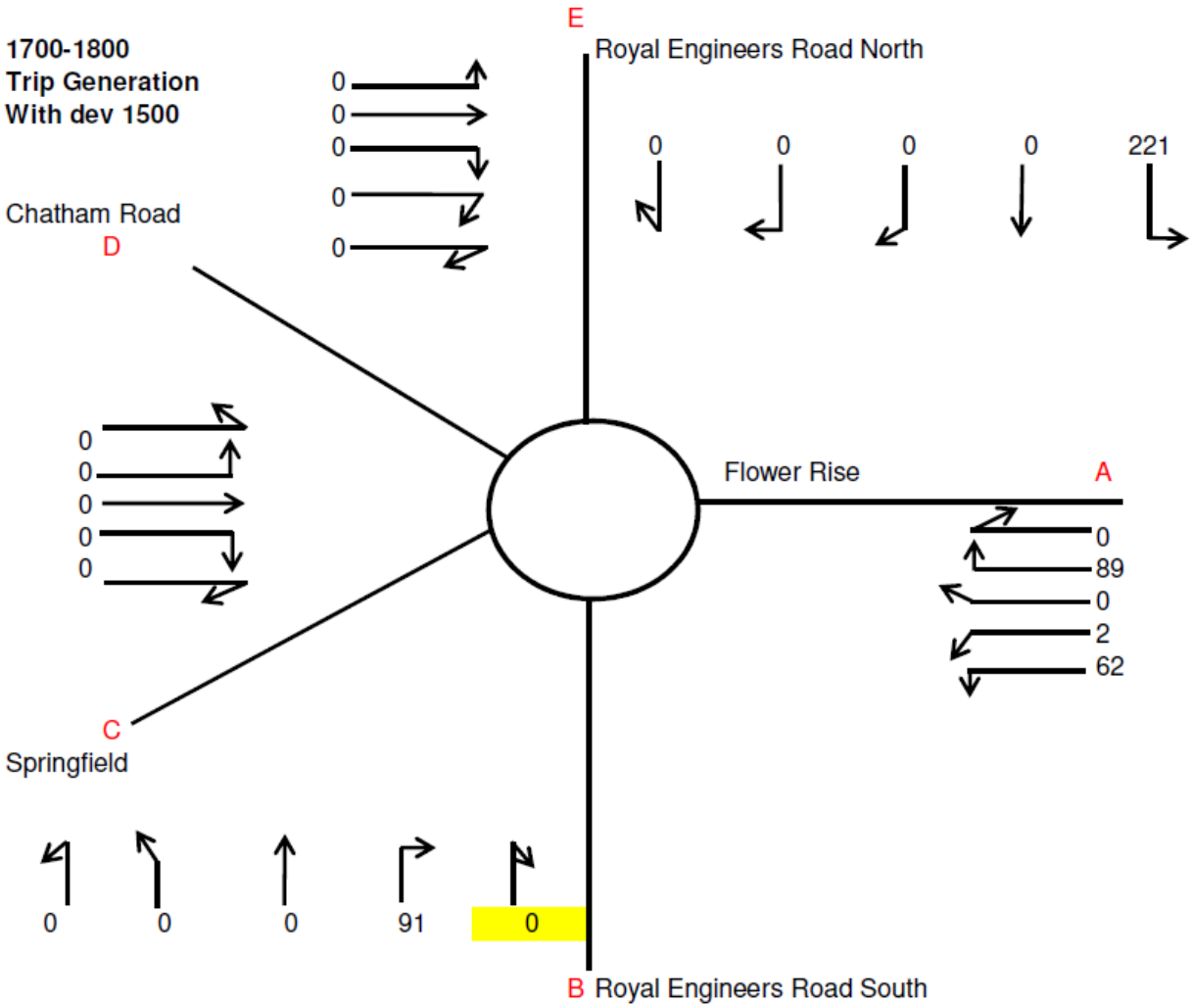


Figure 2.6: Trip Generation Development Flows Scenario B - PM Peak



2.3 TEMPro

TEMPro (version 6.2 with planning dataset 62 and NTM dataset AF09) has been interrogated with regards to forecast background growth in traffic. The growth rates were adjusted using the National Transport Model (NTM) for an urban principal road in Maidstone.

Growth rates for between 2013 and 2031 have been generated. **Table 2.1** shows the growth rates.

Table 2.1: TEMPro Growth Rates for Maidstone: 2013 - 2031

Time period	Factor
AM peak	1.2089
PM peak	1.2213

Future background growth from 2013-2031 identifies an increase in housing of 6,420 households in the Maidstone area. The proposed development generates two scenarios which require revised growth calculation, as detailed below, to avoid double counting of development impacts on growth:

- Scenario A: Reduction in 1,300 future households; and
- Scenario B: Reduction of 1,500 households.

TEMPro has therefore been adjusted per scenario to a 'Future HH' of 47,446 (reduction in 1,300 households) and 47,246 (reduction in 1,500 households) as shown in **Table 2.2.**

Table 2.2: Background Growth Adjustments

Current Future HH	Adjustment for Future HH (minus 1,300)	Adjustment for Future HH (minus 1,500)
48,746	47,446	47,246

The adjusted background growth rates for between 2013 and 2031 have been generated for the two scenarios and are displayed in **Table 2.3** and **Table 2.4**.

Table 2.3: Adjusted TEMPro Growth Rates for Maidstone: 2013-2031 (reduction of 1,300 households)

Time period	Factor
AM peak	1.1943
PM peak	1.2060

Table 2.4: Adjusted TEMPro Growth Rates for Maidstone: 2013-2031 (reduction of 1,500 households)

Time period	Factor
AM peak	1.1921
PM peak	1.2037

2.4 Future Base 2031 Flows – Scenario A

Based on the above factors in **Table 2.3,** the 2031 future base flows for a reduction of 1,300 households were calculated. The AM and PM peaks are illustrated in **Figure 2.7** and **Figure 2.8**.

Figure 2.7: Future Base 2031 Flows Scenario A - AM Peak

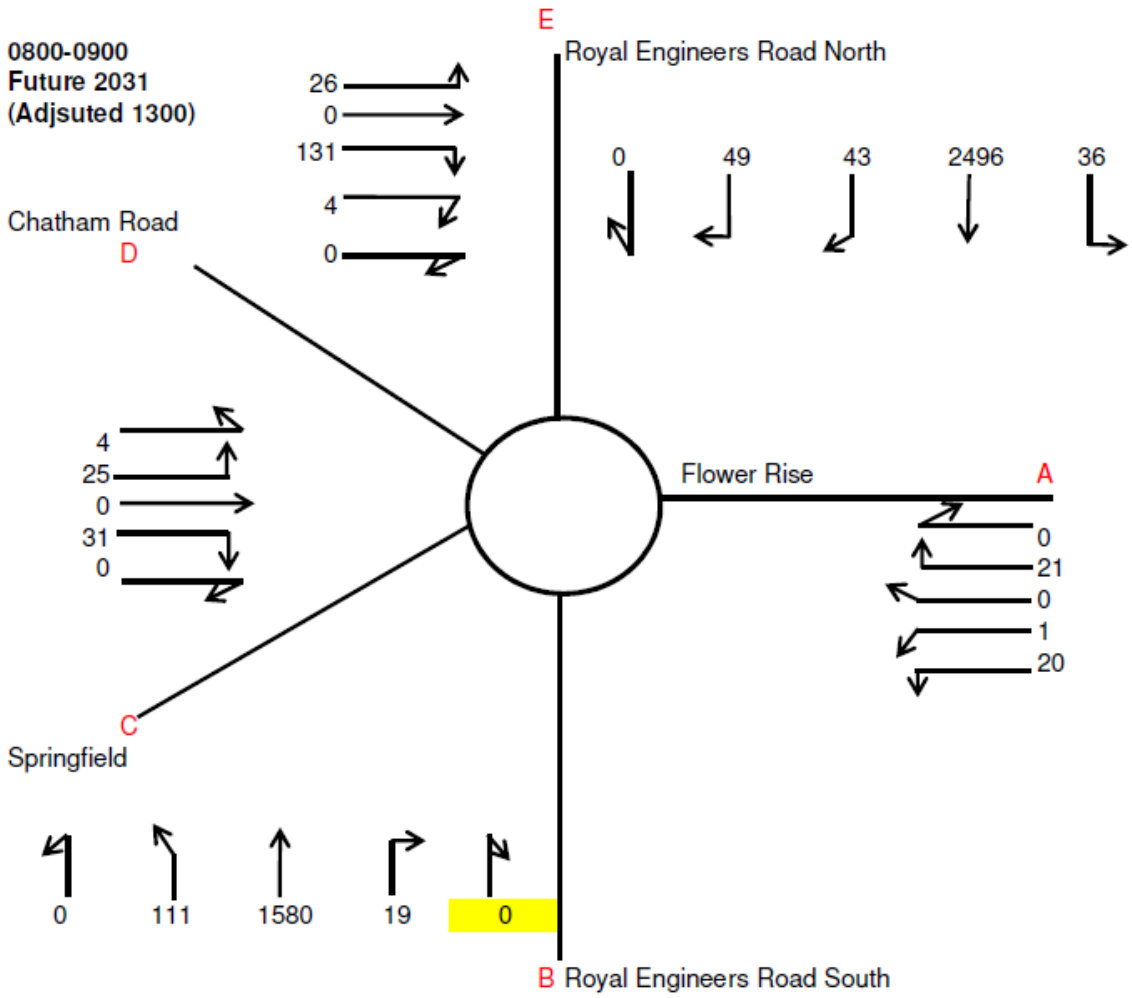
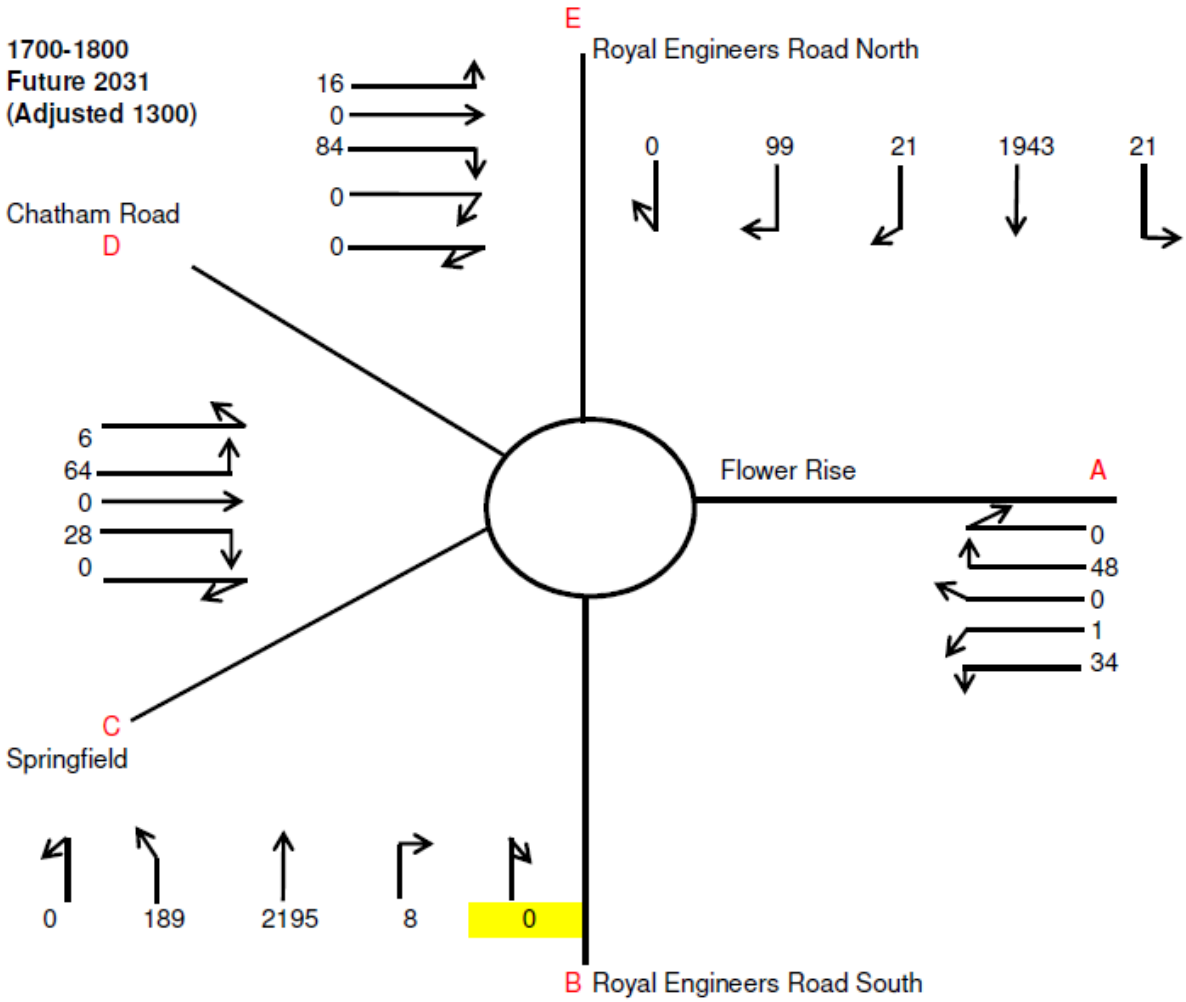


Figure 2.8: Future Base 2031 Flows Scenario A - PM Peak



2.5 Future 2031 Base Flows – Scenario B

In accordance with the factors in **Table 2.4** the future 2031 base flows for a reduction of 1,500 households were calculated, as illustrated in **Figure 2.9** and **Figure 2.10.**

Figure 2.9: Future Base 2031 Flows Scenario B – AM Peak

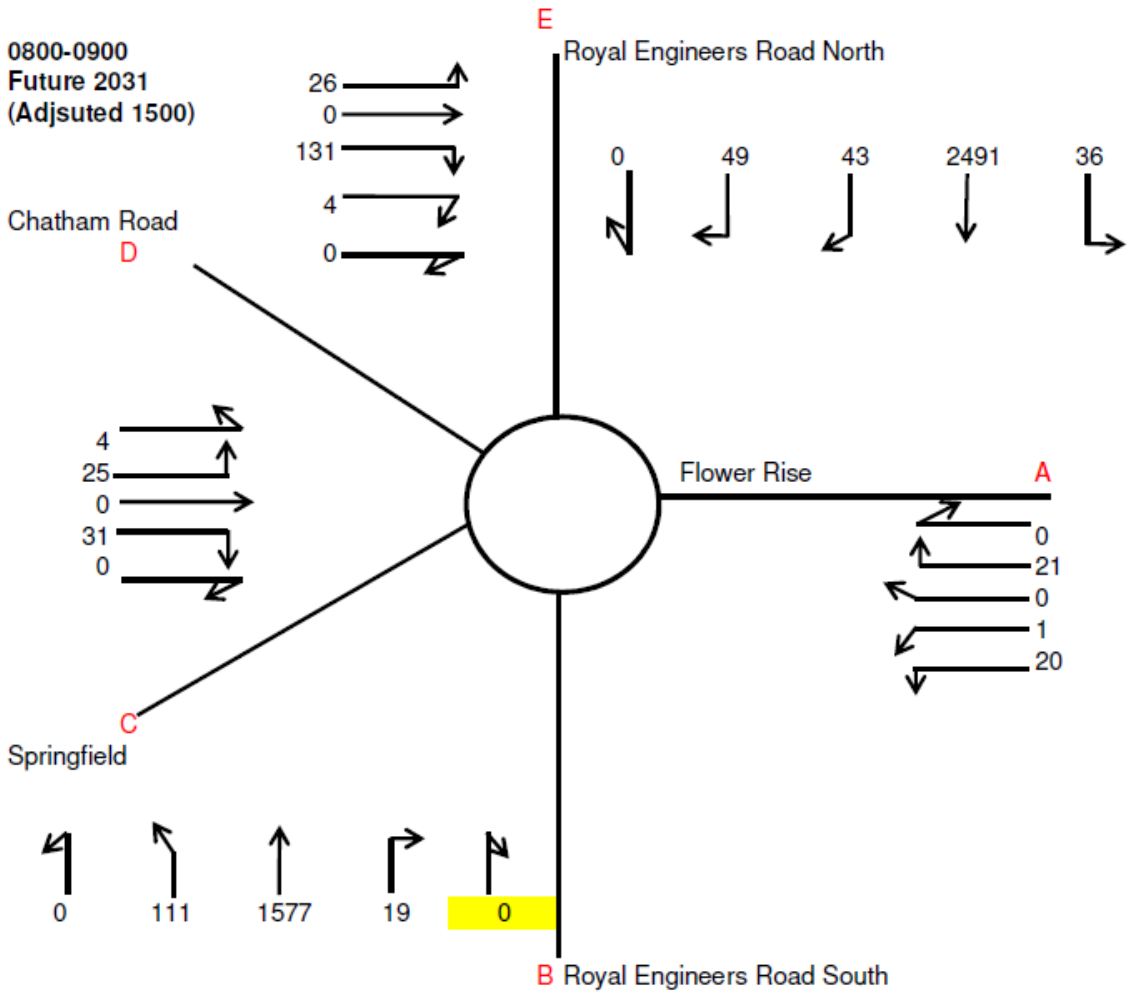
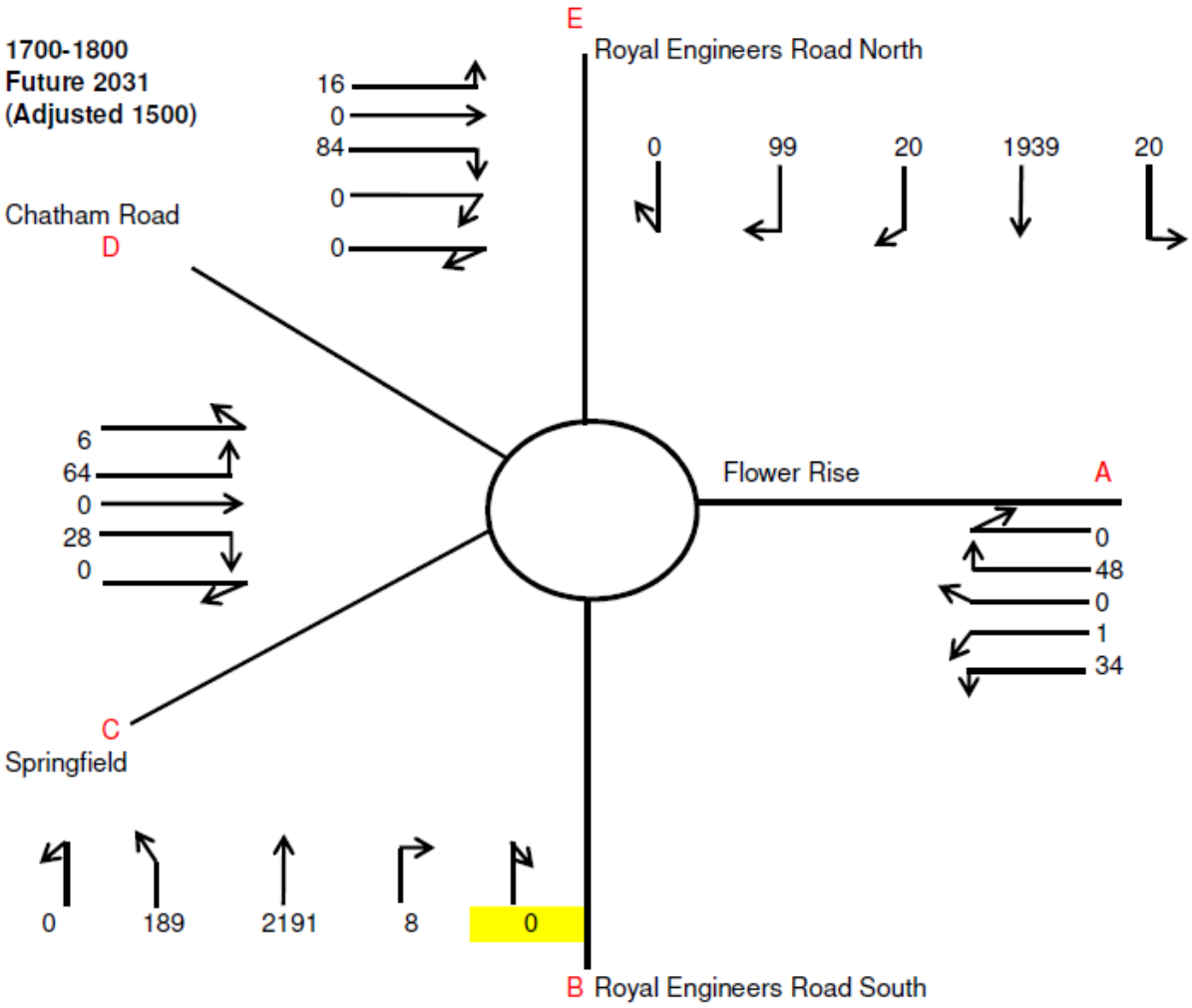


Figure 2.10: Future Base 2031 Flows Scenario B – PM Peak



2.6 2031 'with development' Flows

The development flows illustrated in **Section 2.2** were added to the 2031 Future Base flows to create two 'with development' flow scenarios. These are shown in **Figure 2.11** to **Figure 2.14**. The growthed existing flows into and out of Flower Rise were taken off and replace by the development flows.

Figure 2.11: Future Base 2031 'with development' Flows Scenario A - AM Peak

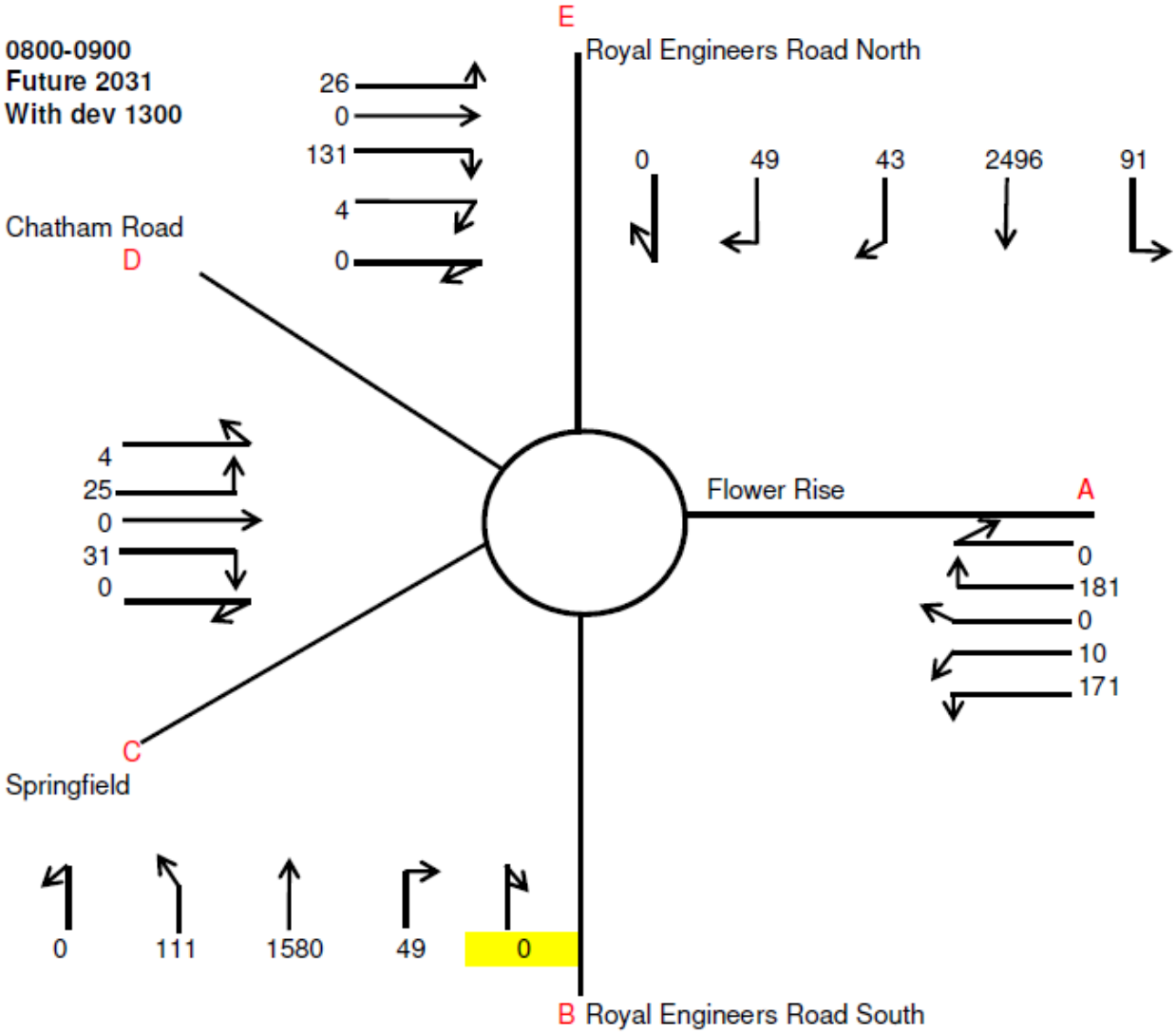


Figure 2.12: Future Base 2031 'with development' Flows Scenario A - PM Peak

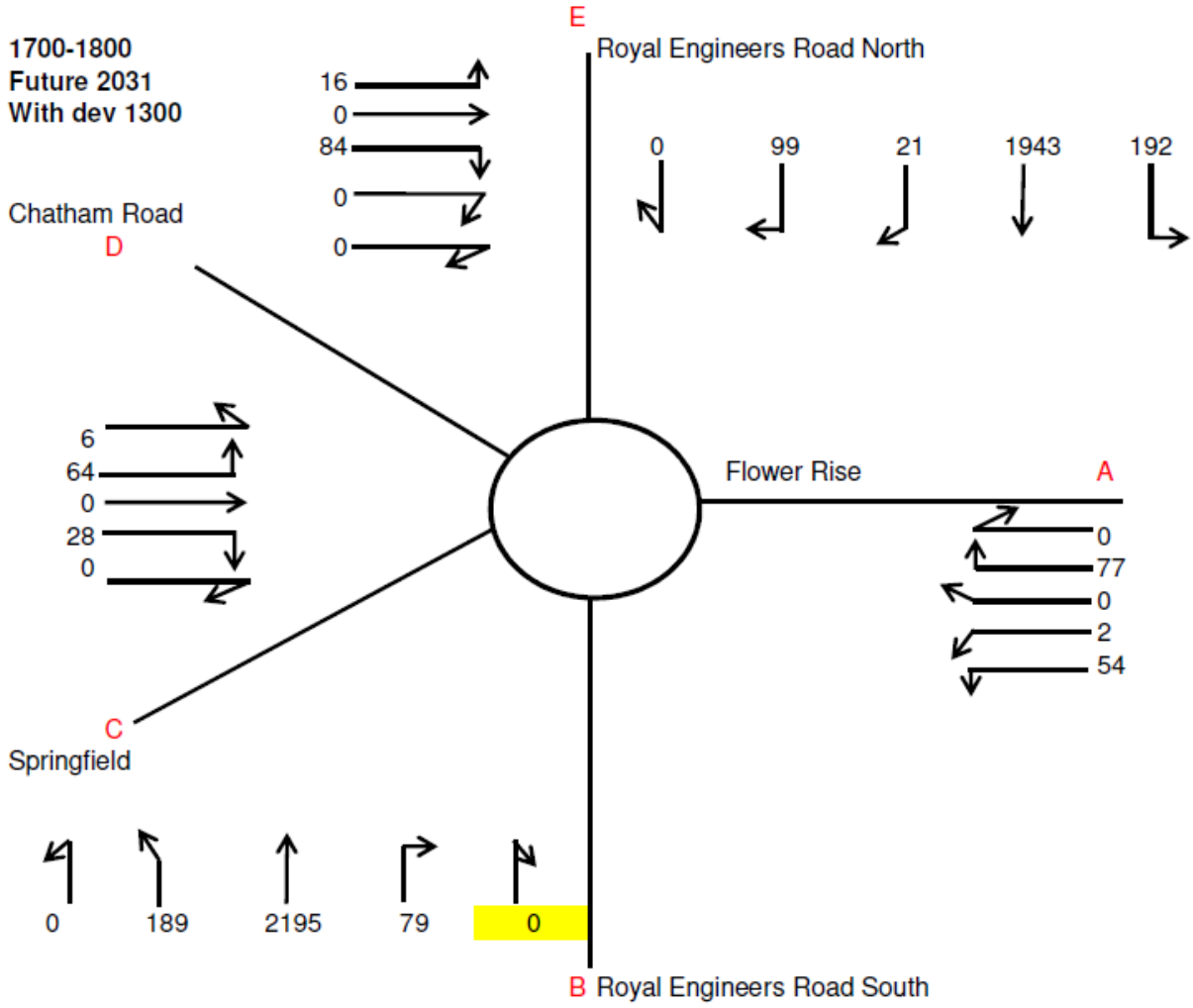


Figure 2.13: Future Base 2031 'with development' Flows Scenario B - AM Peak

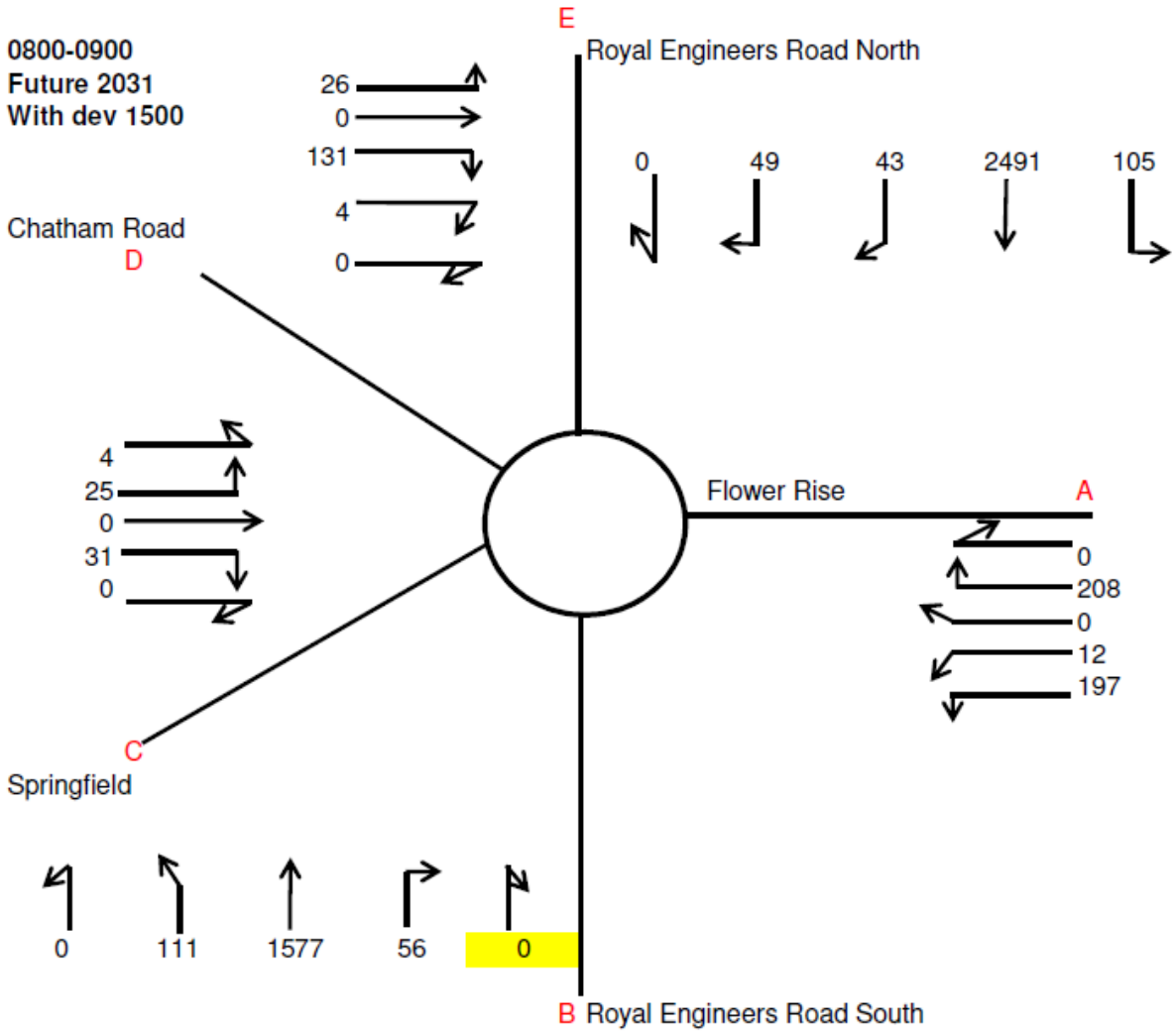
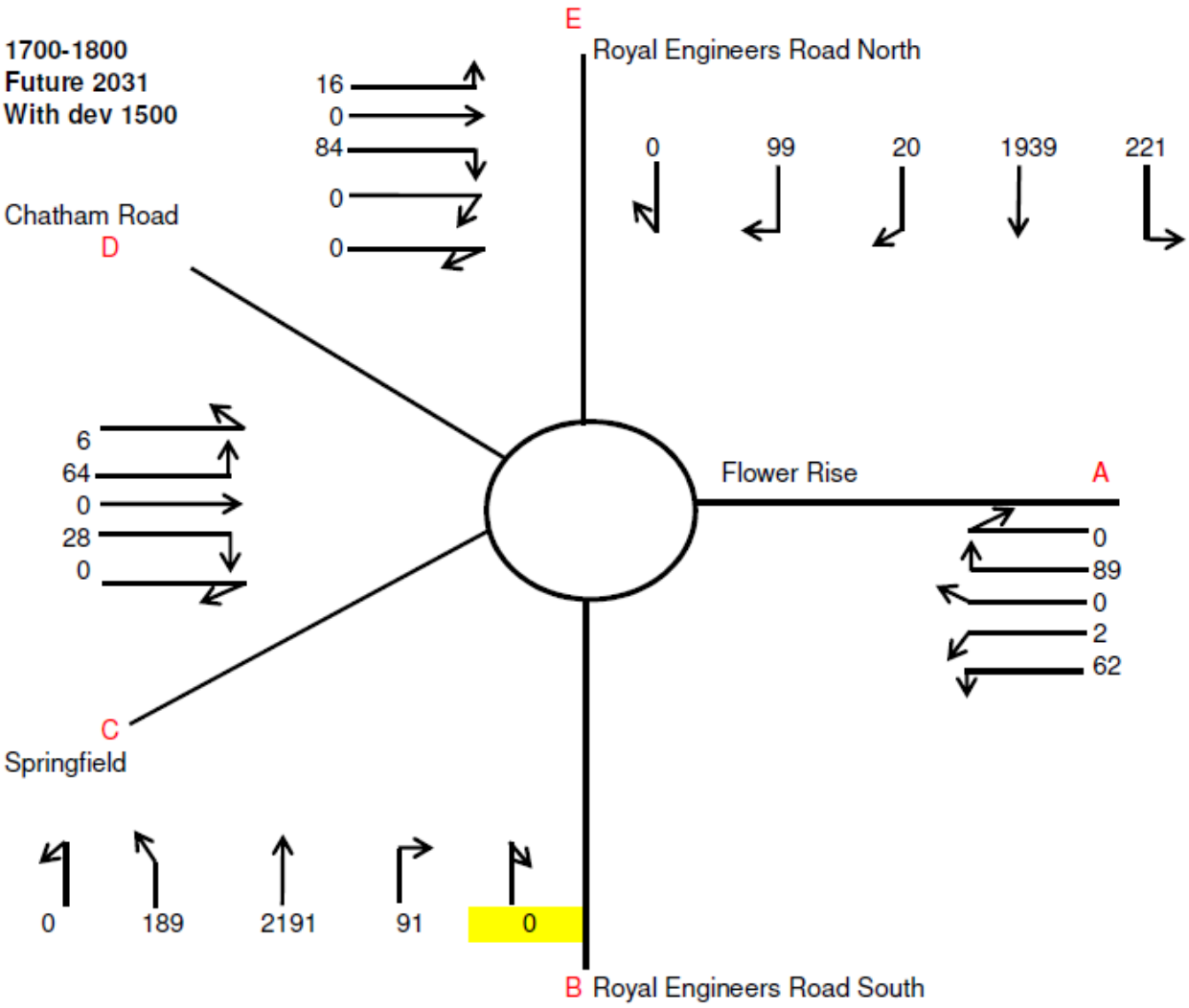


Figure 2.14: Future Base 2031 'with development' Flows Scenario B - PM Peak



3 Review of Existing Junction Layout

3.1 Arcady Modelling

The existing roundabout junction layout was modelled using the Junctions 9 ARCADY software application, designed for predicting capacities, queue lengths and delays at non-signalised roundabouts.

The results can be found below in **Table 3.1** to **Table 3.5**.

Table 3.1: Base 2013

	AM			PM		
Movement	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
A229 South	3	6	0.64	10	16	0.88
Springfield	0	8	0.11	1	32	0.40
Chatham Road	0	7	0.20	0	12	0.21
A229 North	23	32	0.96	4	8	0.74
Flower Rise	0	19	0.14	0	9	0.14

The assessment results for Base 2013 show the junction is already operating over desirable capacity in both the AM and PM peak hours, with RFC values exceeding 0.85. During the AM peak hour, the A229 North arm is operating over desirable capacity with an RFC value of 0.96, a queue of 23 PCUs and delay of 32 seconds. During the PM peak hour, the A229 South arm is operating over desirable capacity with an RFC value of 0.88, queue of 10 PCUs and delay of 16 seconds. Despite this slight exceedance of desirable capacity, it is considered that queues and delays are limited.

Table 3.2: Future Base 2031 – Scenario A

	AM			PM		
Movement	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
A229 South	5	8	0.77	107	125	1.08
Springfield	0	13	0.17	10	352	1.01
Chatham Road	1	10	0.29	1	19	0.32
A229 North	205	268	1.16	12	17	0.90
Flower Rise	0	30	0.20	1	17	0.26

The assessment results for the Future Base 2031 Scenario A show the growth in background traffic would cause the junction to exceed theoretical capacity in both the AM and PM peak, with RFC values exceeding 1.00. During the AM peak hour, A229 North would be the only arm operating over theoretical capacity, experiencing excessive queuing and significant congestion, presenting an RFC value of 1.16, queue of 205 PCUs and delay of 268 seconds. During the PM peak hour, A229 South and Springfield both would operate over theoretical capacity (also experiencing excessive queuing and significant congestion), with A229 North operating over desirable capacity. The A229 South would have an RFC value of 1.08, queue of 107 PCUs and delay of 125 seconds, while Springfield would have an RFC value of 1.01, queue of 352 PCUs and delay of 10 seconds and A229 North would have an RFC value of 0.90, queue of 12 PCUs and delay of 17 seconds.

Table 3.3: Future Base 2031 'with development' – Scenario A

	AM			PM		
Movement	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
A229 South	6	10	0.80	154	183	1.11
Springfield	0	17	0.20	13	447	1.09
Chatham Road	1	12	0.33	1	21	0.33
A229 North	253	353	1.19	38	49	0.99
Flower Rise	87	973	1.54	1	20	0.39

The assessment results for the Future Base 2031 'with development' Scenario A show the growth in development traffic would cause the junction to further exceed theoretical capacity in both the AM and PM peak, with RFC values exceeding 1.00. During the AM peak hour, A229 North and Flower Rise both operate over theoretical capacity, experiencing excessive queuing and significant congestion. The A229 North would have an RFC value of 1.19, queue of 253 PCUs and delay of 353 seconds, while Flower Rise would have an RFC value of 1.54, queue of 87 PCUs and delay of 973 seconds. During the PM peak hour, A229 South, Springfield and A229 North would all operate over theoretical capacity, also experiencing excessive queuing and significant congestion. The A229 South would have an RFC value of 1.11, queue of 154 PCUs and delay of 183 seconds, while Springfield would have an RFC value of 1.09, queue of 13 PCUs and delay of 447 seconds and A229 North would have an RFC value of 0.99, queue of 38 PCUs and delay of 49 seconds.

Table 3.4: Future Base 2031 – Scenario B

	AM			PM		
Movement	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
A229 South	5	8	0.77	102	120	1.08
Springfield	0	13	0.16	11	355	1.04
Chatham Road	1	10	0.30	1	20	0.32
A229 North	206	265	1.15	11	17	0.90
Flower Rise	0	29	0.20	1	16	0.26

The assessment results for the Future Base 2031 Scenario B show the growth in background traffic would cause the junction to exceed theoretical capacity in both the AM and PM peak, with RFC values exceeding 1.00. During the AM peak hour, A229 North would be the only arm operating over theoretical capacity, experiencing excessive queuing and significant congestion, presenting an RFC value of 1.15, queue of 206 PCUs and delay of 265 seconds. During the PM peak hour, A229 South and Springfield both would operate over theoretical capacity (also experiencing excessive queuing and significant congestion), with A229 North operating over desirable capacity. The A229 South would have an RFC value of 1.08, queue of 102 PCUs and delay of 120 seconds, while Springfield would have an RFC value of 1.04, queue of 355 PCUs and delay of 11 seconds and A229 North would have an RFC value of 0.90, queue of 11 PCUs and delay of 17 seconds.

It should be noted that results for both Future Base 2031 scenarios are very similar between Scenario A and Scenario B, showing negligible difference in the results produced and overall junction performance.

Table 3.5: Future Base 2031 'with development' – Scenario B

	AM			PM		
Movement	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
A229 South	5	10	0.79	156	192	1.19
Springfield	0	17	0.20	13	451	1.12
Chatham Road	1	12	0.33	1	21	0.33
A229 North	261	359	1.20	47	58	1.00
Flower Rise	138	1248	1.72	1	21	0.42

The results for the Future Base 2031 'with development' Scenario B show the growth in development traffic would cause the junction to further exceed theoretical capacity in both the AM and PM peak, with RFC values exceeding 1.00. During the AM peak hour, A229 North and Flower Rise both would operate over theoretical capacity, experiencing excessive queuing and significant congestion. The A229 North would have an RFC value of 1.20, queue of 261 PCUs and delay of 359 seconds, while Flower Rise would have an RFC value of 1.72, queue of 138 PCUs and delay of 1248 second. During the PM peak hour, A229 South, Springfield and A229 North would all operate over theoretical capacity, experiencing excessive queuing and significant congestion. The A229 South would have an RFC value of 1.19, queue of 156 PCUs and delay of 192 seconds, while Springfield would have an RFC value of 1.12, queue of 13 PCUs and delay of 451 seconds and A229 North would have an RFC value of 1.00, queue of 47 PCUs and delay of 58 seconds.

It should be noted that results for both Future Base 2031 'with development' scenarios are very similar between Scenario A and Scenario B, showing negligible difference in the results produced and overall junction performance.

3.2 Summary

Despite being slightly over desirable capacity with 2013 flows, the junction presently operates satisfactorily. The addition of significant growth as per TEMPro is predicted to take the junction significantly over capacity. By adding development flows, the RFC values only moderately increase, however given the oversaturated conditions, queuing and delays significantly increase in the 'with development' scenarios when compared to future base, resulting in all future scenarios being significantly over capacity showing excessive queueing and high delays.

4 Junction Layout Improvements

4.1 Layouts considered

Two improvement layouts were considered to mitigate the impact of development traffic:

- Additional lanes on approach arms; and
- Part-signalisation of the roundabout.

These improvements are presented in the sections below.

4.2 Additional Lanes on Approach Arms

A layout was sketched up containing three lanes on both the A229 northern and southern approach arms and two lanes on Flower Rise approaching the roundabout. This sketch was then tested in ARCADY. Initial results showed a further deterioration of junction performance compared to that presented in **Section 3** of this report. This solution was therefore not further progressed.

4.3 Part-signalisation of the Roundabout

Following the approach described in Section 4.2 above not resulting in satisfactory mitigation, part-signalisation of the roundabout was considered.

4.3.1 Design Approach – General Arrangement

The proposed layout shown in drawing 344395-MMD-C-SK-IP01 which is included in **Appendix A** is for concept and illustration purposes only to enable the traffic capacity assessment of the proposed modification to the roundabout.

The proposal involves shifting the central island to the west, widening of the circulatory carriageway width to accommodate 3 lanes, re-alignment of the A229 Northbound left turn slip, widening of carriageway lanes and signalising two arms of the roundabout, namely the A229 northern and A229 southern approach to the roundabout.

Where it has been possible and/or practical to do so, the guidance in DMRB has been followed. In particular, the following parts of DMRB have been referred to during the concept design:

- TD 50/04: The geometric layout of signal-controlled junctions and signalised roundabouts
- TD 42/95: Geometric design of major/minor priority junctions
- TD 16/07: Geometric Design of Roundabouts.

The proposed road markings are in accordance with Chapter 5 of the Traffic Sign Manual. The Layout is indicative only and subject to safety audit and detailed design.

4.3.2 Site Considerations and Limitations

Where possible, and subject to the proposed modifications required for the traffic model, the concept layout retains the existing features of the roundabout with modification where necessary within the highway boundary.

The key elements limiting the design are the existing footbridge structures on the southern half of the roundabout and third party land to the east of the roundabout.

4.3.3 Land Take and Alignment

The proposed layout is within the existing highway boundary and no third party land acquisition is envisaged. The proposal will retain existing gradients as necessary. A change in levels for carriageway widening works is expected to be minimal but subject to a 3D level design.

4.3.4 Lane Width

The concept layout is based on the range of lane widths recommended in paragraph 2.22 of DMRB TD50/04 (3m – 3.65m). The circulatory carriageway lanes are wider, up to 4.5m, to support the circulatory movements of vehicles with larger turning circles.

4.3.5 Junction Intervisibility

The intervisibility zone requirements are needed for the stop lines for the two signalised arms of the roundabout. As the stop lines are in close proximity there is excellent inter visibility of the signalised arms. The proposed modifications to the roundabout should not reduce the existing visibility on all approaches.

4.3.6 NMU Provision

Pedestrian crossings have been left as existing and improved where necessary using a minimum clear footway width of 2m.

The existing controlled signalised pedestrian crossing on the northern arm has been incorporated into the signalisation of this arm. The crossing of the northbound carriageway has been moved slightly to the south compared to existing. The exact location of this crossing should be further considered during detailed design based on pedestrian desire lines, linking in with existing footway network, avoiding pedestrians having to walk on the “central reserve” for a significant distance and capacity considerations, particularly the impact of the crossing on the exit arm and potential queuing back onto the roundabout.

4.3.7 Design Optimisation

The design should be further optimised during preliminary and detailed design, and the following should be carried out:

1. Design Checks
2. Vehicle swept paths
3. Minimising the extent of new carriageway considering project costs including traffic management and construction disruption

5 Review of Improvement Junction Layout

5.1 LinSig Modelling

The improved signalised roundabout junction layout was modelled using the LinSig software application, designed for the assessment and design of signalised junctions. LinSig is also able to model give way links. The signalised pedestrian crossing on the A229 northern arm has been included in the modelling.

The results can be found below in **Table 5.1** to **Table 5.4**.

Table 5.1: Future Base 2031 – Scenario A

	AM		PM	
Movement	DoS (%)	Mean Max Queue (PCU)	DoS (%)	Mean Max Queue (PCU)
A229 South	60.3	7	83.0	15
Circulatory Approaching A229 South	36.1	2	45.8	2
Springfield	6.7	0	12.9	0
Chatham Road	33.2	1	31.6	1
A229 North	73.9	11	58.7	8
Circulatory Approaching A229 North	22.4	1	14.4	1
Flower Rise	6.7	0	11.4	0
A229 northbound pedestrian crossing approach	62.0	2	86.3	6
Practical Reserve Capacity (PRC) ~ over all lanes	21.7		4.3	

The assessment results for the Future Base 2031 Scenario A show the junction to operate within desirable capacity in both the AM and PM peak hours, with all DoS values below 90%. During the AM peak hour, A229 North would have the highest DoS of 73.9% and queuing of 11 PCUs. During the PM peak hour, the approach to the signalised pedestrian crossing on the A229 northbound (north of the roundabout) would have the highest DoS of 86.3% and a queue of 6 PCUs, with the A229 South having the highest DoS of any approach arm of 83.0% and queuing of 15 PCUs.

Table 5.2: Future Base 2031 'with development' – Scenario A

	AM		PM	
Movement	DoS (%)	Mean Max Queue (PCU)	DoS (%)	Mean Max Queue (PCU)
A229 South	62.3	8	86.4	17
Circulatory Approaching A229 South	51.6	3	46.9	2
Springfield	7.6	0	13.1	0
Chatham Road	37.7	1	34.3	2
A229 North	75.6	12	64.3	9
Circulatory Approaching A229 North	26.6	2	23.9	2
Flower Rise	58.2	3	18.7	1
A229 northbound pedestrian crossing approach	67.3	5	88.3	7
Practical Reserve Capacity (PRC) ~ over all lanes	19.0		1.9	

The assessment results for the Future Base 2031 'with development' Scenario A show the junction to continue operating within desirable capacity in both the AM and PM peak hours, with all DoS values remaining below 90% and insignificant increases in queuing compared to Future Base. During the AM peak hour, A229 North would have the highest DoS of 75.6% and queuing of 12 PCUs. During the PM peak hour, the approach to the signalised pedestrian crossing on the A229 northbound (north of the roundabout) would have the highest DoS of 88.3% and a queue of 7 PCUs, with the A229 South having the highest DoS of any approach arm of 86.4% and queuing of 17 PCUs.

Table 5.3: Future Base 2031 – Scenario B

	AM		PM	
Movement	DoS (%)	Mean Max Queue (PCU)	DoS (%)	Mean Max Queue (PCU)
A229 South	60.1	7	82.9	15
Circulatory Approaching A229 South	36.1	2	45.8	2
Springfield	6.7	0	12.8	0
Chatham Road	33.2	1	31.5	1
A229 North	73.8	11	58.5	7
Circulatory Approaching A229 North	22.6	1	14.4	1
Flower Rise	6.7	0	11.3	0
A229 northbound pedestrian crossing approach	69.1	2	86.2	6
Practical Reserve Capacity (PRC) ~ over all lanes	22.0		4.5	

The assessment results for the Future Base 2031 Scenario B show the junction to operate within desirable capacity in both the AM and PM peak hours, with all DoS values below 90%. During the AM peak hour, A229 North would have the highest DoS of 73.8% and queuing of 11 PCUs. During the PM peak hour, the approach to the signalised pedestrian crossing on the A229 northbound (north of the roundabout) would have the highest DoS of 86.2% and a queue of 6 PCUs, with the A229 South having the highest DoS of any approach arm of 82.9% and queuing of 15 PCUs.

It should be noted that results for both Future Base 2031 scenarios are very similar between Scenario A and Scenario B, showing negligible difference in overall junction performance. Future Base for Scenario B performs very slightly better. This is due to very slightly lower growth having been added (growth adjusted for 1500 units) rather than for Scenario A (growth adjusted for 1300 units).

Table 5.4: Future Base 2031'with development' – Scenario B

	AM		PM	
Movement	DoS (%)	Mean Max Queue (PCU)	DoS (%)	Mean Max Queue (PCU)
A229 South	62.4	8	86.9	18
Circulatory Approaching A229 South	55.9	3	47.3	3
Springfield	7.8	0	13.1	0
Chatham Road	38.6	1	35.0	2
A229 North	76.0	12	65.1	9
Circulatory Approaching A229 North	27.5	2	25.7	2
Flower Rise	67.0	4	21.5	1
A229 northbound pedestrian crossing approach	68.4	5	88.6	7
Practical Reserve Capacity (PRC) ~ over all lanes	18.5		1.6	

The assessment results for the Future Base 2031 'with development' Scenario B show the junction to continue operating within desirable capacity in both the AM and PM peak hours, with all DoS values remaining below 90% and insignificant increases in queuing compared to Future Base. During the AM peak hour, A229 North would have the highest DoS of 76.0% and queuing of 12 PCUs. During the PM peak hour, the approach to the signalised pedestrian crossing on the A229 northbound (north of the roundabout) would have the highest DoS of 88.6% and a queue of 7 PCUs, with the A229 South having the highest DoS of any approach arm of 86.9% and queuing of 18 PCUs.

It should be noted that results for both Future Base 2031 'with development' scenarios are very similar between Scenario A and Scenario B, showing negligible difference in the results produced and overall junction performance. The 'with development' scenarios are very similar to the Future Base scenarios with minimal deterioration in DoS and queuing.

5.2 Summary

The improved signalised roundabout junction layout would permit the junction to perform within its desirable capacity in 2031 with development traffic and background traffic growth. The difference in traffic flows between Scenario A and Scenario B has a minimal impact on the junction performance, generating very similar results for the overall junction performance.

Compared to the existing layout, queuing would be reduced to below 2013 levels. The part-signalisation layout would mitigate not only the impacts of development traffic but also that of background growth.

6 Conclusions

Mott MacDonald was commissioned by Maidstone Borough Council (MBC) to consider the capacity at the roundabout junction of the A229 Royal Engineers Road which serves the existing Barracks. The brief also included the consideration of a link to the north to Sandling Lane. Given the absence of any flow data for Sandling Lane and its approach to the A229 (Junction 7 of the M20), it was considered difficult to estimate whether a junction in this location could accommodate some or all of the development traffic and what the impact on the A229 would be. The emphasis of the work was therefore switched to finding a solution at the A229 Royal Engineers Road roundabout that mitigates the development's impact.

The existing roundabout was tested with ARCADY. Despite being slightly over desirable capacity with existing 2013 flows, the junction presently operates satisfactorily. The addition of significant growth as per TEMPro is predicted to take the junction significantly over capacity. By adding development flows, the RFC values only moderately increase, however given the oversaturated conditions, queuing and delays significantly increase in the 'with development' scenarios when compared to future base, resulting in all future scenarios being significantly over capacity showing excessive queueing and high delays.

Consideration was given to widening the approaches to the roundabout, with the assessment results deteriorating rather than improving.

Following this, a part-signalisation was considered. The concept layout is described in **Section 4** of this report with the drawing included in **Appendix A**. The assessment results are shown in **Section 5**.

The part-signalisation would permit the roundabout to perform within its desirable capacity in 2031 with development traffic and background traffic growth. The difference in traffic flows between Scenario A and Scenario B, and 'with' / 'without' development flows, has a minimal impact on the junction performance, generating very similar results for the overall junction performance.

Compared to the existing layout, queuing would be reduced to below 2013 levels. The part-signalisation layout would therefore mitigate not only the impacts of development traffic but also that of background growth.

Appendices

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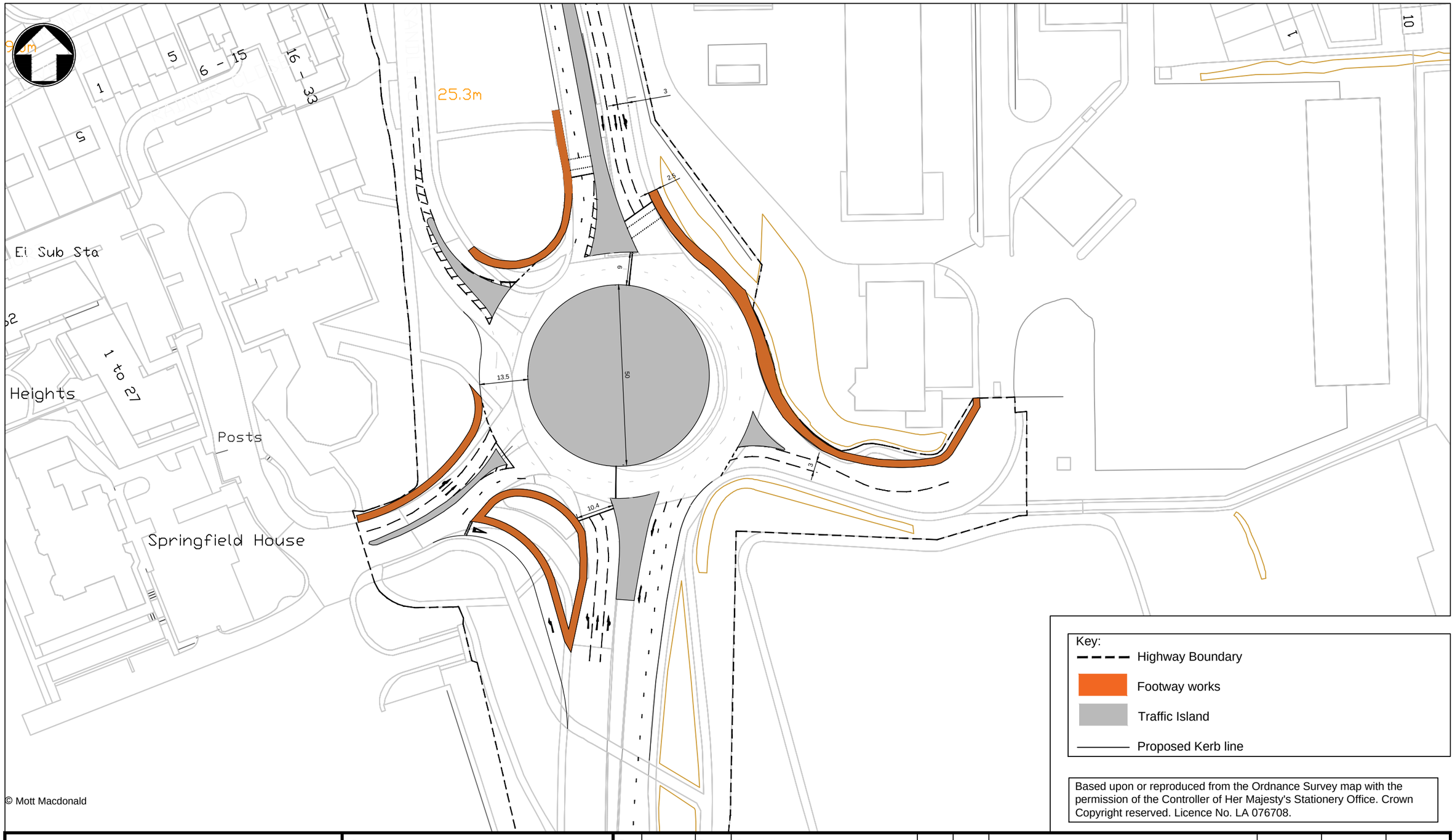
Appendix A. Improved Junction Layout



Key:

- Highway Boundary
- Footway works
- Traffic Island
- Proposed Kerb line

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Rev	Date	Drawn	Description	Ch'k'd	App'd

Title

Invicta Park
Concept Sketch
Signalised Roundabout

Drawn	A Adepoju	
Checked	A Farrow	
Approved	A Farrow	

Scale at A3
1:1000

Drawing Number
344395-MMD-C-SK-IP01

Security	Status	Rev
STD	Pre	P1

\\mottmac\project\Croydon\MMH\BSD\344395 - Maidstone support\344395-Invicta\3.0 Technical\3.10 CAD\3.10.4 Working Drawings\344395-MMD-C-SK-00-XX-IP01 - Concept Sketch.dwg May 13, 2016 - 10:57AM ADE73987

Appendix B. Existing Layout - ARCADY Outputs

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.1.4646 []
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Filename: Invicta Park_exc.jetlane.j9
Path: P:\Southampton\ITW\Projects\344395 Maidstone BC Transport Planning\Invicta\ARCADY
Report generation date: 21/04/2016 12:38:25

»Base 2013, AM
»Base 2013, PM
»Future 2031 (adj 1300), AM
»Future 2031 (adj 1300), PM
»Future 2031 with dev (1300), AM
»Future 2031 with dev (1300), PM
»Future 2031 (adj 1500), AM
»Future 2031 (adj 1500), PM
»Future 2031 with dev (1500), AM
»Future 2031 with dev (1500), PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	[Lane Simulation] - Base 2013							
Arm A	0.2	18.61		C	0.2	8.87		A
Arm B	2.5	5.75		A	9.5	16.49		C
Arm C	0.2	8.32		A	0.9	32.14		D
Arm D	0.3	6.94		A	0.3	11.65		B
Arm E	23.1	32.14		D	4.3	7.81		A
	[Lane Simulation] - Future 2031 (adj 1300)							
Arm A	0.4	30.47		D	0.5	16.78		C
Arm B	4.6	8.24		A	106.8	124.71		F
Arm C	0.3	12.54		B	10.3	352.23		F
Arm D	0.5	10.01		B	0.7	19.48		C
Arm E	204.5	267.75		F	11.7	17.48		C
	[Lane Simulation] - Future 2031 with dev (1300)							
Arm A	86.5	973.14		F	0.8	19.54		C
Arm B	5.5	9.51		A	154.0	183.15		F
Arm C	0.3	16.71		C	12.7	446.88		F
Arm D	0.6	11.52		B	0.7	20.69		C
Arm E	252.8	352.56		F	38.3	49.49		E
	[Lane Simulation] - Future 2031 (adj 1500)							
Arm A	0.4	29.38		D	0.5	16.37		C
Arm B	4.6	8.30		A	101.8	119.84		F
Arm C	0.3	13.00		B	10.8	354.50		F
Arm D	0.5	9.84		A	0.7	19.51		C
Arm E	205.6	265.39		F	10.9	16.96		C
	[Lane Simulation] - Future 2031 with dev (1500)							
Arm A	137.5	1248.39		F	1.1	21.35		C
Arm B	5.0	9.60		A	156.4	192.34		F
Arm C	0.4	16.51		C	12.8	450.60		F
Arm D	0.7	11.52		B	0.6	20.57		C
Arm E	261.3	359.23		F	46.5	57.59		F

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

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Arm and junction delays are averages for all movements, including movements with zero delay.

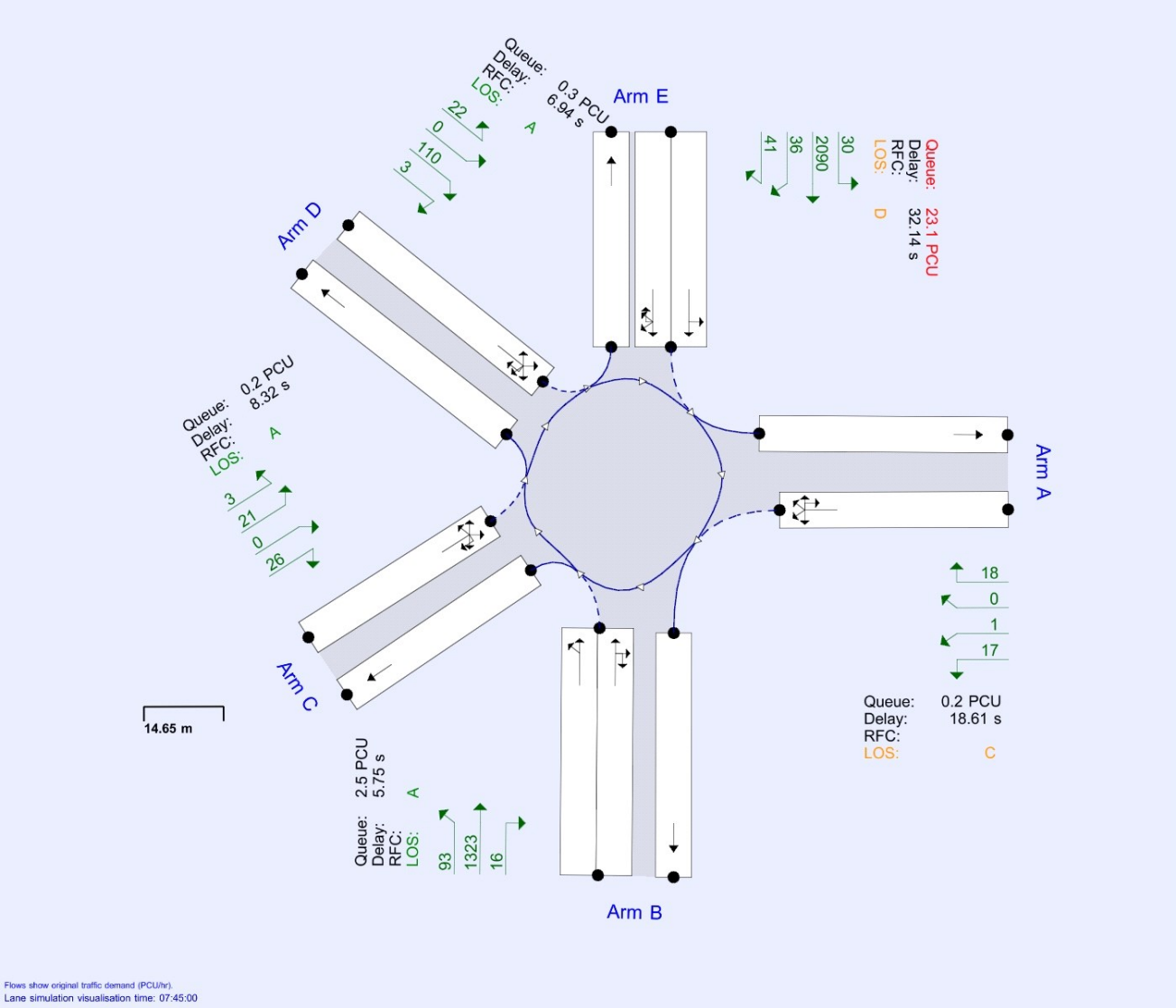
File summary

File Description

Title	(untitled)
Location	
Site number	
Date	18/04/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MOTTMAC\rap67683
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Lane Simulation options

Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Use crossings quick response	Last run random seed	Last run number of trials	Last run time taken (s)
1.00	100000	100000	-1	3	1	✓	297267234	320	57.61

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base 2013	AM	ONE HOUR	07:45	09:15	15	✓
D2	Base 2013	PM	ONE HOUR	16:45	18:15	15	✓
D3	Future 2031 (adj 1300)	AM	ONE HOUR	07:45	09:15	15	✓
D4	Future 2031 (adj 1300)	PM	ONE HOUR	16:45	18:15	15	✓
D5	Future 2031 with dev (1300)	AM	ONE HOUR	07:45	09:15	15	✓
D6	Future 2031 with dev (1300)	PM	ONE HOUR	16:45	18:15	15	✓
D7	Future 2031 (adj 1500)	AM	ONE HOUR	07:45	09:15	15	✓
D8	Future 2031 (adj 1500)	PM	ONE HOUR	16:45	18:15	15	✓
D9	Future 2031 with dev (1500)	AM	ONE HOUR	07:45	09:15	15	✓
D10	Future 2031 with dev (1500)	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

Base 2013, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	21.01	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
A	Flower Rise	
B	A229 S	
C	Springfield	
D	Chatham Road	
E	A229 N	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A	3.12	6.27	12.8	22.0	69.0	18.5	
B	6.82	9.65	14.8	12.0	69.0	22.5	
C	2.91	5.04	9.2	15.9	69.0	20.1	
D	2.85	6.71	14.5	12.0	69.0	23.7	
E	7.22	10.11	15.6	68.0	69.0	50.2	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.496	1545
B	0.649	2583
C	0.448	1278
D	0.472	1478
E	0.651	2639

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

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic Considering Secondary Lanes (%)
A	Evenly split	10.00
B	Evenly split	10.00
C	Evenly split	10.00
D	Evenly split	10.00
E	Evenly split	10.00

Lanes

Arm	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)
A	1 [Give-way line]	1	E,A,B,C,D		Infinity	0	99999
B	1 [Give-way line]	1	E,D		Infinity	0	99999
		2	E,A,B		Infinity	0	99999
C	1 [Give-way line]	1	E,A,B,C,D		Infinity	0	99999
D	1 [Give-way line]	1	E,A,B,C,D		Infinity	0	99999
E	1 [Give-way line]	1	A,B		Infinity	0	99999
		2	E,B,C,D		Infinity	0	99999

Entry Lane slope and intercept

Arm	Lane level	Lane	Final slope	Final intercept (PCU/hr)
A	1 [Give-way line]	1	0.496	1545
B	1 [Give-way line]	1	0.324	1291
		2	0.324	1291
C	1 [Give-way line]	1	0.448	1278
D	1 [Give-way line]	1	0.472	1478
E	1 [Give-way line]	1	0.325	1319
		2	0.325	1319

Lane Movements

Arm	Lane Level	Lane	Destination arm				
			E	A	B	C	D
E	1 [Give-way line]	1		✓	✓		
		2	✓		✓	✓	✓
A	1 [Give-way line]	1	✓	✓	✓	✓	✓
B	1 [Give-way line]	1	✓				✓
		2	✓	✓	✓		
C	1 [Give-way line]	1	✓	✓	✓	✓	✓
D	1 [Give-way line]	1	✓	✓	✓	✓	✓

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base 2013	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	36	100.000
B		ONE HOUR	✓	1432	100.000
C		ONE HOUR	✓	50	100.000
D		ONE HOUR	✓	135	100.000
E		ONE HOUR	✓	2197	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		A	B	C	D	E
From	A	0	17	1	0	18
	B	16	0	0	93	1323
	C	0	26	0	3	21
	D	0	110	3	0	22
	E	30	2090	36	41	0

Proportions

		To				
		A	B	C	D	E
From	A	0.00	0.47	0.03	0.00	0.50
	B	0.01	0.00	0.00	0.06	0.92
	C	0.00	0.52	0.00	0.06	0.42
	D	0.00	0.81	0.02	0.00	0.16
	E	0.01	0.95	0.02	0.02	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	D	10	10	10	10	10
	E	10	10	10	10	10

Average PCU Per Veh

		To				
		A	B	C	D	E
From	A	1.100	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100	1.100
	E	1.100	1.100	1.100	1.100	1.100

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A	27	27
	B	1078	1078
	C	38	38
	D	102	102
	E	1654	1654
08:00-08:15	A	32	32
	B	1287	1287
	C	45	45
	D	121	121
	E	1975	1975
08:15-08:30	A	40	40
	B	1577	1577
	C	55	55
	D	149	149
	E	2419	2419
08:30-08:45	A	40	40
	B	1577	1577
	C	55	55
	D	149	149
	E	2419	2419
08:45-09:00	A	32	32
	B	1287	1287
	C	45	45
	D	121	121
	E	1975	1975
09:00-09:15	A	27	27
	B	1078	1078
	C	38	38
	D	102	102
	E	1654	1654

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	18.61	0.2	C	33	50
B	5.75	2.5	A	1314	1972
C	8.32	0.2	A	46	69
D	6.94	0.3	A	125	187
E	32.14	23.1	D	2020	3030

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	27	7	1739	27	35	0.0	0.1	5.104	A
B	1080	270	71	1080	1695	0.0	1.3	4.118	A
C	37	9	1122	37	30	0.0	0.1	4.870	A
D	103	26	1056	103	103	0.0	0.1	4.220	A
E	1660	415	117	1657	1041	0.0	2.8	5.783	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	32	8	2070	32	44	0.1	0.1	8.165	A
B	1293	323	90	1293	2012	1.3	1.7	4.636	A
C	43	11	1348	43	35	0.1	0.1	6.109	A
D	124	31	1266	124	125	0.1	0.2	5.196	A
E	1977	494	142	1972	1248	2.8	5.0	8.390	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	40	10	2525	39	53	0.1	0.2	14.989	B
B	1575	394	107	1575	2457	1.7	2.5	5.677	A
C	53	13	1638	53	44	0.1	0.2	7.989	A
D	148	37	1538	150	153	0.2	0.3	6.540	A
E	2433	608	171	2407	1516	5.0	20.3	23.911	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	41	10	2540	41	51	0.2	0.2	18.614	C
B	1579	395	112	1582	2469	2.5	2.5	5.750	A
C	57	14	1647	56	47	0.2	0.2	8.322	A
D	149	37	1551	149	152	0.3	0.3	6.941	A
E	2427	607	171	2419	1529	20.3	23.1	32.137	D

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	33	8	2073	32	39	0.2	0.1	10.215	B
B	1288	322	88	1287	2018	2.5	1.9	4.726	A
C	47	12	1340	47	34	0.2	0.1	7.171	A
D	121	30	1264	122	123	0.3	0.2	5.528	A
E	1968	492	141	1972	1245	23.1	4.7	12.516	B

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	27	7	1732	27	37	0.1	0.1	6.515	A
B	1071	268	74	1072	1685	1.9	1.3	4.130	A
C	39	10	1116	39	31	0.1	0.1	5.455	A
D	103	26	1054	103	101	0.2	0.1	4.641	A
E	1654	413	117	1652	1039	4.7	2.8	5.825	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	27	682	0.040	27	0.0	0.1	5.104	A
	Exit	1	1		35			35	0.0	0.0	0.000	A
B	Entry	1	1	E,D	549	1268	0.433	549	0.0	0.7	4.186	A
			2	E,A,B	531	1268	0.418	531	0.0	0.6	4.047	A
	Exit	1	1		1695			1695	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	37	775	0.047	37	0.0	0.1	4.870	A
	Exit	1	1		30			30	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	103	980	0.105	103	0.0	0.1	4.220	A
	Exit	1	1		103			103	0.0	0.0	0.000	A
E	Entry	1	1	A,B	824	1281	0.643	822	0.0	1.4	5.762	A
			2	E,B,C,D	836	1281	0.652	835	0.0	1.4	5.804	A
	Exit	1	1		1041			1041	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	32	518	0.061	32	0.1	0.1	8.165	A
	Exit	1	1		44			44	0.0	0.0	0.000	A
B	Entry	1	1	E,D	655	1262	0.519	655	0.7	0.9	4.730	A
			2	E,A,B	638	1262	0.506	639	0.6	0.8	4.538	A
	Exit	1	1		2012			2012	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	43	674	0.064	43	0.1	0.1	6.109	A
	Exit	1	1		35			35	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	124	880	0.141	124	0.1	0.2	5.196	A
	Exit	1	1		125			125	0.0	0.0	0.000	A
E	Entry	1	1	A,B	984	1273	0.773	982	1.4	2.5	8.371	A
			2	E,B,C,D	993	1273	0.780	990	1.4	2.5	8.409	A
	Exit	1	1		1248			1248	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	40	292	0.136	39	0.1	0.2	14.989	B
	Exit	1	1		53			53	0.0	0.0	0.000	A
B	Entry	1	1	E,D	798	1256	0.635	798	0.9	1.3	5.767	A
			2	E,A,B	777	1256	0.618	777	0.8	1.2	5.586	A
	Exit	1	1		2457			2457	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	53	544	0.098	53	0.1	0.2	7.989	A
	Exit	1	1		44			44	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	148	752	0.197	150	0.2	0.3	6.540	A
	Exit	1	1		153			153	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1218	1264	0.964	1205	2.5	10.2	23.841	C
			2	E,B,C,D	1215	1264	0.962	1202	2.5	10.1	23.981	C
	Exit	1	1		1516			1516	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	41	285	0.143	41	0.2	0.2	18.614	C
	Exit	1	1		51			51	0.0	0.0	0.000	A
B	Entry	1	1	E,D	806	1255	0.643	808	1.3	1.3	5.827	A
			2	E,A,B	773	1255	0.616	774	1.2	1.2	5.670	A
	Exit	1	1		2469			2469	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	57	540	0.106	56	0.2	0.2	8.322	A
	Exit	1	1		47			47	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	149	746	0.199	149	0.3	0.3	6.941	A
	Exit	1	1		152			152	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1209	1264	0.957	1206	10.2	11.5	32.226	D
			2	E,B,C,D	1217	1264	0.963	1213	10.1	11.6	32.049	D
	Exit	1	1		1529			1529	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	33	516	0.063	32	0.2	0.1	10.215	B
	Exit	1	1		39			39	0.0	0.0	0.000	A
B	Entry	1	1	E,D	653	1263	0.517	652	1.3	1.0	4.809	A
			2	E,A,B	635	1263	0.503	635	1.2	0.9	4.639	A
	Exit	1	1		2018			2018	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	47	677	0.070	47	0.2	0.1	7.171	A
	Exit	1	1		34			34	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	121	881	0.137	122	0.3	0.2	5.528	A
	Exit	1	1		123			123	0.0	0.0	0.000	A
E	Entry	1	1	A,B	976	1274	0.766	978	11.5	2.3	12.500	B
			2	E,B,C,D	992	1274	0.779	994	11.6	2.4	12.532	B
	Exit	1	1		1245			1245	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	27	686	0.040	27	0.1	0.1	6.515	A
	Exit	1	1		37			37	0.0	0.0	0.000	A
B	Entry	1	1	E,D	549	1267	0.434	550	1.0	0.7	4.186	A
			2	E,A,B	522	1267	0.412	523	0.9	0.6	4.071	A
	Exit	1	1		1685			1685	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	39	778	0.050	39	0.1	0.1	5.455	A
	Exit	1	1		31			31	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	103	981	0.105	103	0.2	0.1	4.641	A
	Exit	1	1		101			101	0.0	0.0	0.000	A
E	Entry	1	1	A,B	819	1281	0.639	819	2.3	1.3	5.830	A
			2	E,B,C,D	835	1281	0.652	833	2.4	1.4	5.819	A
	Exit	1	1		1039			1039	0.0	0.0	0.000	A

Base 2013, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	12.78	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	Base 2013	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	69	100.000
B		ONE HOUR	✓	1984	100.000
C		ONE HOUR	✓	81	100.000
D		ONE HOUR	✓	83	100.000
E		ONE HOUR	✓	1727	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		A	B	C	D	E
From	A	0	28	1	0	40
	B	7	0	0	157	1820
	C	0	23	0	5	53
	D	0	70	0	0	13
	E	17	1611	17	82	0

Proportions

		To				
		A	B	C	D	E
From	A	0.00	0.41	0.01	0.00	0.58
	B	0.00	0.00	0.00	0.08	0.92
	C	0.00	0.28	0.00	0.06	0.65
	D	0.00	0.84	0.00	0.00	0.16
	E	0.01	0.93	0.01	0.05	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	D	10	10	10	10	10
	E	10	10	10	10	10

Average PCU Per Veh

		To				
		A	B	C	D	E
From	A	1.100	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100	1.100
	E	1.100	1.100	1.100	1.100	1.100

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	A	52	52
	B	1494	1494
	C	61	61
	D	62	62
	E	1300	1300
17:00-17:15	A	62	62
	B	1784	1784
	C	73	73
	D	75	75
	E	1553	1553
17:15-17:30	A	76	76
	B	2184	2184
	C	89	89
	D	91	91
	E	1901	1901
17:30-17:45	A	76	76
	B	2184	2184
	C	89	89
	D	91	91
	E	1901	1901
17:45-18:00	A	62	62
	B	1784	1784
	C	73	73
	D	75	75
	E	1553	1553
18:00-18:15	A	52	52
	B	1494	1494
	C	61	61
	D	62	62
	E	1300	1300

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	8.87	0.2	A	63	94
B	16.49	9.5	C	1821	2732
C	32.14	0.9	D	76	113
D	11.65	0.3	B	76	114
E	7.81	4.3	A	1589	2383

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	52	13	1364	52	18	0.0	0.1	4.269	A
B	1496	374	106	1495	1310	0.0	2.4	5.372	A
C	62	16	1587	60	14	0.0	0.2	7.037	A
D	61	15	1462	61	185	0.0	0.1	4.921	A
E	1308	327	73	1309	1450	0.0	1.6	4.509	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	65	16	1626	65	21	0.1	0.1	6.059	A
B	1775	444	129	1773	1562	2.4	3.9	7.201	A
C	73	18	1886	74	17	0.2	0.2	11.204	B
D	74	18	1736	74	224	0.1	0.2	6.892	A
E	1553	388	88	1560	1722	1.6	2.3	5.294	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	73	18	1984	74	26	0.1	0.1	7.883	A
B	2188	547	152	2189	1906	3.9	9.5	14.021	B
C	89	22	2322	87	18	0.2	0.9	26.912	D
D	91	23	2137	90	272	0.2	0.3	10.133	B
E	1906	476	108	1902	2119	2.3	4.3	7.446	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	75	19	1998	76	25	0.1	0.2	8.872	A
B	2182	546	155	2195	1919	9.5	9.3	16.487	C
C	94	24	2329	93	20	0.9	0.9	32.145	D
D	95	24	2153	95	270	0.3	0.3	11.653	B
E	1907	477	113	1910	2134	4.3	4.1	7.812	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	61	15	1608	61	21	0.2	0.1	6.410	A
B	1780	445	124	1780	1545	9.3	3.7	8.019	A
C	73	18	1887	74	17	0.9	0.2	14.825	B
D	73	18	1748	74	214	0.3	0.1	8.102	A
E	1540	385	89	1540	1733	4.1	2.3	5.395	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	51	13	1376	52	17	0.1	0.1	5.076	A
B	1507	377	109	1509	1319	3.7	2.3	5.472	A
C	62	15	1603	61	15	0.2	0.1	8.576	A
D	63	16	1485	62	180	0.1	0.1	5.829	A
E	1318	330	77	1317	1471	2.3	1.7	4.491	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	52	869	0.060	52	0.0	0.1	4.269	A
	Exit	1	1		18			18	0.0	0.0	0.000	A
B	Entry	1	1	E,D	770	1257	0.612	769	0.0	1.2	5.464	A
			2	E,A,B	726	1257	0.578	726	0.0	1.2	5.276	A
	Exit	1	1		1310			1310	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	62	567	0.109	60	0.0	0.2	7.037	A
	Exit	1	1		14			14	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	61	788	0.077	61	0.0	0.1	4.921	A
	Exit	1	1		185			185	0.0	0.0	0.000	A
E	Entry	1	1	A,B	642	1296	0.495	642	0.0	0.8	4.439	A
			2	E,B,C,D	666	1296	0.514	667	0.0	0.8	4.577	A
	Exit	1	1		1450			1450	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	65	738	0.087	65	0.1	0.1	6.059	A
	Exit	1	1		21			21	0.0	0.0	0.000	A
B	Entry	1	1	E,D	910	1249	0.728	908	1.2	2.0	7.319	A
			2	E,A,B	866	1249	0.693	865	1.2	1.9	7.077	A
	Exit	1	1		1562			1562	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	73	433	0.169	74	0.2	0.2	11.204	B
	Exit	1	1		17			17	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	74	658	0.112	74	0.1	0.2	6.892	A
	Exit	1	1		224			224	0.0	0.0	0.000	A
E	Entry	1	1	A,B	764	1291	0.592	767	0.8	1.2	5.233	A
			2	E,B,C,D	789	1291	0.612	793	0.8	1.2	5.353	A
	Exit	1	1		1722			1722	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	73	561	0.130	74	0.1	0.1	7.883	A
	Exit	1	1		26			26	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1094	1242	0.881	1095	2.0	4.8	14.232	B
			2	E,A,B	1094	1242	0.880	1094	1.9	4.7	13.807	B
	Exit	1	1		1906			1906	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	89	237	0.374	87	0.2	0.9	26.912	D
	Exit	1	1		18			18	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	91	469	0.193	90	0.2	0.3	10.133	B
	Exit	1	1		272			272	0.0	0.0	0.000	A
E	Entry	1	1	A,B	955	1284	0.744	952	1.2	2.1	7.275	A
			2	E,B,C,D	951	1284	0.740	950	1.2	2.1	7.617	A
	Exit	1	1		2119			2119	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	75	554	0.136	76	0.1	0.2	8.872	A
	Exit	1	1		25			25	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1100	1241	0.886	1105	4.8	4.8	16.606	C
			2	E,A,B	1082	1241	0.872	1090	4.7	4.4	16.365	C
	Exit	1	1		1919			1919	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	94	234	0.404	93	0.9	0.9	32.145	D
	Exit	1	1		20			20	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	95	462	0.205	95	0.3	0.3	11.653	B
	Exit	1	1		270			270	0.0	0.0	0.000	A
E	Entry	1	1	A,B	953	1282	0.743	953	2.1	2.0	7.680	A
			2	E,B,C,D	954	1282	0.744	957	2.1	2.1	7.943	A
	Exit	1	1		2134			2134	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	61	747	0.082	61	0.2	0.1	6.410	A
	Exit	1	1		21			21	0.0	0.0	0.000	A
B	Entry	1	1	E,D	916	1251	0.732	918	4.8	1.9	8.089	A
			2	E,A,B	863	1251	0.690	862	4.4	1.8	7.945	A
	Exit	1	1		1545			1545	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	73	432	0.170	74	0.9	0.2	14.825	B
	Exit	1	1		17			17	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	73	653	0.112	74	0.3	0.1	8.102	A
	Exit	1	1		214			214	0.0	0.0	0.000	A
E	Entry	1	1	A,B	751	1290	0.582	752	2.0	1.1	5.364	A
			2	E,B,C,D	789	1290	0.611	789	2.1	1.2	5.424	A
	Exit	1	1		1733			1733	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	51	862	0.060	52	0.1	0.1	5.076	A
	Exit	1	1		17			17	0.0	0.0	0.000	A
B	Entry	1	1	E,D	771	1256	0.614	771	1.9	1.2	5.599	A
			2	E,A,B	737	1256	0.586	738	1.8	1.1	5.338	A
	Exit	1	1		1319			1319	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	62	560	0.110	61	0.2	0.1	8.576	A
	Exit	1	1		15			15	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	63	777	0.081	62	0.1	0.1	5.829	A
	Exit	1	1		180			180	0.0	0.0	0.000	A
E	Entry	1	1	A,B	653	1294	0.504	652	1.1	0.8	4.410	A
			2	E,B,C,D	665	1294	0.514	665	1.2	0.9	4.569	A
	Exit	1	1		1471			1471	0.0	0.0	0.000	A

Future 2031 (adj 1300), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm E - Lane Simulation	Arm E: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	156.67	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	Future 2031 (adj 1300)	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	42	100.000
B		ONE HOUR	✓	1710	100.000
C		ONE HOUR	✓	60	100.000
D		ONE HOUR	✓	161	100.000
E		ONE HOUR	✓	2624	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		A	B	C	D	E
From	A	0	20	1	0	21
	B	19	0	0	111	1580
	C	0	31	0	4	25
	D	0	131	4	0	26
	E	36	2496	43	49	0

Proportions

		To				
		A	B	C	D	E
From	A	0.00	0.48	0.02	0.00	0.50
	B	0.01	0.00	0.00	0.06	0.92
	C	0.00	0.52	0.00	0.07	0.42
	D	0.00	0.81	0.02	0.00	0.16
	E	0.01	0.95	0.02	0.02	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	D	10	10	10	10	10
	E	10	10	10	10	10

Average PCU Per Veh

		To				
		A	B	C	D	E
From	A	1.100	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100	1.100
	E	1.100	1.100	1.100	1.100	1.100

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A	32	32
	B	1287	1287
	C	45	45
	D	121	121
	E	1975	1975
08:00-08:15	A	38	38
	B	1537	1537
	C	54	54
	D	145	145
	E	2359	2359
08:15-08:30	A	46	46
	B	1883	1883
	C	66	66
	D	177	177
	E	2889	2889
08:30-08:45	A	46	46
	B	1883	1883
	C	66	66
	D	177	177
	E	2889	2889
08:45-09:00	A	38	38
	B	1537	1537
	C	54	54
	D	145	145
	E	2359	2359
09:00-09:15	A	32	32
	B	1287	1287
	C	45	45
	D	121	121
	E	1975	1975

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	30.47	0.4	D	38	57
B	8.24	4.6	A	1570	2355
C	12.54	0.3	B	56	84
D	10.01	0.5	B	147	221
E	267.75	204.5	F	2408	3612

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	35	9	2061	35	42	0.0	0.1	7.035	A
B	1289	322	90	1290	2004	0.0	1.7	4.678	A
C	44	11	1344	44	37	0.0	0.1	5.760	A
D	119	30	1268	120	120	0.0	0.2	4.777	A
E	1972	493	136	1965	1251	0.0	5.3	8.364	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	39	10	2478	39	49	0.1	0.1	13.679	B
B	1536	384	108	1534	2409	1.7	2.6	5.606	A
C	56	14	1597	55	44	0.1	0.2	7.810	A
D	147	37	1505	145	148	0.2	0.4	6.186	A
E	2366	591	170	2357	1480	5.3	16.0	19.529	C

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	44	11	2640	46	56	0.1	0.3	27.847	D
B	1893	473	118	1890	2568	2.6	4.6	8.071	A
C	68	17	1959	67	48	0.2	0.3	11.857	B
D	175	44	1856	176	171	0.4	0.5	9.280	A
E	2898	724	202	2494	1830	16.0	114.0	95.351	F

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	46	11	2647	47	56	0.3	0.4	30.466	D
B	1887	472	114	1888	2580	4.6	4.1	8.236	A
C	66	17	1958	67	45	0.3	0.2	12.538	B
D	170	43	1852	169	173	0.5	0.5	10.008	B
E	2879	720	197	2506	1823	114.0	204.5	229.815	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	36	9	2645	36	53	0.4	0.3	26.071	D
B	1536	384	110	1538	2571	4.1	2.3	5.707	A
C	54	13	1602	54	47	0.2	0.1	8.444	A
D	149	37	1507	149	149	0.5	0.3	7.102	A
E	2350	587	170	2529	1487	204.5	165.4	267.750	F

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	29	7	2476	30	48	0.3	0.2	23.055	C
B	1278	320	103	1278	2403	2.3	1.8	4.755	A
C	48	12	1339	48	43	0.1	0.1	6.657	A
D	122	31	1254	123	132	0.3	0.2	5.543	A
E	1983	496	145	2379	1233	165.4	44.9	142.999	F

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	35	523	0.066	35	0.0	0.1	7.035	A
	Exit	1	1		42			42	0.0	0.0	0.000	A
B	Entry	1	1	E,D	657	1262	0.520	657	0.0	0.9	4.752	A
			2	E,A,B	632	1262	0.501	633	0.0	0.8	4.602	A
	Exit	1	1		2004			2004	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	44	676	0.065	44	0.0	0.1	5.760	A
	Exit	1	1		37			37	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	119	879	0.136	120	0.0	0.2	4.777	A
	Exit	1	1		120			120	0.0	0.0	0.000	A
E	Entry	1	1	A,B	979	1275	0.768	976	0.0	2.6	8.359	A
			2	E,B,C,D	993	1275	0.779	989	0.0	2.7	8.370	A
	Exit	1	1		1251			1251	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	39	316	0.123	39	0.1	0.1	13.679	B
	Exit	1	1		49			49	0.0	0.0	0.000	A
B	Entry	1	1	E,D	786	1256	0.625	785	0.9	1.3	5.687	A
			2	E,A,B	750	1256	0.597	749	0.8	1.3	5.523	A
	Exit	1	1		2409			2409	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	56	562	0.100	55	0.1	0.2	7.810	A
	Exit	1	1		44			44	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	147	767	0.191	145	0.2	0.4	6.186	A
	Exit	1	1		148			148	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1185	1264	0.938	1181	2.6	8.0	19.492	C
			2	E,B,C,D	1181	1264	0.934	1177	2.7	8.0	19.567	C
	Exit	1	1		1480			1480	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	44	236	0.189	46	0.1	0.3	27.847	D
	Exit	1	1		56			56	0.0	0.0	0.000	A
B	Entry	1	1	E,D	959	1253	0.765	957	1.3	2.3	8.172	A
			2	E,A,B	934	1253	0.745	933	1.3	2.2	7.967	A
	Exit	1	1		2568			2568	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	68	400	0.170	67	0.2	0.3	11.857	B
	Exit	1	1		48			48	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	175	602	0.291	176	0.4	0.5	9.280	A
	Exit	1	1		171			171	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1454	1254	1.160	1251	8.0	57.0	95.324	F
			2	E,B,C,D	1444	1254	1.152	1243	8.0	57.0	95.377	F
	Exit	1	1		1830			1830	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	46	232	0.198	47	0.3	0.4	30.466	D
	Exit	1	1		56			56	0.0	0.0	0.000	A
B	Entry	1	1	E,D	958	1254	0.763	956	2.3	2.1	8.380	A
			2	E,A,B	930	1254	0.741	932	2.2	2.0	8.089	A
	Exit	1	1		2580			2580	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	66	401	0.165	67	0.3	0.2	12.538	B
	Exit	1	1		45			45	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	170	604	0.282	169	0.5	0.5	10.008	B
	Exit	1	1		173			173	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1436	1255	1.144	1250	57.0	102.2	230.080	F
			2	E,B,C,D	1443	1255	1.149	1256	57.0	102.3	229.549	F
	Exit	1	1		1823			1823	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	36	233	0.154	36	0.4	0.3	26.071	D
	Exit	1	1		53			53	0.0	0.0	0.000	A
B	Entry	1	1	E,D	779	1256	0.620	781	2.1	1.1	5.780	A
			2	E,A,B	757	1256	0.603	757	2.0	1.2	5.632	A
	Exit	1	1		2571			2571	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	54	560	0.096	54	0.2	0.1	8.444	A
	Exit	1	1		47			47	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	149	766	0.195	149	0.5	0.3	7.102	A
	Exit	1	1		149			149	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1164	1264	0.921	1254	102.2	82.8	268.689	F
			2	E,B,C,D	1186	1264	0.938	1275	102.3	82.7	266.817	F
	Exit	1	1		1487			1487	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	29	316	0.092	30	0.3	0.2	23.055	C
	Exit	1	1		48			48	0.0	0.0	0.000	A
B	Entry	1	1	E,D	659	1258	0.524	658	1.1	1.0	4.791	A
			2	E,A,B	620	1258	0.493	620	1.2	0.8	4.717	A
	Exit	1	1		2403			2403	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	48	678	0.071	48	0.1	0.1	6.657	A
	Exit	1	1		43			43	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	122	886	0.138	123	0.3	0.2	5.543	A
	Exit	1	1		132			132	0.0	0.0	0.000	A
E	Entry	1	1	A,B	988	1272	0.776	1186	82.8	22.4	143.020	F
			2	E,B,C,D	996	1272	0.783	1193	82.7	22.5	142.976	F
	Exit	1	1		1233			1233	0.0	0.0	0.000	A

Future 2031 (adj 1300), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	78.35	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	Future 2031 (adj 1300)	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	83	100.000
B		ONE HOUR	✓	2392	100.000
C		ONE HOUR	✓	98	100.000
D		ONE HOUR	✓	100	100.000
E		ONE HOUR	✓	2084	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		A	B	C	D	E
From	A	0	34	1	0	48
	B	8	0	0	189	2195
	C	0	28	0	6	64
	D	0	84	0	0	16
	E	21	1943	21	99	0

Proportions

		To				
		A	B	C	D	E
From	A	0.00	0.41	0.01	0.00	0.58
	B	0.00	0.00	0.00	0.08	0.92
	C	0.00	0.29	0.00	0.06	0.65
	D	0.00	0.84	0.00	0.00	0.16
	E	0.01	0.93	0.01	0.05	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	D	10	10	10	10	10
	E	10	10	10	10	10

Average PCU Per Veh

		To				
		A	B	C	D	E
From	A	1.100	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100	1.100
	E	1.100	1.100	1.100	1.100	1.100

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	A	62	62
	B	1801	1801
	C	74	74
	D	75	75
	E	1569	1569
17:00-17:15	A	75	75
	B	2150	2150
	C	88	88
	D	90	90
	E	1873	1873
17:15-17:30	A	91	91
	B	2634	2634
	C	108	108
	D	110	110
	E	2295	2295
17:30-17:45	A	91	91
	B	2634	2634
	C	108	108
	D	110	110
	E	2295	2295
17:45-18:00	A	75	75
	B	2150	2150
	C	88	88
	D	90	90
	E	1873	1873
18:00-18:15	A	62	62
	B	1801	1801
	C	74	74
	D	75	75
	E	1569	1569

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	16.78	0.5	C	77	115
B	124.71	106.8	F	2197	3296
C	352.23	10.3	F	90	135
D	19.48	0.7	C	92	138
E	17.48	11.7	C	1910	2865

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	63	16	1654	63	21	0.0	0.1	5.219	A
B	1801	450	131	1798	1586	0.0	4.0	7.273	A
C	73	18	1911	74	17	0.0	0.3	10.198	B
D	75	19	1762	75	223	0.0	0.1	6.023	A
E	1582	395	89	1586	1747	0.0	2.1	5.375	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	74	19	1934	75	27	0.1	0.2	7.803	A
B	2163	541	153	2162	1856	4.0	8.9	13.342	B
C	88	22	2295	86	20	0.3	0.8	26.019	D
D	93	23	2117	93	264	0.1	0.3	10.438	B
E	1854	463	112	1849	2098	2.1	4.0	7.125	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	94	23	2374	93	30	0.2	0.5	14.115	B
B	2638	660	185	2439	2282	8.9	61.3	55.117	F
C	106	27	2600	85	24	0.8	6.0	171.010	F
D	109	27	2381	108	305	0.3	0.6	16.138	C
E	2285	571	123	2281	2366	4.0	10.1	14.585	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	92	23	2388	91	30	0.5	0.5	16.779	C
B	2628	657	185	2456	2294	61.3	106.8	124.706	F
C	107	27	2617	93	25	6.0	10.3	352.234	F
D	108	27	2405	108	305	0.6	0.7	19.484	C
E	2302	576	125	2293	2388	10.1	11.7	17.481	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	76	19	1945	76	28	0.5	0.2	9.936	A
B	2153	538	151	2376	1870	106.8	40.8	104.908	F
C	89	22	2506	102	21	10.3	8.3	298.025	F
D	92	23	2326	93	282	0.7	0.4	16.929	C
E	1862	465	114	1858	2306	11.7	4.2	8.345	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	62	16	1645	62	22	0.2	0.1	6.334	A
B	1799	450	128	1833	1579	40.8	4.1	21.512	C
C	75	19	1945	82	17	8.3	0.3	65.268	F
D	75	19	1804	75	223	0.4	0.2	10.141	B
E	1575	394	92	1575	1787	4.2	2.5	5.466	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	63	725	0.087	63	0.0	0.1	5.219	A
	Exit	1	1		21			21	0.0	0.0	0.000	A
B	Entry	1	1	E,D	918	1249	0.735	916	0.0	2.1	7.404	A
			2	E,A,B	882	1249	0.706	881	0.0	1.9	7.137	A
	Exit	1	1		1586			1586	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	73	422	0.172	74	0.0	0.3	10.198	B
	Exit	1	1		17			17	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	75	646	0.116	75	0.0	0.1	6.023	A
	Exit	1	1		223			223	0.0	0.0	0.000	A
E	Entry	1	1	A,B	782	1290	0.606	784	0.0	1.1	5.279	A
			2	E,B,C,D	800	1290	0.620	802	0.0	1.1	5.468	A
	Exit	1	1		1747			1747	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	74	585	0.127	75	0.1	0.2	7.803	A
	Exit	1	1		27			27	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1098	1242	0.884	1097	2.1	4.5	13.464	B
			2	E,A,B	1065	1242	0.858	1065	1.9	4.4	13.218	B
	Exit	1	1		1856			1856	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	88	250	0.353	86	0.3	0.8	26.019	D
	Exit	1	1		20			20	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	93	478	0.194	93	0.1	0.3	10.438	B
	Exit	1	1		264			264	0.0	0.0	0.000	A
E	Entry	1	1	A,B	918	1283	0.716	917	1.1	1.9	6.997	A
			2	E,B,C,D	936	1283	0.729	932	1.1	2.1	7.251	A
	Exit	1	1		2098			2098	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	94	367	0.256	93	0.2	0.5	14.115	B
	Exit	1	1		30			30	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1323	1231	1.075	1224	4.5	30.8	55.569	F
			2	E,A,B	1315	1231	1.068	1215	4.4	30.5	54.666	F
	Exit	1	1		2282			2282	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	106	113	0.942	85	0.8	6.0	171.010	F
	Exit	1	1		24			24	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	109	354	0.308	108	0.3	0.6	16.138	C
	Exit	1	1		305			305	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1131	1279	0.884	1129	1.9	5.0	14.521	B
			2	E,B,C,D	1154	1279	0.902	1152	2.1	5.1	14.648	B
	Exit	1	1		2366			2366	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	92	360	0.255	91	0.5	0.5	16.779	C
	Exit	1	1		30			30	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1318	1231	1.070	1232	30.8	53.4	124.781	F
			2	E,A,B	1310	1231	1.064	1224	30.5	53.3	124.631	F
	Exit	1	1		2294			2294	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	107	107	1.006	93	6.0	10.3	352.234	F
	Exit	1	1		25			25	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	108	342	0.317	108	0.6	0.7	19.484	C
	Exit	1	1		305			305	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1153	1279	0.902	1149	5.0	5.8	17.361	C
			2	E,B,C,D	1149	1279	0.899	1145	5.1	5.9	17.600	C
	Exit	1	1		2388			2388	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	76	580	0.131	76	0.5	0.2	9.936	A
	Exit	1	1		28			28	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1083	1242	0.872	1195	53.4	20.4	104.574	F
			2	E,A,B	1070	1242	0.862	1181	53.3	20.4	105.246	F
	Exit	1	1		1870			1870	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	89	153	0.580	102	10.3	8.3	298.025	F
	Exit	1	1		21			21	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	92	379	0.242	93	0.7	0.4	16.929	C
	Exit	1	1		282			282	0.0	0.0	0.000	A
E	Entry	1	1	A,B	923	1282	0.720	920	5.8	2.1	8.309	A
			2	E,B,C,D	939	1282	0.732	938	5.9	2.1	8.381	A
	Exit	1	1		2306			2306	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	62	729	0.085	62	0.2	0.1	6.334	A
	Exit	1	1		22			22	0.0	0.0	0.000	A
B	Entry	1	1	E,D	919	1250	0.735	936	20.4	2.1	21.515	C
			2	E,A,B	880	1250	0.704	897	20.4	2.0	21.509	C
	Exit	1	1		1579			1579	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	75	407	0.185	82	8.3	0.3	65.268	F
	Exit	1	1		17			17	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	75	626	0.119	75	0.4	0.2	10.141	B
	Exit	1	1		223			223	0.0	0.0	0.000	A
E	Entry	1	1	A,B	777	1289	0.602	776	2.1	1.2	5.411	A
			2	E,B,C,D	799	1289	0.619	799	2.1	1.3	5.519	A
	Exit	1	1		1787			1787	0.0	0.0	0.000	A

Future 2031 with dev (1300), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm A - Lane Simulation	Arm A: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.
Last Run	Lane Simulation	Arm E - Lane Simulation	Arm E: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	262.84	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	Future 2031 with dev (1300)	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	360	100.000
B		ONE HOUR	✓	1739	100.000
C		ONE HOUR	✓	60	100.000
D		ONE HOUR	✓	161	100.000
E		ONE HOUR	✓	2679	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		A	B	C	D	E
From	A	0	170	10	0	180
	B	48	0	0	111	1580
	C	0	31	0	4	25
	D	0	131	4	0	26
	E	91	2496	43	49	0

Proportions

		To				
		A	B	C	D	E
From	A	0.00	0.47	0.03	0.00	0.50
	B	0.03	0.00	0.00	0.06	0.91
	C	0.00	0.52	0.00	0.07	0.42
	D	0.00	0.81	0.02	0.00	0.16
	E	0.03	0.93	0.02	0.02	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	D	10	10	10	10	10
	E	10	10	10	10	10

Average PCU Per Veh

		To				
		A	B	C	D	E
From	A	1.100	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100	1.100
	E	1.100	1.100	1.100	1.100	1.100

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A	271	271
	B	1309	1309
	C	45	45
	D	121	121
	E	2017	2017
08:00-08:15	A	324	324
	B	1563	1563
	C	54	54
	D	145	145
	E	2408	2408
08:15-08:30	A	396	396
	B	1915	1915
	C	66	66
	D	177	177
	E	2950	2950
08:30-08:45	A	396	396
	B	1915	1915
	C	66	66
	D	177	177
	E	2950	2950
08:45-09:00	A	324	324
	B	1563	1563
	C	54	54
	D	145	145
	E	2408	2408
09:00-09:15	A	271	271
	B	1309	1309
	C	45	45
	D	121	121
	E	2017	2017

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	973.14	86.5	F	332	498
B	9.51	5.5	A	1600	2400
C	16.71	0.3	C	55	83
D	11.52	0.6	B	148	222
E	352.56	252.8	F	2457	3685

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	264	66	2089	265	110	0.0	1.4	13.804	B
B	1307	327	212	1310	2141	0.0	1.8	5.119	A
C	46	12	1481	48	41	0.0	0.1	6.509	A
D	127	32	1405	127	124	0.0	0.3	5.192	A
E	2039	510	169	2031	1363	0.0	6.1	9.458	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	326	81	2443	296	125	1.4	9.9	79.474	F
B	1561	390	244	1566	2496	1.8	2.4	6.211	A
C	51	13	1760	51	50	0.1	0.2	8.930	A
D	146	37	1663	146	148	0.3	0.3	7.075	A
E	2415	604	191	2377	1618	6.1	22.5	25.545	D

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	391	98	2550	275	140	9.9	40.2	358.726	F
B	1922	480	241	1914	2584	2.4	5.5	9.346	A
C	68	17	2102	67	53	0.2	0.3	15.169	C
D	170	42	1993	170	175	0.3	0.6	10.688	B
E	2934	733	229	2460	1935	22.5	137.2	116.647	F

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	401	100	2588	267	144	40.2	73.5	785.102	F
B	1924	481	226	1916	2629	5.5	5.4	9.511	A
C	67	17	2089	69	53	0.3	0.3	16.705	C
D	178	44	1984	177	174	0.6	0.6	11.525	B
E	2948	737	243	2489	1918	137.2	252.8	284.605	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	328	82	2548	284	132	73.5	85.7	973.143	F
B	1572	393	238	1573	2594	5.4	2.8	6.504	A
C	53	13	1761	53	51	0.3	0.2	10.192	B
D	146	36	1662	147	152	0.6	0.3	8.173	A
E	2399	600	194	2486	1614	252.8	233.4	352.560	F

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	281	70	2549	275	125	85.7	86.5	666.986	F
B	1314	329	231	1310	2592	2.8	2.2	5.046	A
C	44	11	1489	44	52	0.2	0.1	7.525	A
D	122	31	1401	123	132	0.3	0.2	6.012	A
E	2006	501	163	2511	1361	233.4	105.8	242.710	F

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	264	509	0.519	265	0.0	1.4	13.804	B
	Exit	1	1		110			110	0.0	0.0	0.000	A
B	Entry	1	1	E,D	663	1223	0.542	664	0.0	0.9	5.226	A
			2	E,A,B	644	1223	0.527	646	0.0	0.9	5.010	A
	Exit	1	1		2141			2141	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	46	614	0.076	48	0.0	0.1	6.509	A
	Exit	1	1		41			41	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	127	815	0.156	127	0.0	0.3	5.192	A
	Exit	1	1		124			124	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1018	1264	0.805	1015	0.0	3.0	9.474	A
			2	E,B,C,D	1021	1264	0.807	1016	0.0	3.1	9.442	A
	Exit	1	1		1363			1363	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	326	333	0.980	296	1.4	9.9	79.474	F
	Exit	1	1		125			125	0.0	0.0	0.000	A
B	Entry	1	1	E,D	791	1212	0.652	793	0.9	1.2	6.242	A
			2	E,A,B	770	1212	0.635	773	0.9	1.1	6.178	A
	Exit	1	1		2496			2496	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	51	489	0.104	51	0.1	0.2	8.930	A
	Exit	1	1		50			50	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	146	693	0.211	146	0.3	0.3	7.075	A
	Exit	1	1		148			148	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1213	1257	0.965	1195	3.0	11.2	25.497	D
			2	E,B,C,D	1202	1257	0.956	1182	3.1	11.3	25.593	D
	Exit	1	1		1618			1618	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	391	280	1.396	275	9.9	40.2	358.726	F
	Exit	1	1		140			140	0.0	0.0	0.000	A
B	Entry	1	1	E,D	971	1213	0.800	967	1.2	2.8	9.390	A
			2	E,A,B	951	1213	0.784	948	1.1	2.7	9.301	A
	Exit	1	1		2584			2584	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	68	336	0.203	67	0.2	0.3	15.169	C
	Exit	1	1		53			53	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	170	537	0.317	170	0.3	0.6	10.688	B
	Exit	1	1		175			175	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1473	1245	1.183	1237	11.2	68.5	116.143	F
			2	E,B,C,D	1461	1245	1.174	1223	11.3	68.7	117.155	F
	Exit	1	1		1935			1935	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	401	261	1.536	267	40.2	73.5	785.102	F
	Exit	1	1		144			144	0.0	0.0	0.000	A
B	Entry	1	1	E,D	975	1218	0.801	969	2.8	2.9	9.617	A
			2	E,A,B	949	1218	0.780	947	2.7	2.6	9.403	A
	Exit	1	1		2629			2629	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	67	342	0.197	69	0.3	0.3	16.705	C
	Exit	1	1		53			53	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	178	541	0.329	177	0.6	0.6	11.525	B
	Exit	1	1		174			174	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1473	1240	1.188	1243	68.5	126.4	285.617	F
			2	E,B,C,D	1475	1240	1.189	1247	68.7	126.4	283.593	F
	Exit	1	1		1918			1918	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	328	281	1.170	284	73.5	85.7	973.143	F
	Exit	1	1		132			132	0.0	0.0	0.000	A
B	Entry	1	1	E,D	798	1214	0.658	800	2.9	1.4	6.560	A
			2	E,A,B	773	1214	0.637	773	2.6	1.4	6.446	A
	Exit	1	1		2594			2594	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	53	489	0.109	53	0.3	0.2	10.192	B
	Exit	1	1		51			51	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	146	693	0.210	147	0.6	0.3	8.173	A
	Exit	1	1		152			152	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1205	1256	0.959	1250	126.4	116.6	353.433	F
			2	E,B,C,D	1194	1256	0.950	1236	126.4	116.8	351.697	F
	Exit	1	1		1614			1614	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	281	281	1.002	275	85.7	86.5	666.986	F
	Exit	1	1		125			125	0.0	0.0	0.000	A
B	Entry	1	1	E,D	663	1216	0.545	661	1.4	1.1	5.152	A
			2	E,A,B	651	1216	0.535	649	1.4	1.1	4.938	A
	Exit	1	1		2592			2592	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	44	611	0.072	44	0.2	0.1	7.525	A
	Exit	1	1		52			52	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	122	817	0.150	123	0.3	0.2	6.012	A
	Exit	1	1		132			132	0.0	0.0	0.000	A
E	Entry	1	1	A,B	998	1266	0.788	1252	116.6	52.8	244.718	F
			2	E,B,C,D	1008	1266	0.796	1259	116.8	53.0	240.722	F
	Exit	1	1		1361			1361	0.0	0.0	0.000	A

Future 2031 with dev (1300), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm B - Lane Simulation	Arm B: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	121.03	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Future 2031 with dev (1300)	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	133	100.000
B		ONE HOUR	✓	2463	100.000
C		ONE HOUR	✓	98	100.000
D		ONE HOUR	✓	100	100.000
E		ONE HOUR	✓	2255	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		A	B	C	D	E
From	A	0	54	2	0	77
	B	79	0	0	189	2195
	C	0	28	0	6	64
	D	0	84	0	0	16
	E	192	1943	21	99	0

Proportions

		To				
		A	B	C	D	E
From	A	0.00	0.41	0.02	0.00	0.58
	B	0.03	0.00	0.00	0.08	0.89
	C	0.00	0.29	0.00	0.06	0.65
	D	0.00	0.84	0.00	0.00	0.16
	E	0.09	0.86	0.01	0.04	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	D	10	10	10	10	10
	E	10	10	10	10	10

Average PCU Per Veh

		To				
		A	B	C	D	E
From	A	1.100	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100	1.100
	E	1.100	1.100	1.100	1.100	1.100

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	A	100	100
	B	1854	1854
	C	74	74
	D	75	75
	E	1698	1698
17:00-17:15	A	120	120
	B	2214	2214
	C	88	88
	D	90	90
	E	2027	2027
17:15-17:30	A	146	146
	B	2712	2712
	C	108	108
	D	110	110
	E	2483	2483
17:30-17:45	A	146	146
	B	2712	2712
	C	108	108
	D	110	110
	E	2483	2483
17:45-18:00	A	120	120
	B	2214	2214
	C	88	88
	D	90	90
	E	2027	2027
18:00-18:15	A	100	100
	B	1854	1854
	C	74	74
	D	75	75
	E	1698	1698

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	19.54	0.8	C	122	182
B	183.15	154.0	F	2262	3392
C	446.88	12.7	F	90	135
D	20.69	0.7	C	92	139
E	49.49	38.3	E	2073	3110

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	101	25	1639	101	203	0.0	0.2	5.510	A
B	1850	462	152	1850	1589	0.0	4.4	7.750	A
C	74	18	1984	74	18	0.0	0.3	10.821	B
D	75	19	1837	76	221	0.0	0.2	6.309	A
E	1700	425	144	1699	1768	0.0	3.1	6.208	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	119	30	1963	120	245	0.2	0.3	8.556	A
B	2215	554	178	2217	1905	4.4	11.4	16.335	C
C	88	22	2375	87	20	0.3	1.0	34.972	D
D	92	23	2200	92	262	0.2	0.3	11.018	B
E	2035	509	173	2036	2119	3.1	5.8	9.700	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	147	37	2339	147	287	0.3	0.8	16.477	C
B	2716	679	218	2437	2268	11.4	86.1	75.623	F
C	109	27	2630	83	25	1.0	7.1	212.255	F
D	112	28	2411	111	303	0.3	0.7	17.875	C
E	2477	619	194	2432	2327	5.8	27.8	30.531	D

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	143	36	2364	143	283	0.8	0.8	19.537	C
B	2719	680	214	2441	2294	86.1	154.0	178.375	F
C	108	27	2630	86	25	7.1	12.7	446.884	F
D	109	27	2415	109	301	0.7	0.7	20.686	C
E	2492	623	191	2456	2332	27.8	38.3	49.495	E

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	119	30	1987	119	251	0.8	0.3	13.007	B
B	2217	554	179	2450	1927	154.0	94.6	183.154	F
C	88	22	2609	91	20	12.7	12.1	426.156	F
D	90	23	2416	90	285	0.7	0.5	17.859	C
E	2034	509	179	2059	2327	38.3	6.8	23.019	C

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	100	25	1653	100	209	0.3	0.2	6.916	A
B	1854	463	151	2021	1603	94.6	11.8	63.763	F
C	74	19	2155	114	18	12.1	2.3	163.189	F
D	76	19	2029	76	239	0.5	0.2	13.636	B
E	1703	426	161	1702	1944	6.8	3.3	7.004	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	101	732	0.138	101	0.0	0.2	5.510	A
	Exit	1	1		203			203	0.0	0.0	0.000	A
B	Entry	1	1	E,D	935	1242	0.753	935	0.0	2.3	7.819	A
			2	E,A,B	915	1242	0.737	916	0.0	2.2	7.678	A
	Exit	1	1		1589			1589	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	74	389	0.190	74	0.0	0.3	10.821	B
	Exit	1	1		18			18	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	75	611	0.124	76	0.0	0.2	6.309	A
	Exit	1	1		221			221	0.0	0.0	0.000	A
E	Entry	1	1	A,B	856	1272	0.673	856	0.0	1.6	6.273	A
			2	E,B,C,D	843	1272	0.663	843	0.0	1.6	6.142	A
	Exit	1	1		1768			1768	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	119	571	0.209	120	0.2	0.3	8.556	A
	Exit	1	1		245			245	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1114	1234	0.903	1114	2.3	5.8	16.441	C
			2	E,A,B	1101	1234	0.893	1103	2.2	5.6	16.228	C
	Exit	1	1		1905			1905	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	88	214	0.412	87	0.3	1.0	34.972	D
	Exit	1	1		20			20	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	92	439	0.209	92	0.2	0.3	11.018	B
	Exit	1	1		262			262	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1026	1263	0.812	1026	1.6	3.0	9.762	A
			2	E,B,C,D	1009	1263	0.799	1010	1.6	2.8	9.637	A
	Exit	1	1		2119			2119	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	147	384	0.382	147	0.3	0.8	16.477	C
	Exit	1	1		287			287	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1357	1221	1.111	1217	5.8	43.1	75.695	F
			2	E,A,B	1359	1221	1.113	1220	5.6	43.0	75.552	F
	Exit	1	1		2268			2268	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	109	100	1.085	83	1.0	7.1	212.255	F
	Exit	1	1		25			25	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	112	340	0.330	111	0.3	0.7	17.875	C
	Exit	1	1		303			303	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1239	1256	0.987	1216	3.0	14.0	30.628	D
			2	E,B,C,D	1238	1256	0.985	1215	2.8	13.8	30.433	D
	Exit	1	1		2327			2327	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	143	372	0.385	143	0.8	0.8	19.537	C
	Exit	1	1		283			283	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1357	1222	1.111	1220	43.1	77.0	178.556	F
			2	E,A,B	1361	1222	1.114	1221	43.0	77.0	178.195	F
	Exit	1	1		2294			2294	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	108	100	1.084	86	7.1	12.7	446.884	F
	Exit	1	1		25			25	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	109	338	0.323	109	0.7	0.7	20.686	C
	Exit	1	1		301			301	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1247	1257	0.992	1230	14.0	19.2	49.511	E
			2	E,B,C,D	1245	1257	0.990	1227	13.8	19.1	49.479	E
	Exit	1	1		2332			2332	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	119	559	0.212	119	0.8	0.3	13.007	B
	Exit	1	1		251			251	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1111	1233	0.901	1228	77.0	47.4	183.397	F
			2	E,A,B	1106	1233	0.897	1223	77.0	47.3	182.911	F
	Exit	1	1		1927			1927	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	88	107	0.828	91	12.7	12.1	426.156	F
	Exit	1	1		20			20	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	90	337	0.268	90	0.7	0.5	17.859	C
	Exit	1	1		285			285	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1020	1261	0.809	1033	19.2	3.5	23.135	C
			2	E,B,C,D	1014	1261	0.804	1026	19.1	3.4	22.901	C
	Exit	1	1		2327			2327	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	100	725	0.138	100	0.3	0.2	6.916	A
	Exit	1	1		209			209	0.0	0.0	0.000	A
B	Entry	1	1	E,D	934	1242	0.752	1018	47.4	6.0	63.786	F
			2	E,A,B	920	1242	0.741	1003	47.3	5.9	63.740	F
	Exit	1	1		1603			1603	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	74	313	0.238	114	12.1	2.3	163.189	F
	Exit	1	1		18			18	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	76	520	0.146	76	0.5	0.2	13.636	B
	Exit	1	1		239			239	0.0	0.0	0.000	A
E	Entry	1	1	A,B	859	1267	0.678	858	3.5	1.7	7.066	A
			2	E,B,C,D	844	1267	0.666	843	3.4	1.6	6.941	A
	Exit	1	1		1944			1944	0.0	0.0	0.000	A

Future 2031 (adj 1500), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm E - Lane Simulation	Arm E: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	155.10	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	Future 2031 (adj 1500)	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	42	100.000
B		ONE HOUR	✓	1707	100.000
C		ONE HOUR	✓	60	100.000
D		ONE HOUR	✓	161	100.000
E		ONE HOUR	✓	2619	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		A	B	C	D	E
From	A	0	20	1	0	21
	B	19	0	0	111	1577
	C	0	31	0	4	25
	D	0	131	4	0	26
	E	36	2491	43	49	0

Proportions

		To				
		A	B	C	D	E
From	A	0.00	0.48	0.02	0.00	0.50
	B	0.01	0.00	0.00	0.07	0.92
	C	0.00	0.52	0.00	0.07	0.42
	D	0.00	0.81	0.02	0.00	0.16
	E	0.01	0.95	0.02	0.02	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	D	10	10	10	10	10
	E	10	10	10	10	10

Average PCU Per Veh

		To				
		A	B	C	D	E
From	A	1.100	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100	1.100
	E	1.100	1.100	1.100	1.100	1.100

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A	32	32
	B	1285	1285
	C	45	45
	D	121	121
	E	1972	1972
08:00-08:15	A	38	38
	B	1535	1535
	C	54	54
	D	145	145
	E	2354	2354
08:15-08:30	A	46	46
	B	1879	1879
	C	66	66
	D	177	177
	E	2884	2884
08:30-08:45	A	46	46
	B	1879	1879
	C	66	66
	D	177	177
	E	2884	2884
08:45-09:00	A	38	38
	B	1535	1535
	C	54	54
	D	145	145
	E	2354	2354
09:00-09:15	A	32	32
	B	1285	1285
	C	45	45
	D	121	121
	E	1972	1972

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	29.38	0.4	D	38	57
B	8.30	4.6	A	1568	2352
C	13.00	0.3	B	54	81
D	9.84	0.5	A	149	223
E	265.39	205.6	F	2397	3596

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	32	8	2062	32	42	0.0	0.1	7.160	A
B	1294	324	87	1294	2007	0.0	1.8	4.583	A
C	47	12	1347	47	34	0.0	0.1	5.788	A
D	122	30	1267	122	127	0.0	0.2	4.793	A
E	1967	492	142	1962	1247	0.0	4.9	8.165	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	37	9	2457	37	47	0.1	0.2	14.259	B
B	1532	383	104	1531	2389	1.8	2.5	5.557	A
C	55	14	1595	56	41	0.1	0.1	7.426	A
D	145	36	1506	145	145	0.2	0.3	6.286	A
E	2338	584	168	2336	1482	4.9	14.5	19.702	C

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	45	11	2665	43	57	0.2	0.4	25.666	D
B	1900	475	120	1892	2588	2.5	4.6	7.699	A
C	63	16	1964	63	49	0.1	0.3	11.568	B
D	182	45	1851	181	176	0.3	0.5	8.862	A
E	2869	717	208	2515	1824	14.5	107.9	91.215	F

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	46	11	2638	46	56	0.4	0.4	29.376	D
B	1874	468	118	1882	2565	4.6	4.0	8.301	A
C	65	16	1952	65	49	0.3	0.2	12.999	B
D	179	45	1842	179	175	0.5	0.5	9.839	A
E	2881	720	204	2490	1817	107.9	205.6	227.988	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	39	10	2635	39	51	0.4	0.3	26.221	D
B	1537	384	109	1536	2566	4.0	2.6	5.750	A
C	51	13	1600	51	45	0.2	0.1	8.356	A
D	146	37	1503	145	148	0.5	0.3	7.074	A
E	2347	587	165	2521	1484	205.6	164.2	265.385	F

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	32	8	2460	32	45	0.3	0.2	20.890	C
B	1271	318	104	1273	2389	2.6	1.7	4.685	A
C	44	11	1334	44	43	0.1	0.1	6.261	A
D	120	30	1250	120	128	0.3	0.2	5.413	A
E	1983	496	137	2368	1233	164.2	43.9	140.108	F

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	32	522	0.062	32	0.0	0.1	7.160	A
	Exit	1	1		42			42	0.0	0.0	0.000	A
B	Entry	1	1	E,D	667	1263	0.528	667	0.0	0.9	4.667	A
			2	E,A,B	628	1263	0.497	627	0.0	0.9	4.495	A
	Exit	1	1		2007			2007	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	47	674	0.069	47	0.0	0.1	5.788	A
	Exit	1	1		34			34	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	122	880	0.138	122	0.0	0.2	4.793	A
	Exit	1	1		127			127	0.0	0.0	0.000	A
E	Entry	1	1	A,B	977	1273	0.767	975	0.0	2.4	8.141	A
			2	E,B,C,D	990	1273	0.778	987	0.0	2.5	8.189	A
	Exit	1	1		1247			1247	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	37	326	0.113	37	0.1	0.2	14.259	B
	Exit	1	1		47			47	0.0	0.0	0.000	A
B	Entry	1	1	E,D	781	1257	0.621	780	0.9	1.3	5.621	A
			2	E,A,B	752	1257	0.598	751	0.9	1.2	5.491	A
	Exit	1	1		2389			2389	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	55	563	0.098	56	0.1	0.1	7.426	A
	Exit	1	1		41			41	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	145	767	0.189	145	0.2	0.3	6.286	A
	Exit	1	1		145			145	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1156	1265	0.914	1157	2.4	7.2	19.646	C
			2	E,B,C,D	1181	1265	0.934	1179	2.5	7.4	19.757	C
	Exit	1	1		1482			1482	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	45	223	0.200	43	0.2	0.4	25.666	D
	Exit	1	1		57			57	0.0	0.0	0.000	A
B	Entry	1	1	E,D	968	1252	0.773	963	1.3	2.4	7.764	A
			2	E,A,B	933	1252	0.745	929	1.2	2.2	7.631	A
	Exit	1	1		2588			2588	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	63	398	0.158	63	0.1	0.3	11.568	B
	Exit	1	1		49			49	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	182	604	0.301	181	0.3	0.5	8.862	A
	Exit	1	1		176			176	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1426	1252	1.139	1248	7.2	54.0	91.245	F
			2	E,B,C,D	1443	1252	1.153	1267	7.4	53.9	91.184	F
	Exit	1	1		1824			1824	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	46	236	0.193	46	0.4	0.4	29.376	D
	Exit	1	1		56			56	0.0	0.0	0.000	A
B	Entry	1	1	E,D	944	1253	0.754	949	2.4	2.1	8.417	A
			2	E,A,B	929	1253	0.742	934	2.2	1.9	8.182	A
	Exit	1	1		2565			2565	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	65	403	0.161	65	0.3	0.2	12.999	B
	Exit	1	1		49			49	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	179	608	0.294	179	0.5	0.5	9.839	A
	Exit	1	1		175			175	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1437	1253	1.147	1241	54.0	102.7	228.086	F
			2	E,B,C,D	1444	1253	1.152	1249	53.9	102.9	227.889	F
	Exit	1	1		1817			1817	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	39	238	0.163	39	0.4	0.3	26.221	D
	Exit	1	1		51			51	0.0	0.0	0.000	A
B	Entry	1	1	E,D	784	1256	0.625	784	2.1	1.3	5.822	A
			2	E,A,B	753	1256	0.599	752	1.9	1.3	5.675	A
	Exit	1	1		2566			2566	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	51	561	0.091	51	0.2	0.1	8.356	A
	Exit	1	1		45			45	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	146	768	0.190	145	0.5	0.3	7.074	A
	Exit	1	1		148			148	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1179	1266	0.932	1266	102.7	82.0	263.815	F
			2	E,B,C,D	1168	1266	0.922	1255	102.9	82.2	266.975	F
	Exit	1	1		1484			1484	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	32	325	0.098	32	0.3	0.2	20.890	C
	Exit	1	1		45			45	0.0	0.0	0.000	A
B	Entry	1	1	E,D	648	1258	0.516	649	1.3	0.9	4.746	A
			2	E,A,B	623	1258	0.496	624	1.3	0.8	4.623	A
	Exit	1	1		2389			2389	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	44	680	0.065	44	0.1	0.1	6.261	A
	Exit	1	1		43			43	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	120	888	0.135	120	0.3	0.2	5.413	A
	Exit	1	1		128			128	0.0	0.0	0.000	A
E	Entry	1	1	A,B	982	1275	0.770	1175	82.0	21.9	140.858	F
			2	E,B,C,D	1001	1275	0.785	1193	82.2	22.0	139.366	F
	Exit	1	1		1233			1233	0.0	0.0	0.000	A

Future 2031 (adj 1500), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	75.77	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	Future 2031 (adj 1500)	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	83	100.000
B		ONE HOUR	✓	2388	100.000
C		ONE HOUR	✓	98	100.000
D		ONE HOUR	✓	100	100.000
E		ONE HOUR	✓	2078	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		A	B	C	D	E
From	A	0	34	1	0	48
	B	8	0	0	189	2191
	C	0	28	0	6	64
	D	0	84	0	0	16
	E	20	1939	20	99	0

Proportions

		To				
		A	B	C	D	E
From	A	0.00	0.41	0.01	0.00	0.58
	B	0.00	0.00	0.00	0.08	0.92
	C	0.00	0.29	0.00	0.06	0.65
	D	0.00	0.84	0.00	0.00	0.16
	E	0.01	0.93	0.01	0.05	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	D	10	10	10	10	10
	E	10	10	10	10	10

Average PCU Per Veh

		To				
		A	B	C	D	E
From	A	1.100	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100	1.100
	E	1.100	1.100	1.100	1.100	1.100

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	A	62	62
	B	1798	1798
	C	74	74
	D	75	75
	E	1564	1564
17:00-17:15	A	75	75
	B	2147	2147
	C	88	88
	D	90	90
	E	1868	1868
17:15-17:30	A	91	91
	B	2629	2629
	C	108	108
	D	110	110
	E	2288	2288
17:30-17:45	A	91	91
	B	2629	2629
	C	108	108
	D	110	110
	E	2288	2288
17:45-18:00	A	75	75
	B	2147	2147
	C	88	88
	D	90	90
	E	1868	1868
18:00-18:15	A	62	62
	B	1798	1798
	C	74	74
	D	75	75
	E	1564	1564

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	16.37	0.5	C	76	114
B	119.84	101.8	F	2195	3293
C	354.50	10.8	F	90	135
D	19.51	0.7	C	91	137
E	16.96	10.9	C	1909	2863

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	64	16	1621	64	23	0.0	0.1	5.282	A
B	1796	449	127	1798	1558	0.0	3.9	7.044	A
C	73	18	1910	73	15	0.0	0.2	9.731	A
D	77	19	1759	78	224	0.0	0.2	6.191	A
E	1555	389	88	1556	1748	0.0	2.4	5.290	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	73	18	1956	73	28	0.1	0.2	7.778	A
B	2152	538	148	2142	1882	3.9	8.6	12.956	B
C	90	22	2270	91	19	0.2	0.7	25.527	D
D	85	21	2102	85	258	0.2	0.2	9.418	A
E	1875	469	109	1875	2079	2.4	3.8	7.141	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	95	24	2378	95	29	0.2	0.4	15.103	C
B	2633	658	191	2442	2283	8.6	60.9	54.967	F
C	108	27	2609	86	23	0.7	5.9	164.008	F
D	111	28	2381	112	314	0.2	0.6	16.450	C
E	2290	572	126	2280	2367	3.8	10.9	14.704	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	90	22	2402	90	32	0.4	0.5	16.369	C
B	2639	660	188	2461	2304	60.9	101.8	119.841	F
C	107	27	2625	91	23	5.9	10.8	354.495	F
D	112	28	2396	112	320	0.6	0.7	19.505	C
E	2305	576	132	2302	2377	10.9	10.8	16.957	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	74	18	1954	74	27	0.5	0.2	9.735	A
B	2152	538	151	2346	1877	101.8	42.4	102.564	F
C	89	22	2479	111	18	10.8	7.1	278.652	F
D	87	22	2309	89	282	0.7	0.3	15.855	C
E	1866	467	116	1865	2281	10.8	4.0	8.247	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	60	15	1634	61	22	0.2	0.1	6.559	A
B	1799	450	129	1827	1565	42.4	4.4	22.442	C
C	75	19	1941	84	16	7.1	0.4	63.928	F
D	75	19	1798	76	226	0.3	0.2	9.848	A
E	1560	390	95	1560	1779	4.0	2.6	5.539	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	64	741	0.086	64	0.0	0.1	5.282	A
	Exit	1	1		23			23	0.0	0.0	0.000	A
B	Entry	1	1	E,D	917	1250	0.734	919	0.0	1.9	7.128	A
			2	E,A,B	878	1250	0.702	879	0.0	1.9	6.956	A
	Exit	1	1		1558			1558	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	73	422	0.173	73	0.0	0.2	9.731	A
	Exit	1	1		15			15	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	77	648	0.120	78	0.0	0.2	6.191	A
	Exit	1	1		224			224	0.0	0.0	0.000	A
E	Entry	1	1	A,B	762	1291	0.591	762	0.0	1.2	5.209	A
			2	E,B,C,D	792	1291	0.614	793	0.0	1.2	5.368	A
	Exit	1	1		1748			1748	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	73	575	0.127	73	0.1	0.2	7.778	A
	Exit	1	1		28			28	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1092	1243	0.878	1086	1.9	4.4	13.055	B
			2	E,A,B	1060	1243	0.853	1056	1.9	4.2	12.854	B
	Exit	1	1		1882			1882	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	90	261	0.344	91	0.2	0.7	25.527	D
	Exit	1	1		19			19	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	85	485	0.176	85	0.2	0.2	9.418	A
	Exit	1	1		258			258	0.0	0.0	0.000	A
E	Entry	1	1	A,B	922	1284	0.719	924	1.2	1.8	7.070	A
			2	E,B,C,D	952	1284	0.742	952	1.2	2.0	7.211	A
	Exit	1	1		2079			2079	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	95	365	0.261	95	0.2	0.4	15.103	C
	Exit	1	1		29			29	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1317	1229	1.071	1221	4.4	30.5	55.046	F
			2	E,A,B	1316	1229	1.070	1221	4.2	30.4	54.888	F
	Exit	1	1		2283			2283	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	108	111	0.971	86	0.7	5.9	164.008	F
	Exit	1	1		23			23	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	111	353	0.315	112	0.2	0.6	16.450	C
	Exit	1	1		314			314	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1140	1278	0.891	1133	1.8	5.4	14.599	B
			2	E,B,C,D	1150	1278	0.900	1147	2.0	5.4	14.809	B
	Exit	1	1		2367			2367	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	90	353	0.254	90	0.4	0.5	16.369	C
	Exit	1	1		32			32	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1313	1230	1.067	1223	30.5	51.0	120.162	F
			2	E,A,B	1326	1230	1.078	1238	30.4	50.8	119.520	F
	Exit	1	1		2304			2304	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	107	102	1.044	91	5.9	10.8	354.495	F
	Exit	1	1		23			23	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	112	346	0.324	112	0.6	0.7	19.505	C
	Exit	1	1		320			320	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1151	1277	0.902	1150	5.4	5.3	16.797	C
			2	E,B,C,D	1154	1277	0.904	1152	5.4	5.5	17.116	C
	Exit	1	1		2377			2377	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	74	576	0.128	74	0.5	0.2	9.735	A
	Exit	1	1		27			27	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1076	1242	0.866	1174	51.0	21.2	102.872	F
			2	E,A,B	1076	1242	0.866	1172	50.8	21.2	102.254	F
	Exit	1	1		1877			1877	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	89	167	0.535	111	10.8	7.1	278.652	F
	Exit	1	1		18			18	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	87	388	0.226	89	0.7	0.3	15.855	C
	Exit	1	1		282			282	0.0	0.0	0.000	A
E	Entry	1	1	A,B	927	1281	0.724	927	5.3	2.0	8.128	A
			2	E,B,C,D	939	1281	0.733	939	5.5	2.0	8.364	A
	Exit	1	1		2281			2281	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	60	735	0.082	61	0.2	0.1	6.559	A
	Exit	1	1		22			22	0.0	0.0	0.000	A
B	Entry	1	1	E,D	918	1249	0.735	931	21.2	2.3	22.434	C
			2	E,A,B	880	1249	0.705	896	21.2	2.1	22.450	C
	Exit	1	1		1565			1565	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	75	408	0.183	84	7.1	0.4	63.928	F
	Exit	1	1		16			16	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	75	629	0.120	76	0.3	0.2	9.848	A
	Exit	1	1		226			226	0.0	0.0	0.000	A
E	Entry	1	1	A,B	765	1288	0.594	765	2.0	1.2	5.502	A
			2	E,B,C,D	795	1288	0.617	795	2.0	1.3	5.574	A
	Exit	1	1		1779			1779	0.0	0.0	0.000	A

Future 2031 with dev (1500), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm A - Lane Simulation	Arm A: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.
Last Run	Lane Simulation	Arm E - Lane Simulation	Arm E: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	296.86	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	Future 2031 with dev (1500)	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	417	100.000
B		ONE HOUR	✓	1744	100.000
C		ONE HOUR	✓	60	100.000
D		ONE HOUR	✓	161	100.000
E		ONE HOUR	✓	2688	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		A	B	C	D	E
From	A	0	197	12	0	208
	B	56	0	0	111	1577
	C	0	31	0	4	25
	D	0	131	4	0	26
	E	105	2491	43	49	0

Proportions

		To				
		A	B	C	D	E
From	A	0.00	0.47	0.03	0.00	0.50
	B	0.03	0.00	0.00	0.06	0.90
	C	0.00	0.52	0.00	0.07	0.42
	D	0.00	0.81	0.02	0.00	0.16
	E	0.04	0.93	0.02	0.02	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	D	10	10	10	10	10
	E	10	10	10	10	10

Average PCU Per Veh

		To				
		A	B	C	D	E
From	A	1.100	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100	1.100
	E	1.100	1.100	1.100	1.100	1.100

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A	314	314
	B	1313	1313
	C	45	45
	D	121	121
	E	2024	2024
08:00-08:15	A	375	375
	B	1568	1568
	C	54	54
	D	145	145
	E	2416	2416
08:15-08:30	A	459	459
	B	1920	1920
	C	66	66
	D	177	177
	E	2960	2960
08:30-08:45	A	459	459
	B	1920	1920
	C	66	66
	D	177	177
	E	2960	2960
08:45-09:00	A	375	375
	B	1568	1568
	C	54	54
	D	145	145
	E	2416	2416
09:00-09:15	A	314	314
	B	1313	1313
	C	45	45
	D	121	121
	E	2024	2024

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	1248.39	137.5	F	381	572
B	9.60	5.0	A	1596	2394
C	16.51	0.4	C	56	84
D	11.52	0.7	B	149	223
E	359.23	261.3	F	2464	3696

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	313	78	2070	311	118	0.0	1.9	15.832	C
B	1304	326	237	1302	2145	0.0	2.1	4.986	A
C	47	12	1494	47	45	0.0	0.1	6.135	A
D	123	31	1419	124	121	0.0	0.2	5.231	A
E	2019	505	166	2022	1377	0.0	5.7	9.288	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	370	93	2432	318	141	1.9	15.5	107.623	F
B	1558	389	246	1560	2503	2.1	2.7	6.214	A
C	53	13	1759	53	48	0.1	0.2	8.839	A
D	147	37	1665	147	147	0.2	0.4	7.372	A
E	2400	600	200	2373	1612	5.7	21.8	25.718	D

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	466	116	2569	267	160	15.5	59.3	508.669	F
B	1921	480	230	1925	2606	2.7	5.0	9.603	A
C	67	17	2102	67	54	0.2	0.4	15.209	C
D	173	43	1998	173	171	0.4	0.7	10.942	B
E	2974	743	243	2486	1927	21.8	142.4	120.047	F

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	453	113	2559	273	156	59.3	103.9	1095.817	F
B	1905	476	234	1907	2599	5.0	5.0	9.365	A
C	69	17	2090	69	51	0.4	0.3	16.507	C
D	178	45	1989	178	170	0.7	0.6	11.524	B
E	2935	734	243	2473	1924	142.4	261.3	293.868	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	365	91	2581	269	151	103.9	129.3	1248.385	F
B	1564	391	237	1563	2613	5.0	2.8	6.383	A
C	54	14	1747	55	52	0.3	0.1	10.745	B
D	148	37	1647	148	155	0.6	0.3	8.096	A
E	2444	611	202	2530	1593	261.3	238.5	359.230	F

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	321	80	2512	294	145	129.3	137.5	812.890	F
B	1326	331	239	1322	2567	2.8	2.1	5.124	A
C	45	11	1512	46	48	0.1	0.1	7.396	A
D	121	30	1425	122	133	0.3	0.2	6.008	A
E	2013	503	169	2489	1379	238.5	115.0	253.485	F

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	313	518	0.604	311	0.0	1.9	15.832	C
	Exit	1	1		118			118	0.0	0.0	0.000	A
B	Entry	1	1	E,D	664	1215	0.547	662	0.0	1.1	5.013	A
			2	E,A,B	640	1215	0.527	639	0.0	1.0	4.958	A
	Exit	1	1		2145			2145	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	47	609	0.077	47	0.0	0.1	6.135	A
	Exit	1	1		45			45	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	123	808	0.152	124	0.0	0.2	5.231	A
	Exit	1	1		121			121	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1020	1265	0.806	1020	0.0	2.9	9.260	A
			2	E,B,C,D	1000	1265	0.790	1001	0.0	2.8	9.316	A
	Exit	1	1		1377			1377	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	370	339	1.094	318	1.9	15.5	107.623	F
	Exit	1	1		141			141	0.0	0.0	0.000	A
B	Entry	1	1	E,D	788	1211	0.650	789	1.1	1.4	6.266	A
			2	E,A,B	770	1211	0.635	771	1.0	1.3	6.161	A
	Exit	1	1		2503			2503	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	53	490	0.109	53	0.1	0.2	8.839	A
	Exit	1	1		48			48	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	147	692	0.212	147	0.2	0.4	7.372	A
	Exit	1	1		147			147	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1198	1254	0.955	1184	2.9	10.9	25.681	D
			2	E,B,C,D	1202	1254	0.959	1189	2.8	10.9	25.754	D
	Exit	1	1		1612			1612	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	466	270	1.724	267	15.5	59.3	508.669	F
	Exit	1	1		160			160	0.0	0.0	0.000	A
B	Entry	1	1	E,D	966	1217	0.794	968	1.4	2.5	9.645	A
			2	E,A,B	955	1217	0.785	957	1.3	2.5	9.561	A
	Exit	1	1		2606			2606	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	67	336	0.199	67	0.2	0.4	15.209	C
	Exit	1	1		54			54	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	173	535	0.324	173	0.4	0.7	10.942	B
	Exit	1	1		171			171	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1486	1240	1.199	1243	10.9	71.2	120.121	F
			2	E,B,C,D	1488	1240	1.200	1243	10.9	71.3	119.973	F
	Exit	1	1		1927			1927	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	453	275	1.646	273	59.3	103.9	1095.817	F
	Exit	1	1		156			156	0.0	0.0	0.000	A
B	Entry	1	1	E,D	958	1215	0.788	960	2.5	2.5	9.420	A
			2	E,A,B	947	1215	0.779	948	2.5	2.5	9.310	A
	Exit	1	1		2599			2599	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	69	341	0.201	69	0.4	0.3	16.507	C
	Exit	1	1		51			51	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	178	539	0.331	178	0.7	0.6	11.524	B
	Exit	1	1		170			170	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1481	1240	1.194	1249	71.2	130.6	291.863	F
			2	E,B,C,D	1454	1240	1.172	1224	71.3	130.7	295.896	F
	Exit	1	1		1924			1924	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	365	265	1.379	269	103.9	129.3	1248.385	F
	Exit	1	1		151			151	0.0	0.0	0.000	A
B	Entry	1	1	E,D	786	1214	0.647	785	2.5	1.4	6.466	A
			2	E,A,B	778	1214	0.641	778	2.5	1.4	6.298	A
	Exit	1	1		2613			2613	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	54	495	0.109	55	0.3	0.1	10.745	B
	Exit	1	1		52			52	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	148	700	0.211	148	0.6	0.3	8.096	A
	Exit	1	1		155			155	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1220	1254	0.973	1263	130.6	119.2	358.868	F
			2	E,B,C,D	1224	1254	0.976	1267	130.7	119.3	359.591	F
	Exit	1	1		1593			1593	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	321	298	1.076	294	129.3	137.5	812.890	F
	Exit	1	1		145			145	0.0	0.0	0.000	A
B	Entry	1	1	E,D	670	1214	0.552	668	1.4	1.1	5.171	A
			2	E,A,B	656	1214	0.540	654	1.4	1.0	5.076	A
	Exit	1	1		2567			2567	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	45	600	0.076	46	0.1	0.1	7.396	A
	Exit	1	1		48			48	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	121	805	0.151	122	0.3	0.2	6.008	A
	Exit	1	1		133			133	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1012	1264	0.801	1248	119.2	57.7	253.710	F
			2	E,B,C,D	1001	1264	0.792	1241	119.3	57.4	253.260	F
	Exit	1	1		1379			1379	0.0	0.0	0.000	A

Future 2031 with dev (1500), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm B - Lane Simulation	Arm B: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	A,B,C,D,E	128.58	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	Future 2031 with dev (1500)	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	152	100.000
B		ONE HOUR	✓	2471	100.000
C		ONE HOUR	✓	98	100.000
D		ONE HOUR	✓	100	100.000
E		ONE HOUR	✓	2279	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		A	B	C	D	E
From	A	0	62	2	0	88
	B	91	0	0	189	2191
	C	0	28	0	6	64
	D	0	84	0	0	16
	E	221	1939	20	99	0

Proportions

		To				
		A	B	C	D	E
From	A	0.00	0.41	0.01	0.00	0.58
	B	0.04	0.00	0.00	0.08	0.89
	C	0.00	0.29	0.00	0.06	0.65
	D	0.00	0.84	0.00	0.00	0.16
	E	0.10	0.85	0.01	0.04	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To				
		A	B	C	D	E
From	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	D	10	10	10	10	10
	E	10	10	10	10	10

Average PCU Per Veh

		To				
		A	B	C	D	E
From	A	1.100	1.100	1.100	1.100	1.100
	B	1.100	1.100	1.100	1.100	1.100
	C	1.100	1.100	1.100	1.100	1.100
	D	1.100	1.100	1.100	1.100	1.100
	E	1.100	1.100	1.100	1.100	1.100

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	A	114	114
	B	1860	1860
	C	74	74
	D	75	75
	E	1716	1716
17:00-17:15	A	137	137
	B	2221	2221
	C	88	88
	D	90	90
	E	2049	2049
17:15-17:30	A	167	167
	B	2721	2721
	C	108	108
	D	110	110
	E	2509	2509
17:30-17:45	A	167	167
	B	2721	2721
	C	108	108
	D	110	110
	E	2509	2509
17:45-18:00	A	137	137
	B	2221	2221
	C	88	88
	D	90	90
	E	2049	2049
18:00-18:15	A	114	114
	B	1860	1860
	C	74	74
	D	75	75
	E	1716	1716

Results

Results Summary for whole modelled period

Arm	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	21.35	1.1	C	139	209
B	192.34	156.4	F	2262	3393
C	450.60	12.8	F	90	136
D	20.57	0.6	C	93	139
E	57.59	46.5	F	2091	3136

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	114	28	1629	113	240	0.0	0.2	5.610	A
B	1870	468	156	1868	1586	0.0	4.6	7.840	A
C	73	18	2007	73	17	0.0	0.3	11.040	B
D	77	19	1859	77	220	0.0	0.2	6.511	A
E	1711	428	155	1714	1782	0.0	3.3	6.429	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	140	35	1957	140	279	0.2	0.4	9.214	A
B	2197	549	189	2202	1907	4.6	11.3	16.862	C
C	88	22	2372	88	19	0.3	1.1	35.518	E
D	91	23	2191	92	269	0.2	0.3	11.278	B
E	2045	511	184	2051	2098	3.3	5.6	10.110	B

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	166	41	2321	165	327	0.4	1.1	17.940	C
B	2719	680	225	2432	2261	11.3	85.4	75.065	F
C	110	28	2634	84	24	1.1	7.4	229.873	F
D	110	28	2423	109	294	0.3	0.6	18.088	C
E	2506	627	204	2445	2328	5.6	31.8	33.129	D

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	164	41	2331	165	324	1.1	1.0	21.350	C
B	2708	677	227	2429	2269	85.4	156.4	180.405	F
C	109	27	2633	90	23	7.4	12.8	450.603	F
D	110	28	2420	111	302	0.6	0.6	20.568	C
E	2516	629	205	2450	2326	31.8	46.5	57.592	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	139	35	1993	141	288	1.0	0.4	14.263	B
B	2211	553	190	2456	1944	156.4	100.9	192.344	F
C	87	22	2625	88	21	12.8	12.3	429.558	F
D	91	23	2433	90	281	0.6	0.6	19.211	C
E	2049	512	189	2093	2334	46.5	8.2	30.506	D

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	111	28	1647	112	244	0.4	0.2	7.231	A
B	1865	466	155	2067	1603	100.9	14.0	70.952	F
C	75	19	2207	110	16	12.3	2.7	173.249	F
D	76	19	2078	76	239	0.6	0.2	13.979	B
E	1718	429	173	1719	1981	8.2	3.3	7.348	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	114	737	0.154	113	0.0	0.2	5.610	A
	Exit	1	1		240			240	0.0	0.0	0.000	A
B	Entry	1	1	E,D	945	1241	0.762	945	0.0	2.3	7.922	A
			2	E,A,B	925	1241	0.745	923	0.0	2.3	7.757	A
	Exit	1	1		1586			1586	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	73	379	0.193	73	0.0	0.3	11.040	B
	Exit	1	1		17			17	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	77	600	0.129	77	0.0	0.2	6.511	A
	Exit	1	1		220			220	0.0	0.0	0.000	A
E	Entry	1	1	A,B	866	1269	0.682	867	0.0	1.7	6.536	A
			2	E,B,C,D	845	1269	0.666	847	0.0	1.6	6.319	A
	Exit	1	1		1782			1782	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	140	574	0.243	140	0.2	0.4	9.214	A
	Exit	1	1		279			279	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1107	1230	0.900	1108	2.3	5.8	16.956	C
			2	E,A,B	1091	1230	0.887	1094	2.3	5.6	16.768	C
	Exit	1	1		1907			1907	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	88	215	0.410	88	0.3	1.1	35.518	E
	Exit	1	1		19			19	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	91	444	0.206	92	0.2	0.3	11.278	B
	Exit	1	1		269			269	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1031	1259	0.818	1033	1.7	2.8	10.176	B
			2	E,B,C,D	1015	1259	0.806	1018	1.6	2.7	10.043	B
	Exit	1	1		2098			2098	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	166	393	0.421	165	0.4	1.1	17.940	C
	Exit	1	1		327			327	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1357	1218	1.114	1214	5.8	42.8	75.421	F
			2	E,A,B	1362	1218	1.118	1218	5.6	42.6	74.711	F
	Exit	1	1		2261			2261	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	110	99	1.120	84	1.1	7.4	229.873	F
	Exit	1	1		24			24	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	110	334	0.330	109	0.3	0.6	18.088	C
	Exit	1	1		294			294	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1257	1253	1.003	1227	2.8	16.0	33.215	D
			2	E,B,C,D	1249	1253	0.997	1218	2.7	15.9	33.042	D
	Exit	1	1		2328			2328	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	164	388	0.423	165	1.1	1.0	21.350	C
	Exit	1	1		324			324	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1357	1218	1.114	1217	42.8	78.2	180.461	F
			2	E,A,B	1352	1218	1.110	1212	42.6	78.2	180.350	F
	Exit	1	1		2269			2269	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	109	98	1.108	90	7.4	12.8	450.603	F
	Exit	1	1		23			23	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	110	335	0.329	111	0.6	0.6	20.568	C
	Exit	1	1		302			302	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1258	1253	1.004	1226	16.0	23.3	57.763	F
			2	E,B,C,D	1258	1253	1.004	1224	15.9	23.2	57.421	F
	Exit	1	1		2326			2326	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	139	556	0.251	141	1.0	0.4	14.263	B
	Exit	1	1		288			288	0.0	0.0	0.000	A
B	Entry	1	1	E,D	1108	1230	0.901	1229	78.2	50.6	192.438	F
			2	E,A,B	1103	1230	0.897	1227	78.2	50.3	192.251	F
	Exit	1	1		1944			1944	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	87	102	0.855	88	12.8	12.3	429.558	F
	Exit	1	1		21			21	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	91	329	0.277	90	0.6	0.6	19.211	C
	Exit	1	1		281			281	0.0	0.0	0.000	A
E	Entry	1	1	A,B	1032	1258	0.820	1055	23.3	4.1	30.550	D
			2	E,B,C,D	1017	1258	0.808	1038	23.2	4.0	30.462	D
	Exit	1	1		2334			2334	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A	Entry	1	1	E,A,B,C,D	111	728	0.153	112	0.4	0.2	7.231	A
	Exit	1	1		244			244	0.0	0.0	0.000	A
B	Entry	1	1	E,D	933	1241	0.752	1033	50.6	7.1	70.989	F
			2	E,A,B	932	1241	0.751	1034	50.3	6.9	70.914	F
	Exit	1	1		1603			1603	0.0	0.0	0.000	A
C	Entry	1	1	E,A,B,C,D	75	288	0.260	110	12.3	2.7	173.249	F
	Exit	1	1		16			16	0.0	0.0	0.000	A
D	Entry	1	1	E,A,B,C,D	76	497	0.153	76	0.6	0.2	13.979	B
	Exit	1	1		239			239	0.0	0.0	0.000	A
E	Entry	1	1	A,B	875	1263	0.692	875	4.1	1.7	7.373	A
			2	E,B,C,D	843	1263	0.668	843	4.0	1.6	7.323	A
	Exit	1	1		1981			1981	0.0	0.0	0.000	A

Appendix C. Improved Layout – LinSig Outputs

Basic Results Summary

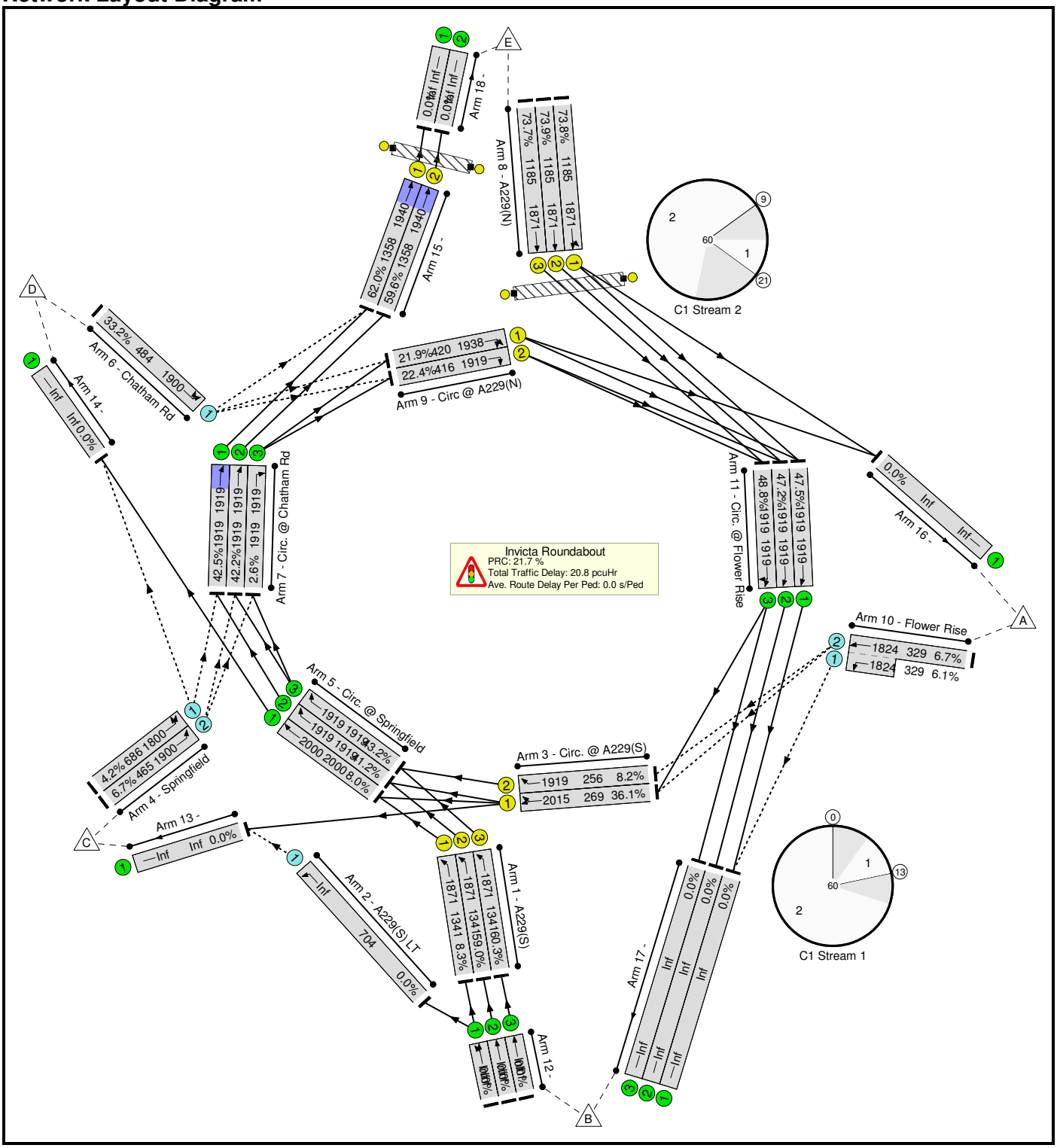
User and Project Details

Project:	**Maidstone Transport Planning**
Title:	**Invicta Roundabout**
Location:	Stoneham Place, Stoneham Lane, Southampton
File name:	Invicta Rbt B.lsg3x
Author:	David Parkin
Company:	Mott MacDonald
Address:	
Notes:	Controlled pedestrian crossings added on the northern arm.

Basic Results Summary

Scenario 3: 'Future 2031 (Adjusted 1300) AM' (FG3: 'Future 2031 (Adjusted 1300) AM', Plan 1: 'Network Control Plan 1')

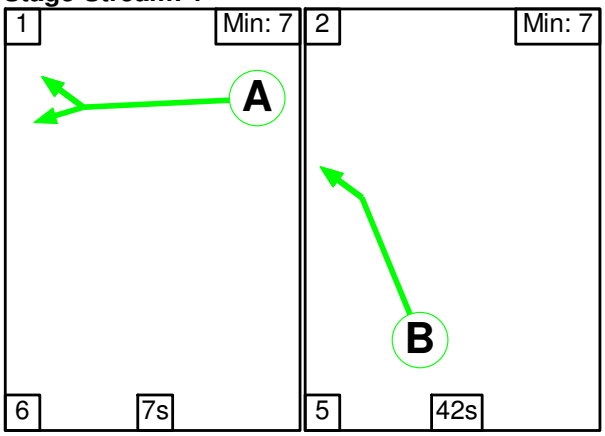
Network Layout Diagram



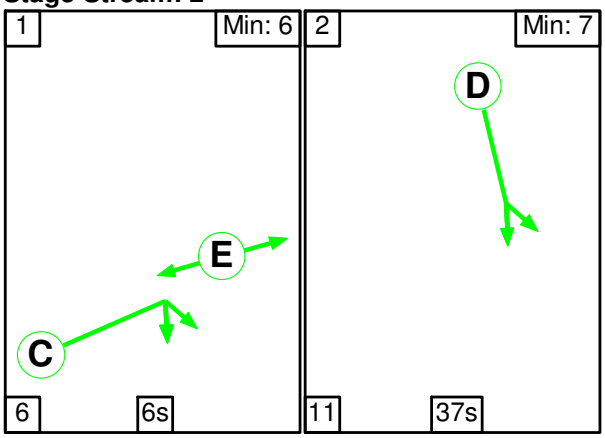
Basic Results Summary

Stage Sequence Diagram

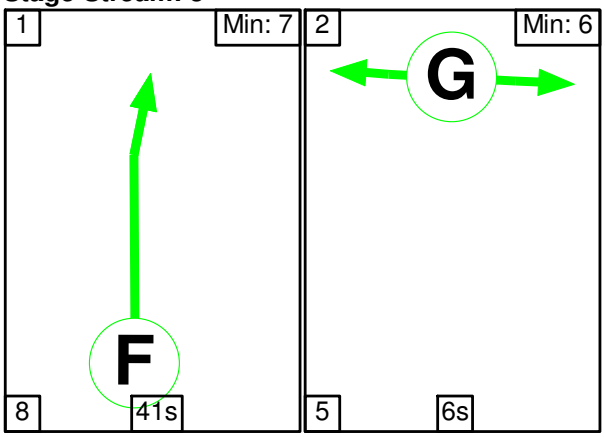
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.9%**	**305**	**0**	**0**	**20.8**	**-**	**-**
Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.9%**	**305**	**0**	**0**	**20.8**	**-**	**-**
1/1	A229(S) Ahead	U	B		1	42	-	111	1871	1341	8.3%	-	-	-	0.1	4.0	0.6
1/2	A229(S) Ahead	U	B		1	42	-	791	1871	1341	59.0%	-	-	-	1.6	7.4	7.1
1/3	A229(S) Ahead	U	B		1	42	-	808	1871	1341	60.3%	-	-	-	1.7	7.6	7.3
2/1	A229(S) LT Left	O	-		-	-	-	0	Inf	704	0.0%	0	0	0	0.0	0.0	0.0
3/1	Circ. @ A229(S) Ahead Ahead2	U	A		1	7	-	97	2015	269	36.1%	-	-	-	0.7	27.6	1.7
3/2	Circ. @ A229(S) Ahead	U	A		1	7	-	21	1919	256	8.2%	-	-	-	0.2	26.3	0.2
4/1	Springfield Left Left2	O	-		-	-	-	29	1800	686	4.2%	29	0	0	0.0	2.7	0.0
4/2	Springfield Left	O	-		-	-	-	31	1900	465	6.7%	31	0	0	0.0	5.8	0.2
5/1	Circ. @ Springfield Ahead	U	-		-	-	-	160	2000	2000	8.0%	-	-	-	0.0	1.0	0.0
5/2	Circ. @ Springfield Right	U	-		-	-	-	791	1919	1919	41.2%	-	-	-	0.4	1.6	0.4
5/3	Circ. @ Springfield Right	U	-		-	-	-	829	1919	1919	43.2%	-	-	-	0.4	1.7	0.4
6/1	Chatham Rd Left Left2	O	-		-	-	-	161	1900	484	33.2%	161	0	0	0.3	7.7	1.1

Basic Results Summary

7/1	Circ. @ Chatham Rd Ahead	U	-		-	-	-	816	1919	1919	42.5%	-	-	-	0.4	1.6	0.4
7/2	Circ. @ Chatham Rd Ahead	U	-		-	-	-	810	1919	1919	42.2%	-	-	-	0.4	1.6	0.4
7/3	Circ. @ Chatham Rd Right	U	-		-	-	-	50	1919	1919	2.6%	-	-	-	0.0	1.0	0.0
8/1	A229(N) Ahead Ahead2	U	D		1	37	-	875	1871	1185	73.8%	-	-	-	3.2	13.3	11.4
8/2	A229(N) Ahead	U	D		1	37	-	876	1871	1185	73.9%	-	-	-	3.3	13.4	11.4
8/3	A229(N) Ahead	U	D		1	37	-	873	1871	1185	73.7%	-	-	-	3.2	13.3	11.3
9/1	Circ @ A229(N) Right Right2	U	C		1	12	-	92	1938	420	21.9%	-	-	-	0.6	25.3	1.4
9/2	Circ @ A229(N) Right	U	C		1	12	-	93	1919	416	22.4%	-	-	-	0.6	23.1	1.4
10/2+10/1	Flower Rise Ahead Left	O	-		-	-	-	42	1824:1824	329+329	6.7 : 6.1%	84	0	0	0.1	8.0	0.2
11/1	Circ. @ Flower Rise Ahead	U	-		-	-	-	912	1919	1919	47.5%	-	-	-	0.5	1.8	0.5
11/2	Circ. @ Flower Rise Ahead	U	-		-	-	-	905	1919	1919	47.2%	-	-	-	0.4	1.8	0.4
11/3	Circ. @ Flower Rise Right Ahead	U	-		-	-	-	937	1919	1919	48.8%	-	-	-	0.5	1.8	0.5
15/1	Ahead	U	F		1	41	-	842	1940	1358	62.0%	-	-	-	1.1	4.6	2.1
15/2	Ahead	U	F		1	41	-	810	1940	1358	59.6%	-	-	-	1.0	4.5	2.1
Ped Link: P1	Unnamed Ped Link	-	E		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

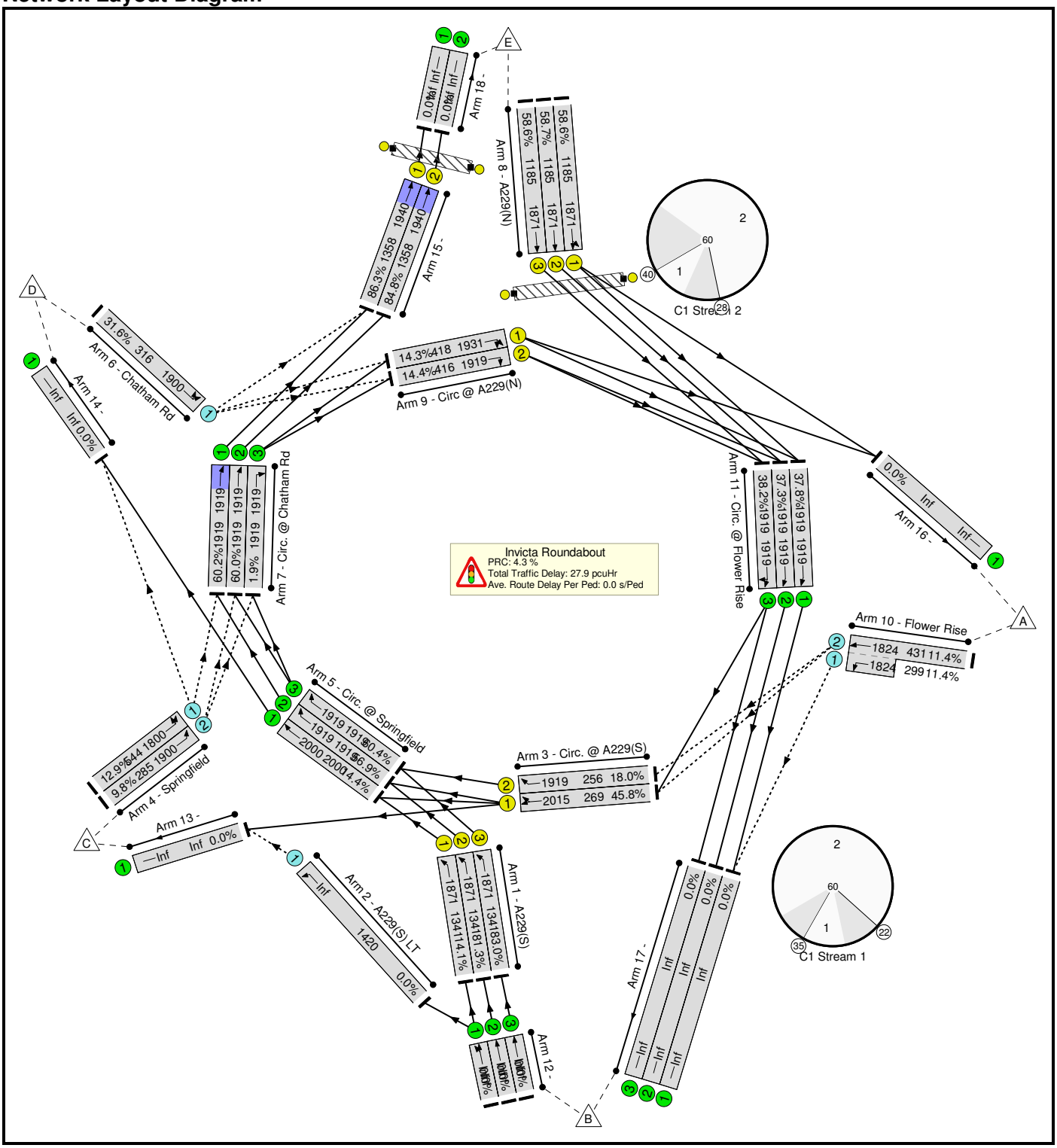
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	49.4	Total Delay for Signalled Lanes (pcuHr):	4.36	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	21.7	Total Delay for Signalled Lanes (pcuHr):	10.96	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	45.2	Total Delay for Signalled Lanes (pcuHr):	2.08	Cycle Time (s):	60
		PRC Over All Lanes (%):	21.7	Total Delay Over All Lanes(pcuHr):	20.81		

Basic Results Summary

Scenario 4: 'Future 2031 (Adjusted 1300) PM' (FG4: 'Future 2031 (Adjusted 1300) PM', Plan 1: 'Network Control Plan 1')

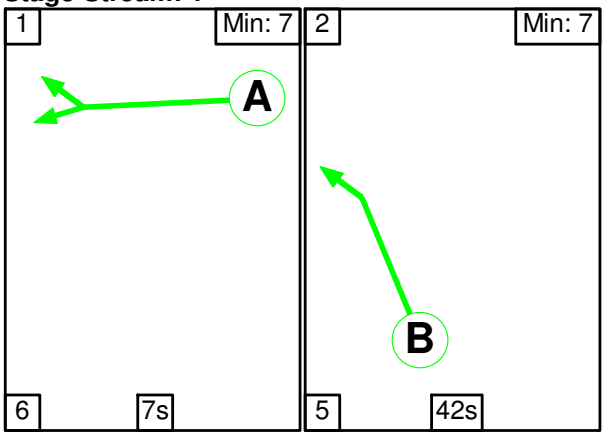
Network Layout Diagram



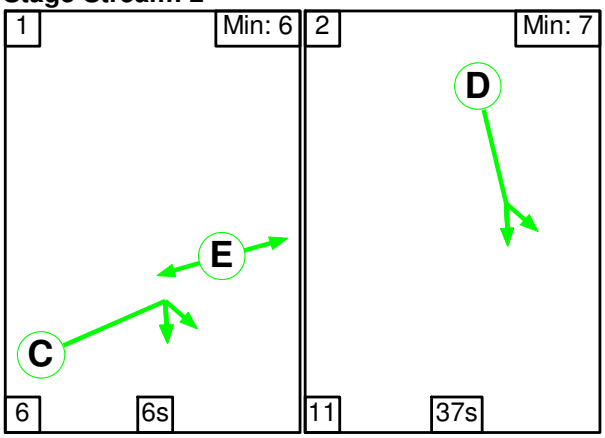
Basic Results Summary

Stage Sequence Diagram

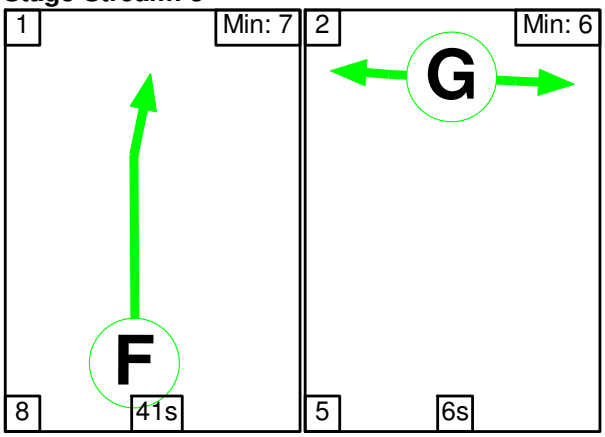
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.3%**	**364**	**0**	**0**	**27.9**	**-**	**-**
Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.3%**	**364**	**0**	**0**	**27.9**	**-**	**-**
1/1	A229(S) Ahead	U	B		1	42	-	189	1871	1341	14.1%	-	-	-	0.2	4.2	1.0
1/2	A229(S) Ahead	U	B		1	42	-	1090	1871	1341	81.3%	-	-	-	3.9	12.8	14.2
1/3	A229(S) Ahead	U	B		1	42	-	1113	1871	1341	83.0%	-	-	-	4.2	13.7	15.1
2/1	A229(S) LT Left	O	-		-	-	-	0	Inf	1420	0.0%	0	0	0	0.0	0.0	0.0
3/1	Circ. @ A229(S) Ahead Ahead2	U	A		1	7	-	123	2015	269	45.8%	-	-	-	1.0	30.0	2.3
3/2	Circ. @ A229(S) Ahead	U	A		1	7	-	46	1919	256	18.0%	-	-	-	0.4	29.4	0.8
4/1	Springfield Left Left2	O	-		-	-	-	70	1800	544	12.9%	70	0	0	0.1	3.8	0.1
4/2	Springfield Left	O	-		-	-	-	28	1900	285	9.8%	28	0	0	0.1	13.5	0.3
5/1	Circ. @ Springfield Ahead	U	-		-	-	-	288	2000	2000	14.4%	-	-	-	0.1	1.1	0.1
5/2	Circ. @ Springfield Right	U	-		-	-	-	1092	1919	1919	56.9%	-	-	-	0.7	2.2	0.7
5/3	Circ. @ Springfield Right	U	-		-	-	-	1159	1919	1919	60.4%	-	-	-	0.8	2.4	0.8
6/1	Chatham Rd Left Left2	O	-		-	-	-	100	1900	316	31.6%	100	0	0	0.5	17.5	1.4

Basic Results Summary

7/1	Circ. @ Chatham Rd Ahead	U	-		-	-	-	1156	1919	1919	60.2%	-	-	-	0.8	2.4	0.8
7/2	Circ. @ Chatham Rd Ahead	U	-		-	-	-	1151	1919	1919	60.0%	-	-	-	0.7	2.3	0.7
7/3	Circ. @ Chatham Rd Right	U	-		-	-	-	36	1919	1919	1.9%	-	-	-	0.0	1.0	0.0
8/1	A229(N) Ahead Ahead2	U	D		1	37	-	694	1871	1185	58.6%	-	-	-	1.9	10.1	7.3
8/2	A229(N) Ahead	U	D		1	37	-	696	1871	1185	58.7%	-	-	-	2.0	10.1	7.5
8/3	A229(N) Ahead	U	D		1	37	-	694	1871	1185	58.6%	-	-	-	1.9	10.1	7.3
9/1	Circ @ A229(N) Right Right2	U	C		1	12	-	60	1931	418	14.3%	-	-	-	0.3	17.8	0.9
9/2	Circ @ A229(N) Right	U	C		1	12	-	60	1919	416	14.4%	-	-	-	0.3	15.6	0.9
10/2+10/1	Flower Rise Ahead Left	O	-		-	-	-	83	1824:1824	431+299	11.4 : 11.4%	166	0	0	0.1	5.0	0.3
11/1	Circ. @ Flower Rise Ahead	U	-		-	-	-	725	1919	1919	37.8%	-	-	-	0.3	1.5	0.3
11/2	Circ. @ Flower Rise Ahead	U	-		-	-	-	716	1919	1919	37.3%	-	-	-	0.3	1.5	0.3
11/3	Circ. @ Flower Rise Right Ahead	U	-		-	-	-	734	1919	1919	38.2%	-	-	-	0.3	1.5	0.3
15/1	Ahead	U	F		1	41	-	1172	1940	1358	86.3%	-	-	-	3.7	11.4	5.7
15/2	Ahead	U	F		1	41	-	1151	1940	1358	84.8%	-	-	-	3.4	10.6	5.7
Ped Link: P1	Unnamed Ped Link	-	E		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

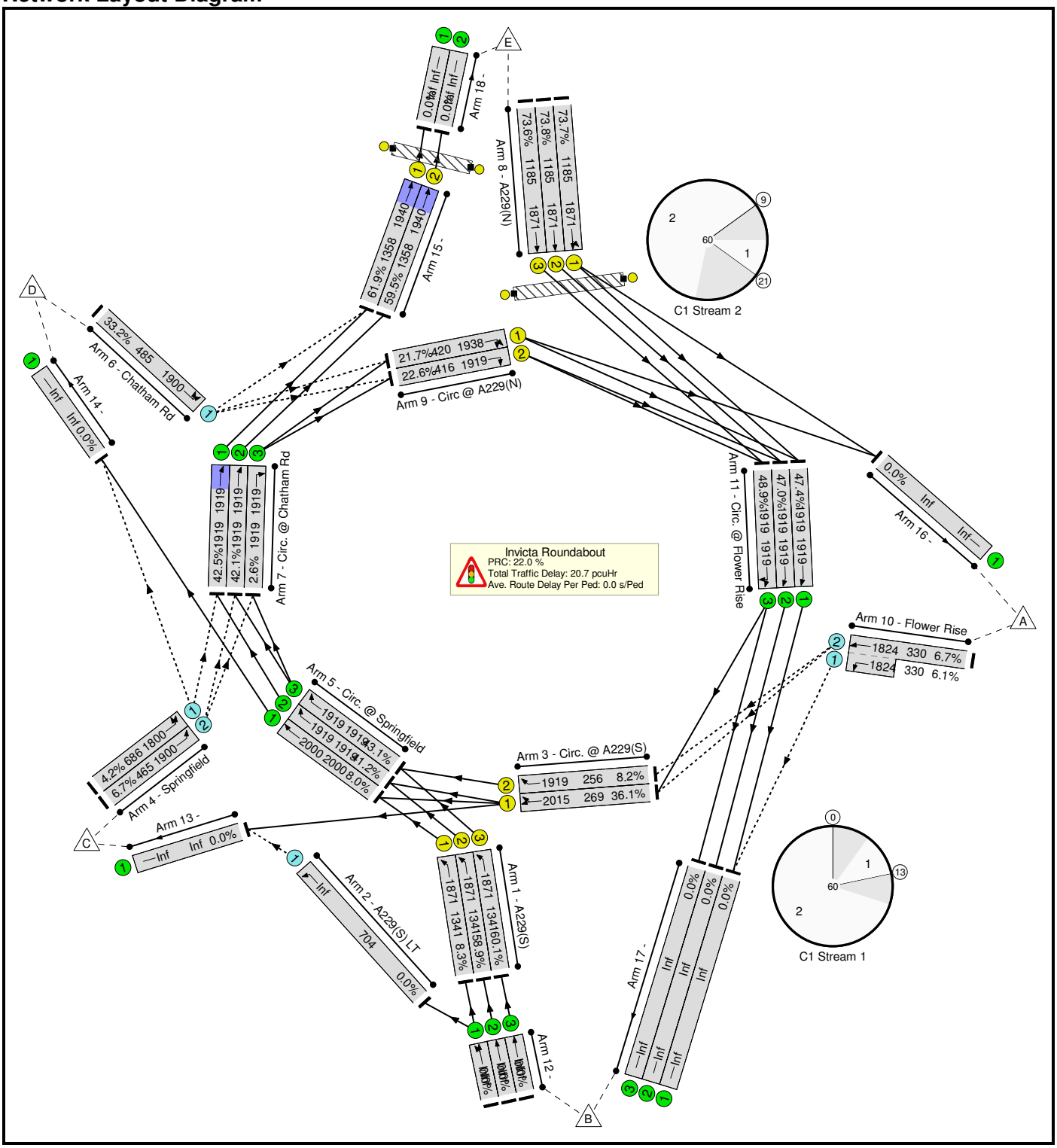
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	8.4	Total Delay for Signalled Lanes (pcuHr):	9.74	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	53.2	Total Delay for Signalled Lanes (pcuHr):	6.39	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	4.3	Total Delay for Signalled Lanes (pcuHr):	7.08	Cycle Time (s):	60
		PRC Over All Lanes (%):	4.3	Total Delay Over All Lanes(pcuHr):	27.92		

Basic Results Summary

Scenario 5: 'Future 2031 (Adjusted 1500) AM' (FG5: 'Future 2031 (Adjusted 1500) AM', Plan 1: 'Network Control Plan 1')

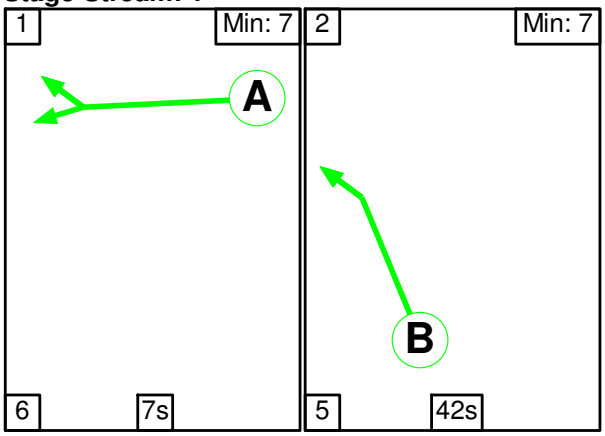
Network Layout Diagram



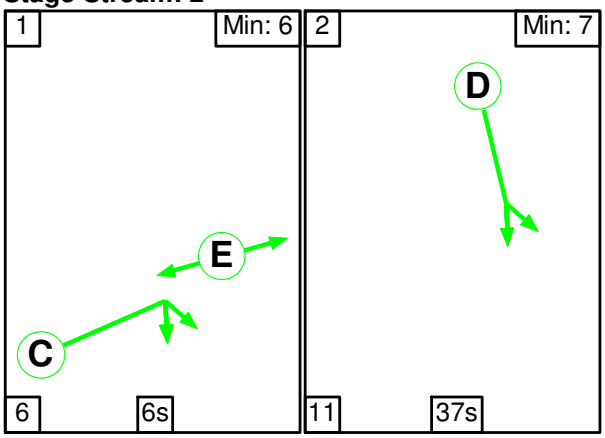
Basic Results Summary

Stage Sequence Diagram

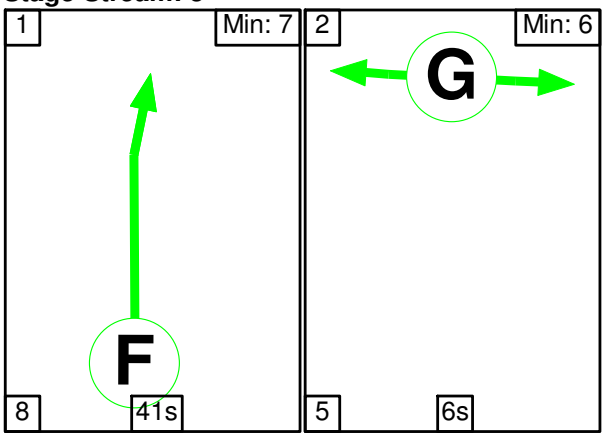
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.8%**	**305**	**0**	**0**	**20.7**	**-**	**-**
Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.8%**	**305**	**0**	**0**	**20.7**	**-**	**-**
1/1	A229(S) Ahead	U	B		1	42	-	111	1871	1341	8.3%	-	-	-	0.1	4.0	0.6
1/2	A229(S) Ahead	U	B		1	42	-	790	1871	1341	58.9%	-	-	-	1.6	7.4	7.1
1/3	A229(S) Ahead	U	B		1	42	-	806	1871	1341	60.1%	-	-	-	1.7	7.6	7.2
2/1	A229(S) LT Left	O	-		-	-	-	0	Inf	704	0.0%	0	0	0	0.0	0.0	0.0
3/1	Circ. @ A229(S) Ahead Ahead2	U	A		1	7	-	97	2015	269	36.1%	-	-	-	0.7	27.6	1.7
3/2	Circ. @ A229(S) Ahead	U	A		1	7	-	21	1919	256	8.2%	-	-	-	0.2	26.3	0.2
4/1	Springfield Left Left2	O	-		-	-	-	29	1800	686	4.2%	29	0	0	0.0	2.7	0.0
4/2	Springfield Left	O	-		-	-	-	31	1900	465	6.7%	31	0	0	0.0	5.8	0.2
5/1	Circ. @ Springfield Ahead	U	-		-	-	-	160	2000	2000	8.0%	-	-	-	0.0	1.0	0.0
5/2	Circ. @ Springfield Right	U	-		-	-	-	790	1919	1919	41.2%	-	-	-	0.3	1.6	0.3
5/3	Circ. @ Springfield Right	U	-		-	-	-	827	1919	1919	43.1%	-	-	-	0.4	1.6	0.4
6/1	Chatham Rd Left Left2	O	-		-	-	-	161	1900	485	33.2%	161	0	0	0.3	7.6	1.1

Basic Results Summary

7/1	Circ. @ Chatham Rd Ahead	U	-		-	-	-	815	1919	1919	42.5%	-	-	-	0.4	1.6	0.4
7/2	Circ. @ Chatham Rd Ahead	U	-		-	-	-	808	1919	1919	42.1%	-	-	-	0.4	1.6	0.4
7/3	Circ. @ Chatham Rd Right	U	-		-	-	-	50	1919	1919	2.6%	-	-	-	0.0	1.0	0.0
8/1	A229(N) Ahead Ahead2	U	D		1	37	-	873	1871	1185	73.7%	-	-	-	3.2	13.3	11.3
8/2	A229(N) Ahead	U	D		1	37	-	874	1871	1185	73.8%	-	-	-	3.2	13.3	11.3
8/3	A229(N) Ahead	U	D		1	37	-	872	1871	1185	73.6%	-	-	-	3.2	13.3	11.3
9/1	Circ @ A229(N) Right Right2	U	C		1	12	-	91	1938	420	21.7%	-	-	-	0.6	25.4	1.4
9/2	Circ @ A229(N) Right	U	C		1	12	-	94	1919	416	22.6%	-	-	-	0.6	23.1	1.4
10/2+10/1	Flower Rise Ahead Left	O	-		-	-	-	42	1824:1824	330+330	6.7 : 6.1%	84	0	0	0.1	7.9	0.2
11/1	Circ. @ Flower Rise Ahead	U	-		-	-	-	909	1919	1919	47.4%	-	-	-	0.4	1.8	0.4
11/2	Circ. @ Flower Rise Ahead	U	-		-	-	-	902	1919	1919	47.0%	-	-	-	0.4	1.8	0.4
11/3	Circ. @ Flower Rise Right Ahead	U	-		-	-	-	938	1919	1919	48.9%	-	-	-	0.5	1.8	0.5
15/1	Ahead	U	F		1	41	-	841	1940	1358	61.9%	-	-	-	1.1	4.6	2.1
15/2	Ahead	U	F		1	41	-	808	1940	1358	59.5%	-	-	-	1.0	4.5	2.1
Ped Link: P1	Unnamed Ped Link	-	E		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

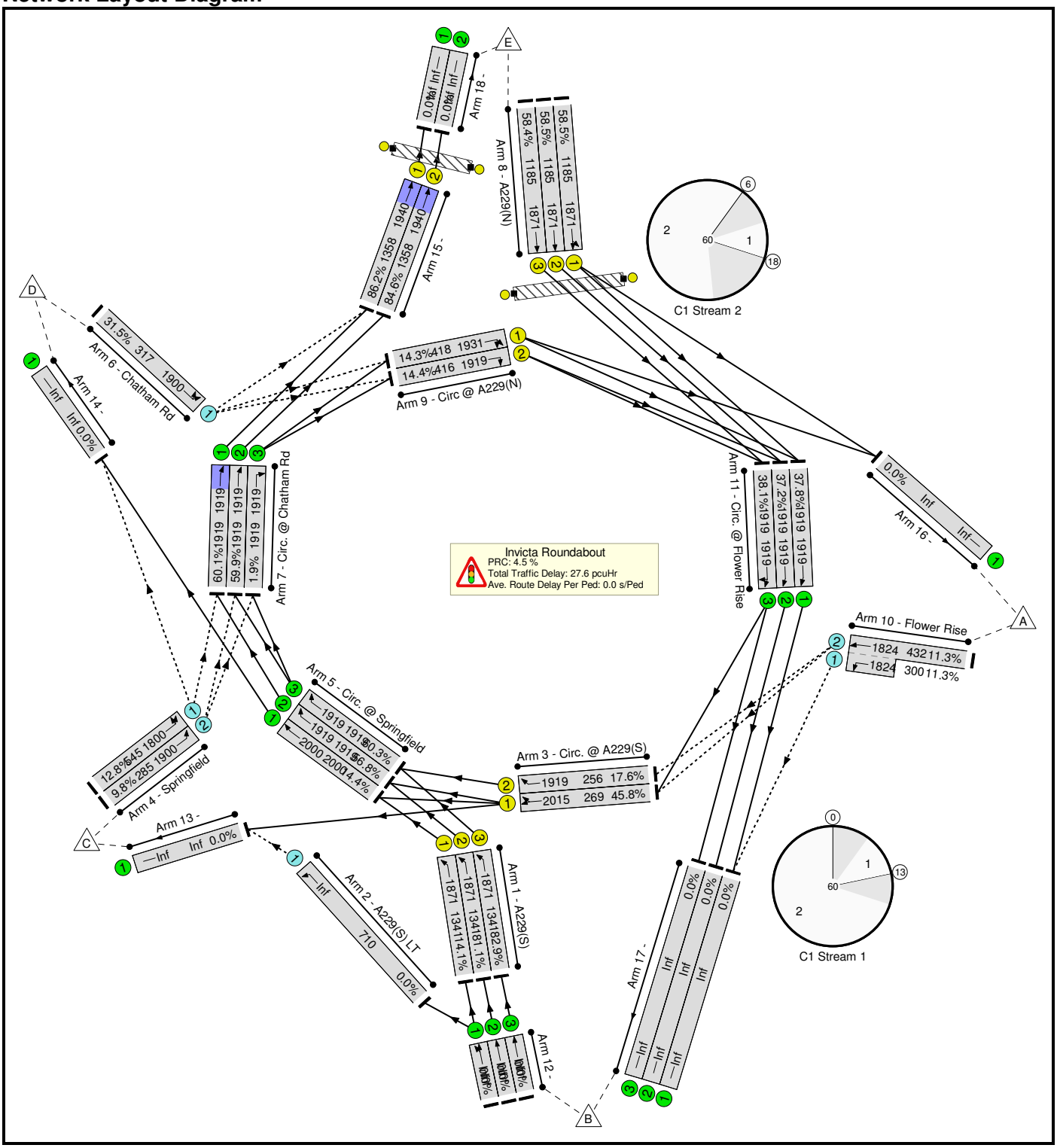
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	49.7	Total Delay for Signalled Lanes (pcuHr):	4.35	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	22.0	Total Delay for Signalled Lanes (pcuHr):	10.91	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	45.3	Total Delay for Signalled Lanes (pcuHr):	2.07	Cycle Time (s):	60
		PRC Over All Lanes (%):	22.0	Total Delay Over All Lanes(pcuHr):	20.72		

Basic Results Summary

Scenario 6: 'Future 2031 (Adjusted 1500) PM' (FG6: 'Future 2031 (Adjusted 1500) PM', Plan 1: 'Network Control Plan 1')

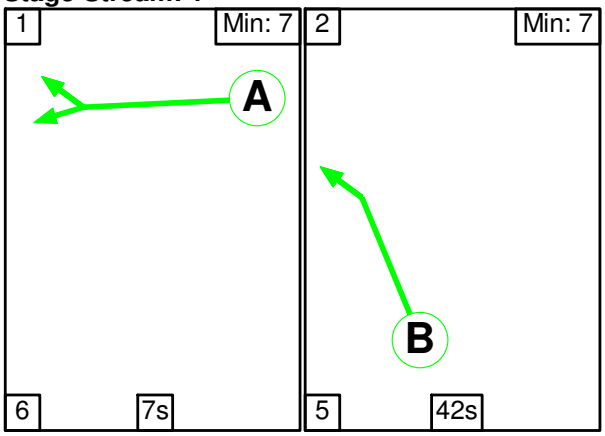
Network Layout Diagram



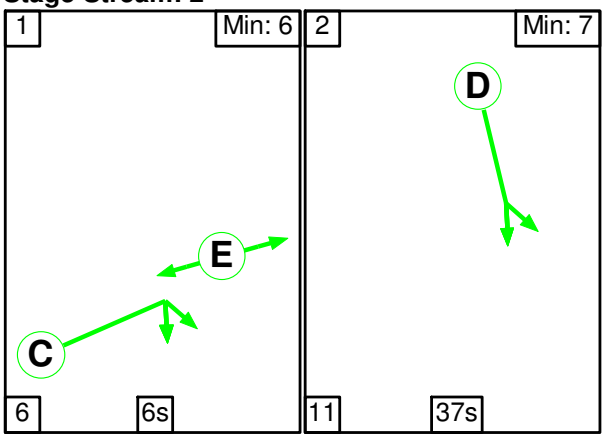
Basic Results Summary

Stage Sequence Diagram

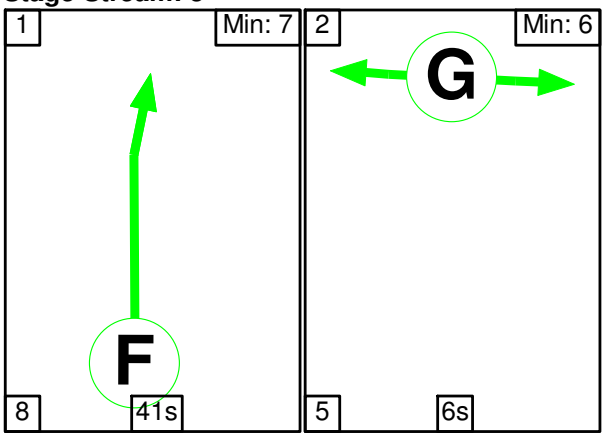
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.2%**	**364**	**0**	**0**	**27.6**	**-**	**-**
Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.2%**	**364**	**0**	**0**	**27.6**	**-**	**-**
1/1	A229(S) Ahead	U	B		1	42	-	189	1871	1341	14.1%	-	-	-	0.2	4.2	1.0
1/2	A229(S) Ahead	U	B		1	42	-	1087	1871	1341	81.1%	-	-	-	3.8	12.7	14.2
1/3	A229(S) Ahead	U	B		1	42	-	1112	1871	1341	82.9%	-	-	-	4.2	13.6	15.0
2/1	A229(S) LT Left	O	-		-	-	-	0	Inf	710	0.0%	0	0	0	0.0	0.0	0.0
3/1	Circ. @ A229(S) Ahead Ahead2	U	A		1	7	-	123	2015	269	45.8%	-	-	-	1.0	30.0	2.3
3/2	Circ. @ A229(S) Ahead	U	A		1	7	-	45	1919	256	17.6%	-	-	-	0.4	29.4	0.8
4/1	Springfield Left Left2	O	-		-	-	-	70	1800	545	12.8%	70	0	0	0.1	3.8	0.1
4/2	Springfield Left	O	-		-	-	-	28	1900	285	9.8%	28	0	0	0.1	13.4	0.3
5/1	Circ. @ Springfield Ahead	U	-		-	-	-	288	2000	2000	14.4%	-	-	-	0.1	1.1	0.1
5/2	Circ. @ Springfield Right	U	-		-	-	-	1090	1919	1919	56.8%	-	-	-	0.7	2.2	0.7
5/3	Circ. @ Springfield Right	U	-		-	-	-	1157	1919	1919	60.3%	-	-	-	0.8	2.4	0.8
6/1	Chatham Rd Left Left2	O	-		-	-	-	100	1900	317	31.5%	100	0	0	0.5	17.4	1.4

Basic Results Summary

7/1	Circ. @ Chatham Rd Ahead	U	-		-	-	-	1154	1919	1919	60.1%	-	-	-	0.8	2.4	0.8
7/2	Circ. @ Chatham Rd Ahead	U	-		-	-	-	1149	1919	1919	59.9%	-	-	-	0.7	2.3	0.7
7/3	Circ. @ Chatham Rd Right	U	-		-	-	-	36	1919	1919	1.9%	-	-	-	0.0	1.0	0.0
8/1	A229(N) Ahead Ahead2	U	D		1	37	-	693	1871	1185	58.5%	-	-	-	1.9	10.1	7.2
8/2	A229(N) Ahead	U	D		1	37	-	693	1871	1185	58.5%	-	-	-	1.9	10.1	7.2
8/3	A229(N) Ahead	U	D		1	37	-	692	1871	1185	58.4%	-	-	-	1.9	10.0	7.2
9/1	Circ @ A229(N) Right Right2	U	C		1	12	-	60	1931	418	14.3%	-	-	-	0.3	17.9	0.9
9/2	Circ @ A229(N) Right	U	C		1	12	-	60	1919	416	14.4%	-	-	-	0.3	15.7	0.9
10/2+10/1	Flower Rise Ahead Left	O	-		-	-	-	83	1824:1824	432+300	11.3 : 11.3%	166	0	0	0.1	5.0	0.3
11/1	Circ. @ Flower Rise Ahead	U	-		-	-	-	725	1919	1919	37.8%	-	-	-	0.3	1.5	0.3
11/2	Circ. @ Flower Rise Ahead	U	-		-	-	-	713	1919	1919	37.2%	-	-	-	0.3	1.5	0.3
11/3	Circ. @ Flower Rise Right Ahead	U	-		-	-	-	732	1919	1919	38.1%	-	-	-	0.3	1.5	0.3
15/1	Ahead	U	F		1	41	-	1170	1940	1358	86.2%	-	-	-	3.6	11.0	5.5
15/2	Ahead	U	F		1	41	-	1149	1940	1358	84.6%	-	-	-	3.3	10.3	5.4
Ped Link: P1	Unnamed Ped Link	-	E		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

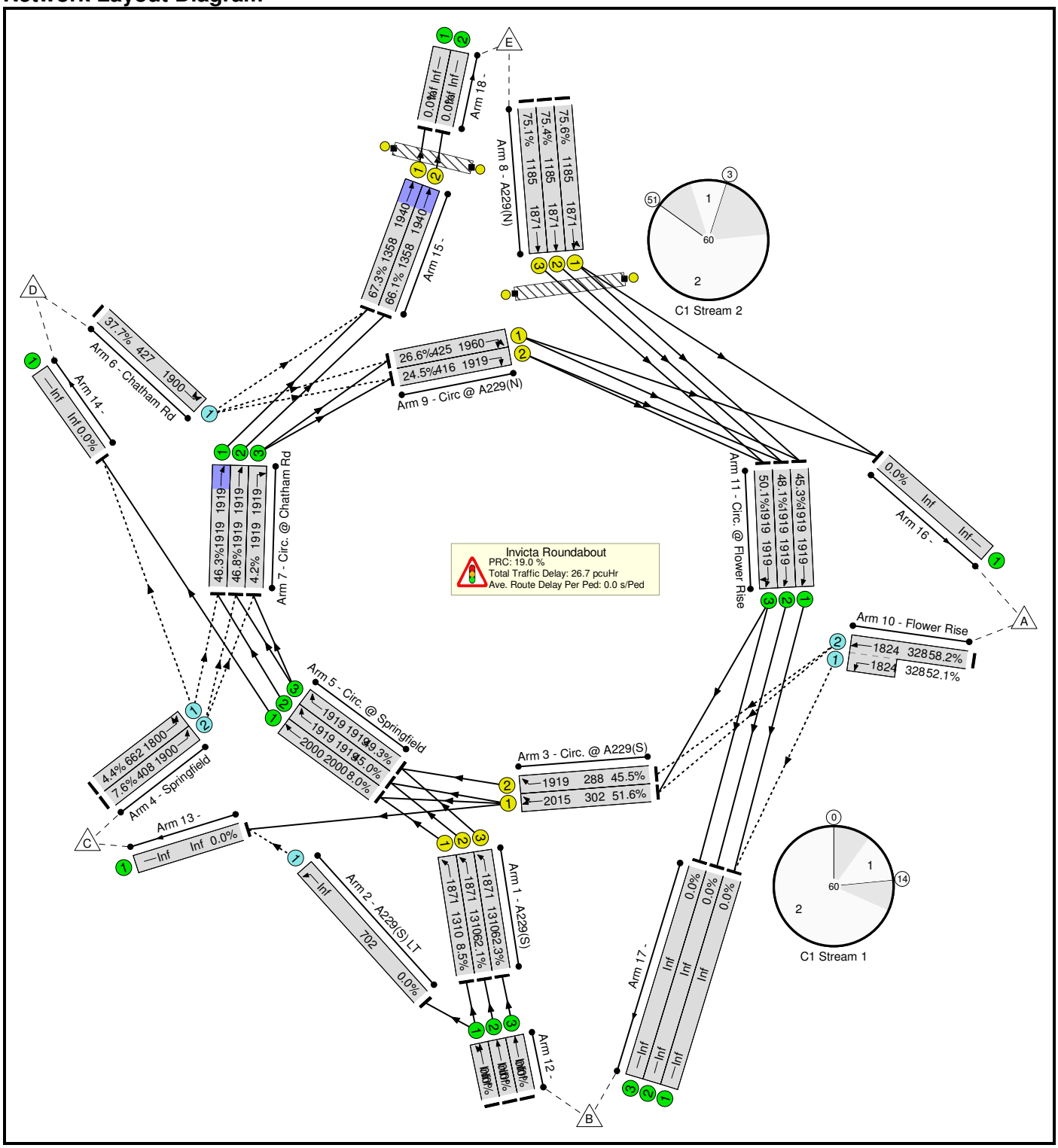
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	8.5	Total Delay for Signalled Lanes (pcuHr):	9.67	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	53.9	Total Delay for Signalled Lanes (pcuHr):	6.36	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	4.5	Total Delay for Signalled Lanes (pcuHr):	6.87	Cycle Time (s):	60
		PRC Over All Lanes (%):	4.5	Total Delay Over All Lanes(pcuHr):	27.60		

Basic Results Summary

Scenario 7: 'Future 2031 With dev 1300 AM' (FG7: 'Future 2031 With dev 1300 AM', Plan 1: 'Network Control Plan 1')

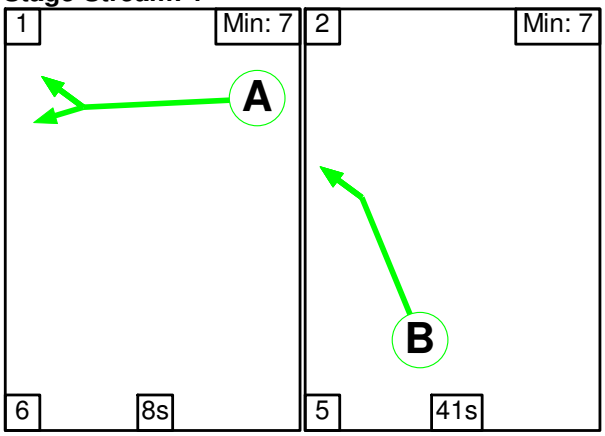
Network Layout Diagram



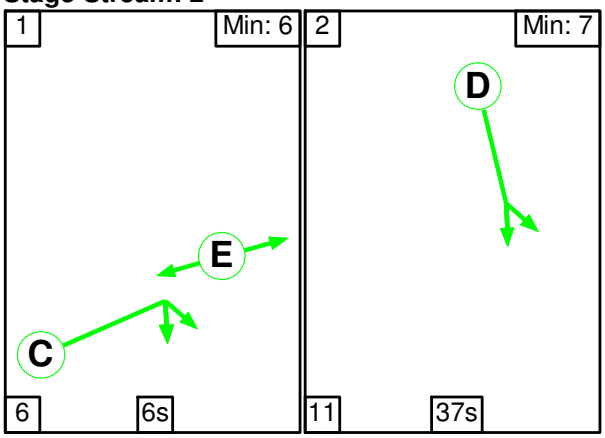
Basic Results Summary

Stage Sequence Diagram

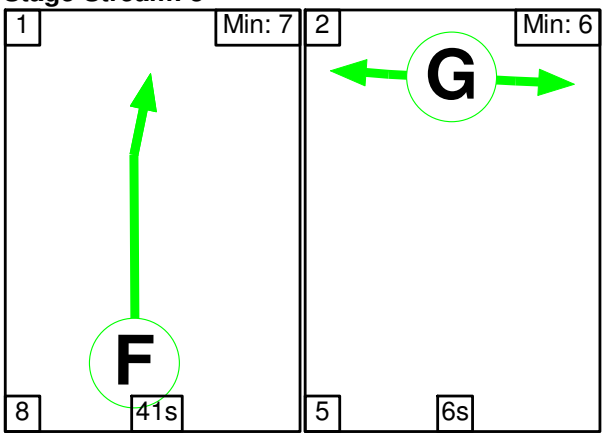
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.6%**	**945**	**0**	**0**	**26.7**	**-**	**-**
Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.6%**	**945**	**0**	**0**	**26.7**	**-**	**-**
1/1	A229(S) Ahead	U	B		1	41	-	111	1871	1310	8.5%	-	-	-	0.1	4.4	0.6
1/2	A229(S) Ahead	U	B		1	41	-	813	1871	1310	62.1%	-	-	-	1.9	8.4	7.8
1/3	A229(S) Ahead	U	B		1	41	-	816	1871	1310	62.3%	-	-	-	1.9	8.4	7.9
2/1	A229(S) LT Left	O	-		-	-	-	0	Inf	702	0.0%	0	0	0	0.0	0.0	0.0
3/1	Circ. @ A229(S) Ahead Ahead2	U	A		1	8	-	156	2015	302	51.6%	-	-	-	1.5	34.0	2.9
3/2	Circ. @ A229(S) Ahead	U	A		1	8	-	131	1919	288	45.5%	-	-	-	0.8	22.7	2.0
4/1	Springfield Left Left2	O	-		-	-	-	29	1800	662	4.4%	29	0	0	0.0	2.8	0.0
4/2	Springfield Left	O	-		-	-	-	31	1900	408	7.6%	31	0	0	0.1	6.7	0.2
5/1	Circ. @ Springfield Ahead	U	-		-	-	-	160	2000	2000	8.0%	-	-	-	0.0	1.0	0.0
5/2	Circ. @ Springfield Right	U	-		-	-	-	863	1919	1919	45.0%	-	-	-	0.4	1.7	0.4
5/3	Circ. @ Springfield Right	U	-		-	-	-	947	1919	1919	49.3%	-	-	-	0.5	1.8	0.5
6/1	Chatham Rd Left Left2	O	-		-	-	-	161	1900	427	37.7%	161	0	0	0.4	9.3	1.3

Basic Results Summary

7/1	Circ. @ Chatham Rd Ahead	U	-		-	-	-	888	1919	1919	46.3%	-	-	-	0.4	1.7	0.4
7/2	Circ. @ Chatham Rd Ahead	U	-		-	-	-	898	1919	1919	46.8%	-	-	-	0.4	1.8	0.4
7/3	Circ. @ Chatham Rd Right	U	-		-	-	-	80	1919	1919	4.2%	-	-	-	0.0	1.0	0.0
8/1	A229(N) Ahead Ahead2	U	D		1	37	-	896	1871	1185	75.6%	-	-	-	3.5	13.9	12.0
8/2	A229(N) Ahead	U	D		1	37	-	893	1871	1185	75.4%	-	-	-	3.4	13.8	11.9
8/3	A229(N) Ahead	U	D		1	37	-	890	1871	1185	75.1%	-	-	-	3.4	13.7	11.6
9/1	Circ @ A229(N) Right Right2	U	C		1	12	-	113	1960	425	26.6%	-	-	-	0.7	22.3	1.7
9/2	Circ @ A229(N) Right	U	C		1	12	-	102	1919	416	24.5%	-	-	-	0.6	22.7	1.6
10/2+10/1	Flower Rise Ahead Left	O	-		-	-	-	362	1824:1824	328+328	58.2 : 52.1%	724	0	0	1.9	18.5	3.2
11/1	Circ. @ Flower Rise Ahead	U	-		-	-	-	869	1919	1919	45.3%	-	-	-	0.4	1.7	0.4
11/2	Circ. @ Flower Rise Ahead	U	-		-	-	-	923	1919	1919	48.1%	-	-	-	0.5	1.8	0.5
11/3	Circ. @ Flower Rise Right Ahead	U	-		-	-	-	962	1919	1919	50.1%	-	-	-	0.5	1.9	0.5
15/1	Ahead	U	F		1	41	-	914	1940	1358	67.3%	-	-	-	1.6	6.1	3.6
15/2	Ahead	U	F		1	41	-	898	1940	1358	66.1%	-	-	-	1.7	6.7	4.8
Ped Link: P1	Unnamed Ped Link	-	E		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

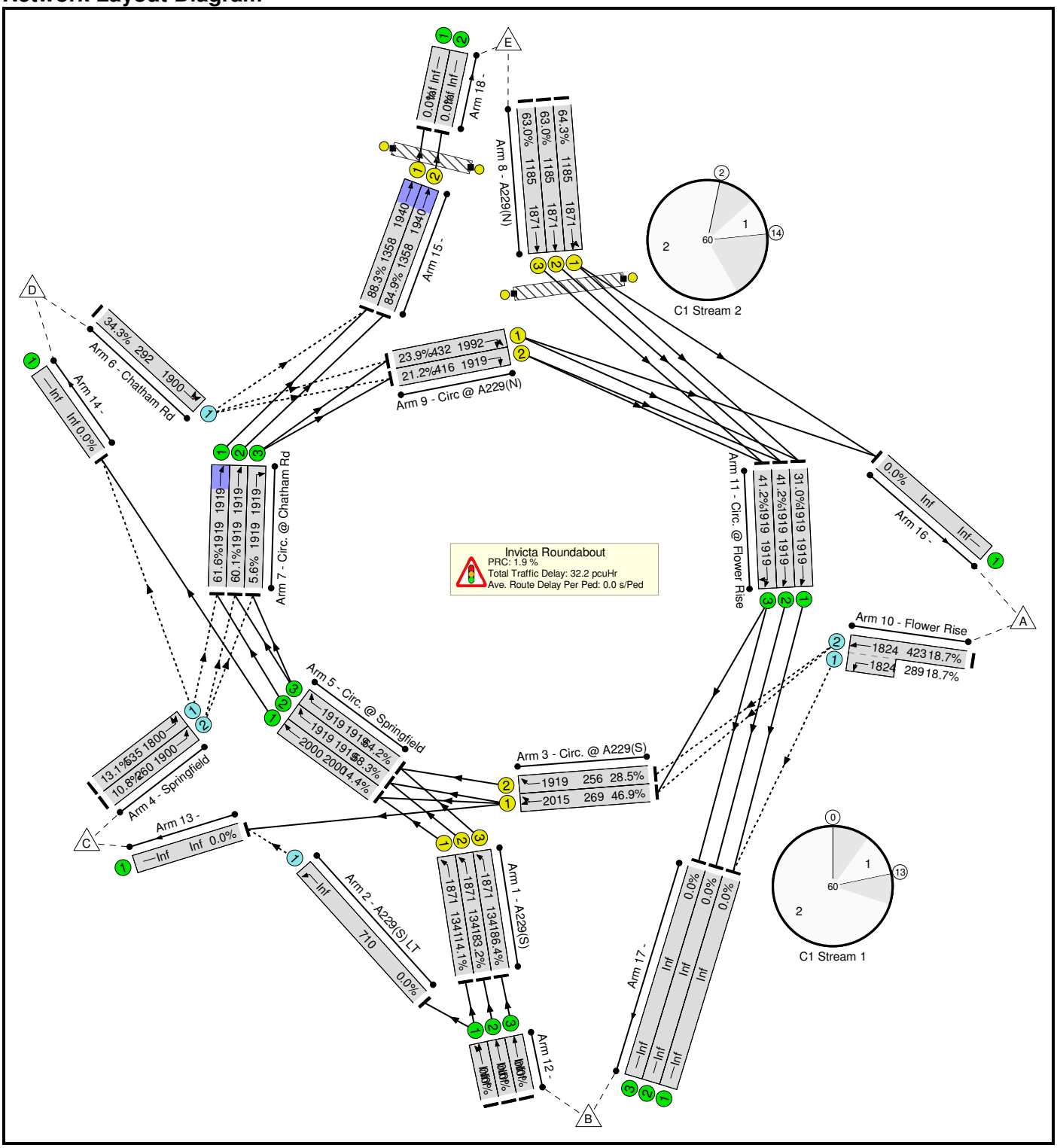
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	44.5	Total Delay for Signalled Lanes (pcuHr):	6.24	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	19.0	Total Delay for Signalled Lanes (pcuHr):	11.63	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	33.7	Total Delay for Signalled Lanes (pcuHr):	3.22	Cycle Time (s):	60
		PRC Over All Lanes (%):	19.0	Total Delay Over All Lanes(pcuHr):	26.65		

Basic Results Summary

Scenario 8: 'Future 2031 With dev 1300 PM' (FG8: 'Future 2031 With dev 1300 PM', Plan 1: 'Network Control Plan 1')

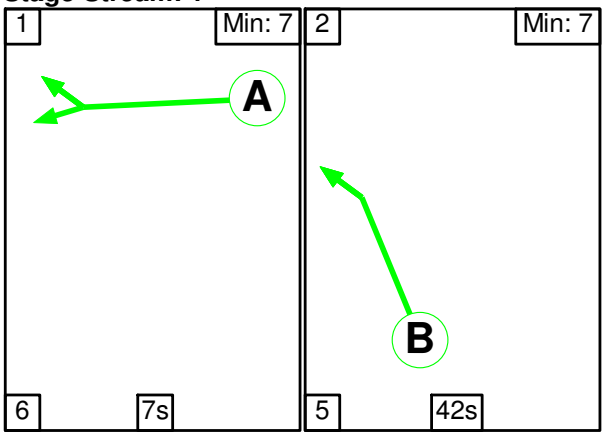
Network Layout Diagram



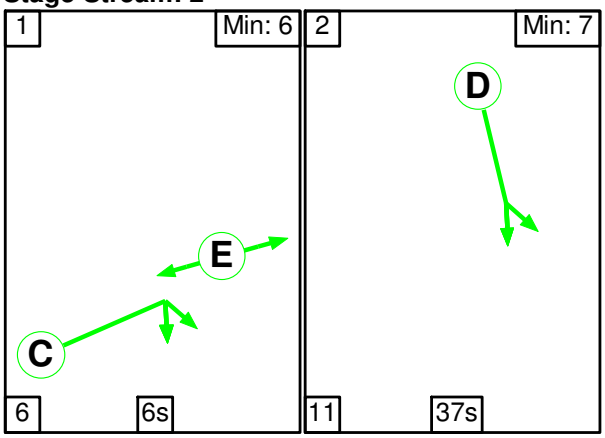
Basic Results Summary

Stage Sequence Diagram

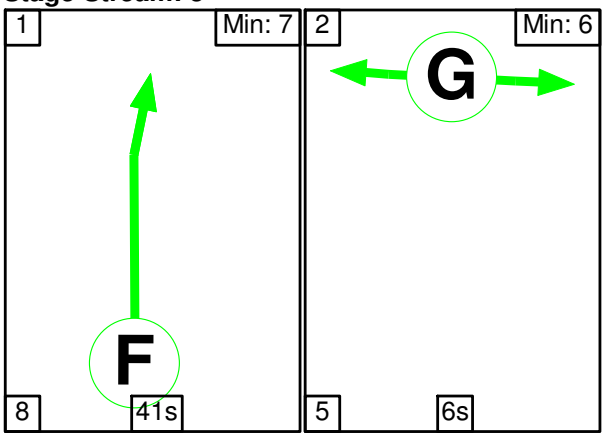
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.3%**	**464**	**0**	**0**	**32.2**	**-**	**-**
Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.3%**	**464**	**0**	**0**	**32.2**	**-**	**-**
1/1	A229(S) Ahead	U	B		1	42	-	189	1871	1341	14.1%	-	-	-	0.2	4.2	1.0
1/2	A229(S) Ahead	U	B		1	42	-	1115	1871	1341	83.2%	-	-	-	4.3	13.8	15.4
1/3	A229(S) Ahead	U	B		1	42	-	1159	1871	1341	86.4%	-	-	-	5.1	15.9	17.2
2/1	A229(S) LT Left	O	-		-	-	-	0	Inf	710	0.0%	0	0	0	0.0	0.0	0.0
3/1	Circ. @ A229(S) Ahead Ahead2	U	A		1	7	-	126	2015	269	46.9%	-	-	-	1.1	31.9	2.4
3/2	Circ. @ A229(S) Ahead	U	A		1	7	-	73	1919	256	28.5%	-	-	-	0.6	30.0	1.3
4/1	Springfield Left Left2	O	-		-	-	-	70	1800	535	13.1%	70	0	0	0.1	3.9	0.1
4/2	Springfield Left	O	-		-	-	-	28	1900	260	10.8%	28	0	0	0.1	15.8	0.3
5/1	Circ. @ Springfield Ahead	U	-		-	-	-	288	2000	2000	14.4%	-	-	-	0.1	1.1	0.1
5/2	Circ. @ Springfield Right	U	-		-	-	-	1119	1919	1919	58.3%	-	-	-	0.7	2.2	0.7
5/3	Circ. @ Springfield Right	U	-		-	-	-	1232	1919	1919	64.2%	-	-	-	0.9	2.6	0.9
6/1	Chatham Rd Left Left2	O	-		-	-	-	100	1900	292	34.3%	100	0	0	0.6	20.5	1.5

Basic Results Summary

7/1	Circ. @ Chatham Rd Ahead	U	-		-	-	-	1183	1919	1919	61.6%	-	-	-	0.8	2.5	0.9
7/2	Circ. @ Chatham Rd Ahead	U	-		-	-	-	1153	1919	1919	60.1%	-	-	-	0.8	2.3	0.8
7/3	Circ. @ Chatham Rd Right	U	-		-	-	-	107	1919	1919	5.6%	-	-	-	0.0	1.0	0.0
8/1	A229(N) Ahead Ahead2	U	D		1	37	-	762	1871	1185	64.3%	-	-	-	2.3	11.0	8.7
8/2	A229(N) Ahead	U	D		1	37	-	746	1871	1185	63.0%	-	-	-	2.2	10.8	8.3
8/3	A229(N) Ahead	U	D		1	37	-	747	1871	1185	63.0%	-	-	-	2.2	10.8	8.3
9/1	Circ @ A229(N) Right Right2	U	C		1	12	-	103	1992	432	23.9%	-	-	-	0.7	26.1	1.7
9/2	Circ @ A229(N) Right	U	C		1	12	-	88	1919	416	21.2%	-	-	-	0.4	14.6	1.1
10/2+10/1	Flower Rise Ahead Left	O	-		-	-	-	133	1824:1824	423+289	18.7 : 18.7%	266	0	0	0.2	6.2	0.6
11/1	Circ. @ Flower Rise Ahead	U	-		-	-	-	594	1919	1919	31.0%	-	-	-	0.2	1.4	0.2
11/2	Circ. @ Flower Rise Ahead	U	-		-	-	-	790	1919	1919	41.2%	-	-	-	0.3	1.6	0.3
11/3	Circ. @ Flower Rise Right Ahead	U	-		-	-	-	791	1919	1919	41.2%	-	-	-	0.4	1.6	0.4
15/1	Ahead	U	F		1	41	-	1199	1940	1358	88.3%	-	-	-	4.3	12.9	6.6
15/2	Ahead	U	F		1	41	-	1153	1940	1358	84.9%	-	-	-	3.5	10.9	6.5
Ped Link: P1	Unnamed Ped Link	-	E		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

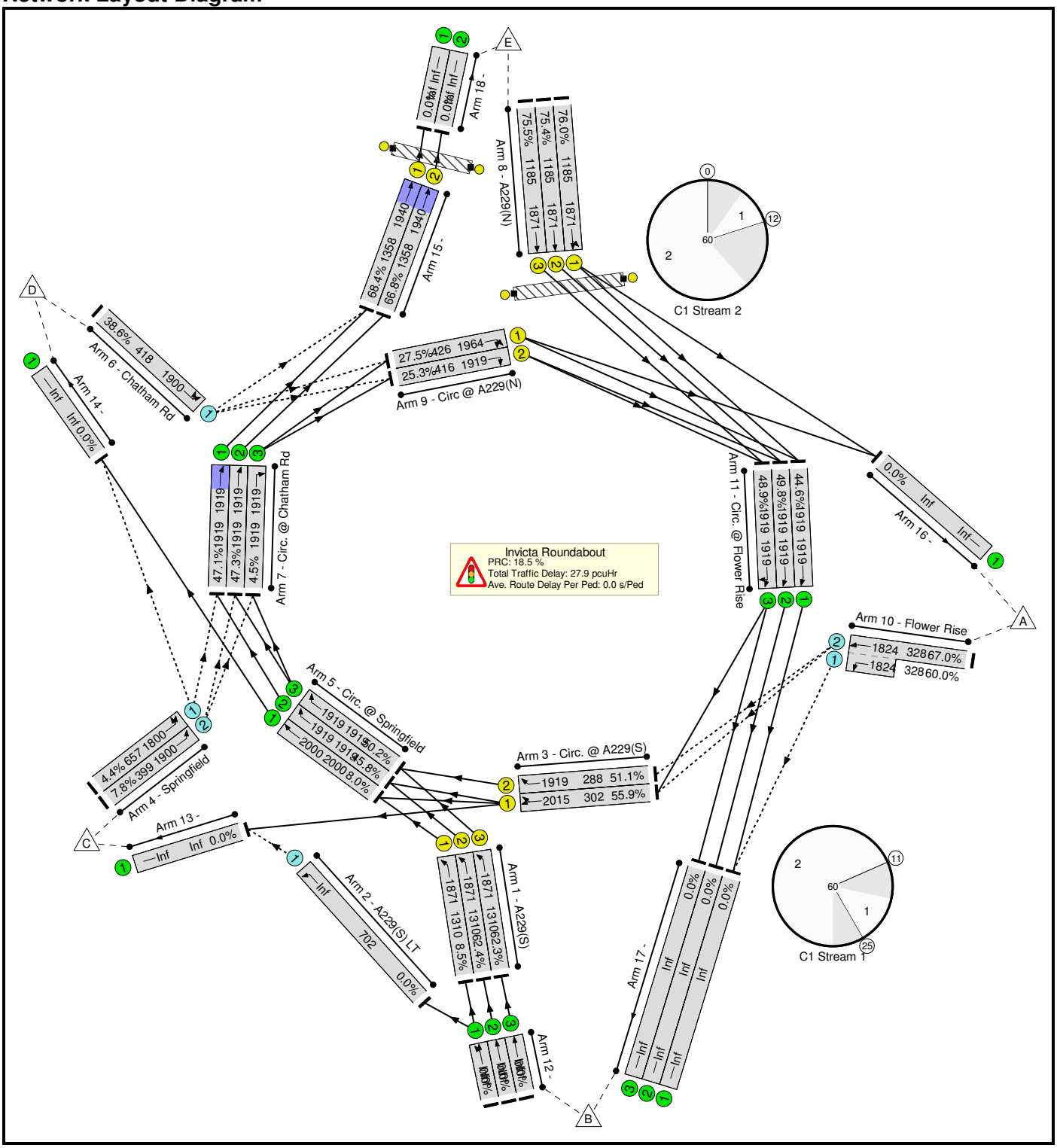
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	4.1	Total Delay for Signalled Lanes (pcuHr):	11.33	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	40.0	Total Delay for Signalled Lanes (pcuHr):	7.92	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	1.9	Total Delay for Signalled Lanes (pcuHr):	7.77	Cycle Time (s):	60
		PRC Over All Lanes (%):	1.9	Total Delay Over All Lanes(pcuHr):	32.21		

Basic Results Summary

Scenario 9: 'Future 2031 With dev 1500 AM' (FG9: 'Future 2031 With dev 1500 AM', Plan 1: 'Network Control Plan 1')

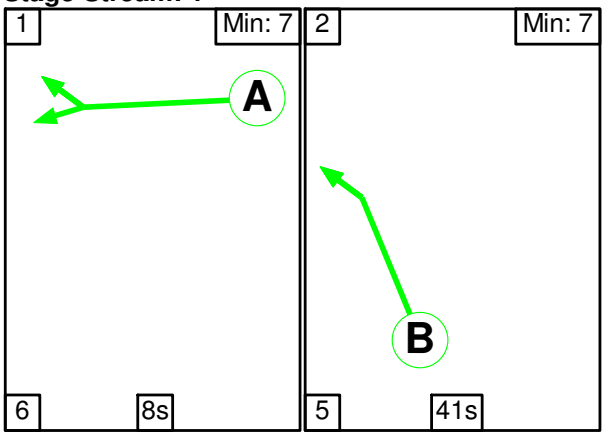
Network Layout Diagram



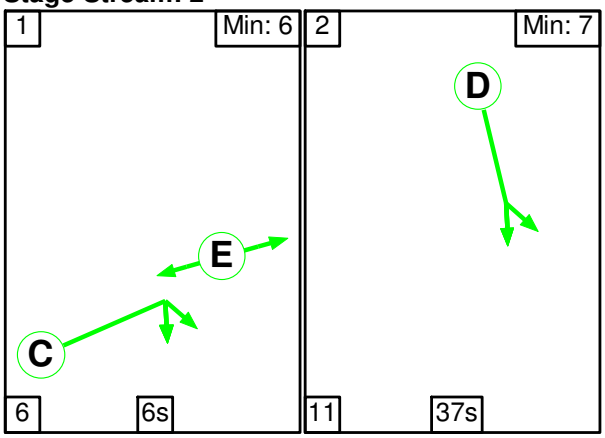
Basic Results Summary

Stage Sequence Diagram

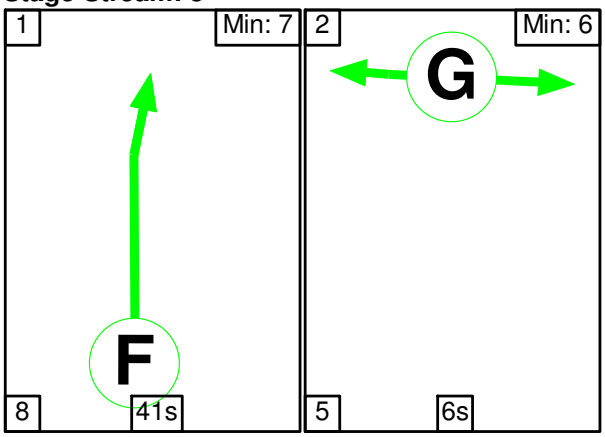
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.0%**	**1055**	**0**	**0**	**27.9**	**-**	**-**
Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.0%**	**1055**	**0**	**0**	**27.9**	**-**	**-**
1/1	A229(S) Ahead	U	B		1	41	-	111	1871	1310	8.5%	-	-	-	0.1	4.4	0.6
1/2	A229(S) Ahead	U	B		1	41	-	817	1871	1310	62.4%	-	-	-	1.9	8.4	7.9
1/3	A229(S) Ahead	U	B		1	41	-	816	1871	1310	62.3%	-	-	-	1.9	8.4	7.9
2/1	A229(S) LT Left	O	-		-	-	-	0	Inf	702	0.0%	0	0	0	0.0	0.0	0.0
3/1	Circ. @ A229(S) Ahead Ahead2	U	A		1	8	-	169	2015	302	55.9%	-	-	-	1.6	35.1	3.2
3/2	Circ. @ A229(S) Ahead	U	A		1	8	-	147	1919	288	51.1%	-	-	-	0.9	23.2	2.3
4/1	Springfield Left Left2	O	-		-	-	-	29	1800	657	4.4%	29	0	0	0.0	2.9	0.0
4/2	Springfield Left	O	-		-	-	-	31	1900	399	7.8%	31	0	0	0.1	6.8	0.2
5/1	Circ. @ Springfield Ahead	U	-		-	-	-	160	2000	2000	8.0%	-	-	-	0.0	1.0	0.0
5/2	Circ. @ Springfield Right	U	-		-	-	-	878	1919	1919	45.8%	-	-	-	0.4	1.7	0.4
5/3	Circ. @ Springfield Right	U	-		-	-	-	963	1919	1919	50.2%	-	-	-	0.5	1.9	0.5
6/1	Chatham Rd Left Left2	O	-		-	-	-	161	1900	418	38.6%	161	0	0	0.4	9.6	1.3

Basic Results Summary

7/1	Circ. @ Chatham Rd Ahead	U	-		-	-	-	903	1919	1919	47.1%	-	-	-	0.4	1.8	0.4
7/2	Circ. @ Chatham Rd Ahead	U	-		-	-	-	907	1919	1919	47.3%	-	-	-	0.4	1.8	0.4
7/3	Circ. @ Chatham Rd Right	U	-		-	-	-	87	1919	1919	4.5%	-	-	-	0.0	1.0	0.0
8/1	A229(N) Ahead Ahead2	U	D		1	37	-	900	1871	1185	76.0%	-	-	-	3.5	14.0	12.1
8/2	A229(N) Ahead	U	D		1	37	-	893	1871	1185	75.4%	-	-	-	3.4	13.8	11.9
8/3	A229(N) Ahead	U	D		1	37	-	895	1871	1185	75.5%	-	-	-	3.4	13.9	12.0
9/1	Circ @ A229(N) Right Right2	U	C		1	12	-	117	1964	426	27.5%	-	-	-	0.7	21.9	1.8
9/2	Circ @ A229(N) Right	U	C		1	12	-	105	1919	416	25.3%	-	-	-	0.7	22.8	1.6
10/2+10/1	Flower Rise Ahead Left	O	-		-	-	-	417	1824:1824	328+328	67.0 : 60.0%	834	0	0	2.4	20.8	3.9
11/1	Circ. @ Flower Rise Ahead	U	-		-	-	-	856	1919	1919	44.6%	-	-	-	0.4	1.7	0.4
11/2	Circ. @ Flower Rise Ahead	U	-		-	-	-	955	1919	1919	49.8%	-	-	-	0.5	1.9	0.5
11/3	Circ. @ Flower Rise Right Ahead	U	-		-	-	-	938	1919	1919	48.9%	-	-	-	0.5	1.8	0.5
15/1	Ahead	U	F		1	41	-	929	1940	1358	68.4%	-	-	-	1.7	6.5	4.1
15/2	Ahead	U	F		1	41	-	907	1940	1358	66.8%	-	-	-	1.7	6.9	5.3
Ped Link: P1	Unnamed Ped Link	-	E		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

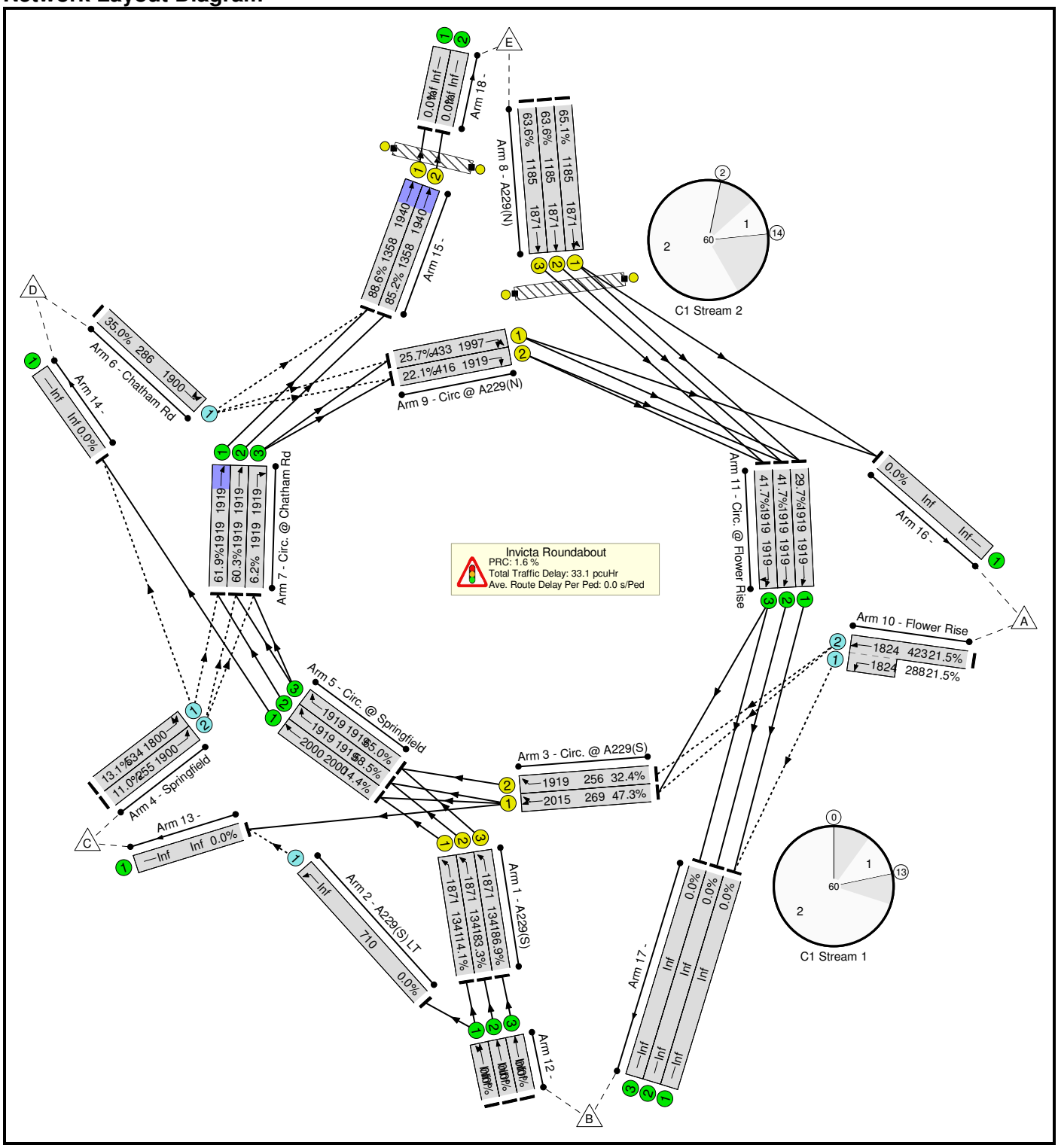
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	44.3	Total Delay for Signalled Lanes (pcuHr):	6.56	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	18.5	Total Delay for Signalled Lanes (pcuHr):	11.76	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	31.6	Total Delay for Signalled Lanes (pcuHr):	3.42	Cycle Time (s):	60
		PRC Over All Lanes (%):	18.5	Total Delay Over All Lanes(pcuHr):	27.92		

Basic Results Summary

Scenario 10: 'Future 2031 With dev 1500 PM' (FG10: 'Future 2031 With dev 1500 PM', Plan 1: 'Network Control Plan 1')

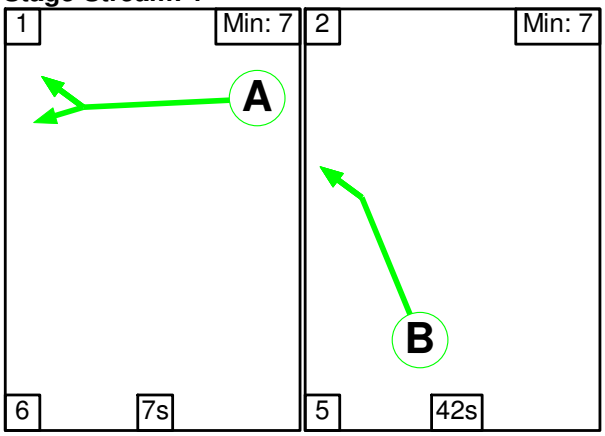
Network Layout Diagram



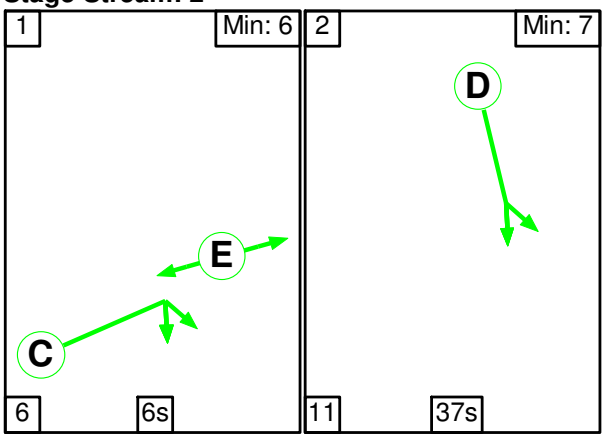
Basic Results Summary

Stage Sequence Diagram

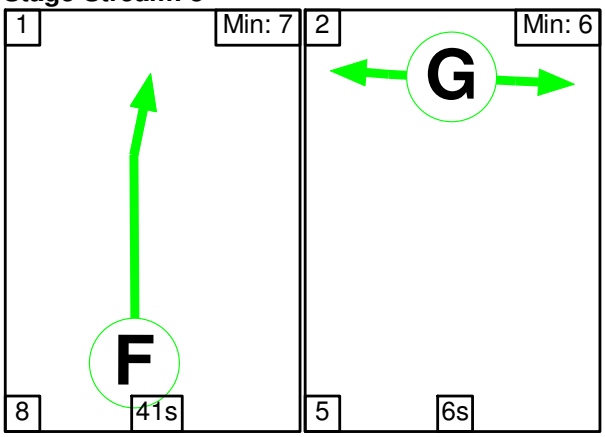
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.6%**	**504**	**0**	**0**	**33.1**	**-**	**-**
Invicta Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.6%**	**504**	**0**	**0**	**33.1**	**-**	**-**
1/1	A229(S) Ahead	U	B		1	42	-	189	1871	1341	14.1%	-	-	-	0.2	4.2	1.0
1/2	A229(S) Ahead	U	B		1	42	-	1117	1871	1341	83.3%	-	-	-	4.3	13.8	15.5
1/3	A229(S) Ahead	U	B		1	42	-	1165	1871	1341	86.9%	-	-	-	5.3	16.3	17.8
2/1	A229(S) LT Left	O	-		-	-	-	0	Inf	710	0.0%	0	0	0	0.0	0.0	0.0
3/1	Circ. @ A229(S) Ahead Ahead2	U	A		1	7	-	127	2015	269	47.3%	-	-	-	1.1	31.9	2.5
3/2	Circ. @ A229(S) Ahead	U	A		1	7	-	83	1919	256	32.4%	-	-	-	0.7	30.5	1.5
4/1	Springfield Left Left2	O	-		-	-	-	70	1800	534	13.1%	70	0	0	0.1	3.9	0.1
4/2	Springfield Left	O	-		-	-	-	28	1900	255	11.0%	28	0	0	0.1	16.2	0.3
5/1	Circ. @ Springfield Ahead	U	-		-	-	-	288	2000	2000	14.4%	-	-	-	0.1	1.1	0.1
5/2	Circ. @ Springfield Right	U	-		-	-	-	1123	1919	1919	58.5%	-	-	-	0.7	2.3	0.7
5/3	Circ. @ Springfield Right	U	-		-	-	-	1248	1919	1919	65.0%	-	-	-	0.9	2.7	0.9
6/1	Chatham Rd Left Left2	O	-		-	-	-	100	1900	286	35.0%	100	0	0	0.6	21.0	1.5

Basic Results Summary

7/1	Circ. @ Chatham Rd Ahead	U	-		-	-	-	1187	1919	1919	61.9%	-	-	-	0.8	2.5	0.9
7/2	Circ. @ Chatham Rd Ahead	U	-		-	-	-	1157	1919	1919	60.3%	-	-	-	0.8	2.4	0.8
7/3	Circ. @ Chatham Rd Right	U	-		-	-	-	119	1919	1919	6.2%	-	-	-	0.0	1.0	0.0
8/1	A229(N) Ahead Ahead2	U	D		1	37	-	771	1871	1185	65.1%	-	-	-	2.4	11.2	8.9
8/2	A229(N) Ahead	U	D		1	37	-	754	1871	1185	63.6%	-	-	-	2.3	10.9	8.4
8/3	A229(N) Ahead	U	D		1	37	-	754	1871	1185	63.6%	-	-	-	2.3	10.9	8.4
9/1	Circ @ A229(N) Right Right2	U	C		1	12	-	111	1997	433	25.7%	-	-	-	0.8	27.1	1.9
9/2	Circ @ A229(N) Right	U	C		1	12	-	92	1919	416	22.1%	-	-	-	0.4	14.5	1.1
10/2+10/1	Flower Rise Ahead Left	O	-		-	-	-	153	1824:1824	423+288	21.5 : 21.5%	306	0	0	0.3	6.5	0.7
11/1	Circ. @ Flower Rise Ahead	U	-		-	-	-	570	1919	1919	29.7%	-	-	-	0.2	1.3	0.2
11/2	Circ. @ Flower Rise Ahead	U	-		-	-	-	800	1919	1919	41.7%	-	-	-	0.4	1.6	0.4
11/3	Circ. @ Flower Rise Right Ahead	U	-		-	-	-	800	1919	1919	41.7%	-	-	-	0.4	1.6	0.4
15/1	Ahead	U	F		1	41	-	1203	1940	1358	88.6%	-	-	-	4.4	13.1	6.7
15/2	Ahead	U	F		1	41	-	1157	1940	1358	85.2%	-	-	-	3.6	11.1	6.7
Ped Link: P1	Unnamed Ped Link	-	E		1	6	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	6	-	0	-	0	0.0%	-	-	-	-	-	-

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	3.6	Total Delay for Signalled Lanes (pcuHr):	11.61	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	38.3	Total Delay for Signalled Lanes (pcuHr):	8.18	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	1.6	Total Delay for Signalled Lanes (pcuHr):	7.97	Cycle Time (s):	60
		PRC Over All Lanes (%):	1.6	Total Delay Over All Lanes(pcuHr):	33.07		