



Isle of Wight Council

Isle of Wight Junction Assessment and Design

Junction Feasibility Study – Queen’s Road / West Street

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1 Introduction

General

- 1.1 WYG have been appointed by the Isle of Wight (IOW) Council to undertake a feasibility study for a series of highway junctions located throughout the island, with a particular focus on the towns of Newport, Ryde, Shanklin and Sandown. The study has been carried out to identify traffic management issues impacting on all road users and develop proposals that will form part of a package of schemes to be progressed as part of the Council’s Local Implementation Plan (LIP) process.
- 1.2 IOW Council has identified 15 highway junctions which currently experience traffic issues such as congestion and queuing. The study considers where the main issues lie in relation to traffic movement, road safety, bus operation, pedestrian and cycle provision, public realm, parking provision and servicing. Each of the 15 highway junctions are to be supplemented by a feasibility study report, with traffic modelling software used to test the various proposals in order to identify a range of measures aimed at improving the behaviour and movement of traffic at each junction.
- 1.3 The 15 key junctions identified are summarised in **Table 1.1** below:

Table 1.1 List of Junctions

ID Num	Junction Name	Area	Junction Type
1	St Mary's Roundabout	Newport	4 arm Roundabout
2	Coppins Bridge Gyratory	Newport	Gyratory
3	Hunnyhill/Hunnycross Way	Newport	Signalised Crossroads
4	Hunnycross Way/Riverway	Newport	3x Roundabouts
5	Medina Way/Coppins Bridge Roundabout	Newport	Gyratory
6	Queens Road/West Street	Ryde	5 arm Signalised Jct
7	Argyll St/West St	Ryde	Signalised Crossroads
8	Binstead Road/Pellhurst Road	Ryde	3 arm Signalised Jct
9	Quarr Hill/Newnham Road	Ryde	4 arm Roundabout
10	Marlborough Road/Great Preston Road	Ryde	Signalised Crossroads
11	High Street/Victoria Avenue, Shanklin	Shanklin	3 arm Signalised Jct
12	Newport Road/Industrial Way	Shanklin	4 arm Roundabout
13	Newport Road/Sandown Road	Shanklin	3 arm Signalised Jct
14	Lake Hill/The Fairway	Shanklin	Triangular 3x Priority Jcts
15	Morton Common/Perowne Way	Sandown	3 arm Signalised Jct

Site Location & Background

- 1.4 The Isle of Wight is an island located in the English Channel, approximately 6km off the Hampshire coast. The towns of Newport, Ryde, Shanklin and Sandown comprise the project study area for this feasibility study.
- 1.5 The town of Newport is the largest town on the IOW and is located in the centre of the island; the town of Ryde is located approximately 10km to the east of Newport, on the north-eastern coast of the island; whilst Shanklin and Sandown are located approximately 9km to the south of Ryde and 10km to the south east of Newport.

- 1.6 The IOW as a whole is characterised by high car ownership levels, with 77.5% of households on the island owning a car or van, as indicated by the 2011 Census. Thus, the private vehicle remains the most convenient and fastest way to travel around the island.
- 1.7 **Figures 1.1 – 1.3** presents the locations of all 15 junctions within Newport, Ryde and Shanklin & Sandown, which comprise the feasibility study area.

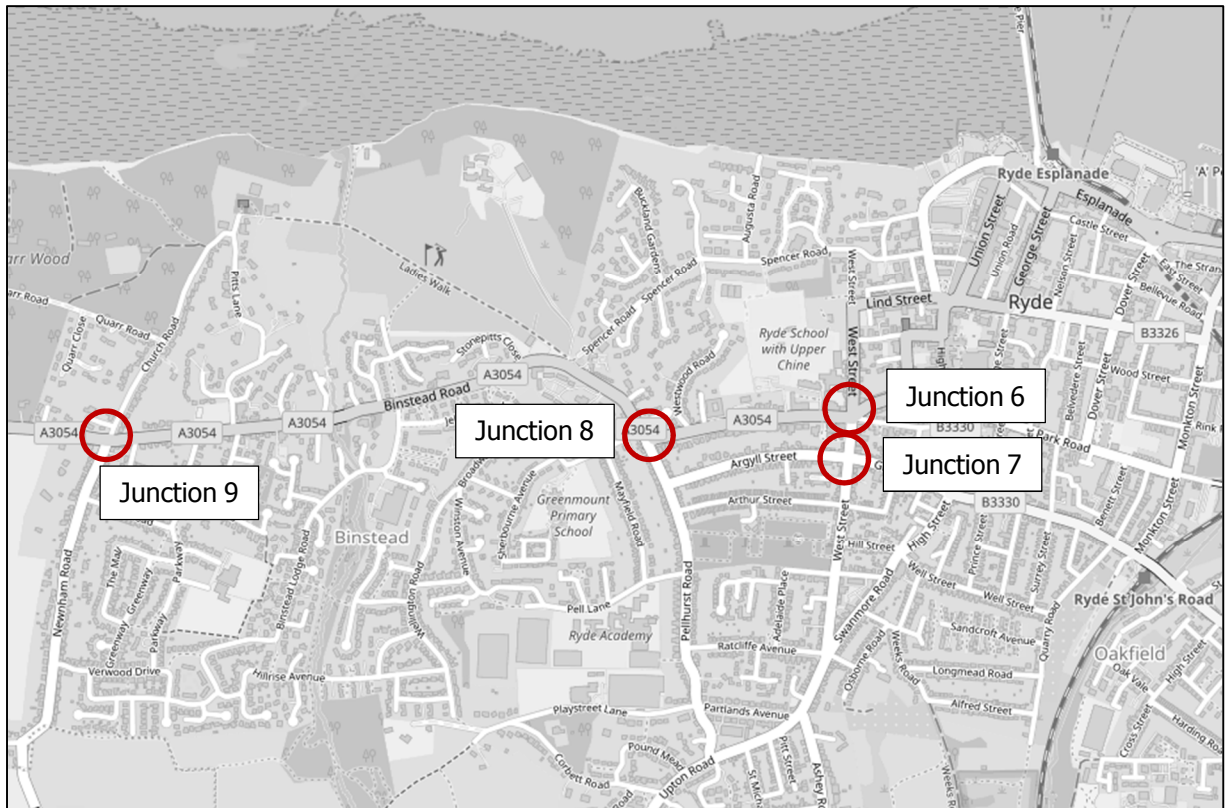
Figure 1.1 Feasibility Study Area – Newport Junctions



Source: OpenStreetMap with WYG Annotations, September 2017

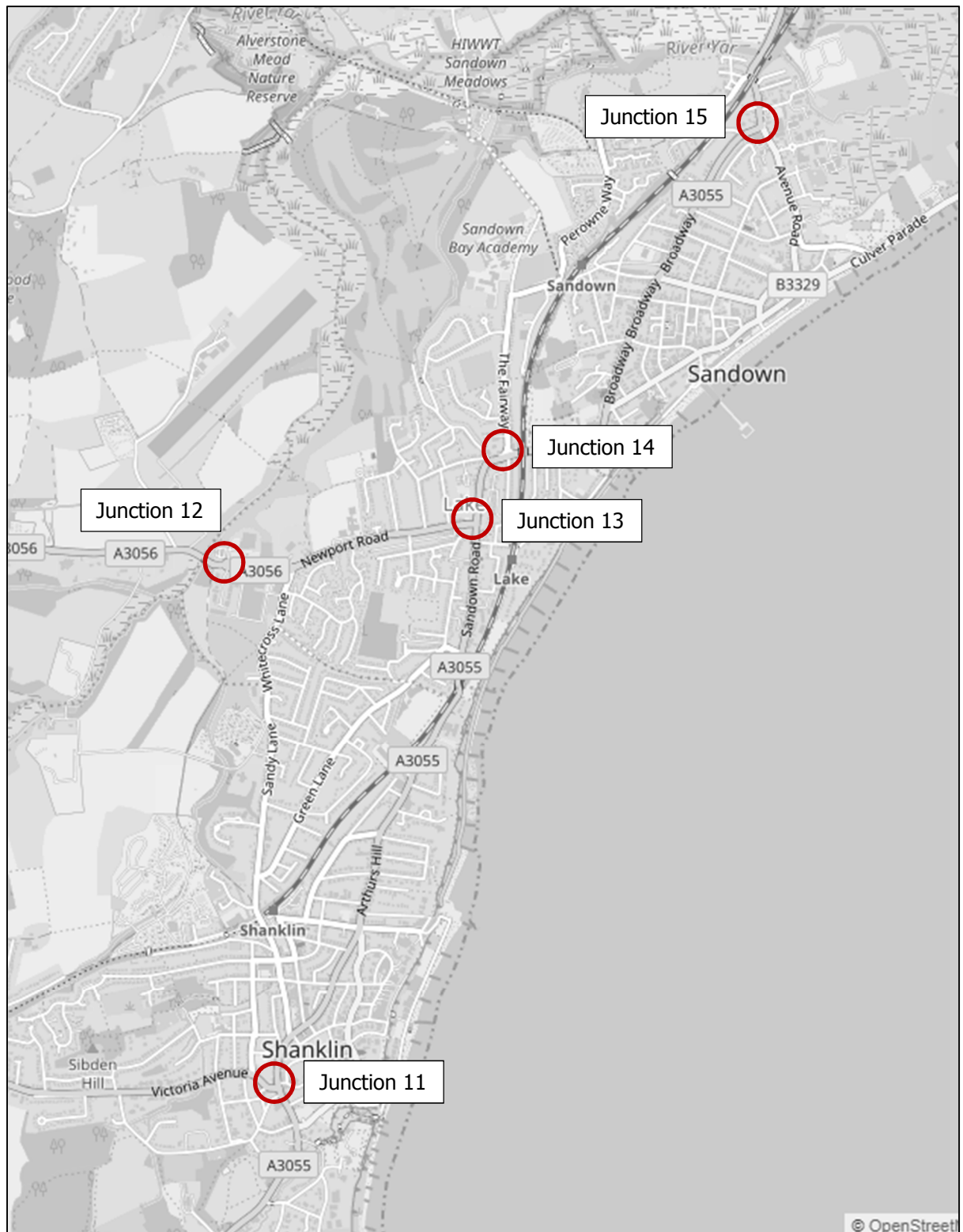


Figure 1.2 Feasibility Study Area – Ryde Junctions



Source: OpenStreetMap, September 2017

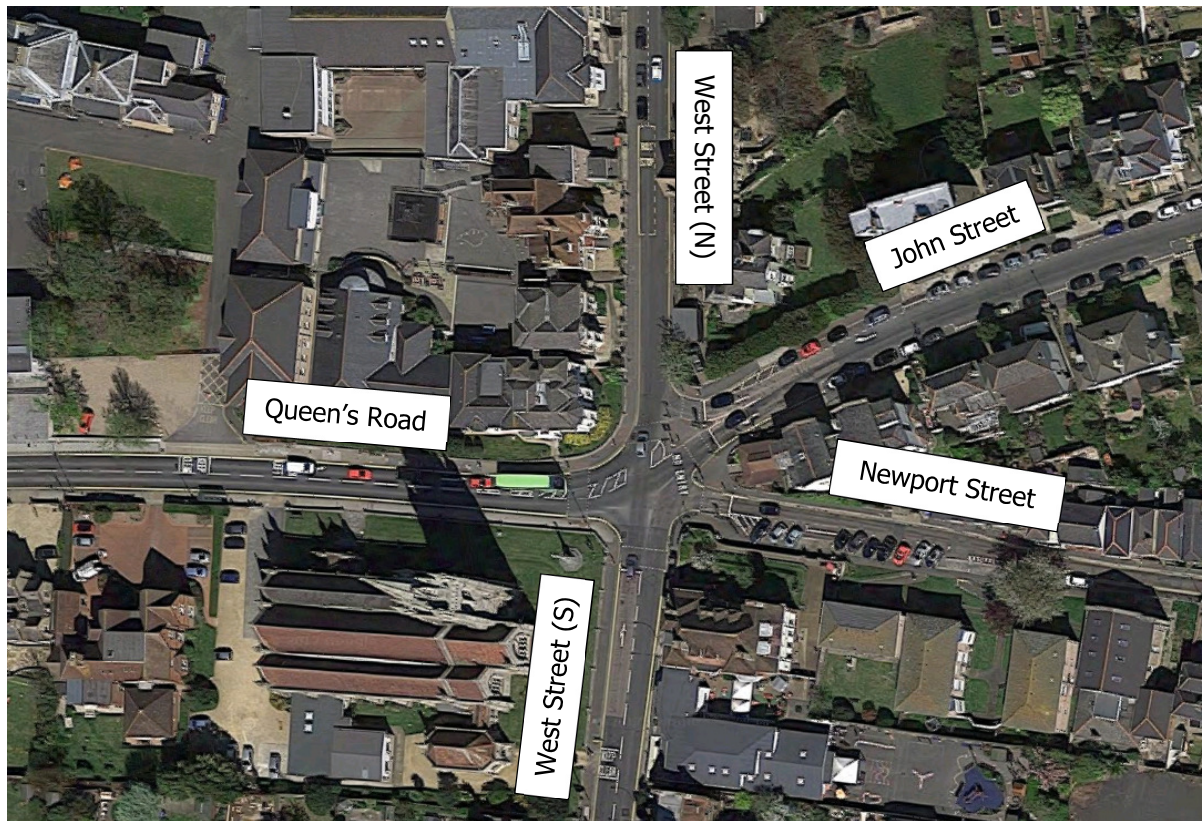
Figure 1.3 Feasibility Study Area – Sandown & Shanklin Junctions



Source: OpenStreetMap, September 2017

- 1.8 Each of the 15 junctions are to be addressed within an individual feasibility study report. This report focuses on Junction 12, the highway junction of Queen’s Road / West Street / John Street / Newport Street which comprises a five-arm signalised junction in Ryde.
- 1.9 **Figure 1.4** presents a site location plan of the five-arm signalised junction.

Figure 1.4 Junction Location Plan



Source: Google Satellite Image, August 2017

Scope/Purpose of Study

- 1.10 The purpose of the study is to identify, through the use of traffic modelling software, where the main issues lie in terms of capacity, congestion and queuing at the junction; the traffic modelling will inform the type of highway improvements and design required at each junction.

Report Structure

- 1.11 The remainder of this document is structured as follows:
- **Chapter 2: Existing Conditions** - summarising the existing conditions at the junction, providing background to the junction, local highway network and detailing the current traffic issues experienced at the junction;
 - **Chapter 3: Modelling Methodology** - setting-out details of tasks undertaken to build traffic models of the study area using specialist software, including results of option testing for the junction of interest;
 - **Chapter 4: Proposed Scheme** - detailing the proposed scheme for highway improvements at the junction and their expected outcome; and
 - **Chapter 5: Summary and Conclusions** - summarising the feasibility study process and outlining the key findings of the assessment.
- 1.12 All Appendices are included at the end of this report for information.



2 Existing Conditions

General

- 2.1 This chapter establishes the existing, or 'baseline', highway conditions which prevail in the area surrounding the junction. It describes the existing local highway network and any traffic issues present at the junction.
- 2.2 Baseline studies have been informed by detailed site visits and desk-based research carried out between August and September 2017.
- 2.3 This report focuses on the five-arm signalised junction at A3054 Queen’s Road / West Street in Ryde.

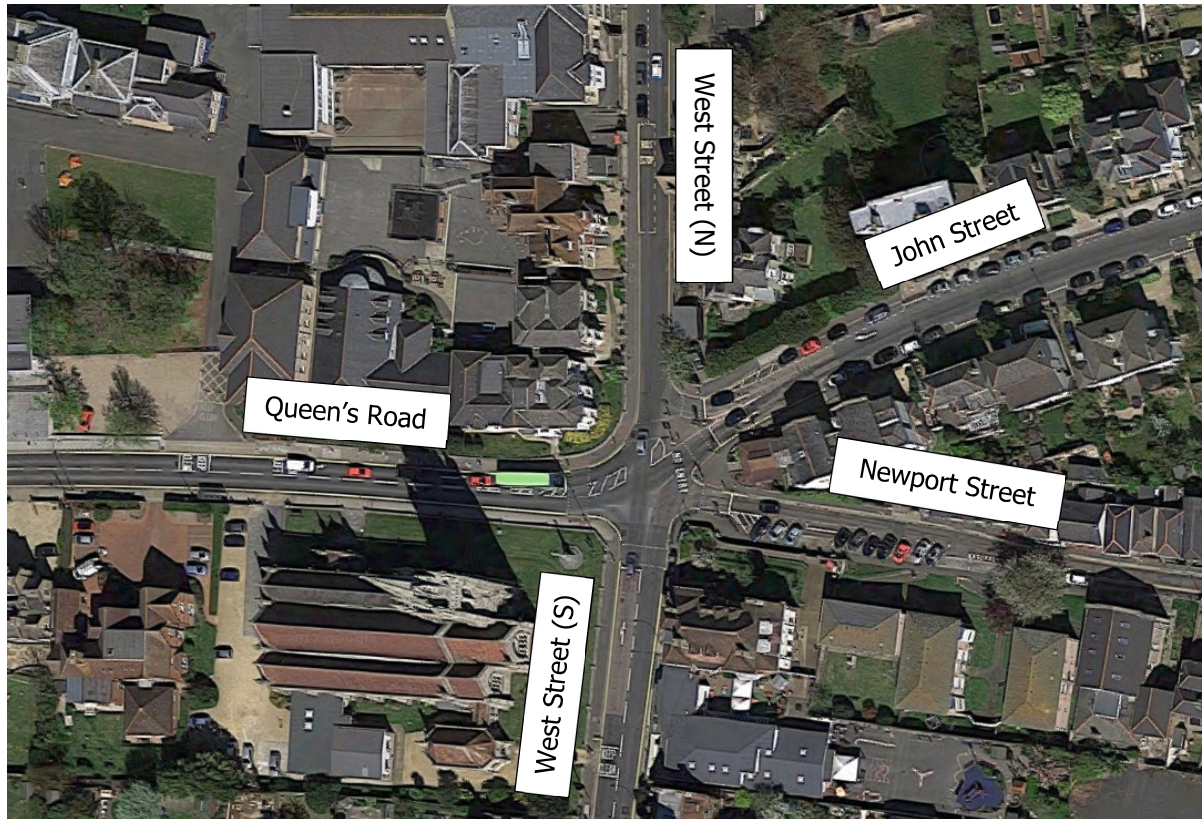
Data Collection

- 2.4 Traffic flow surveys were undertaken by MHC Traffic Ltd on Thursday 20th July 2017 to establish the baseline traffic conditions for the local highway network on the IOW. A range of surveys were undertaken including:
 - Manual Classified Counts (MCC) for turning flow information at 15 key junctions on the IOW;
 - Automatic Traffic Counts (ATCs) were placed at strategic locations on the network allowing the speeds to be obtained at each of these junctions;
 - Queue length surveys at stop lines of all 15 junctions; and
 - Traffic video surveys at each of the 15 junctions.
- 2.5 The surveys allowed for the identification of turning movements at all key junctions as well as routing within the IOW. Signal timing data was additionally supplied by the IOW Council for use for the correct modelling of signal timing data.
- 2.6 The data collected as part of the surveys was used directly for calibrating and validating the base scenario for both the Junctions 9 and LinSig models. Video footage of the surveyed junctions was additionally reviewed to ensure that the base models reflect the on-street road conditions as closely as possible.

Study Area/Junction Background

- 2.7 The A3054 Newport Road / West Street / John Street / Newport Street signalised junction is located in the centre of Ryde, approximately 240m to the west of Ryde High Street. The A3054 Queen’s Road forms the western arm, West Street forms the northern and southern arms, whilst John Street forms the north-eastern arm and Newport Street forms the south-eastern arm.
- 2.8 The junction provides access to Ryde’s town centre to the east, the A3054 and Newport to the west and the residential area of Swanmore to the south. A location plan of the junction is provided in **Figure 2.1**.

Figure 2.1 Junction Location Plan



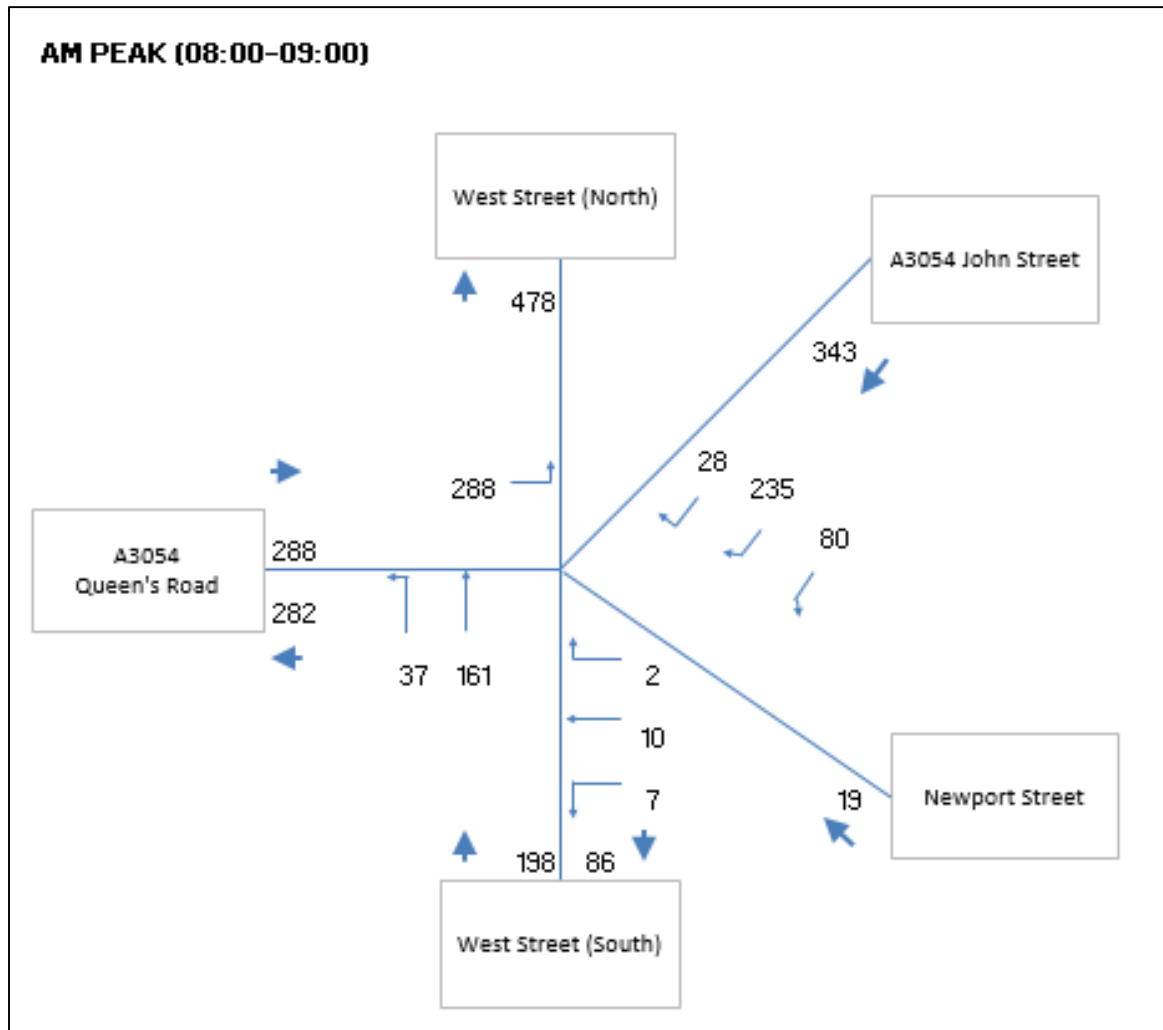
Source: Google Satellite Image, August 2017

Base Traffic Flows

- 2.9 This section details the current traffic flows and queuing at the junction, as recorded by the survey data. These are shown in **Figures 2.2** and **2.3**.

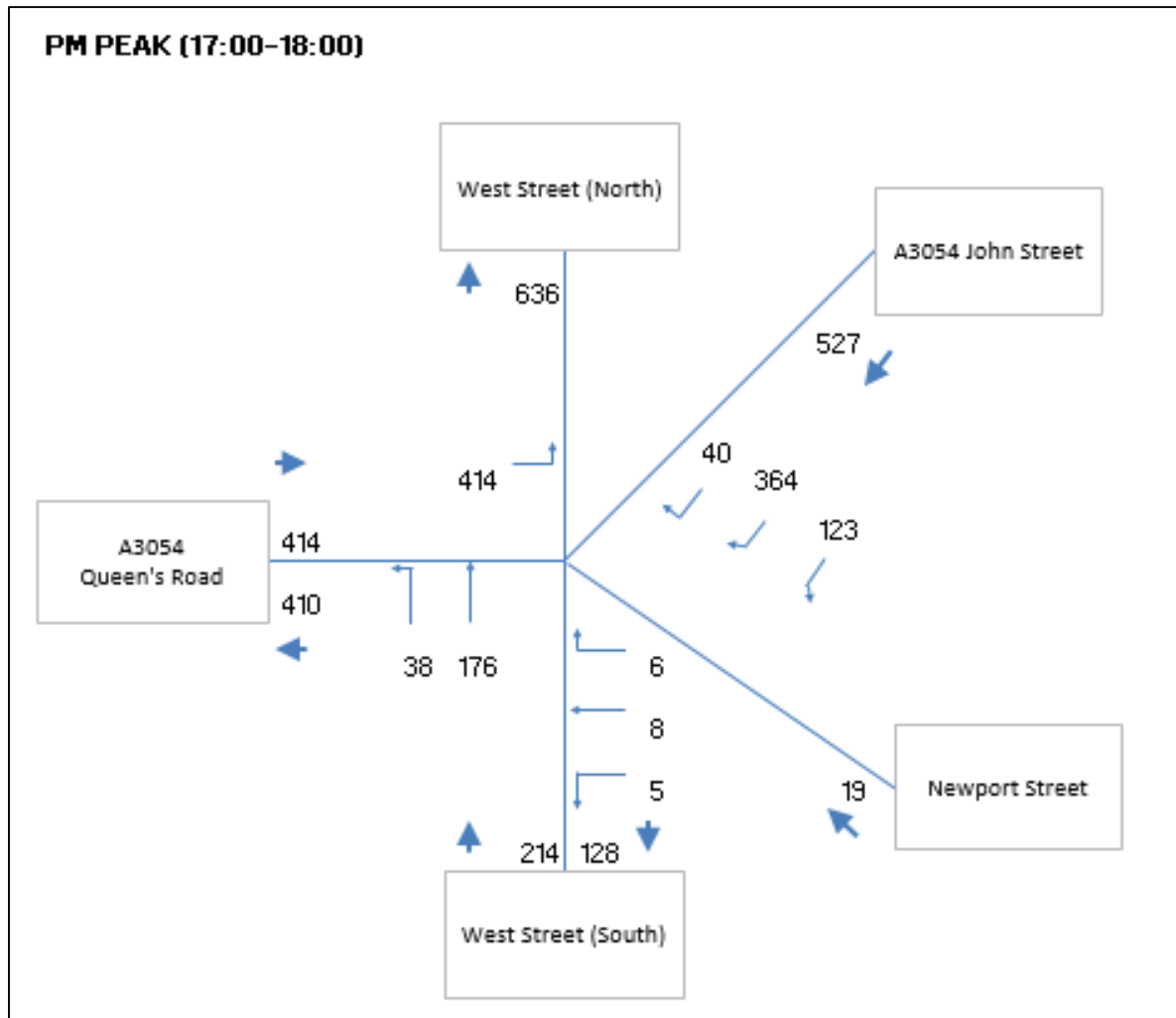


Figure 2.2 AM Traffic Flows (PCUs)



- 2.10 As shown in Figure 2.2, the highest traffic flows are those travelling eastbound and westbound in the AM peak (08:00-09:00) with 288 PCUs recorded eastbound and 235 PCUs recorded westbound. The high westbound flows are likely to be associated with those commuting to Newport for work. Northbound flows are also high, with 161 PCUs recorded.
- 2.11 The majority of queuing occurs on the A3054 Queen’s Road and John Street, with maximum observed queues of 10 vehicles recorded on Queen’s Road and nine vehicles on John Street. Some queuing also occurs on West Street (S), with a maximum queue of seven vehicles recorded.
- 2.12 **Figure 2.3** below shows the traffic flows for the PM peak (17:00-18:00).

Figure 2.3 PM Traffic Flows (PCUs)



- 2.13 As shown in Figure 2.3, the highest traffic flows are those travelling eastbound and westbound in the PM peak (17:00-18:00), with 414 PCUs recorded eastbound and 364 PCUs recorded westbound. Northbound flows are also high, with 176 PCUs recorded.
- 2.14 The majority of queuing occurs on the A3054 Queen’s Road and John Street, with maximum observed queues of 13 vehicles recorded on Queen’s Road and 10 vehicles on John Street. Some queuing also occurs on West Street (S), with a maximum queue of seven vehicles recorded.

Existing Traffic Issues

- 2.15 At present, the junction is known to experience congestion and queuing, which has been observed during site visits and traffic video surveys at the junction. It was observed that congestion and queuing is particularly evident on the A3054 Queen’s Road.
- 2.16 It is noted that queues of vehicles on Queen’s Road are unable to completely pass through the junction during the allocated green time. It is also noted that queuing is worse in the PM peak than the AM peak.



Collisions

- 2.17 A collision data review for the most recent five years was undertaken at the junction, using the website crashmap.co.uk. It was found that seven ‘slight’ collisions were recorded within the vicinity of the junction during this time period. It is therefore concluded that there are no significant highway safety issues in relation to the highway junction.

Local Highway Network

- 2.18 The roundabout junction comprises the A3054 Queen’s Road, West Street, John Street and Newport Street. This section provides a description of each of these roads.

A3054 Queen’s Road

- 2.19 The A3054 Queen’s Road is a two-way single carriageway road in an east-west alignment, providing a link between Ryde and Newport. It is located between West Street to the east and Binstead/Pellhurst Road to the west. In the vicinity of the junction, the road is subject to a 30mph speed limit and a pedestrian puffin crossing is provided across the carriageway at the junction. Footways are present on both sides of the carriageway.

West Street

- 2.20 West Street is a two-way single carriageway road in an north-south alignment and is predominantly residential in nature. It is located between Spencer Road to the north and Swanmore Road to the south. The northern section of the road, to the north of Queen’s Road is one-way only (northbound). The road is subject to a 30mph speed limit along its length, with a pedestrian puffin crossing provided across the carriageway at the junction. Footways are present on both sides of the carriageway.

John Street

- 2.21 John Street is one-way single carriageway road (westbound) and is predominantly residential in nature. It is located between the High Street to the east and West Street to the west. The road is subject to a 30mph speed limit and a staggered pedestrian puffin crossing is provided across the carriageway at the junction. Footways are present on both sides of the carriageway.

Newport Street

- 2.22 Newport Street is a one-way single carriageway road (westbound) in an east-west alignment and is predominately residential in nature. It is located between the High Street to the east and West Street to the west. The road is subject to a 30mph speed limit along its length, with a pedestrian crossing provided across the carriageway at the junction. Footways are present on both sides of the carriageway.

Utilities Assessment

- 2.23 A utilities assessment has been carried out at the junction as an indication of which utilities are present within the vicinity of the junction. The following utilities which may be affected by improvements at the junction are listed below:
- Environment Agency
 - Isle of Wight Council
 - LinesearchbeforeUdig
 - Openreach – (British Telecommunications)
 - Scottish and Southern Electricity
 - SGN – Southern Gas Networks
 - Southern Water



3 Modelling Methodology

Introduction

- 3.1 Traffic modelling has been undertaken as part of the feasibility study, identifying how the local highway network on the Isle of Wight currently operates and how it might operate following the proposed improvements to the identified junctions. LinSig v3 is the latest version of JCT’s industry-standard software for modelling signalised junctions and urban road networks and has therefore been used to model this junction.
- 3.2 The modelling has been undertaken for two weekday periods considered to be the network peaks in terms of traffic volumes, with the AM peak between 08:00 and 09:00 and the PM peak between 17:00 and 18:00. These peaks were identified through analysis of traffic count data. Initially, Base Year modelling was undertaken using survey data collected in July 2017. Future Year modelling was subsequently carried out in order to test the proposed changes to the network and assess the scale of impact on road traffic.

Explanation of Results

- 3.3 Queue lengths at junction approaches are usually expressed in terms of ‘Passenger Car Equivalent’ (PCE) or ‘Passenger Car Unit’ (PCU). A standard car typically has a PCE/PCU value of 1.0; larger vehicles, such as goods vehicles, typically have PCE/PCU values greater than 1.0 and smaller vehicles, such as motorcycles, typically have PCE/PCU values less than 1.0.
- 3.4 The Degree of Saturation (DoS) is a ratio of demand to capacity on each approach to a signalised junction, with a value of 100% meaning that demand and capacity are equal and no further traffic is able to progress through the junction. Values over 85% are typically regarded as suffering from traffic congestion, with queues of vehicles beginning to form. The term Practical Reserve Capacity (PRC) is often used to refer to the available spare capacity at a junction. A negative PRC indicates that the junction is over capacity.
- 3.5 It is noted that a DoS of 90% or over recorded on an approach to the junction is deemed as approaching capacity and therefore a DoS of under 90% is considered acceptable.

Base Year Modelling

- 3.6 Data was collected as part of the surveys was compared to the base year outputs to match modelled flows and queue patterns to those observed, within acceptable variations. The results for the A3054 Queen’s Road / West Street / John Street / Newport Street signalised junction are summarised in **Table 3.1**, with full output results included in **Appendix B**.
- 3.7 It was found that the Newport Street arm rarely runs in the traffic cycle, and as a result, the traffic phase for this arm has not been included within the modelling scenarios. Thus, this is to provide a more accurate representation of the junction.



LinSig Modelling Results – 2017 Base Year

Table 3.1 2017 Base Year Scenario: Existing Junction

Arm Cycle time 53 secs	AM peak			PM peak		
	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)
1/1 - John Street Left Ahead	39.4%	3.5	14.6	61.2%	6.3	18.0
1/2 - John Street Right	9.2%	0.4	24.3	13.1%	0.6	24.7
3/1 - West Street (S)	55.0%	3.2	30.5	59.3%	3.6	31.8
5/1 - Queen's Road	81.2%	6.0	45.6	116.9%	40.0	320.1
PRC	10.8%			-29.9%		
Total Delay (pcu/hr)	6.76			41.31		

- 3.8 The base year results as shown in Table 3.1, indicate that the junction operates within recommended capacity during the AM peak. However, during the PM peak, it operates over capacity, with a PRC of -29.9% recorded. The main capacity issues are experienced on the Queen’s Road arm, with a DoS of 81.2% recorded in the AM and 116.9% in the PM. The highest queues of 6 PCUs were also recorded on this arm, with 6 PCUs in the AM and 40 PCUs in the PM.

Forecast/Future Year Modelling

- 3.9 Forecast or Future Year modelling was undertaken for the existing junction and the proposed highway design, to provide a comparison in capacity between the two designs. The proposed highway design for the junction is shown in **Figure 3.1**, with the Future Year modelling determining the effectiveness and feasibility of the design. The Future Year 2034 was assessed as part of this scenario and thus TEMPRO growth factors were applied to the 2017 traffic survey data in order to calculate the 2034 traffic flows.
- 3.10 A comparison of TEMPRO growth factors was undertaken for each of the three study areas; Newport, Ryde, Shanklin and Sandown, using local Super Output Areas. It was found that the TEMPRO growth factors for each of the study areas were broadly similar to the TEMPRO growth factors for the Isle of Wight as a whole. As a result, the 'Isle of Wight' as a whole was selected as the geographical area. Also, as all highway junctions within the study area are located in urban areas, it has therefore been deemed more robust that only 'Urban Road Types' were selected as part of this assessment.
- 3.11 These TEMPRO growth factors are shown in **Table 3.2**.

Table 3.2 2017-2034 TEMPRO Growth Factors – All Urban Road Types

Time Period	TEMPRO Growth Factors (2017-2034)
AM peak	1.2229
PM peak	1.2188

- 3.12 The Future Year results for the existing junction are summarised in **Table 3.3**, with full output results included in **Appendix B**.



LinSig Modelling Results – Future Year

Table 3.3 2034 Future Year Assessment: Existing Junction

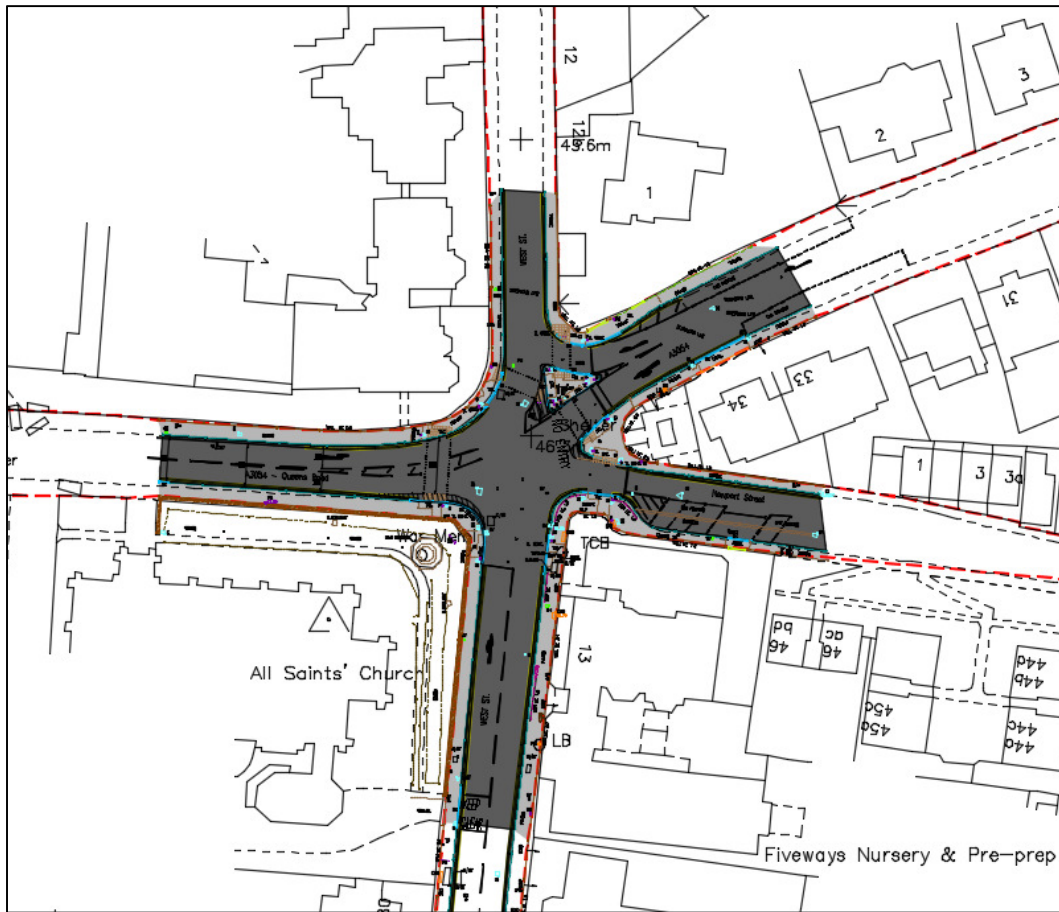
Arm Cycle time 53 secs	AM peak			PM peak		
	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)
1/1 - John Street Left Ahead	48.4%	4.5	15.7	74.7%	8.7	22.0
1/2 - John Street Right	11.1%	0.5	24.5	16.1%	0.7	25.1
3/1 - West Street (S)	67.5%	4.3	35.2	72.7%	4.8	38.1
5/1 - Queen's Road	99.6%	14.2	113.8	142.7%	86.7	594.7
PRC	-10.7%			-58.5%		
Total Delay (pcu/hr)	15.41			89.99		

- 3.13 The Future Year results as shown in Table 3.3, indicate that the existing junction as it stands, is expected to operate over capacity during both peak periods, with capacity issues worsening even further in the PM peak. The Queen’s Road arm nearly reaches a DoS of 100% in the AM peak, whilst in the PM peak it records a DoS of 142.7%. Queues on this arm are also predicted to worsen as a result. Thus, the overall PRC at the junction is recorded as -10.7% in the AM and -58.5% in the PM.
- 3.14 It is therefore hoped that the proposed scheme as detailed below will mitigate some of the capacity issues that are expected to occur at the junction.

Proposed Scheme Options

- 3.15 The proposed scheme for this junction includes the following:
- Relocation of the pedestrian island and crossings between West Street and John Street;
 - Relocation of stop line on John Street;
 - Kerblin realignment between Newport Street and John Street; and
 - Pedestrian crossing build-out on the southern corner of Queen’s Road and West Street.
- 3.16 It is anticipated that this scheme will reduce the intergreens between the pedestrian and traffic phases at the junction. This scheme is shown in **Figure 3.1** below.

Figure 3.1 Proposed Junction Design



Source: WYG Drawing A090129-99-009

LinSig Modelling Results – Proposals

3.17 The proposed junction design was tested in the 2017 Base Year and the 2034 Future Year scenarios. The Base Year modelling results will determine whether any immediate benefits result from the design. **Tables 3.4** and **3.5** present the modelling results for these scenarios.

Table 3.4 2017 Base Year Assessment: Proposed Junction Design

Arm Cycle time 53 secs	AM peak			PM peak		
	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)
1/1 - John Street Left Ahead	39.4%	3.5	14.6	61.2%	6.3	18.0
1/2 - John Street Right	9.2%	0.4	24.3	13.1%	0.6	24.7
3/1 - West Street (S)	55.0%	3.2	30.5	59.3%	3.6	31.8
5/1 - Queen's Road	74.5%	5.3	36.9	107.2%	25.7	193.1
PRC	20.8%			-19.1%		
Total Delay (pcu/hr)	6.07			26.74		



Table 3.5 2034 Future Year Assessment: Proposed Junction Design

Arm Cycle time 53 secs	AM peak			PM peak		
	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)
1/1 - John Street Left Ahead	48.4%	4.5	15.7	74.7%	8.7	22.0
1/2 - John Street Right	11.1%	0.5	24.5	16.1%	0.7	25.1
3/1 - West Street (S)	67.5%	4.3	35.2	72.7%	4.8	38.1
5/1 - Queen's Road	91.3%	9.2	63.1	130.8%	70.5	477.4
PRC	-1.5%			-45.3%		
Total Delay (pcu/hr)	10.45			73.56		

- 3.18 As shown in Table 3.4, the proposed junction design provides immediate benefits to junction capacity in the Base Year, with the PRC shown to increase from 10.8% to 20.8% in the AM peak, and improving from -58.5% to -19.1% in the PM peak. Despite these improvements, the proposed design does not fully resolve capacity issues in the PM peak.
- 3.19 For the Future Year assessment, as shown in Table 3.5, there are also capacity improvements in comparison to the existing junction. It is shown that the PRC improves from -10.7% to -1.5% in the AM peak, and from -58.5% to -45.3% in the PM peak. Whilst there are improvements resulting from the design, these improvements alone are not significant enough to fully address capacity issues at the junction. Therefore, a longer cycle time of 80 seconds was also tested to see if this had any additional benefit. The results from this scenario are presented in **Table 3.6**.

Table 3.6 2034 Future Year Assessment: Proposed Junction Design

Arm Cycle time 80 secs	AM peak			PM peak		
	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)
1/1 - John Street Left Ahead	42.3%	5.9	17.2	60.5%	10.0	18.4
1/2 - John Street Right	21.0%	0.8	47.2	30.3%	1.2	49.4
3/1 - West Street (S)	59.9%	5.6	39.5	78.3%	7.2	55.4
5/1 - Queen's Road	59.1%	7.1	28.7	76.4%	11.2	32.7
PRC	50.2%			14.9%		
Total Delay (pcu/hr)	7.74			12.29		

- 3.20 As shown above, by increasing the cycle time to 80 seconds, this provides a substantial improvement in capacity, in comparison to the existing cycle time of 53 seconds. With an 80 second cycle time, the junction is predicted to operate with a PRC of 50.2% in the AM peak, which equates to a 51.7% improvement, whilst in the PM peak, a PRC of 14.9% is recorded, equating to a 60.2% improvement. This demonstrates that the junction would operate within capacity with a longer cycle time, and also shows a significant reduction in the DoS and queuing across all arms.



Outcome / Conclusions

- 3.21 The outcome of the modelling scenarios is that the proposed junction design provides additional capacity in both the Base and Future Year, however it is shown that the proposed design alone does not provide significant enough improvements to fully address capacity issues predicted in the Future Year. Therefore, it is recommended that the cycle time is lengthened to 80 seconds as it was shown that this scenario provides substantial improvements in capacity, across all arms at the junction.



4 Proposed Scheme

Aims and Objectives

- 4.1 This chapter considers the preferred improvement option for the A3054 Queen’s Road / West Street / John Street / Newport Road signalised junction. Drawings of the proposals are included in **Appendix A**.

Proposed Junction Improvements

Junction Issues

- 4.2 Current issues specific to the A3054 Queen’s Road / West Street / John Street / Newport Road signalised junction are that congestion and queuing is particularly evident on the A3054 Queen’s Road.
- 4.3 It is noted that queues of vehicles on Queen’s Road are unable to completely pass through the junction during the allocated green time. It is also noted that queuing is worse in the PM peak than the AM peak.

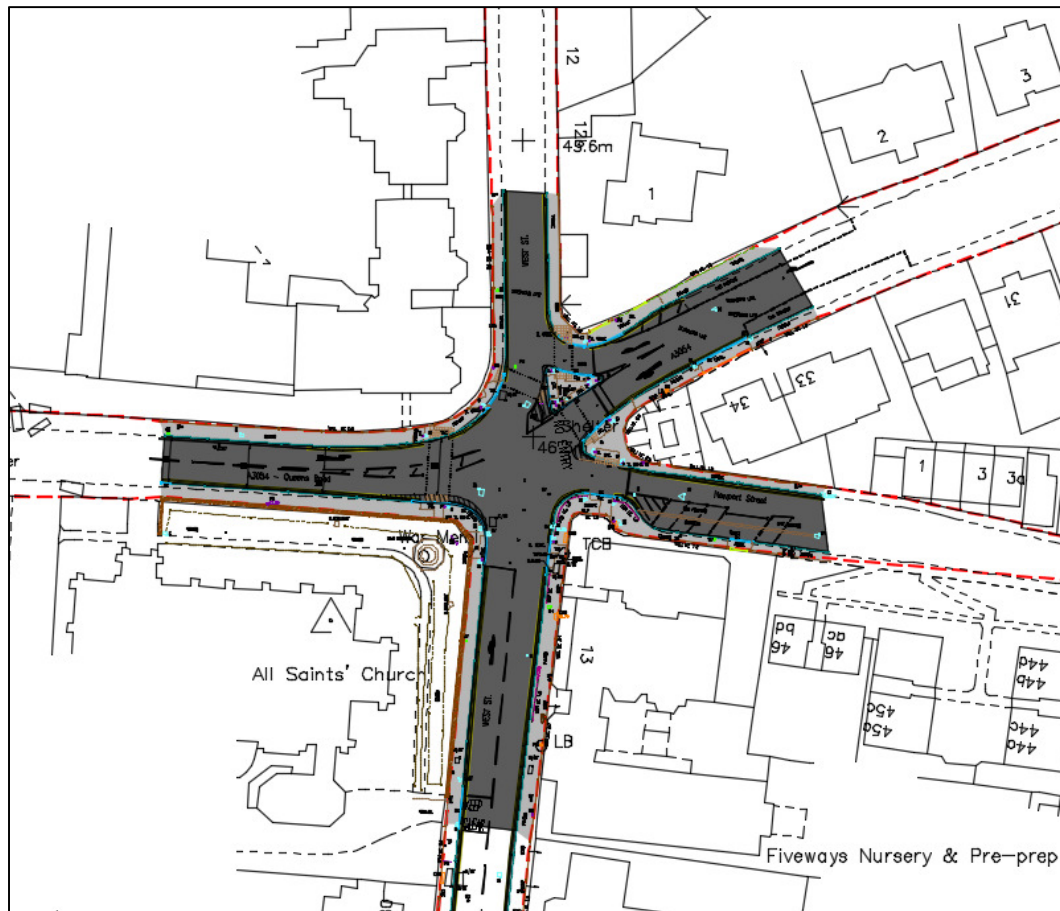
Opportunities

- 4.4 The opportunities to improve the five-arm signalised junction are primarily focused on easing congestion and queuing on Queen’s Road, whilst improving the public realm and crossings for pedestrians at the junction.

Proposals

- 4.5 The proposed scheme for this junction includes the following:
- Relocation of the pedestrian island and crossings between West Street and John Street;
 - Relocation of stop line on John Street;
 - Kerblines realignment between Newport Street and John Street; and
 - Pedestrian crossing build-out on the southern corner of Queen’s Road and West Street.
- 4.6 The proposed layout is presented below in **Figure 4.1**. The 1:250 drawing is included at **Appendix A**.

Figure 4.1 Proposed Junction Layout



Source: WYG Drawing A090129-99-009

- 4.7 At present, the junction has little signage and therefore it is proposed that signage, clear road markings and advisory information should be included as part of the design. It is anticipated that this will encourage correct lane discipline amongst drivers, on their approach to the junction. Signs and clear road markings directing drivers to destinations is likely to improve the efficiency and flow of traffic through the junction.

Outcome

- 4.8 With the proposed junction design tested as part of the modelling, it was found that physical alterations to the junction provided immediate benefits to the junction in the Base Year, and subsequently it also performed better in the Future Year. As a result, it is recommended that this design scheme should be implemented. It is also recommended that the cycle time at the junction can be lengthened to 80 seconds in order to provide more substantial improvements in capacity.



Costs

- 4.9 This section of the feasibility study sets out an indication of the costs of the proposals at each section of the study area. The costs are based on appraisal of construction prices from SPONS and WYG’s understanding of similar schemes developed for other local authorities. The cost estimate is identified in **Table 4.1**.

John Street / West Street

- 4.10 The scope of improvements includes the following:
- Extension of pedestrian island and relocation of tactile paving and crossings
 - Relocation of stop line on John Street
 - Existing road markings to be burnt off and new markings to be implemented where applicable

Newport Street / Queen’s Road

- 4.11 The scope of improvements includes the following:
- Northern footway to be extended on Newport Street, tactile paving to be relocated
 - Southern footway to be extended on Queen’s Road, tactile paving to be relocated
 - Existing road markings to be burnt off and new markings to be implemented where applicable

Summary

- 4.12 **Table 4.1** sets out a summary of the indicative estimated costs for the proposals within the study area.

Table 4.1 Cost Estimate of Proposals – Summary

Proposal	Cost Estimate
Construction Estimate	£71,000
Risk Variables (Statutory Undertakers, Safety Audit requirements)	£7,000
Design Administration and TRO Fees	£2,000
Total	£80,000

WYG, December 2017

Cost/Time Savings Analysis

- 4.13 A cost savings analysis has been undertaken for the junction based on the delay/time savings as a result of the proposed alterations to the junction. In order to calculate the cost savings, fuel cost values were extracted for the average car (per km) (petrol / diesel) from the Department for Transport (DfT) document ‘Values of Time and Vehicle Operating Costs’ Transport Analysis Guidance (TAG), January 2014. The average fuel cost for an average car was extracted as £0.79 per kilometre.
- 4.14 To calculate the total cost savings, the average speed at the junction was recorded as 30mph (48kph) (based on ATC data collected by MHC Traffic Ltd), which was then applied to the total time savings to both the AM (07:00-10:00) and PM peak periods (16:00-19:00). As a result, this determined the total distance saved. The average fuel cost per kilometre was then applied to the total distance, giving a total cost saving per peak period, for an average weekday. For the annual cost savings, the total AM and PM peak cost savings were applied to a total of 253 days (excluding weekends and Bank Holidays),



seeing as this assessment only takes into account an average weekday. The results of this assessment are summarised in **Table 4.2** below.

Table 4.2 Estimated Cost/Time Savings Analysis of Junction 6

Time Period	Average Existing Delay per PCU (secs)	Estimated Average Delay per PCU (secs)	Average Journey Time Savings (secs)	Assumed Length of Time Period (Hours)	Average No. of PCUs per hour	Time Savings for All Vehicles During Period (secs)	Value of Time Savings Per Period (£)	Value of Time Savings Per Annum
AM peak (07:00-10:00)	15	10	5	3	200	2,974	£31.32	£7,924.89
PM peak (16:00-19:00)	90	74	16	3	263	12,940	£136.30	£34,483.20
TOTAL						15,913	£167.62	£42,408.09

4.15 As shown in Table 4.2, the estimated cost savings per peak period were £31.32 in the AM peak and £136.30 in the PM peak, and thus the overall annual fuel cost savings was estimated to be £39,757.59.



5 Summary and Conclusions

Summary

- 5.1 WYG have been appointed by the Isle of Wight (IOW) Council to undertake a feasibility study for a series of highway junctions located throughout the island, with a particular focus on the towns of Newport, Ryde, Shanklin and Sandown. The study has been carried out to identify traffic management issues impacting on all road users and develop proposals that will form part of a package of schemes to be progressed as part of the Council’s Local Implementation Plan (LIP) process.
- 5.2 IOW Council has identified 15 highway junctions which currently experience traffic issues such as congestion and queuing. The study considers where the main issues lie in relation to traffic movement, road safety, bus operation, pedestrian and cycle provision, public realm, parking provision and servicing. Each of the 15 highway junctions is subject to a feasibility study report, with traffic modelling software used to test various proposals in order to identify a range of measures aimed at improving the behaviour and movement of traffic at each junction.
- 5.3 The A3054 Newport Road / West Street / John Street / Newport Street signalised junction is located in the centre of Ryde, approximately 240m to the west of Ryde High Street. The A3054 Queen’s Road forms the western arm, West Street forms the northern and southern arms, whilst John Street forms the north-eastern arm and Newport Street forms the south-eastern arm.
- 5.4 The junction provides access to Ryde’s town centre to the east, the A3054 and Newport to the west and the residential area of Swanmore to the south. At present, the junction is known to experience congestion and queuing, which has been observed during site visits and traffic video surveys at the junction. It was observed that congestion and queuing is particularly evident on the A3054 Queen’s Road.
- 5.5 The traffic signal software LinSig v3 was used to model this junction. The modelling has been undertaken for two weekday periods considered to be the network peaks in terms of traffic volumes, with the AM peak between 08:00 and 09:00 and the PM peak between 17:00 and 18:00. The Base Year results indicate that the junction operates within recommended capacity during the AM peak. However, during the PM peak, it operates over capacity, with a PRC of -29.9% recorded. The main capacity issues are experienced on the Queen’s Road arm, with a DoS of 81.2% recorded in the AM and 116.9% in the PM. The highest queues of 6 PCUs were also recorded on this arm, with 6 PCUs in the AM and 40 PCUs in the PM.
- 5.6 As a result, improvements to the roundabout junction have been focused around easing congestion and queuing on Queen’s Road, whilst improving the public realm and crossing for pedestrians at the junction.
- 5.7 With the proposed junction improvements tested for the 2017 Base Year and 2034 Future Year, the results indicate that there are immediate benefits to junction capacity in the Base Year, in comparison to the existing junction. As a result, the junction also performed better in the Future Year. This is largely due to a reduction in the intergreens between the pedestrian and traffic phases. Despite these improvements in junction capacity, these alone were not significant enough to fully address capacity issues at the junction, with the PM peak still remaining over capacity.
- 5.8 Therefore, a longer cycle time of 80 seconds was tested to see if this provided any additional capacity. It was found that by increasing the cycle time to 80 seconds, this provided substantial improvements in capacity across all arms at the junction, with the junction operating within capacity in both peak periods.



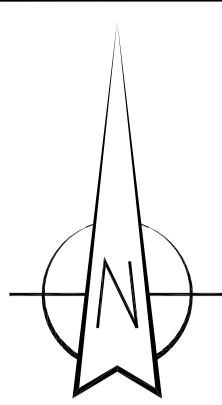
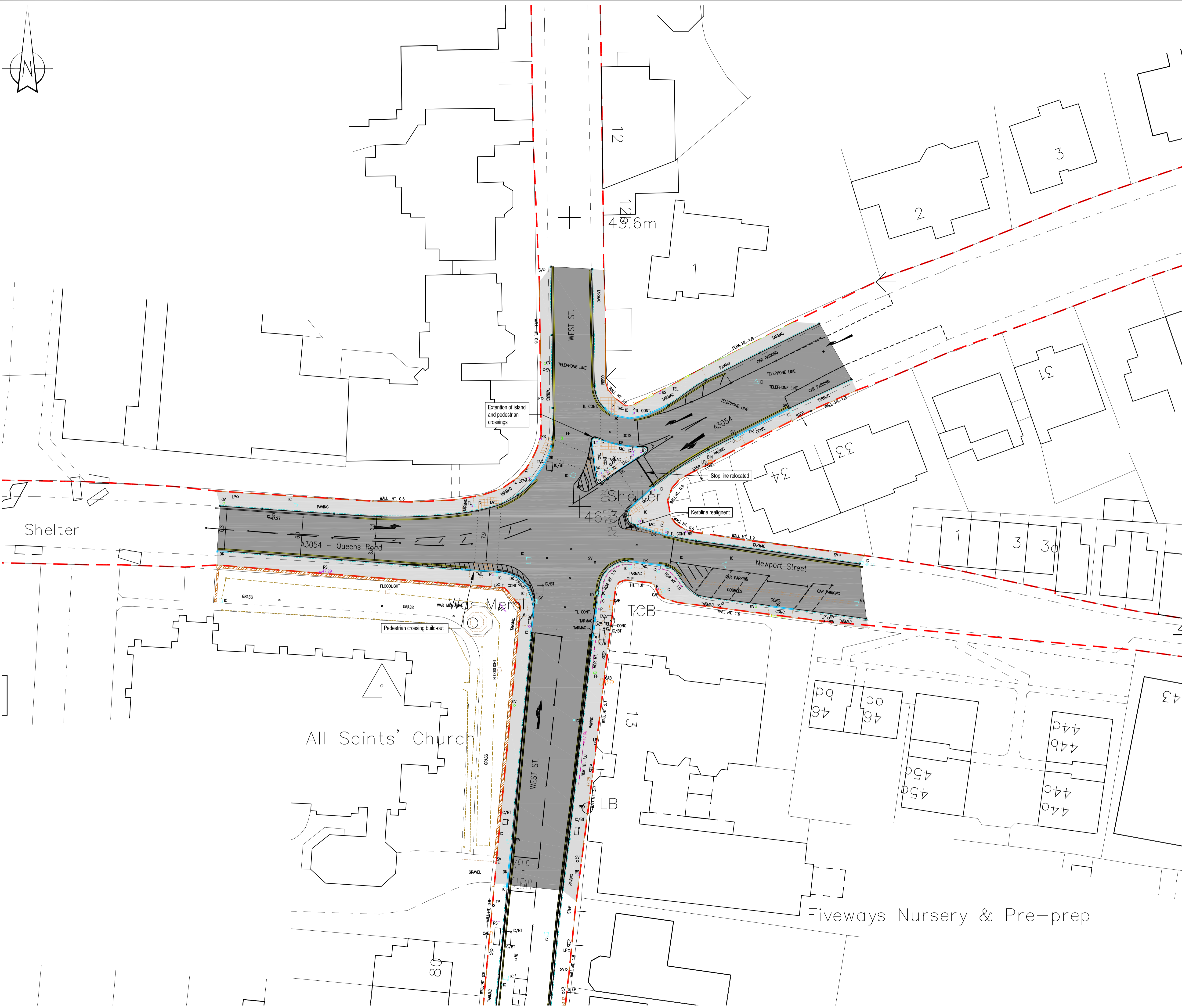
Conclusions

- 5.9 As part of this feasibility study, it can be concluded that the improvements brought forward address some of the existing issues related to congestion and queuing on the Queen’s Road arm. It has been shown that whilst the proposed junction scheme provides additional capacity, it is recommended that the cycle time is lengthened to 80 seconds as well, as this would enable the junction to operate within capacity in both the Base Year and Future Year scenarios.



Appendix A

1:250 DRAWINGS



- Notes:**
- General**
1. Do not scale from drawing.
 2. All dimensions are in metres, unless stated otherwise.
 3. This drawing is to be read & printed in colour.
 4. This drawing is for illustrative purposes only.
- Disclaimer**
1. The information contained in this drawing is based on a combination of OS and data provided by others and WYG shall not be liable for any inaccuracies or deficiencies.
- KEY:**
- Extent of highway boundary
 - Existing carriageway
 - Existing footway / public realm
 - Existing road marking
 - Proposed road marking
 - New footway construction
 - Existing gully to be relocated
 - Location of new gully

INDICATIVE

REV	DETAILS	DRAWN BY	CHECKED BY	DATE
CLIENT: Client				
PROJECT: IOW				
DRAWING TITLE: Junction 6 Ryde				
SCALES: 1:250		SHEET SIZE: A1		
DRAWN: SJR	CHECKED: NW	DATE: Date		
<small>11th Floor 1 Angel Court London EC2R 7HJ t: 0207 250 7500 f: 0207 250 7501 e: transport@wyg.com</small>				<small>REVISION:</small> Rev
DRAWING NUMBER: A090129-99-009				

NOTE: THE PROPERTY OF THIS DRAWING AND DESIGN IS VESTED IN WYG ENVIRONMENT PLANNING TRANSPORT LTD. IT MUST NOT BE COPIED OR REPRODUCED IN ANY WAY WITHOUT THEIR PRIOR WRITTEN CONSENT.



Appendix B

MODELLING OUTPUT RESULTS

Full Input Data And Results

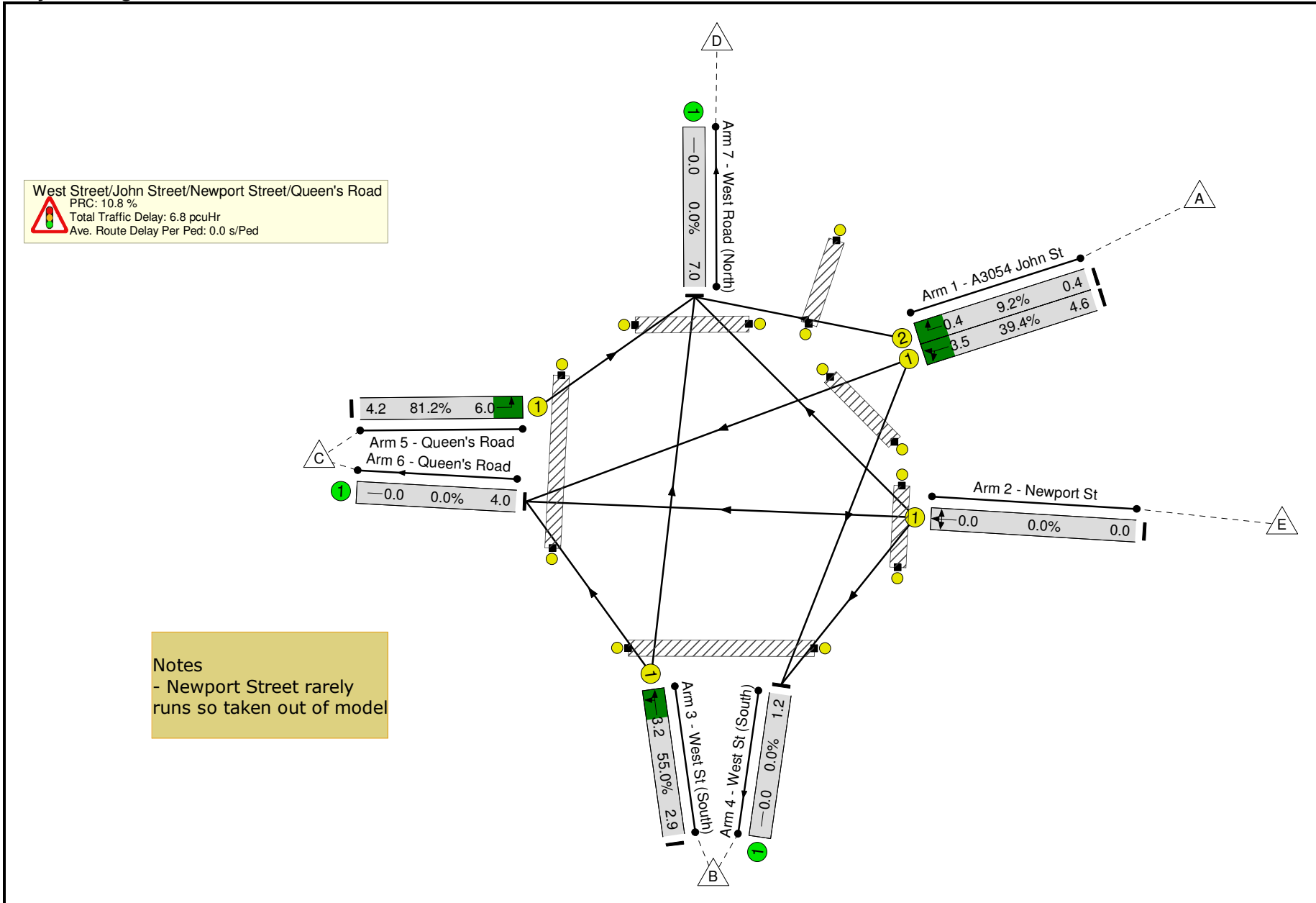
User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	Junction 6 West St John St Queens Rd Without Newport St (Existing).lsg3x
Author:	
Company:	
Address:	

Full Input Data And Results

Scenario 1: 'AM 2017 Base' (FG1: 'AM 2017 Base', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Full Input Data And Results

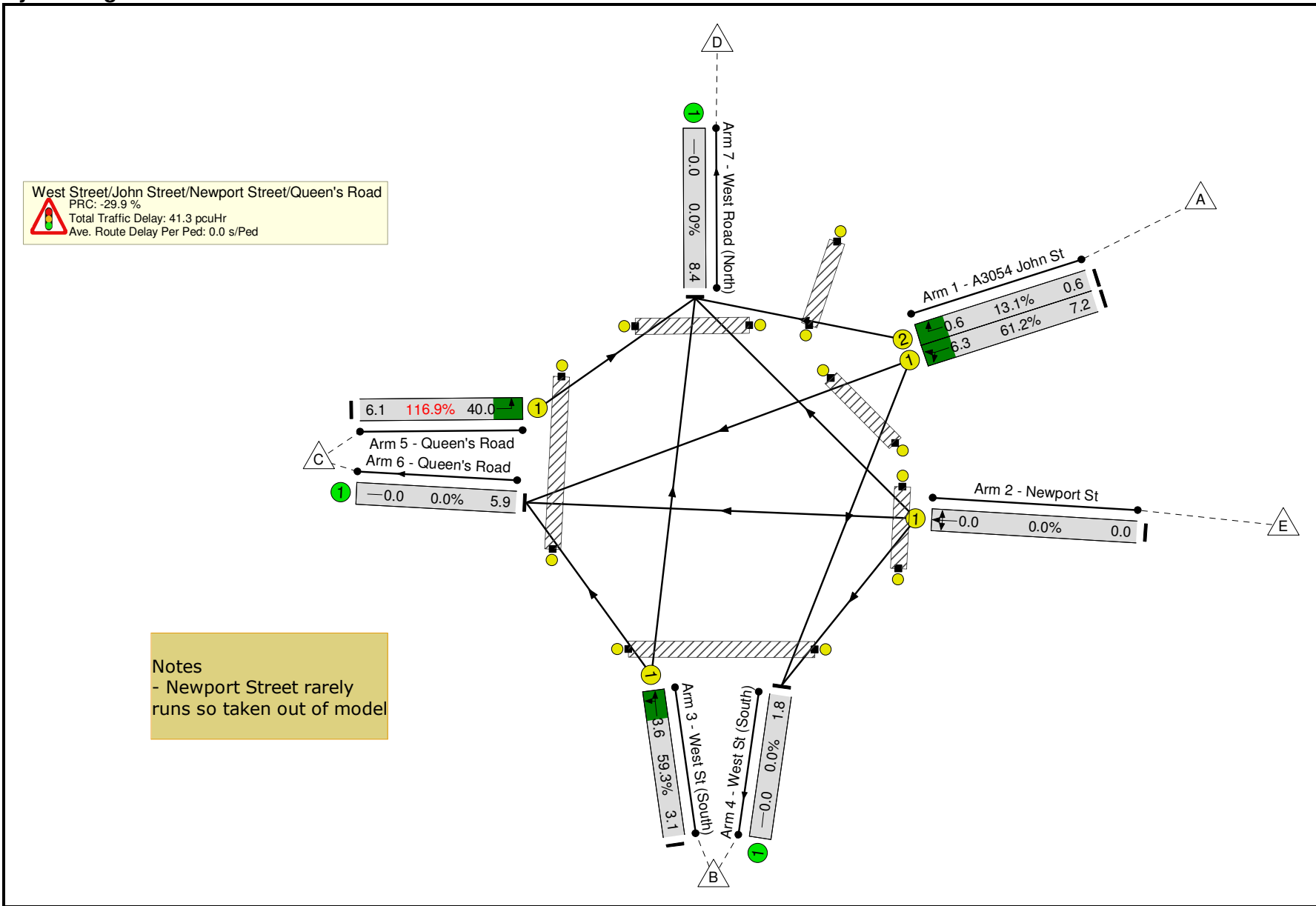
Network Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Max Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
Network	-	-	N/A	-		-	-	-	-	-	-	81.2%	-	-	
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-		-	-	-	-	-	-	81.2%	-	-	
1/1	A3054 John St Left Ahead	U	N/A	D		19	-	Y	313	1916	795	39.4%	14.6	3.5	
1/2	A3054 John St Right	U	N/A	C		7	-	Y	28	1617	305	9.2%	24.3	0.4	
2/1	Newport St Left Ahead Right	U	N/A	E		0	-	-	0	1915	0	0.0%	0.0	0.0	
3/1	West St (South) Left Ahead	U	N/A	A		7	-	Y	197	1899	358	55.0%	30.5	3.2	
4/1	West St (South)	U	N/A	-		-	-	-	79	Inf	Inf	0.0%	0.0	0.0	
5/1	Queen's Road Left	U	N/A	B		8	-	Y	287	1702	353	81.2%	45.6	6.0	
6/1	Queen's Road	U	N/A	-		-	-	-	271	Inf	Inf	0.0%	0.0	0.0	
7/1	West Road (North)	U	N/A	-		-	-	-	475	Inf	Inf	0.0%	0.0	0.0	
Ped Link: P1	Unnamed Ped Link	-	N/A	J		20	-	-	0	-	0	0.0%	-	-	
Ped Link: P2	Unnamed Ped Link	-	N/A	K		53	-	-	0	-	0	0.0%	-	-	
Ped Link: P3	Unnamed Ped Link	-	N/A	F		8	-	-	0	-	0	0.0%	-	-	
Ped Link: P4	Unnamed Ped Link	-	N/A	G		6	-	-	0	-	0	0.0%	-	-	
Ped Link: P5	Unnamed Ped Link	-	N/A	H		19	-	-	0	-	0	0.0%	-	-	
Ped Link: P6	Unnamed Ped Link	-	N/A	I		35	-	-	0	-	0	0.0%	-	-	
C1		PRC for Signalled Lanes (%):		10.8		Total Delay for Signalled Lanes (pcuHr):			6.76		Cycle Time (s):		53		
		PRC Over All Lanes (%):		10.8		Total Delay Over All Lanes(pcuHr):			6.76						

Full Input Data And Results

Scenario 2: 'PM 2017 Base' (FG2: 'PM 2017 Base', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Full Input Data And Results

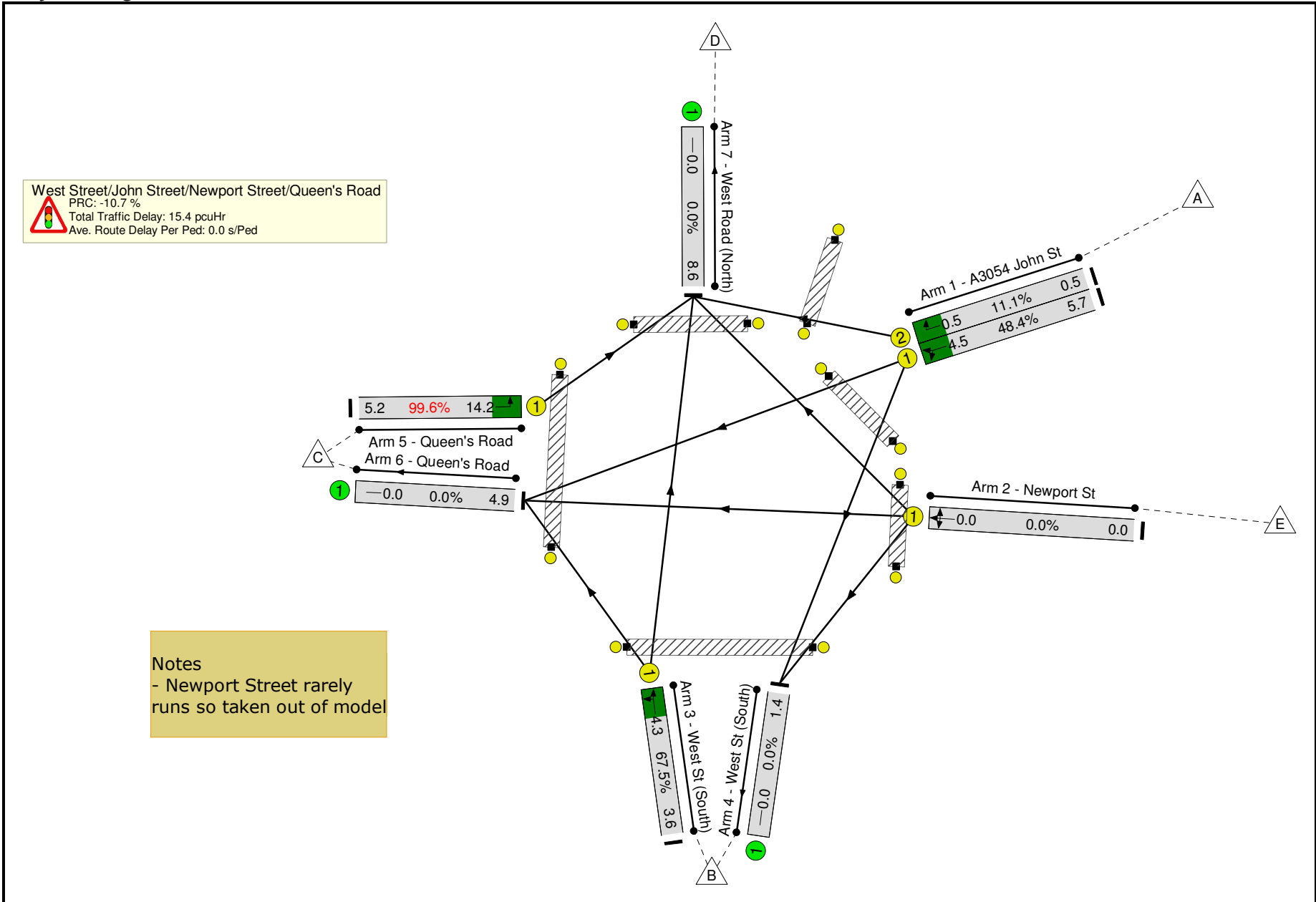
Network Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Max Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
Network	-	-	N/A	-		-	-	-	-	-	-	116.9%	-	-	
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-		-	-	-	-	-	-	116.9%	-	-	
1/1	A3054 John St Left Ahead	U	N/A	D		19	-	Y	487	1916	795	61.2%	18.0	6.3	
1/2	A3054 John St Right	U	N/A	C		7	-	Y	40	1617	305	13.1%	24.7	0.6	
2/1	Newport St Left Ahead Right	U	N/A	E		0	-	-	0	1915	0	0.0%	0.0	0.0	
3/1	West St (South) Left Ahead	U	N/A	A		7	-	Y	213	1905	359	59.3%	31.8	3.6	
4/1	West St (South)	U	N/A	-		-	-	-	123	Inf	Inf	0.0%	0.0	0.0	
5/1	Queen's Road Left	U	N/A	B		8	-	Y	413	1702	353	116.9%	320.1	40.0	
6/1	Queen's Road	U	N/A	-		-	-	-	401	Inf	Inf	0.0%	0.0	0.0	
7/1	West Road (North)	U	N/A	-		-	-	-	629	Inf	Inf	0.0%	0.0	0.0	
Ped Link: P1	Unnamed Ped Link	-	N/A	J		20	-	-	0	-	0	0.0%	-	-	
Ped Link: P2	Unnamed Ped Link	-	N/A	K		53	-	-	0	-	0	0.0%	-	-	
Ped Link: P3	Unnamed Ped Link	-	N/A	F		8	-	-	0	-	0	0.0%	-	-	
Ped Link: P4	Unnamed Ped Link	-	N/A	G		6	-	-	0	-	0	0.0%	-	-	
Ped Link: P5	Unnamed Ped Link	-	N/A	H		19	-	-	0	-	0	0.0%	-	-	
Ped Link: P6	Unnamed Ped Link	-	N/A	I		35	-	-	0	-	0	0.0%	-	-	
C1		PRC for Signalled Lanes (%):		-29.9		Total Delay for Signalled Lanes (pcuHr):			41.31		Cycle Time (s):		53		
		PRC Over All Lanes (%):		-29.9		Total Delay Over All Lanes(pcuHr):			41.31						

Full Input Data And Results

Scenario 3: 'AM 2034 DN' (FG3: 'AM 2034 DN', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Full Input Data And Results

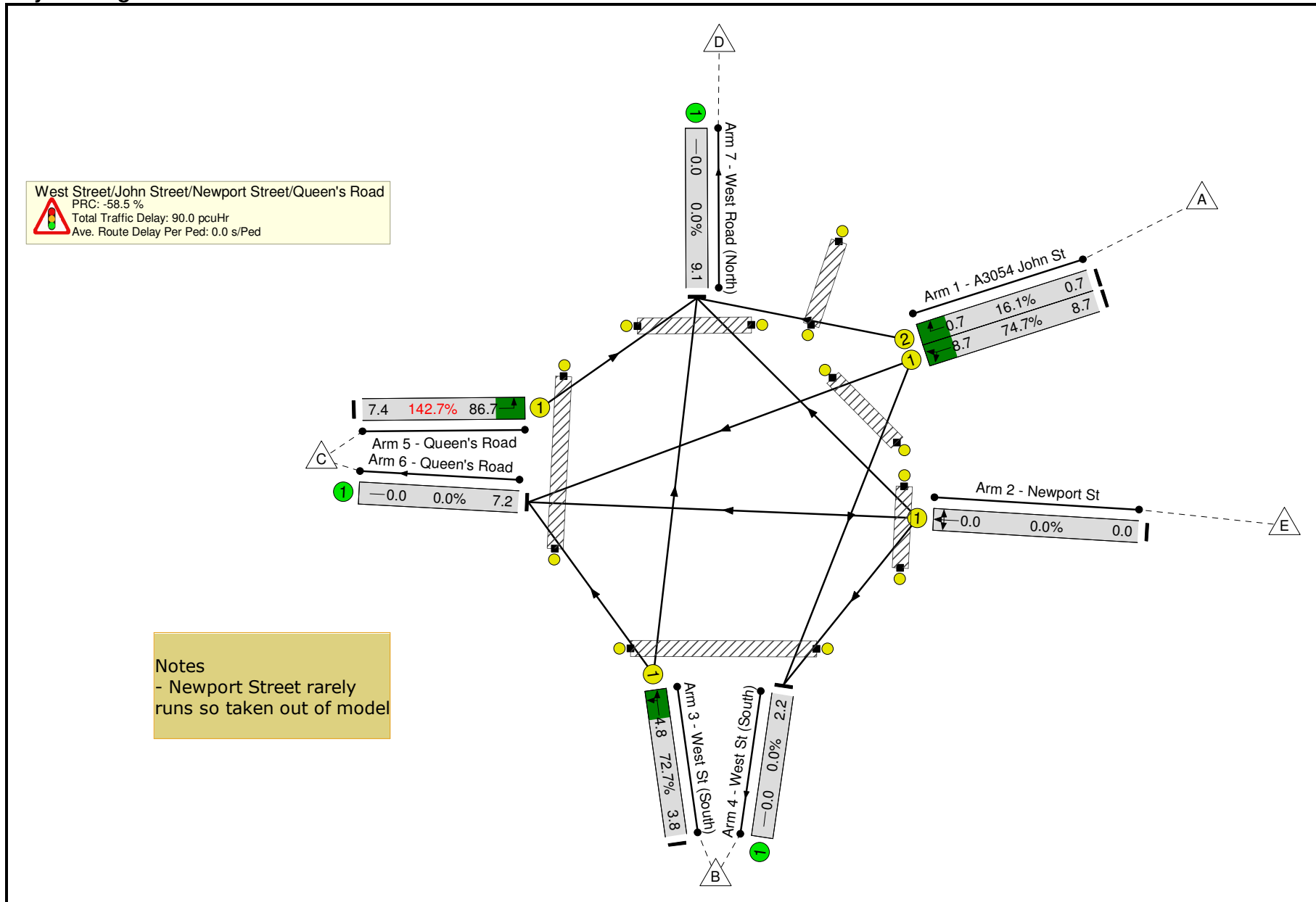
Network Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Max Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
Network	-	-	N/A	-		-	-	-	-	-	-	99.6%	-	-	
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-		-	-	-	-	-	-	99.6%	-	-	
1/1	A3054 John St Left Ahead	U	N/A	D		19	-	Y	385	1916	795	48.4%	15.7	4.5	
1/2	A3054 John St Right	U	N/A	C		7	-	Y	34	1617	305	11.1%	24.5	0.5	
2/1	Newport St Left Ahead Right	U	N/A	E		0	-	-	0	1915	0	0.0%	0.0	0.0	
3/1	West St (South) Left Ahead	U	N/A	A		7	-	Y	242	1900	358	67.5%	35.2	4.3	
4/1	West St (South)	U	N/A	-		-	-	-	98	Inf	Inf	0.0%	0.0	0.0	
5/1	Queen's Road Left	U	N/A	B		8	-	Y	352	1702	353	99.6%	113.8	14.2	
6/1	Queen's Road	U	N/A	-		-	-	-	332	Inf	Inf	0.0%	0.0	0.0	
7/1	West Road (North)	U	N/A	-		-	-	-	583	Inf	Inf	0.0%	0.0	0.0	
Ped Link: P1	Unnamed Ped Link	-	N/A	J		20	-	-	0	-	0	0.0%	-	-	
Ped Link: P2	Unnamed Ped Link	-	N/A	K		53	-	-	0	-	0	0.0%	-	-	
Ped Link: P3	Unnamed Ped Link	-	N/A	F		8	-	-	0	-	0	0.0%	-	-	
Ped Link: P4	Unnamed Ped Link	-	N/A	G		6	-	-	0	-	0	0.0%	-	-	
Ped Link: P5	Unnamed Ped Link	-	N/A	H		19	-	-	0	-	0	0.0%	-	-	
Ped Link: P6	Unnamed Ped Link	-	N/A	I		35	-	-	0	-	0	0.0%	-	-	
C1		PRC for Signalled Lanes (%):		-10.7		Total Delay for Signalled Lanes (pcuHr):			15.41		Cycle Time (s):		53		
		PRC Over All Lanes (%):		-10.7		Total Delay Over All Lanes(pcuHr):			15.41						

Full Input Data And Results

Scenario 4: 'PM 2034 DN' (FG4: 'PM 2034 DN', Plan 1: 'Network Control Plan 1')

Network Layout Diagram

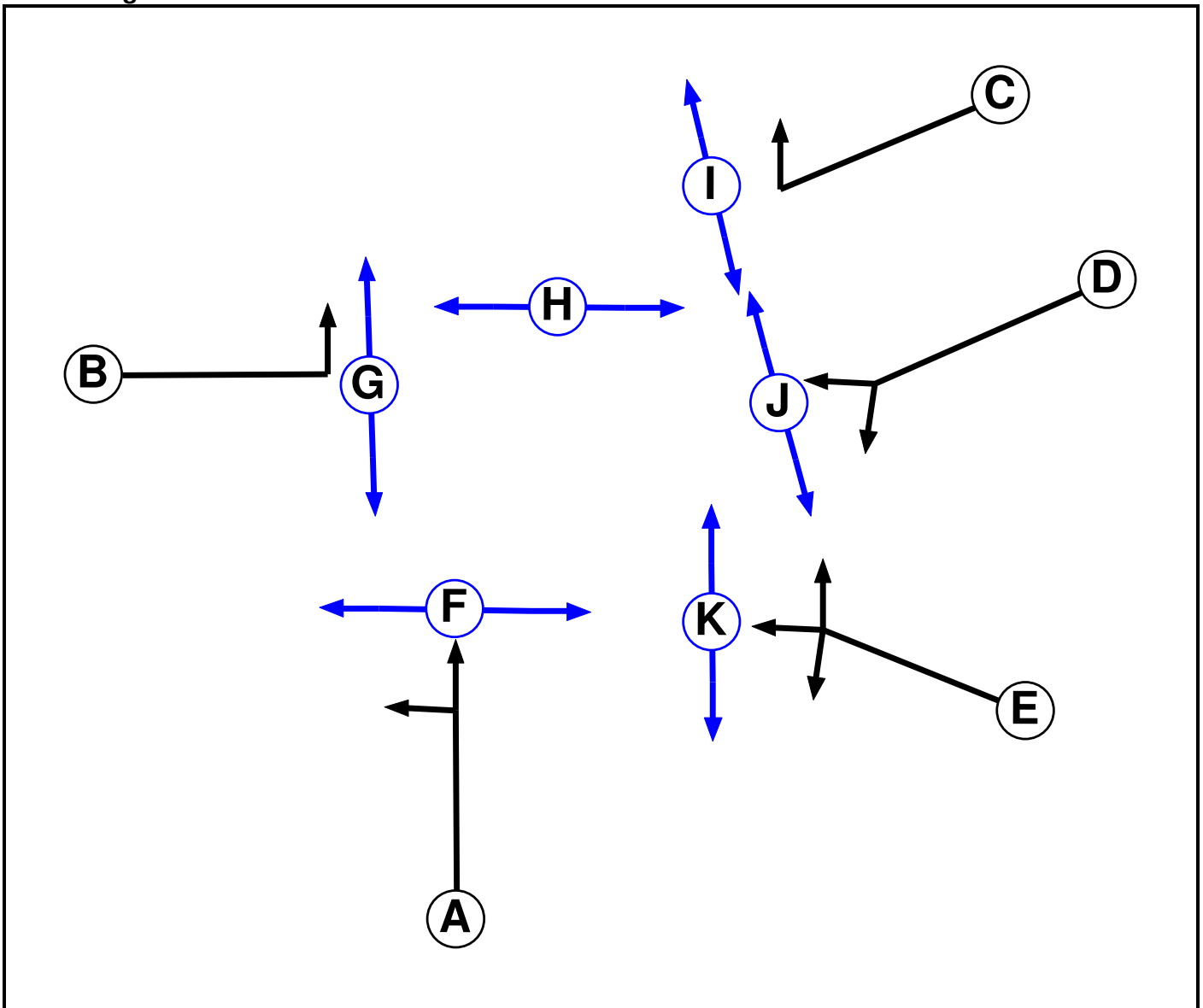


Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Max Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
Network	-	-	N/A	-		-	-	-	-	-	-	142.7%	-	-	
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-		-	-	-	-	-	-	142.7%	-	-	
1/1	A3054 John St Left Ahead	U	N/A	D		19	-	Y	594	1916	795	74.7%	22.0	8.7	
1/2	A3054 John St Right	U	N/A	C		7	-	Y	49	1617	305	16.1%	25.1	0.7	
2/1	Newport St Left Ahead Right	U	N/A	E		0	-	-	0	1915	0	0.0%	0.0	0.0	
3/1	West St (South) Left Ahead	U	N/A	A		7	-	Y	261	1904	359	72.7%	38.1	4.8	
4/1	West St (South)	U	N/A	-		-	-	-	150	Inf	Inf	0.0%	0.0	0.0	
5/1	Queen's Road Left	U	N/A	B		8	-	Y	504	1702	353	142.7%	594.7	86.7	
6/1	Queen's Road	U	N/A	-		-	-	-	490	Inf	Inf	0.0%	0.0	0.0	
7/1	West Road (North)	U	N/A	-		-	-	-	768	Inf	Inf	0.0%	0.0	0.0	
Ped Link: P1	Unnamed Ped Link	-	N/A	J		20	-	-	0	-	0	0.0%	-	-	
Ped Link: P2	Unnamed Ped Link	-	N/A	K		53	-	-	0	-	0	0.0%	-	-	
Ped Link: P3	Unnamed Ped Link	-	N/A	F		8	-	-	0	-	0	0.0%	-	-	
Ped Link: P4	Unnamed Ped Link	-	N/A	G		6	-	-	0	-	0	0.0%	-	-	
Ped Link: P5	Unnamed Ped Link	-	N/A	H		19	-	-	0	-	0	0.0%	-	-	
Ped Link: P6	Unnamed Ped Link	-	N/A	I		35	-	-	0	-	0	0.0%	-	-	
C1		PRC for Signalled Lanes (%):		-58.5		Total Delay for Signalled Lanes (pcuHr):			89.99		Cycle Time (s):		53		
		PRC Over All Lanes (%):		-58.5		Total Delay Over All Lanes(pcuHr):			89.99						

Full Input Data And Results
Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Pedestrian		6	6
G	Pedestrian		6	6
H	Pedestrian		6	6
I	Pedestrian		6	6
J	Pedestrian		6	6
K	Pedestrian		6	6

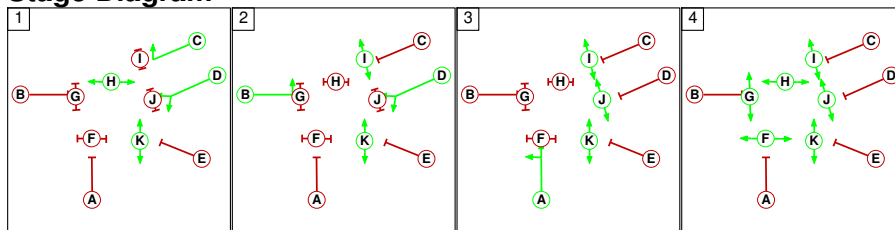
Phase Intergrens Matrix

	Starting Phase										
	A	B	C	D	E	F	G	H	I	J	K
Terminating Phase	A	6	7	5	5	5	7	7	-	-	-
	B	5	7	-	5	-	5	7	-	-	-
	C	5	5	-	5	-	-	-	5	-	-
	D	5	-	-	5	7	7	-	-	5	-
	E	5	5	7	5	7	7	7	-	-	5
	F	10	-	-	9	9	-	-	-	-	-
	G	9	10	-	9	9	-	-	-	-	-
	H	7	7	-	7	-	-	-	-	-	-
	I	-	-	6	-	-	-	-	-	-	-
	J	-	-	-	6	-	-	-	-	-	-
	K	-	-	-	-	6	-	-	-	-	-

Phases in Stage

Stage No.	Phases in Stage
1	C D H K
2	B D I K
3	A I J K
4	F G H I J K

Stage Diagram



Phase Delays

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

Prohibited Stage Change

From Stage	To Stage			
	1	2	3	4
1	7	7	7	7
2	7	5	7	7
3	7	6	7	7
4	9	10	10	10

Full Input Data And Results

Give-Way Lane Input Data

Junction: West Street/John Street/Newport Street/Queen's Road
There are no Opposed Lanes in this Junction

Lane Input Data

Junction: West Street/John Street/Newport Street/Queen's Road												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A3054 John St)	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 4 Left	30.00
											Arm 6 Ahead	Inf
1/2 (A3054 John St)	U	C	2	3	40.0	Geom	-	3.25	0.00	Y	Arm 7 Right	7.50
											Arm 4 Left	6.00
2/1 (Newport St)	U	E	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
											Arm 7 Right	12.00
3/1 (West St (South))	U	A	2	3	60.0	Geom	-	3.70	0.00	Y	Arm 6 Left	6.23
											Arm 7 Ahead	Inf
4/1 (West St (South))	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Queen's Road)	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 7 Left	12.00
6/1 (Queen's Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (West Road (North))	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM 2017 Base'	08:00	09:00	01:00	
2: 'PM 2017 Base'	17:00	18:00	01:00	
3: 'AM 2034 DN'	08:00	09:00	01:00	
4: 'PM 2034 DN'	17:00	18:00	01:00	

Full Input Data And Results

Scenario 1: 'AM 2017 Base' (FG1: 'AM 2017 Base', Plan 1: 'Network Control Plan 1')

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	81.2%
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-	-		-	-	-	-	-	-	81.2%
1/1	A3054 John St Left Ahead	U	N/A	N/A	D		1	19	-	313	1916	795	39.4%
1/2	A3054 John St Right	U	N/A	N/A	C		1	7	-	28	1617	305	9.2%
2/1	Newport St Left Ahead Right	U	N/A	N/A	E		0	0	-	0	1915	0	0.0%
3/1	West St (South) Left Ahead	U	N/A	N/A	A		1	7	-	197	1899	358	55.0%
4/1	West St (South)	U	N/A	N/A	-		-	-	-	79	Inf	Inf	0.0%
5/1	Queen's Road Left	U	N/A	N/A	B		1	8	-	287	1702	353	81.2%
6/1	Queen's Road	U	N/A	N/A	-		-	-	-	271	Inf	Inf	0.0%
7/1	West Road (North)	U	N/A	N/A	-		-	-	-	475	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	20	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	K		1	53	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	G		1	6	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	19	-	0	-	0	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	I		1	35	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	3.7	3.0	0.0	6.8	-	-	-	-
West Street/John Street/Newport Street/Queen's Road	-	-	0	0	0	3.7	3.0	0.0	6.8	-	-	-	-
1/1	313	313	-	-	-	0.9	0.3	-	1.3	14.6	3.2	0.3	3.5
1/2	28	28	-	-	-	0.1	0.1	-	0.2	24.3	0.3	0.1	0.4
2/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	197	197	-	-	-	1.1	0.6	-	1.7	30.5	2.6	0.6	3.2
4/1	79	79	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	287	287	-	-	-	1.6	2.0	-	3.6	45.6	4.0	2.0	6.0
6/1	271	271	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	475	475	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P5	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P6	0	0	-	-	-	-	-	-	-	-	-	-	-
C1			PRC for Signalled Lanes (%):	10.8	Total Delay for Signalled Lanes (pcuHr):			6.76	Cycle Time (s): 53				
			PRC Over All Lanes (%):	10.8	Total Delay Over All Lanes(pcuHr):			6.76					

Full Input Data And Results

Traffic Flows, Desired

Desired Flow :

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	79	234	28	0	341
	B	0	0	37	160	0	197
	C	0	0	0	287	0	287
	D	0	0	0	0	0	0
	E	0	0	0	0	0	0
	Tot.	0	79	271	475	0	825

Traffic Lane Flows

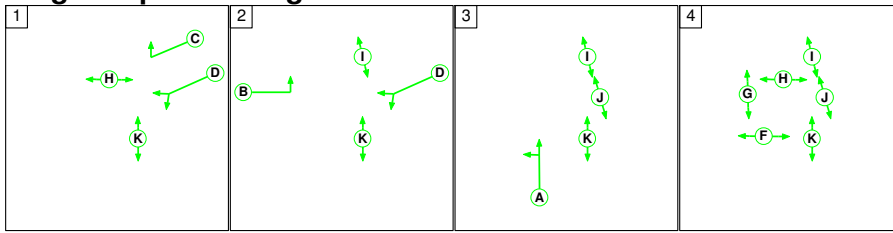
Lane	Scenario 1: AM 2017 Base
Junction: West Street/John Street/Newport Street/Queen's Road	
1/1	313
1/2	28
2/1	0
3/1	197
4/1	79
5/1	287
6/1	271
7/1	475

Lane Saturation Flows

Junction: West Street/John Street/Newport Street/Queen's Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A3054 John St)	3.25	0.00	Y	Arm 4 Left Arm 6 Ahead	30.00 Inf	25.2 % 74.8 %	1916	1916
1/2 (A3054 John St)	3.25	0.00	Y	Arm 7 Right	7.50	100.0 %	1617	1617
2/1 (Newport St)	3.00	0.00	Y	Arm 4 Left Arm 6 Ahead Arm 7 Right	6.00 Inf 12.00	0.0 % 0.0 % 0.0 %	1915	1915
3/1 (West St (South))	3.70	0.00	Y	Arm 6 Left Arm 7 Ahead	6.23 Inf	18.8 % 81.2 %	1899	1899
4/1 (West St (South) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Queen's Road)	3.00	0.00	Y	Arm 7 Left	12.00	100.0 %	1702	1702
6/1 (Queen's Road Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (West Road (North) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

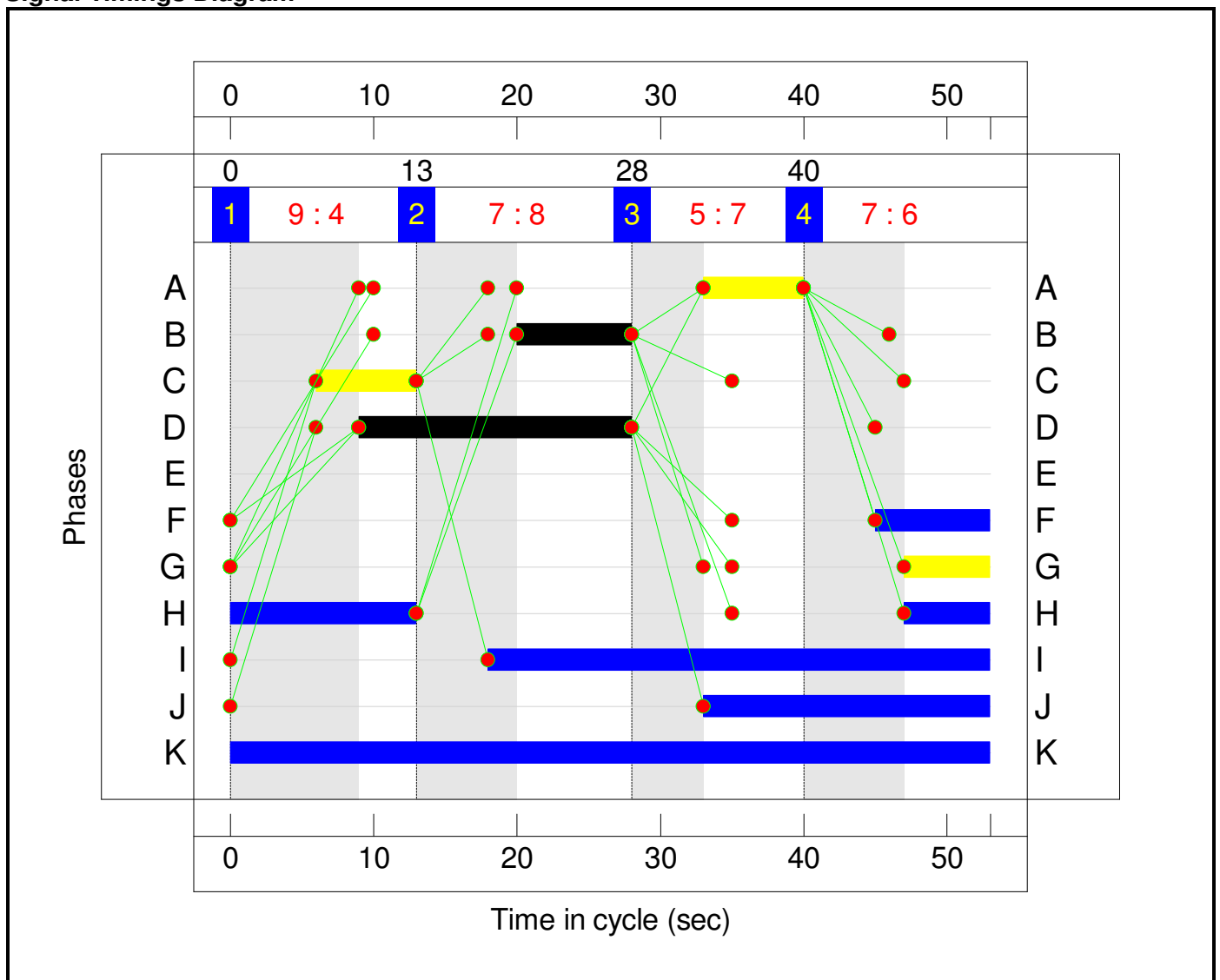
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	4	8	7	6
Change Point	0	13	28	40

Signal Timings Diagram



Full Input Data And Results

Scenario 2: 'PM 2017 Base' (FG2: 'PM 2017 Base', Plan 1: 'Network Control Plan 1')

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	116.9%
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-	-		-	-	-	-	-	-	116.9%
1/1	A3054 John St Left Ahead	U	N/A	N/A	D		1	19	-	487	1916	795	61.2%
1/2	A3054 John St Right	U	N/A	N/A	C		1	7	-	40	1617	305	13.1%
2/1	Newport St Left Ahead Right	U	N/A	N/A	E		0	0	-	0	1915	0	0.0%
3/1	West St (South) Left Ahead	U	N/A	N/A	A		1	7	-	213	1905	359	59.3%
4/1	West St (South)	U	N/A	N/A	-		-	-	-	123	Inf	Inf	0.0%
5/1	Queen's Road Left	U	N/A	N/A	B		1	8	-	413	1702	353	116.9%
6/1	Queen's Road	U	N/A	N/A	-		-	-	-	401	Inf	Inf	0.0%
7/1	West Road (North)	U	N/A	N/A	-		-	-	-	629	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	20	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	K		1	53	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	G		1	6	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	19	-	0	-	0	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	I		1	35	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	6.7	34.6	0.0	41.3	-	-	-	-
West Street/John Street/Newport Street/Queen's Road	-	-	0	0	0	6.7	34.6	0.0	41.3	-	-	-	-
1/1	487	487	-	-	-	1.6	0.8	-	2.4	18.0	5.5	0.8	6.3
1/2	40	40	-	-	-	0.2	0.1	-	0.3	24.7	0.5	0.1	0.6
2/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	213	213	-	-	-	1.2	0.7	-	1.9	31.8	2.8	0.7	3.6
4/1	123	123	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	413	353	-	-	-	3.7	33.0	-	36.7	320.1	7.0	33.0	40.0
6/1	401	401	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	569	569	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P5	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P6	0	0	-	-	-	-	-	-	-	-	-	-	-
C1			PRC for Signalled Lanes (%):	-29.9	Total Delay for Signalled Lanes (pcuHr):			41.31	Cycle Time (s): 53				
			PRC Over All Lanes (%):	-29.9	Total Delay Over All Lanes(pcuHr):			41.31					

Full Input Data And Results

Traffic Flows, Desired

Desired Flow :

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	123	364	40	0	527
	B	0	0	37	176	0	213
	C	0	0	0	413	0	413
	D	0	0	0	0	0	0
	E	0	0	0	0	0	0
	Tot.	0	123	401	629	0	1153

Traffic Lane Flows

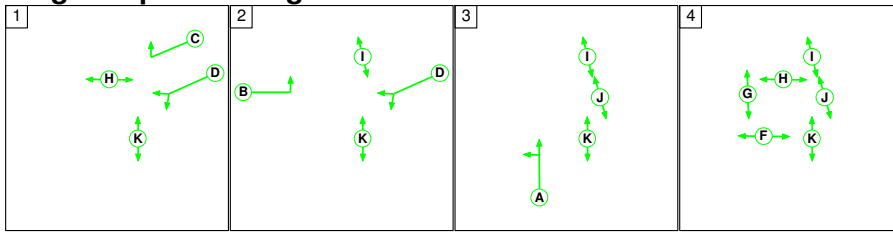
Lane	Scenario 2: PM 2017 Base
Junction: West Street/John Street/Newport Street/Queen's Road	
1/1	487
1/2	40
2/1	0
3/1	213
4/1	123
5/1	413
6/1	401
7/1	629

Lane Saturation Flows

Junction: West Street/John Street/Newport Street/Queen's Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A3054 John St)	3.25	0.00	Y	Arm 4 Left Arm 6 Ahead	30.00 Inf	25.3 % 74.7 %	1916	1916
1/2 (A3054 John St)	3.25	0.00	Y	Arm 7 Right	7.50	100.0 %	1617	1617
2/1 (Newport St)	3.00	0.00	Y	Arm 4 Left Arm 6 Ahead Arm 7 Right	6.00 Inf 12.00	0.0 % 0.0 % 0.0 %	1915	1915
3/1 (West St (South))	3.70	0.00	Y	Arm 6 Left Arm 7 Ahead	6.23 Inf	17.4 % 82.6 %	1905	1905
4/1 (West St (South) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Queen's Road)	3.00	0.00	Y	Arm 7 Left	12.00	100.0 %	1702	1702
6/1 (Queen's Road Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (West Road (North) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

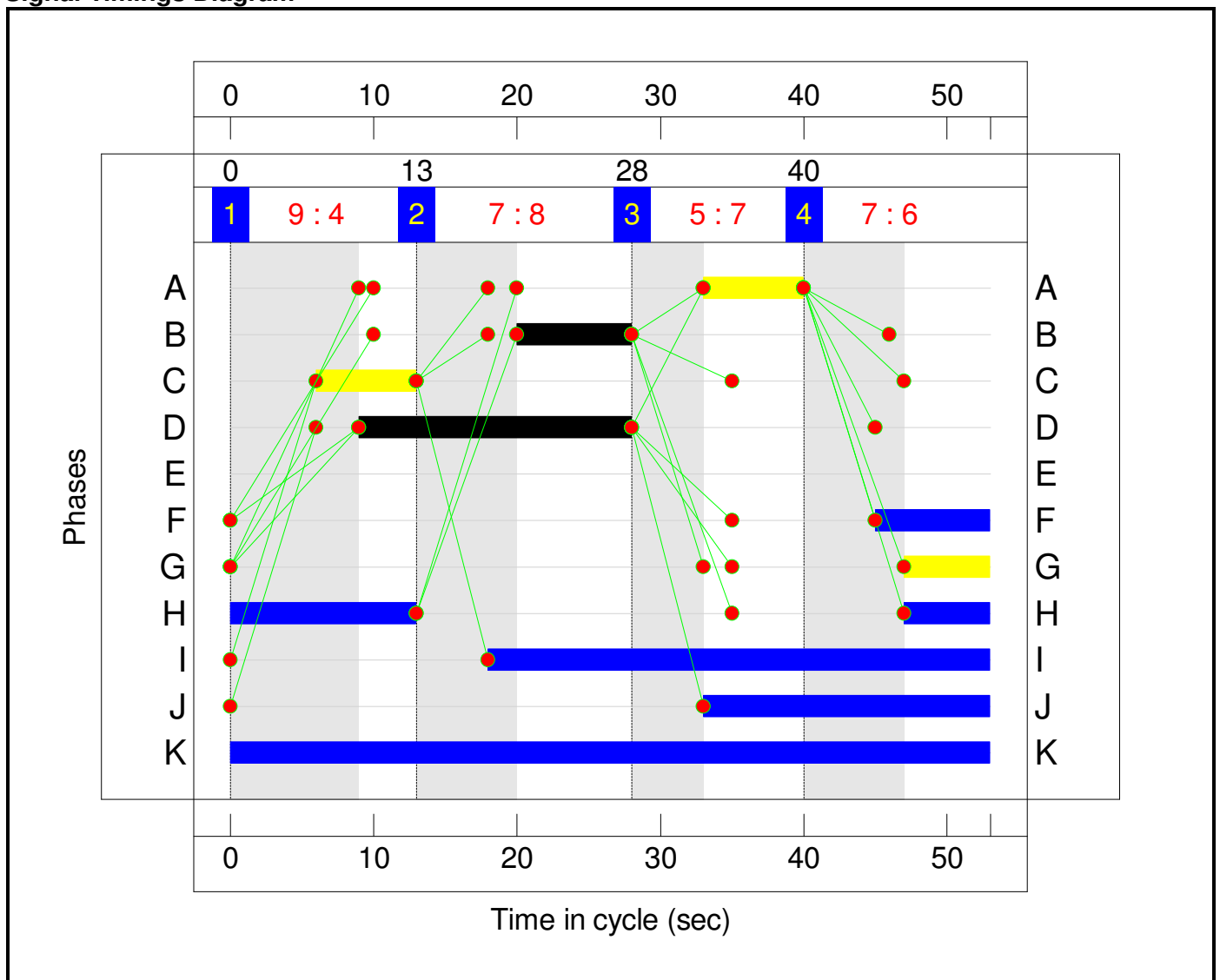
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	4	8	7	6
Change Point	0	13	28	40

Signal Timings Diagram



Full Input Data And Results

Scenario 3: 'AM 2034 DN' (FG3: 'AM 2034 DN', Plan 1: 'Network Control Plan 1')

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	99.6%
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-	-		-	-	-	-	-	-	99.6%
1/1	A3054 John St Left Ahead	U	N/A	N/A	D		1	19	-	385	1916	795	48.4%
1/2	A3054 John St Right	U	N/A	N/A	C		1	7	-	34	1617	305	11.1%
2/1	Newport St Left Ahead Right	U	N/A	N/A	E		0	0	-	0	1915	0	0.0%
3/1	West St (South) Left Ahead	U	N/A	N/A	A		1	7	-	242	1900	358	67.5%
4/1	West St (South)	U	N/A	N/A	-		-	-	-	98	Inf	Inf	0.0%
5/1	Queen's Road Left	U	N/A	N/A	B		1	8	-	352	1702	353	99.6%
6/1	Queen's Road	U	N/A	N/A	-		-	-	-	332	Inf	Inf	0.0%
7/1	West Road (North)	U	N/A	N/A	-		-	-	-	583	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	20	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	K		1	53	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	G		1	6	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	19	-	0	-	0	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	I		1	35	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	4.8	10.6	0.0	15.4	-	-	-	-
West Street/John Street/Newport Street/Queen's Road	-	-	0	0	0	4.8	10.6	0.0	15.4	-	-	-	-
1/1	385	385	-	-	-	1.2	0.5	-	1.7	15.7	4.1	0.5	4.5
1/2	34	34	-	-	-	0.2	0.1	-	0.2	24.5	0.4	0.1	0.5
2/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	242	242	-	-	-	1.3	1.0	-	2.4	35.2	3.3	1.0	4.3
4/1	98	98	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	352	352	-	-	-	2.1	9.1	-	11.1	113.8	5.1	9.1	14.2
6/1	332	332	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	583	583	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P5	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P6	0	0	-	-	-	-	-	-	-	-	-	-	-
C1			PRC for Signalled Lanes (%): -10.7		Total Delay for Signalled Lanes (pcuHr): 15.41			15.41	Cycle Time (s): 53				
			PRC Over All Lanes (%): -10.7		Total Delay Over All Lanes(pcuHr):			15.41					

Full Input Data And Results

Traffic Flows, Desired

Desired Flow :

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	98	287	34	0	419
	B	0	0	45	197	0	242
	C	0	0	0	352	0	352
	D	0	0	0	0	0	0
	E	0	0	0	0	0	0
	Tot.	0	98	332	583	0	1013

Traffic Lane Flows

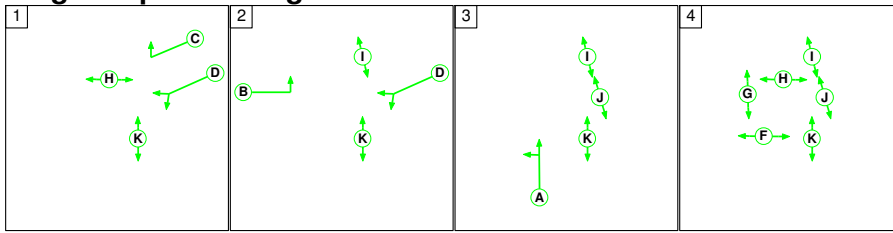
Lane	Scenario 3: AM 2034 DN
Junction: West Street/John Street/Newport Street/Queen's Road	
1/1	385
1/2	34
2/1	0
3/1	242
4/1	98
5/1	352
6/1	332
7/1	583

Lane Saturation Flows

Junction: West Street/John Street/Newport Street/Queen's Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A3054 John St)	3.25	0.00	Y	Arm 4 Left Arm 6 Ahead	30.00 Inf	25.5 % 74.5 %	1916	1916
1/2 (A3054 John St)	3.25	0.00	Y	Arm 7 Right	7.50	100.0 %	1617	1617
2/1 (Newport St)	3.00	0.00	Y	Arm 4 Left Arm 6 Ahead Arm 7 Right	6.00 Inf 12.00	0.0 % 0.0 % 0.0 %	1915	1915
3/1 (West St (South))	3.70	0.00	Y	Arm 6 Left Arm 7 Ahead	6.23 Inf	18.6 % 81.4 %	1900	1900
4/1 (West St (South) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Queen's Road)	3.00	0.00	Y	Arm 7 Left	12.00	100.0 %	1702	1702
6/1 (Queen's Road Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (West Road (North) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

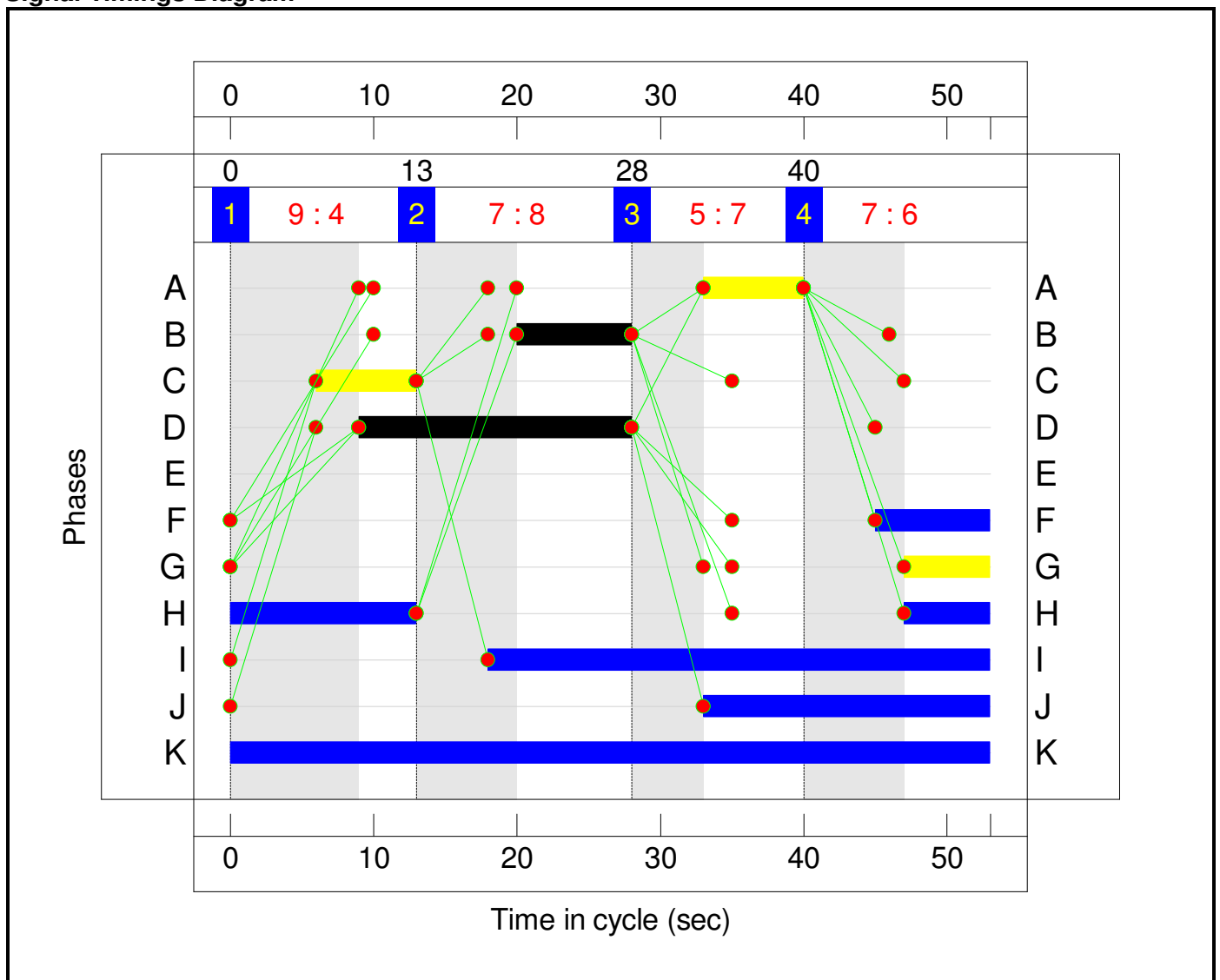
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	4	8	7	6
Change Point	0	13	28	40

Signal Timings Diagram



Full Input Data And Results

Scenario 4: 'PM 2034 DN' (FG4: 'PM 2034 DN', Plan 1: 'Network Control Plan 1')

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	142.7%
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-	-		-	-	-	-	-	-	142.7%
1/1	A3054 John St Left Ahead	U	N/A	N/A	D		1	19	-	594	1916	795	74.7%
1/2	A3054 John St Right	U	N/A	N/A	C		1	7	-	49	1617	305	16.1%
2/1	Newport St Left Ahead Right	U	N/A	N/A	E		0	0	-	0	1915	0	0.0%
3/1	West St (South) Left Ahead	U	N/A	N/A	A		1	7	-	261	1904	359	72.7%
4/1	West St (South)	U	N/A	N/A	-		-	-	-	150	Inf	Inf	0.0%
5/1	Queen's Road Left	U	N/A	N/A	B		1	8	-	504	1702	353	142.7%
6/1	Queen's Road	U	N/A	N/A	-		-	-	-	490	Inf	Inf	0.0%
7/1	West Road (North)	U	N/A	N/A	-		-	-	-	768	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	20	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	K		1	53	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	G		1	6	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	19	-	0	-	0	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	I		1	35	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)				
Network	-	-	0	0	0	10.1	79.9	0.0	90.0	-	-	-	-				
West Street/John Street/Newport Street/Queen's Road	-	-	0	0	0	10.1	79.9	0.0	90.0	-	-	-	-				
1/1	594	594	-	-	-	2.2	1.5	-	3.6	22.0	7.3	1.5	8.7				
1/2	49	49	-	-	-	0.2	0.1	-	0.3	25.1	0.6	0.1	0.7				
2/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0				
3/1	261	261	-	-	-	1.5	1.3	-	2.8	38.1	3.6	1.3	4.8				
4/1	150	150	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0				
5/1	504	353	-	-	-	6.2	77.0	-	83.3	594.7	9.6	77.0	86.7				
6/1	490	490	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0				
7/1	617	617	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0				
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-				
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-				
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-				
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-				
Ped Link: P5	0	0	-	-	-	-	-	-	-	-	-	-	-				
Ped Link: P6	0	0	-	-	-	-	-	-	-	-	-	-	-				
C1			PRC for Signalled Lanes (%):		-58.5	Total Delay for Signalled Lanes (pcuHr):		89.99	Cycle Time (s):		53	PRC Over All Lanes (%):		-58.5	Total Delay Over All Lanes(pcuHr):		89.99

Full Input Data And Results

Traffic Flows, Desired

Desired Flow :

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	150	444	49	0	643
	B	0	0	46	215	0	261
	C	0	0	0	504	0	504
	D	0	0	0	0	0	0
	E	0	0	0	0	0	0
	Tot.	0	150	490	768	0	1408

Traffic Lane Flows

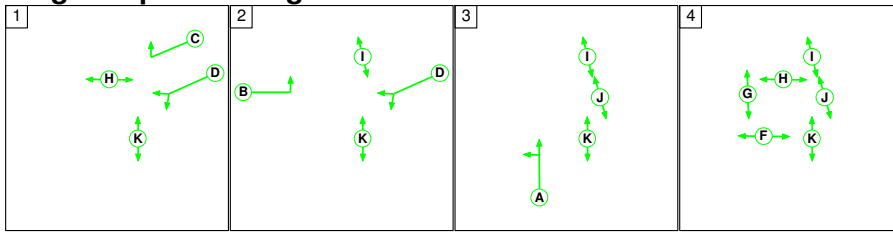
Lane	Scenario 4: PM 2034 DN
Junction: West Street/John Street/Newport Street/Queen's Road	
1/1	594
1/2	49
2/1	0
3/1	261
4/1	150
5/1	504
6/1	490
7/1	768

Lane Saturation Flows

Junction: West Street/John Street/Newport Street/Queen's Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A3054 John St)	3.25	0.00	Y	Arm 4 Left Arm 6 Ahead	30.00 Inf	25.3 % 74.7 %	1916	1916
1/2 (A3054 John St)	3.25	0.00	Y	Arm 7 Right	7.50	100.0 %	1617	1617
2/1 (Newport St)	3.00	0.00	Y	Arm 4 Left Arm 6 Ahead Arm 7 Right	6.00 Inf 12.00	0.0 % 0.0 % 0.0 %	1915	1915
3/1 (West St (South))	3.70	0.00	Y	Arm 6 Left Arm 7 Ahead	6.23 Inf	17.6 % 82.4 %	1904	1904
4/1 (West St (South) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Queen's Road)	3.00	0.00	Y	Arm 7 Left	12.00	100.0 %	1702	1702
6/1 (Queen's Road Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (West Road (North) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

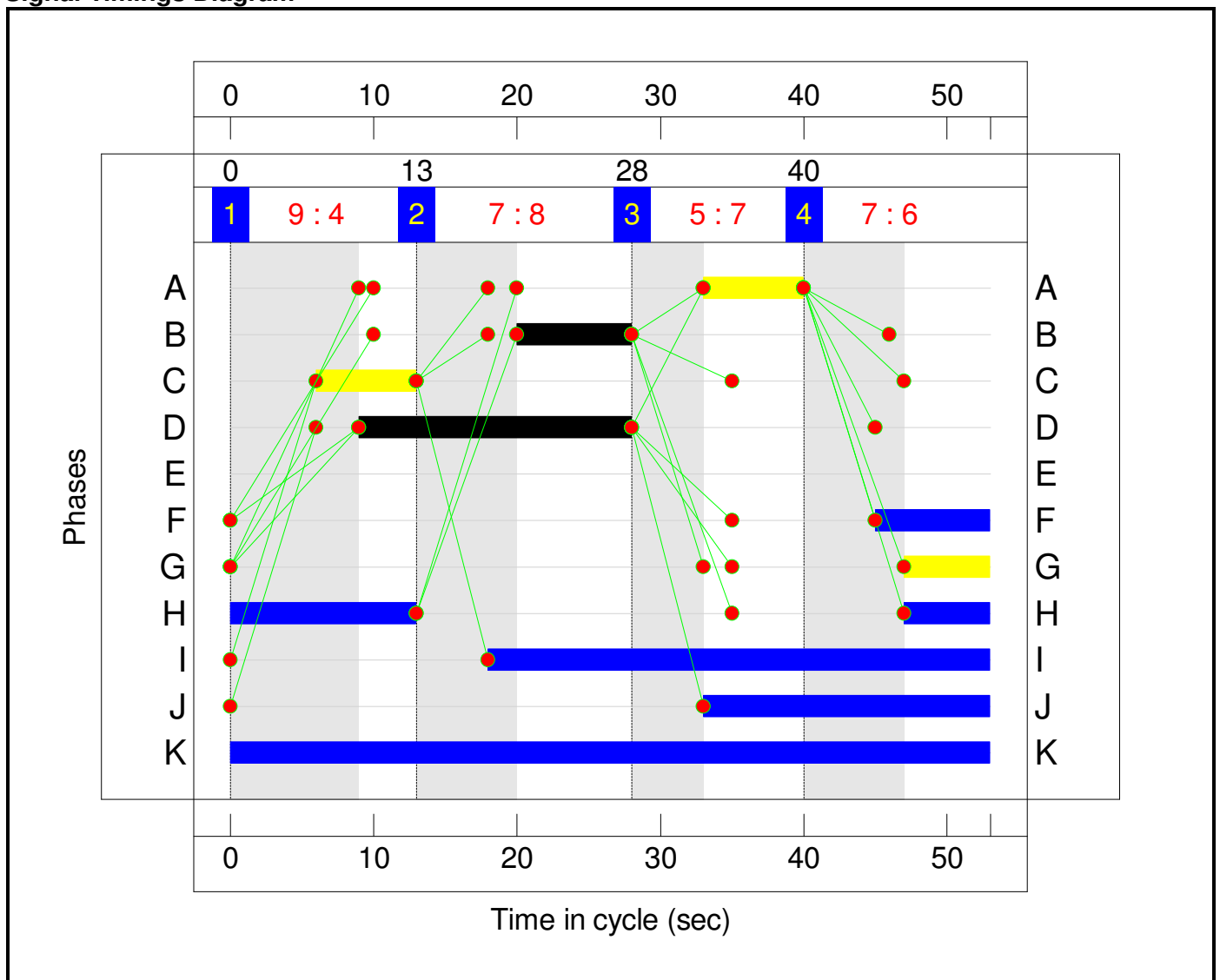
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	4	8	7	6
Change Point	0	13	28	40

Signal Timings Diagram



Full Input Data And Results

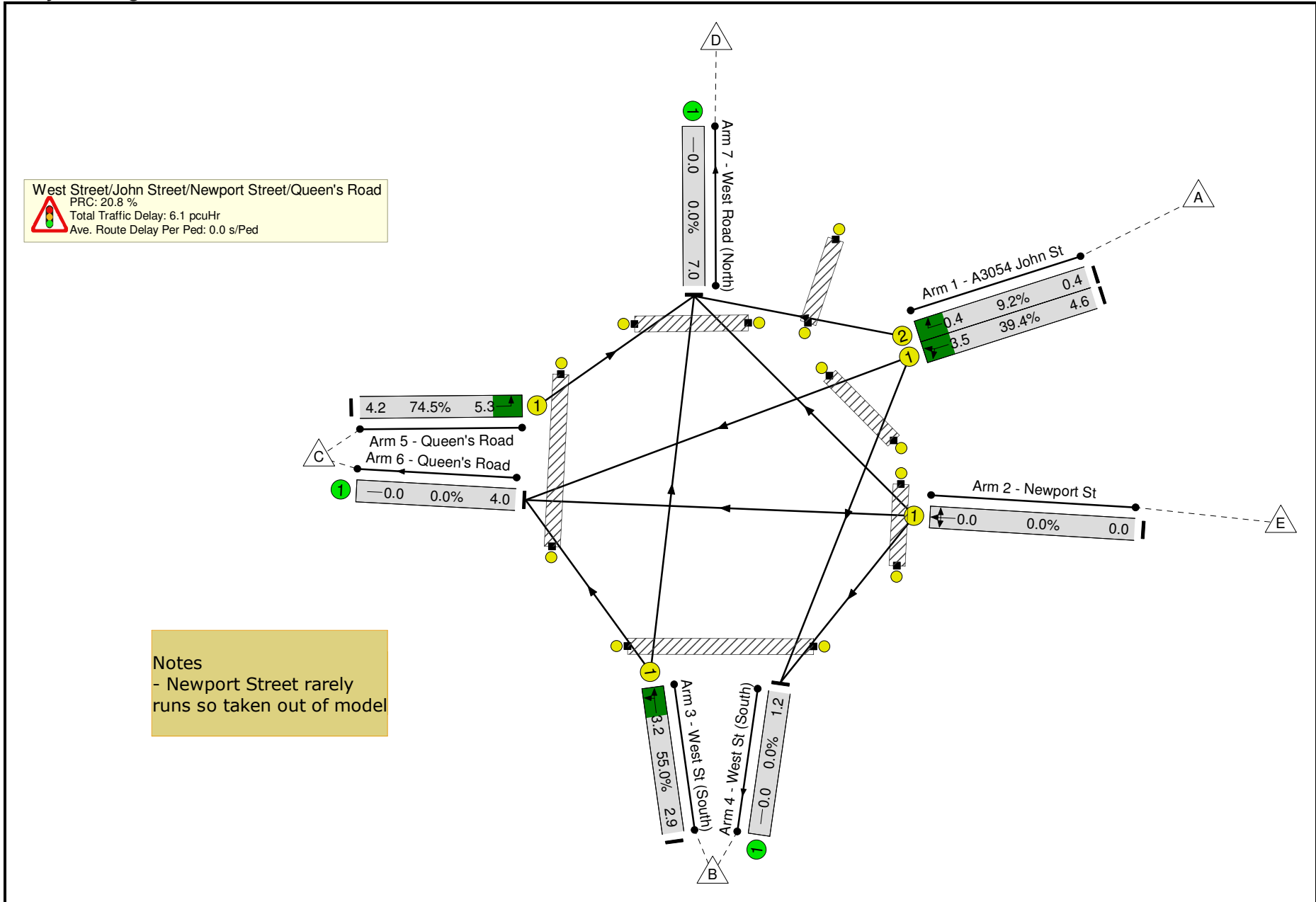
User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	Junction 6 West St John St Queens Rd Without Newport St (Proposed).lsg3x
Author:	
Company:	
Address:	

Full Input Data And Results

Scenario 1: 'AM 2017 Base' (FG1: 'AM 2017 Base', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Full Input Data And Results

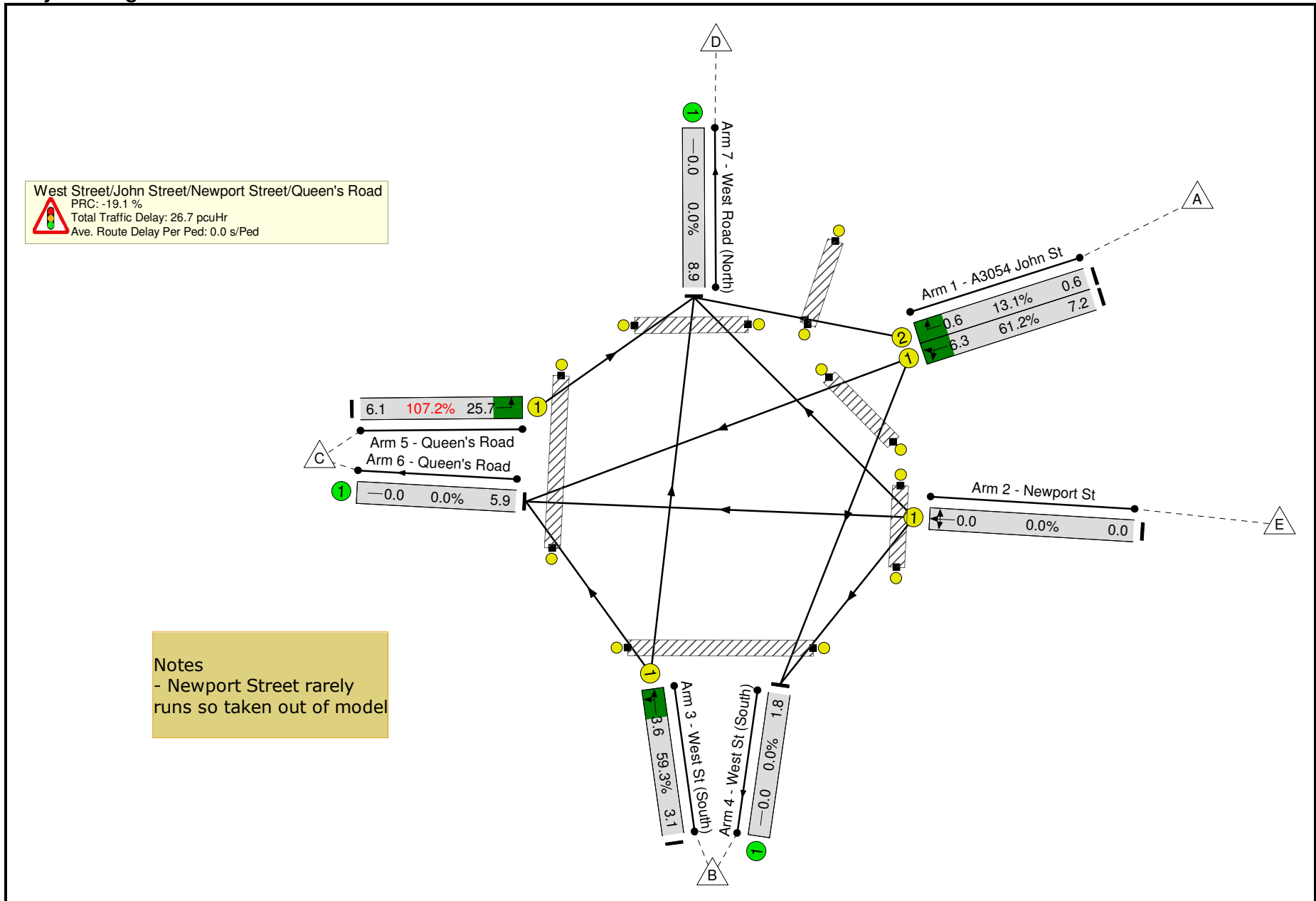
Network Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Max Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	N/A	-		-	-	-	-	-	-	74.5%	-	-
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-		-	-	-	-	-	-	74.5%	-	-
1/1	A3054 John St Left Ahead	U	N/A	D		19	-	Y	313	1916	795	39.4%	14.6	3.5
1/2	A3054 John St Right	U	N/A	C		7	-	Y	28	1617	305	9.2%	24.3	0.4
2/1	Newport St Left Ahead Right	U	N/A	E		0	-	-	0	1915	0	0.0%	0.0	0.0
3/1	West St (South) Left Ahead	U	N/A	A		7	-	Y	197	1899	358	55.0%	30.5	3.2
4/1	West St (South)	U	N/A	-		-	-	-	79	Inf	Inf	0.0%	0.0	0.0
5/1	Queen's Road Left	U	N/A	B		9	-	Y	287	1702	385	74.5%	36.9	5.3
6/1	Queen's Road	U	N/A	-		-	-	-	271	Inf	Inf	0.0%	0.0	0.0
7/1	West Road (North)	U	N/A	-		-	-	-	475	Inf	Inf	0.0%	0.0	0.0
Ped Link: P1	Unnamed Ped Link	-	N/A	J		19	-	-	0	-	0	0.0%	-	-
Ped Link: P2	Unnamed Ped Link	-	N/A	K		53	-	-	0	-	0	0.0%	-	-
Ped Link: P3	Unnamed Ped Link	-	N/A	F		7	-	-	0	-	0	0.0%	-	-
Ped Link: P4	Unnamed Ped Link	-	N/A	G		6	-	-	0	-	0	0.0%	-	-
Ped Link: P5	Unnamed Ped Link	-	N/A	H		18	-	-	0	-	0	0.0%	-	-
Ped Link: P6	Unnamed Ped Link	-	N/A	I		35	-	-	0	-	0	0.0%	-	-
C1		PRC for Signalled Lanes (%):		20.8		Total Delay for Signalled Lanes (pcuHr):		6.07		Cycle Time (s):		53		
		PRC Over All Lanes (%):		20.8		Total Delay Over All Lanes(pcuHr):		6.07						

Full Input Data And Results

Scenario 2: 'PM 2017 Base' (FG2: 'PM 2017 Base', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Full Input Data And Results

Network Results

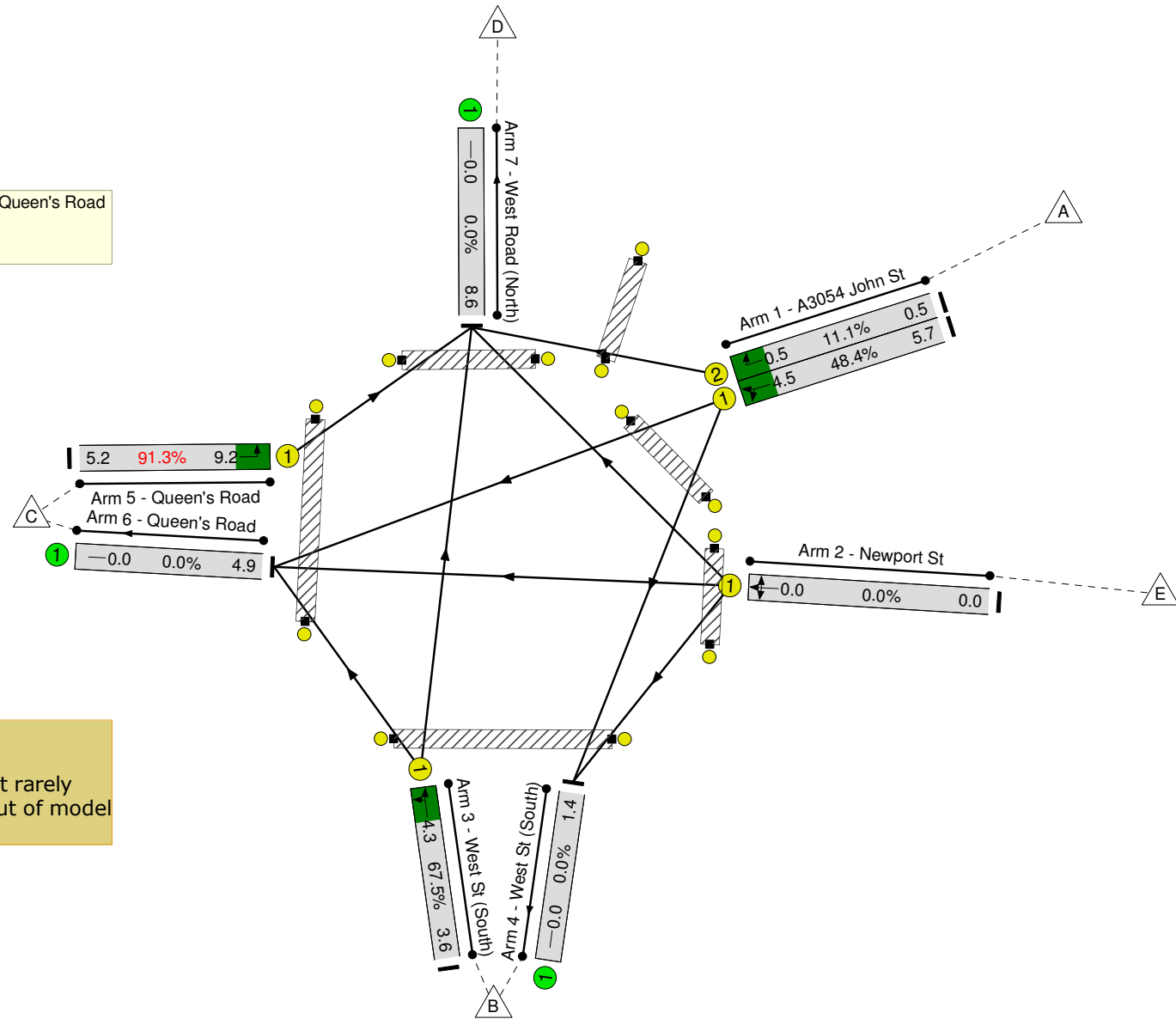
Item	Lane Description	Lane Type	Controller Stream	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Max Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	N/A	-		-	-	-	-	-	-	107.2%	-	-
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-		-	-	-	-	-	-	107.2%	-	-
1/1	A3054 John St Left Ahead	U	N/A	D		19	-	Y	487	1916	795	61.2%	18.0	6.3
1/2	A3054 John St Right	U	N/A	C		7	-	Y	40	1617	305	13.1%	24.7	0.6
2/1	Newport St Left Ahead Right	U	N/A	E		0	-	-	0	1915	0	0.0%	0.0	0.0
3/1	West St (South) Left Ahead	U	N/A	A		7	-	Y	213	1905	359	59.3%	31.8	3.6
4/1	West St (South)	U	N/A	-		-	-	-	123	Inf	Inf	0.0%	0.0	0.0
5/1	Queen's Road Left	U	N/A	B		9	-	Y	413	1702	385	107.2%	193.1	25.7
6/1	Queen's Road	U	N/A	-		-	-	-	401	Inf	Inf	0.0%	0.0	0.0
7/1	West Road (North)	U	N/A	-		-	-	-	629	Inf	Inf	0.0%	0.0	0.0
Ped Link: P1	Unnamed Ped Link	-	N/A	J		19	-	-	0	-	0	0.0%	-	-
Ped Link: P2	Unnamed Ped Link	-	N/A	K		53	-	-	0	-	0	0.0%	-	-
Ped Link: P3	Unnamed Ped Link	-	N/A	F		7	-	-	0	-	0	0.0%	-	-
Ped Link: P4	Unnamed Ped Link	-	N/A	G		6	-	-	0	-	0	0.0%	-	-
Ped Link: P5	Unnamed Ped Link	-	N/A	H		18	-	-	0	-	0	0.0%	-	-
Ped Link: P6	Unnamed Ped Link	-	N/A	I		35	-	-	0	-	0	0.0%	-	-
C1		PRC for Signalled Lanes (%):		-19.1		Total Delay for Signalled Lanes (pcuHr):		26.74		Cycle Time (s):		53		
		PRC Over All Lanes (%):		-19.1		Total Delay Over All Lanes(pcuHr):		26.74						

Full Input Data And Results

Scenario 3: 'AM 2034 DN' (FG3: 'AM 2034 DN', Plan 1: 'Network Control Plan 1')

Network Layout Diagram

West Street/John Street/Newport Street/Queen's Road
 PRC: -1.5%
 Total Traffic Delay: 10.4 pcuHr
 Ave. Route Delay Per Ped: 0.0 s/Ped



Notes
 - Newport Street rarely runs so taken out of model

Full Input Data And Results

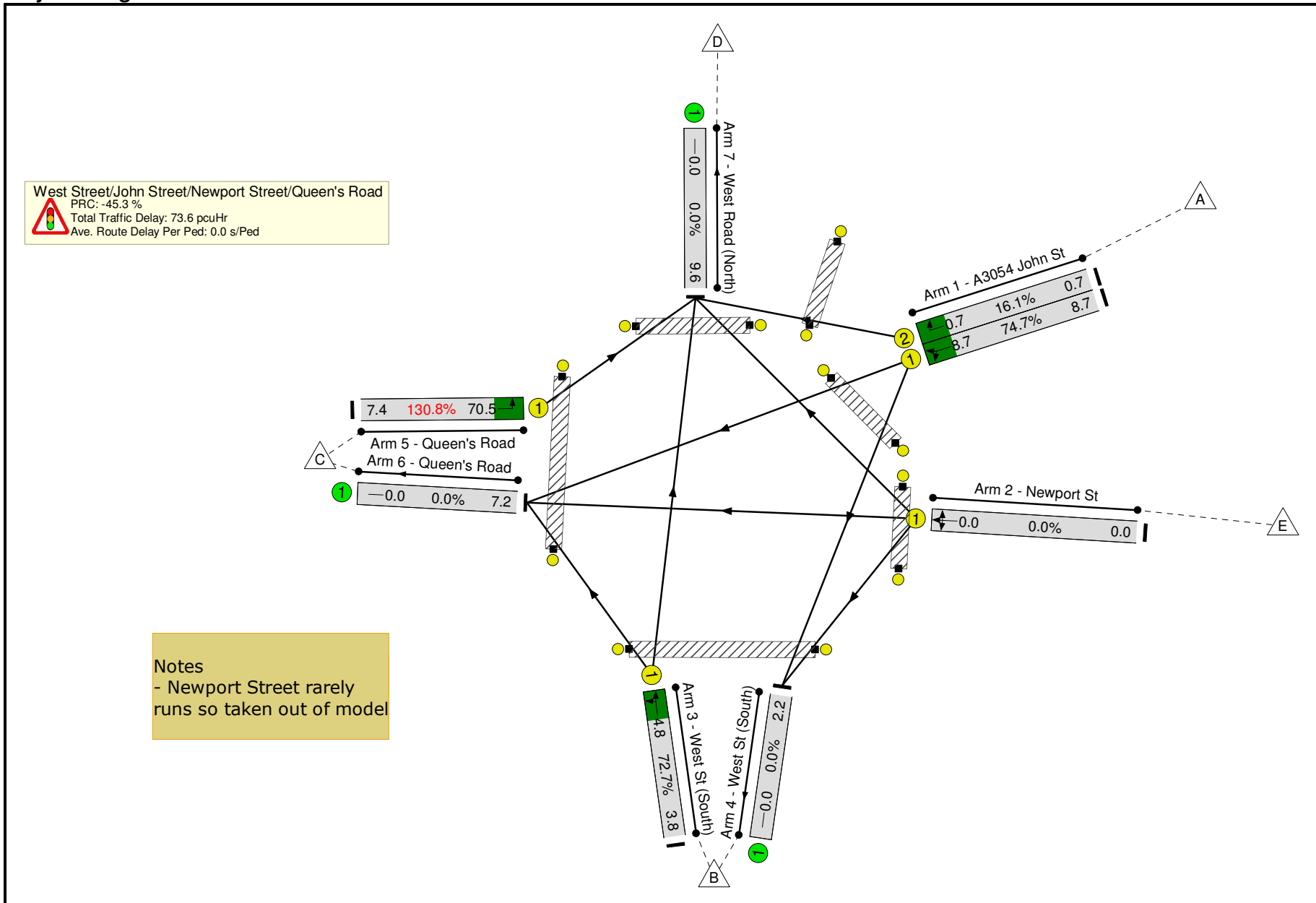
Network Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Max Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
Network	-	-	N/A	-		-	-	-	-	-	-	91.3%	-	-	
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-		-	-	-	-	-	-	91.3%	-	-	
1/1	A3054 John St Left Ahead	U	N/A	D		19	-	Y	385	1916	795	48.4%	15.7	4.5	
1/2	A3054 John St Right	U	N/A	C		7	-	Y	34	1617	305	11.1%	24.5	0.5	
2/1	Newport St Left Ahead Right	U	N/A	E		0	-	-	0	1915	0	0.0%	0.0	0.0	
3/1	West St (South) Left Ahead	U	N/A	A		7	-	Y	242	1900	358	67.5%	35.2	4.3	
4/1	West St (South)	U	N/A	-		-	-	-	98	Inf	Inf	0.0%	0.0	0.0	
5/1	Queen's Road Left	U	N/A	B		9	-	Y	352	1702	385	91.3%	63.1	9.2	
6/1	Queen's Road	U	N/A	-		-	-	-	332	Inf	Inf	0.0%	0.0	0.0	
7/1	West Road (North)	U	N/A	-		-	-	-	583	Inf	Inf	0.0%	0.0	0.0	
Ped Link: P1	Unnamed Ped Link	-	N/A	J		19	-	-	0	-	0	0.0%	-	-	
Ped Link: P2	Unnamed Ped Link	-	N/A	K		53	-	-	0	-	0	0.0%	-	-	
Ped Link: P3	Unnamed Ped Link	-	N/A	F		7	-	-	0	-	0	0.0%	-	-	
Ped Link: P4	Unnamed Ped Link	-	N/A	G		6	-	-	0	-	0	0.0%	-	-	
Ped Link: P5	Unnamed Ped Link	-	N/A	H		18	-	-	0	-	0	0.0%	-	-	
Ped Link: P6	Unnamed Ped Link	-	N/A	I		35	-	-	0	-	0	0.0%	-	-	
C1		PRC for Signalled Lanes (%):		-1.5		Total Delay for Signalled Lanes (pcuHr):			10.45		Cycle Time (s):		53		
		PRC Over All Lanes (%):		-1.5		Total Delay Over All Lanes(pcuHr):			10.45						

Full Input Data And Results

Scenario 4: 'PM 2034 DN' (FG4: 'PM 2034 DN', Plan 1: 'Network Control Plan 1')

Network Layout Diagram

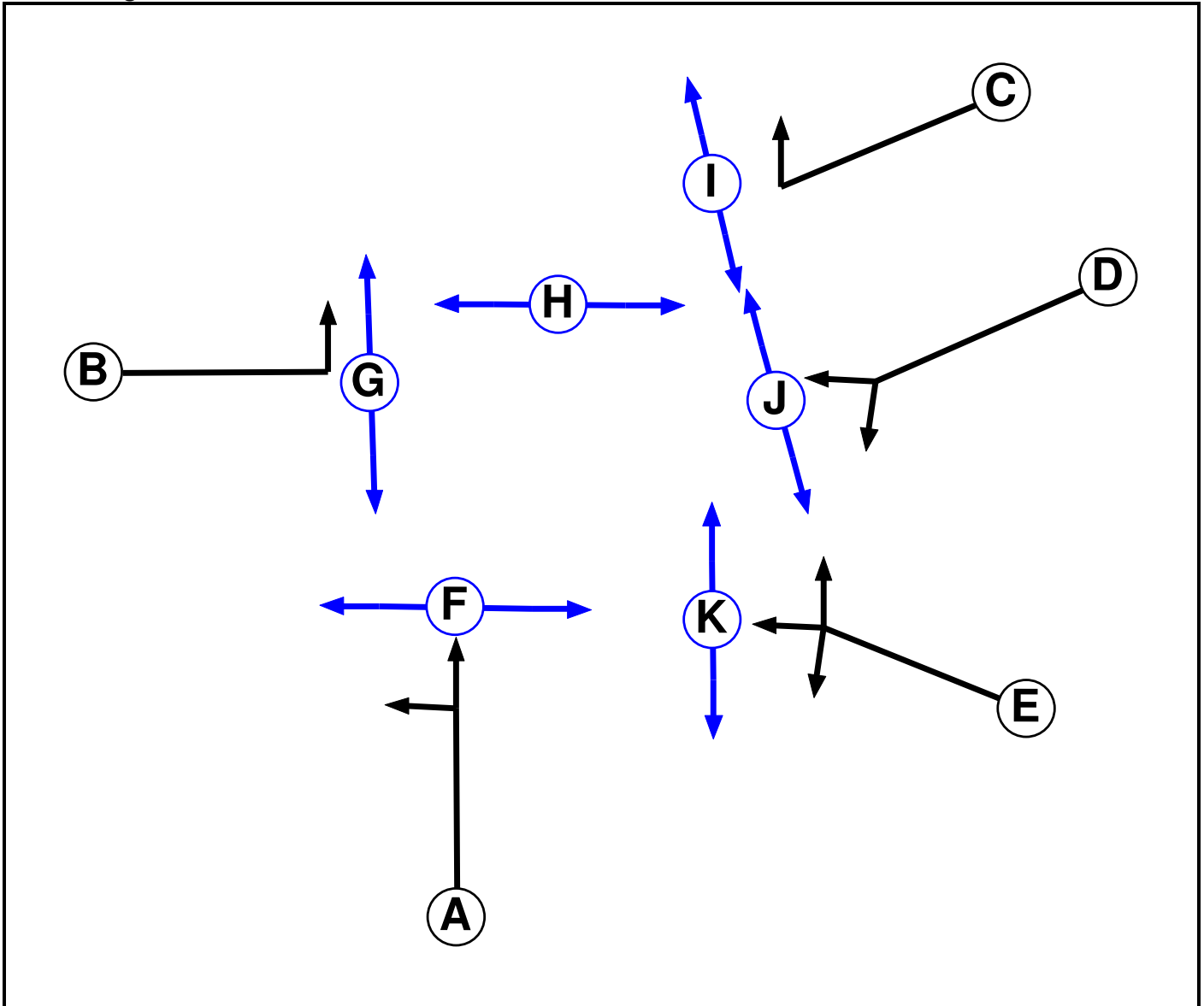


Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Max Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
Network	-	-	N/A	-		-	-	-	-	-	-	130.8%	-	-	
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-		-	-	-	-	-	-	130.8%	-	-	
1/1	A3054 John St Left Ahead	U	N/A	D		19	-	Y	594	1916	795	74.7%	22.0	8.7	
1/2	A3054 John St Right	U	N/A	C		7	-	Y	49	1617	305	16.1%	25.1	0.7	
2/1	Newport St Left Ahead Right	U	N/A	E		0	-	-	0	1915	0	0.0%	0.0	0.0	
3/1	West St (South) Left Ahead	U	N/A	A		7	-	Y	261	1904	359	72.7%	38.1	4.8	
4/1	West St (South)	U	N/A	-		-	-	-	150	Inf	Inf	0.0%	0.0	0.0	
5/1	Queen's Road Left	U	N/A	B		9	-	Y	504	1702	385	130.8%	477.4	70.5	
6/1	Queen's Road	U	N/A	-		-	-	-	490	Inf	Inf	0.0%	0.0	0.0	
7/1	West Road (North)	U	N/A	-		-	-	-	768	Inf	Inf	0.0%	0.0	0.0	
Ped Link: P1	Unnamed Ped Link	-	N/A	J		19	-	-	0	-	0	0.0%	-	-	
Ped Link: P2	Unnamed Ped Link	-	N/A	K		53	-	-	0	-	0	0.0%	-	-	
Ped Link: P3	Unnamed Ped Link	-	N/A	F		7	-	-	0	-	0	0.0%	-	-	
Ped Link: P4	Unnamed Ped Link	-	N/A	G		6	-	-	0	-	0	0.0%	-	-	
Ped Link: P5	Unnamed Ped Link	-	N/A	H		18	-	-	0	-	0	0.0%	-	-	
Ped Link: P6	Unnamed Ped Link	-	N/A	I		35	-	-	0	-	0	0.0%	-	-	
C1		PRC for Signalled Lanes (%):		-45.3		Total Delay for Signalled Lanes (pcuHr):			73.56		Cycle Time (s):		53		
		PRC Over All Lanes (%):		-45.3		Total Delay Over All Lanes(pcuHr):			73.56						

Full Input Data And Results
Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Pedestrian		6	6
G	Pedestrian		6	6
H	Pedestrian		6	6
I	Pedestrian		6	6
J	Pedestrian		6	6
K	Pedestrian		6	6

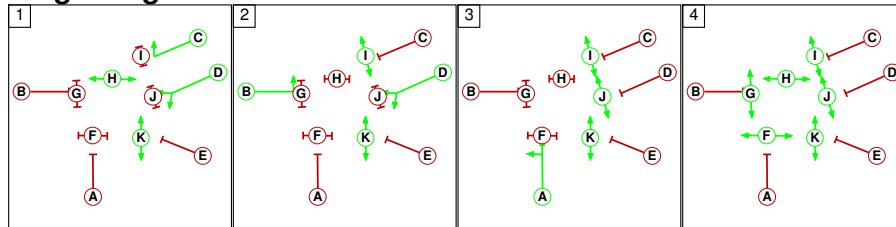
Phase Intergrens Matrix

Terminating Phase	Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K
	A		5	7	5	5	5	6	7	-	-	-
	B	5		6	-	5	-	5	7	-	-	-
	C	5	5		-	5	-	-	-	5	-	-
	D	5	-	-		5	7	7	-	-	5	-
	E	6	5	7	5		7	7	7	-	-	5
	F	10	-	-	10	10		-	-	-	-	-
	G	10	10	-	10	10	-		-	-	-	-
	H	7	7	-	-	7	-	-		-	-	-
	I	-	-	6	-	-	-	-	-		-	-
J	-	-	-	7	-	-	-	-	-		-	
K	-	-	-	-	6	-	-	-	-	-		

Phases in Stage

Stage No.	Phases in Stage
1	C D H K
2	B D I K
3	A I J K
4	F G H I J K

Stage Diagram



Phase Delays

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

Prohibited Stage Change

From Stage	To Stage				
		1	2	3	4
	1		7	7	7
	2	7		5	7
	3	7	7		7
4	10	10	10		

Full Input Data And Results

Give-Way Lane Input Data

Junction: West Street/John Street/Newport Street/Queen's Road
There are no Opposed Lanes in this Junction

Lane Input Data

Junction: West Street/John Street/Newport Street/Queen's Road												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A3054 John St)	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 4 Left	30.00
											Arm 6 Ahead	Inf
1/2 (A3054 John St)	U	C	2	3	40.0	Geom	-	3.25	0.00	Y	Arm 7 Right	7.50
											Arm 4 Left	6.00
2/1 (Newport St)	U	E	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
											Arm 7 Right	12.00
3/1 (West St (South))	U	A	2	3	60.0	Geom	-	3.70	0.00	Y	Arm 6 Left	6.23
											Arm 7 Ahead	Inf
4/1 (West St (South))	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Queen's Road)	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 7 Left	12.00
6/1 (Queen's Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (West Road (North))	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM 2017 Base'	08:00	09:00	01:00	
2: 'PM 2017 Base'	17:00	18:00	01:00	
3: 'AM 2034 DN'	08:00	09:00	01:00	
4: 'PM 2034 DN'	17:00	18:00	01:00	

Full Input Data And Results

Scenario 1: 'AM 2017 Base' (FG1: 'AM 2017 Base', Plan 1: 'Network Control Plan 1')

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	74.5%
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-	-		-	-	-	-	-	-	74.5%
1/1	A3054 John St Left Ahead	U	N/A	N/A	D		1	19	-	313	1916	795	39.4%
1/2	A3054 John St Right	U	N/A	N/A	C		1	7	-	28	1617	305	9.2%
2/1	Newport St Left Ahead Right	U	N/A	N/A	E		0	0	-	0	1915	0	0.0%
3/1	West St (South) Left Ahead	U	N/A	N/A	A		1	7	-	197	1899	358	55.0%
4/1	West St (South)	U	N/A	N/A	-		-	-	-	79	Inf	Inf	0.0%
5/1	Queen's Road Left	U	N/A	N/A	B		1	9	-	287	1702	385	74.5%
6/1	Queen's Road	U	N/A	N/A	-		-	-	-	271	Inf	Inf	0.0%
7/1	West Road (North)	U	N/A	N/A	-		-	-	-	475	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	19	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	K		1	53	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	G		1	6	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	18	-	0	-	0	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	I		1	35	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	3.7	2.4	0.0	6.1	-	-	-	-
West Street/John Street/Newport Street/Queen's Road	-	-	0	0	0	3.7	2.4	0.0	6.1	-	-	-	-
1/1	313	313	-	-	-	0.9	0.3	-	1.3	14.6	3.2	0.3	3.5
1/2	28	28	-	-	-	0.1	0.1	-	0.2	24.3	0.3	0.1	0.4
2/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	197	197	-	-	-	1.1	0.6	-	1.7	30.5	2.6	0.6	3.2
4/1	79	79	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	287	287	-	-	-	1.5	1.4	-	2.9	36.9	3.9	1.4	5.3
6/1	271	271	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	475	475	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P5	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P6	0	0	-	-	-	-	-	-	-	-	-	-	-
C1			PRC for Signalled Lanes (%):		20.8	Total Delay for Signalled Lanes (pcuHr):		6.07	Cycle Time (s):		53		
			PRC Over All Lanes (%):		20.8	Total Delay Over All Lanes(pcuHr):		6.07					

Full Input Data And Results

Traffic Flows, Desired

Desired Flow :

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	79	234	28	0	341
	B	0	0	37	160	0	197
	C	0	0	0	287	0	287
	D	0	0	0	0	0	0
	E	0	0	0	0	0	0
	Tot.	0	79	271	475	0	825

Traffic Lane Flows

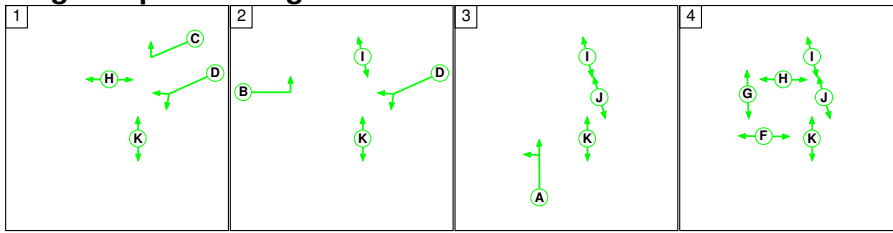
Lane	Scenario 1: AM 2017 Base
Junction: West Street/John Street/Newport Street/Queen's Road	
1/1	313
1/2	28
2/1	0
3/1	197
4/1	79
5/1	287
6/1	271
7/1	475

Lane Saturation Flows

Junction: West Street/John Street/Newport Street/Queen's Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A3054 John St)	3.25	0.00	Y	Arm 4 Left Arm 6 Ahead	30.00 Inf	25.2 % 74.8 %	1916	1916
1/2 (A3054 John St)	3.25	0.00	Y	Arm 7 Right	7.50	100.0 %	1617	1617
2/1 (Newport St)	3.00	0.00	Y	Arm 4 Left Arm 6 Ahead Arm 7 Right	6.00 Inf 12.00	0.0 % 0.0 % 0.0 %	1915	1915
3/1 (West St (South))	3.70	0.00	Y	Arm 6 Left Arm 7 Ahead	6.23 Inf	18.8 % 81.2 %	1899	1899
4/1 (West St (South) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Queen's Road)	3.00	0.00	Y	Arm 7 Left	12.00	100.0 %	1702	1702
6/1 (Queen's Road Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (West Road (North) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

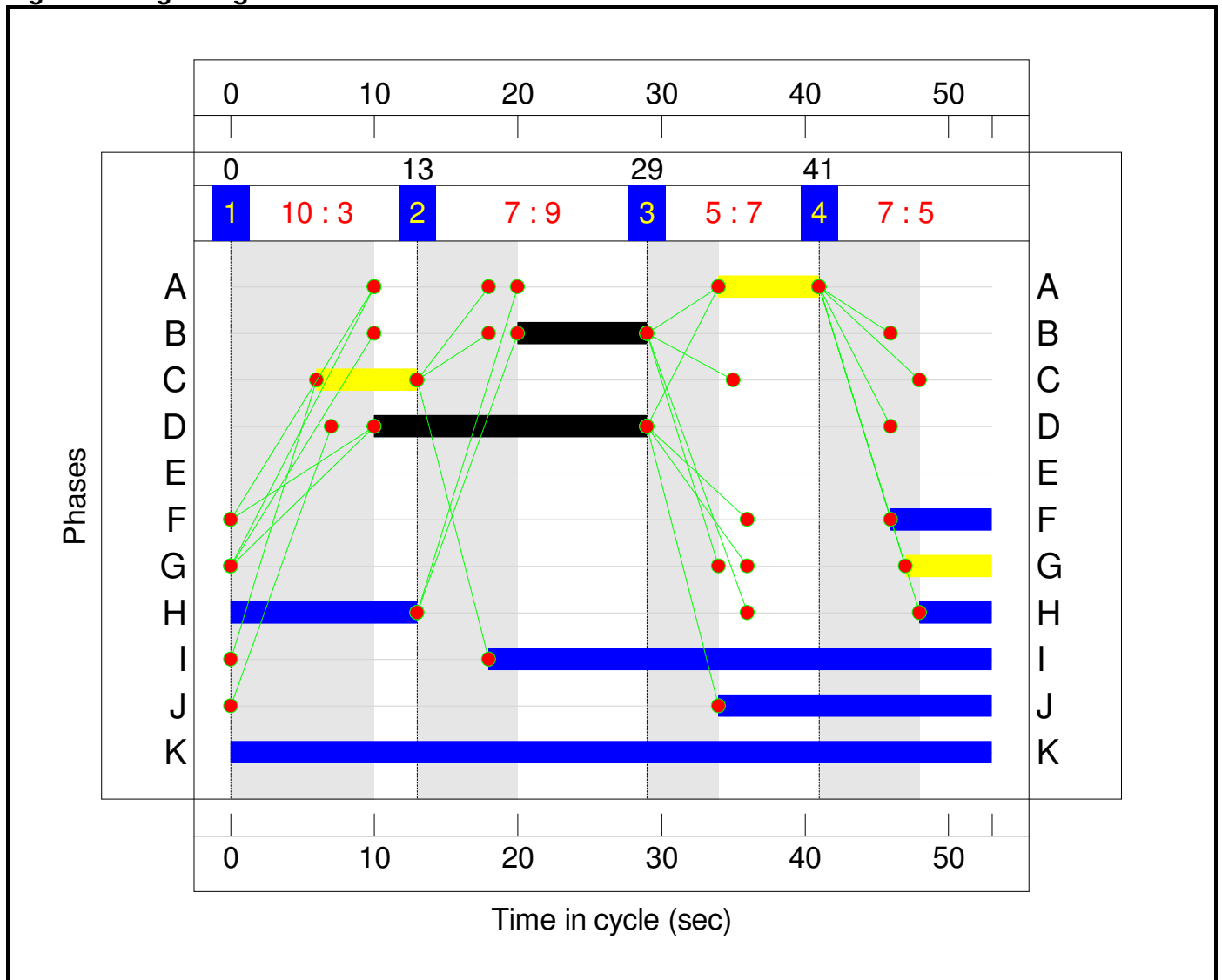
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	3	9	7	5
Change Point	0	13	29	41

Signal Timings Diagram



Full Input Data And Results

Scenario 2: 'PM 2017 Base' (FG2: 'PM 2017 Base', Plan 1: 'Network Control Plan 1')

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	107.2%
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-	-		-	-	-	-	-	-	107.2%
1/1	A3054 John St Left Ahead	U	N/A	N/A	D		1	19	-	487	1916	795	61.2%
1/2	A3054 John St Right	U	N/A	N/A	C		1	7	-	40	1617	305	13.1%
2/1	Newport St Left Ahead Right	U	N/A	N/A	E		0	0	-	0	1915	0	0.0%
3/1	West St (South) Left Ahead	U	N/A	N/A	A		1	7	-	213	1905	359	59.3%
4/1	West St (South)	U	N/A	N/A	-		-	-	-	123	Inf	Inf	0.0%
5/1	Queen's Road Left	U	N/A	N/A	B		1	9	-	413	1702	385	107.2%
6/1	Queen's Road	U	N/A	N/A	-		-	-	-	401	Inf	Inf	0.0%
7/1	West Road (North)	U	N/A	N/A	-		-	-	-	629	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	19	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	K		1	53	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	G		1	6	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	18	-	0	-	0	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	I		1	35	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	6.0	20.8	0.0	26.7	-	-	-	-
West Street/John Street/Newport Street/Queen's Road	-	-	0	0	0	6.0	20.8	0.0	26.7	-	-	-	-
1/1	487	487	-	-	-	1.6	0.8	-	2.4	18.0	5.5	0.8	6.3
1/2	40	40	-	-	-	0.2	0.1	-	0.3	24.7	0.5	0.1	0.6
2/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	213	213	-	-	-	1.2	0.7	-	1.9	31.8	2.8	0.7	3.6
4/1	123	123	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	413	385	-	-	-	3.0	19.2	-	22.2	193.1	6.5	19.2	25.7
6/1	401	401	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	601	601	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P5	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P6	0	0	-	-	-	-	-	-	-	-	-	-	-
C1			PRC for Signalled Lanes (%):	-19.1	Total Delay for Signalled Lanes (pcuHr):			26.74	Cycle Time (s): 53				
			PRC Over All Lanes (%):	-19.1	Total Delay Over All Lanes(pcuHr):			26.74					

Full Input Data And Results

Traffic Flows, Desired

Desired Flow :

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	123	364	40	0	527
	B	0	0	37	176	0	213
	C	0	0	0	413	0	413
	D	0	0	0	0	0	0
	E	0	0	0	0	0	0
	Tot.	0	123	401	629	0	1153

Traffic Lane Flows

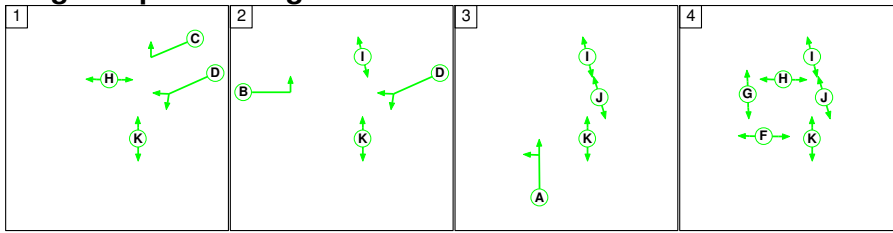
Lane	Scenario 2: PM 2017 Base
Junction: West Street/John Street/Newport Street/Queen's Road	
1/1	487
1/2	40
2/1	0
3/1	213
4/1	123
5/1	413
6/1	401
7/1	629

Lane Saturation Flows

Junction: West Street/John Street/Newport Street/Queen's Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A3054 John St)	3.25	0.00	Y	Arm 4 Left Arm 6 Ahead	30.00 Inf	25.3 % 74.7 %	1916	1916
1/2 (A3054 John St)	3.25	0.00	Y	Arm 7 Right	7.50	100.0 %	1617	1617
2/1 (Newport St)	3.00	0.00	Y	Arm 4 Left Arm 6 Ahead Arm 7 Right	6.00 Inf 12.00	0.0 % 0.0 % 0.0 %	1915	1915
3/1 (West St (South))	3.70	0.00	Y	Arm 6 Left Arm 7 Ahead	6.23 Inf	17.4 % 82.6 %	1905	1905
4/1 (West St (South) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Queen's Road)	3.00	0.00	Y	Arm 7 Left	12.00	100.0 %	1702	1702
6/1 (Queen's Road Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (West Road (North) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

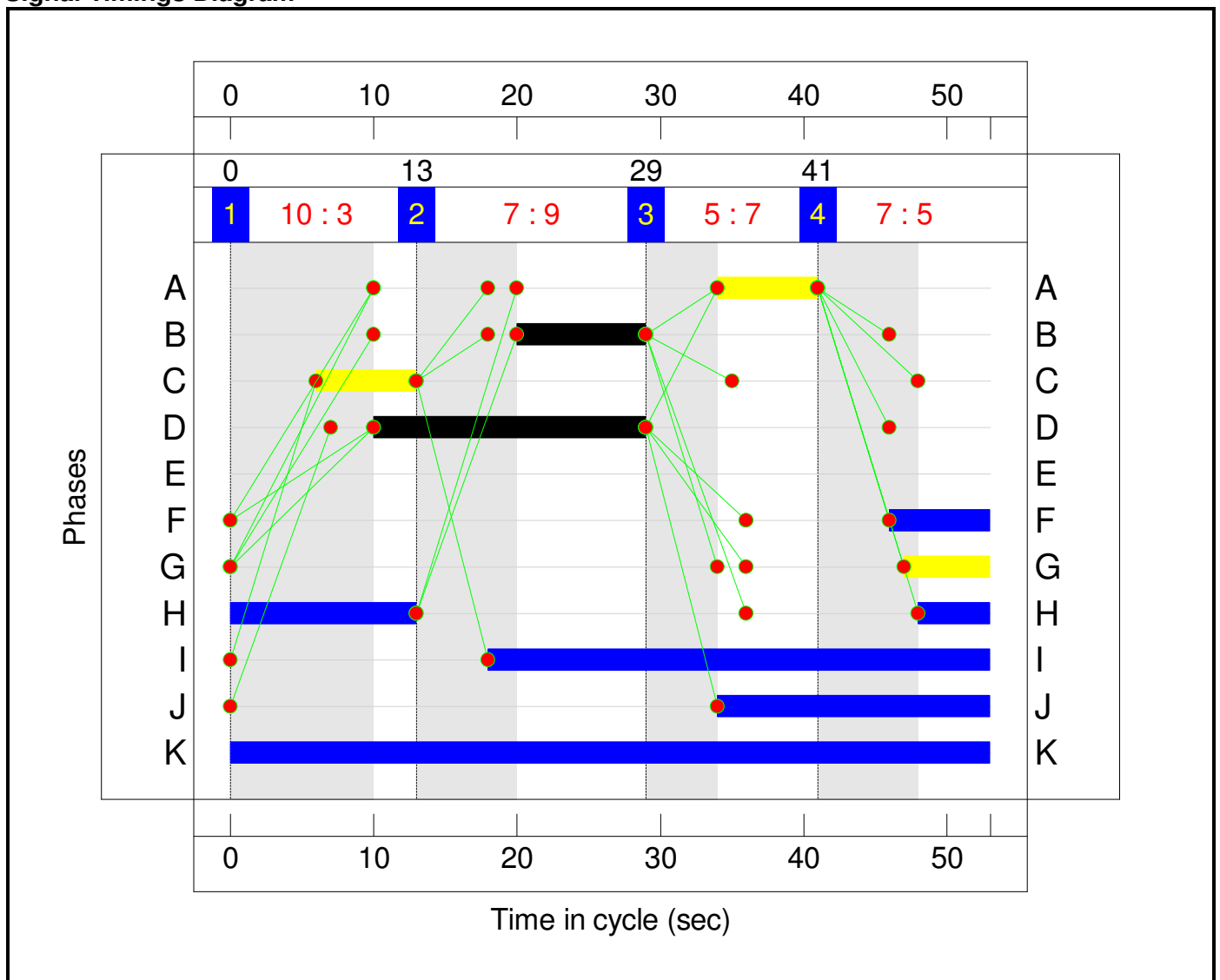
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	3	9	7	5
Change Point	0	13	29	41

Signal Timings Diagram



Full Input Data And Results

Scenario 3: 'AM 2034 DN' (FG3: 'AM 2034 DN', Plan 1: 'Network Control Plan 1')

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	91.3%
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-	-		-	-	-	-	-	-	91.3%
1/1	A3054 John St Left Ahead	U	N/A	N/A	D		1	19	-	385	1916	795	48.4%
1/2	A3054 John St Right	U	N/A	N/A	C		1	7	-	34	1617	305	11.1%
2/1	Newport St Left Ahead Right	U	N/A	N/A	E		0	0	-	0	1915	0	0.0%
3/1	West St (South) Left Ahead	U	N/A	N/A	A		1	7	-	242	1900	358	67.5%
4/1	West St (South)	U	N/A	N/A	-		-	-	-	98	Inf	Inf	0.0%
5/1	Queen's Road Left	U	N/A	N/A	B		1	9	-	352	1702	385	91.3%
6/1	Queen's Road	U	N/A	N/A	-		-	-	-	332	Inf	Inf	0.0%
7/1	West Road (North)	U	N/A	N/A	-		-	-	-	583	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	19	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	K		1	53	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	G		1	6	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	18	-	0	-	0	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	I		1	35	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	4.7	5.8	0.0	10.4	-	-	-	-
West Street/John Street/Newport Street/Queen's Road	-	-	0	0	0	4.7	5.8	0.0	10.4	-	-	-	-
1/1	385	385	-	-	-	1.2	0.5	-	1.7	15.7	4.1	0.5	4.5
1/2	34	34	-	-	-	0.2	0.1	-	0.2	24.5	0.4	0.1	0.5
2/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	242	242	-	-	-	1.3	1.0	-	2.4	35.2	3.3	1.0	4.3
4/1	98	98	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	352	352	-	-	-	2.0	4.2	-	6.2	63.1	5.0	4.2	9.2
6/1	332	332	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	583	583	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P5	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P6	0	0	-	-	-	-	-	-	-	-	-	-	-
C1			PRC for Signalled Lanes (%):	-1.5	Total Delay for Signalled Lanes (pcuHr):			10.45	Cycle Time (s): 53				
			PRC Over All Lanes (%):	-1.5	Total Delay Over All Lanes(pcuHr):			10.45					

Full Input Data And Results

Traffic Flows, Desired

Desired Flow :

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	98	287	34	0	419
	B	0	0	45	197	0	242
	C	0	0	0	352	0	352
	D	0	0	0	0	0	0
	E	0	0	0	0	0	0
	Tot.	0	98	332	583	0	1013

Traffic Lane Flows

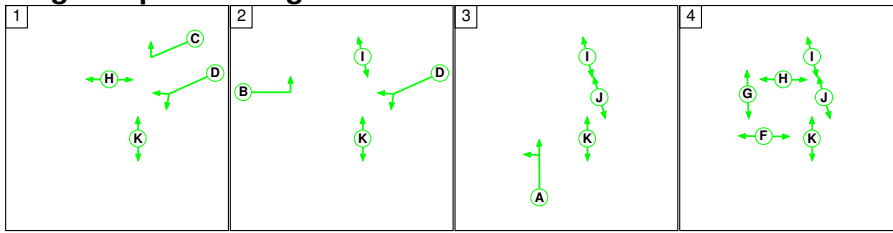
Lane	Scenario 3: AM 2034 DN
Junction: West Street/John Street/Newport Street/Queen's Road	
1/1	385
1/2	34
2/1	0
3/1	242
4/1	98
5/1	352
6/1	332
7/1	583

Lane Saturation Flows

Junction: West Street/John Street/Newport Street/Queen's Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A3054 John St)	3.25	0.00	Y	Arm 4 Left Arm 6 Ahead	30.00 Inf	25.5 % 74.5 %	1916	1916
1/2 (A3054 John St)	3.25	0.00	Y	Arm 7 Right	7.50	100.0 %	1617	1617
2/1 (Newport St)	3.00	0.00	Y	Arm 4 Left Arm 6 Ahead Arm 7 Right	6.00 Inf 12.00	0.0 % 0.0 % 0.0 %	1915	1915
3/1 (West St (South))	3.70	0.00	Y	Arm 6 Left Arm 7 Ahead	6.23 Inf	18.6 % 81.4 %	1900	1900
4/1 (West St (South) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Queen's Road)	3.00	0.00	Y	Arm 7 Left	12.00	100.0 %	1702	1702
6/1 (Queen's Road Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (West Road (North) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

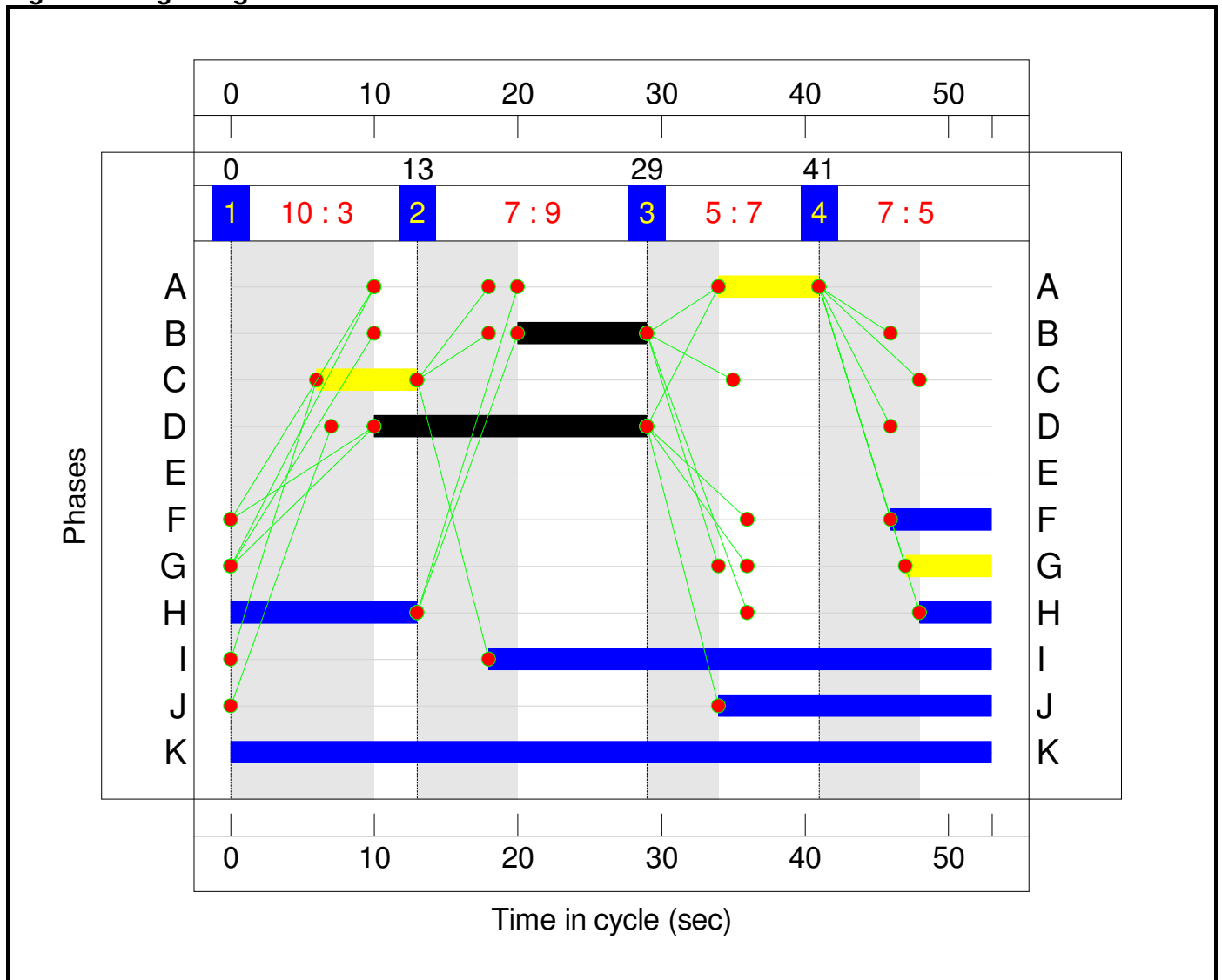
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	3	9	7	5
Change Point	0	13	29	41

Signal Timings Diagram



Full Input Data And Results

Scenario 4: 'PM 2034 DN' (FG4: 'PM 2034 DN', Plan 1: 'Network Control Plan 1')

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	130.8%
West Street/John Street/Newport Street/Queen's Road	-	-	N/A	-	-		-	-	-	-	-	-	130.8%
1/1	A3054 John St Left Ahead	U	N/A	N/A	D		1	19	-	594	1916	795	74.7%
1/2	A3054 John St Right	U	N/A	N/A	C		1	7	-	49	1617	305	16.1%
2/1	Newport St Left Ahead Right	U	N/A	N/A	E		0	0	-	0	1915	0	0.0%
3/1	West St (South) Left Ahead	U	N/A	N/A	A		1	7	-	261	1904	359	72.7%
4/1	West St (South)	U	N/A	N/A	-		-	-	-	150	Inf	Inf	0.0%
5/1	Queen's Road Left	U	N/A	N/A	B		1	9	-	504	1702	385	130.8%
6/1	Queen's Road	U	N/A	N/A	-		-	-	-	490	Inf	Inf	0.0%
7/1	West Road (North)	U	N/A	N/A	-		-	-	-	768	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	19	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	K		1	53	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	G		1	6	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	18	-	0	-	0	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	I		1	35	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	9.3	64.2	0.0	73.6	-	-	-	-
West Street/John Street/Newport Street/Queen's Road	-	-	0	0	0	9.3	64.2	0.0	73.6	-	-	-	-
1/1	594	594	-	-	-	2.2	1.5	-	3.6	22.0	7.3	1.5	8.7
1/2	49	49	-	-	-	0.2	0.1	-	0.3	25.1	0.6	0.1	0.7
2/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	261	261	-	-	-	1.5	1.3	-	2.8	38.1	3.6	1.3	4.8
4/1	150	150	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	504	385	-	-	-	5.5	61.4	-	66.8	477.4	9.2	61.4	70.5
6/1	490	490	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	649	649	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P5	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P6	0	0	-	-	-	-	-	-	-	-	-	-	-
C1			PRC for Signalled Lanes (%):		-45.3	Total Delay for Signalled Lanes (pcuHr):		73.56	Cycle Time (s):		53		
			PRC Over All Lanes (%):		-45.3	Total Delay Over All Lanes(pcuHr):		73.56					

Full Input Data And Results

Traffic Flows, Desired

Desired Flow :

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	150	444	49	0	643
	B	0	0	46	215	0	261
	C	0	0	0	504	0	504
	D	0	0	0	0	0	0
	E	0	0	0	0	0	0
	Tot.	0	150	490	768	0	1408

Traffic Lane Flows

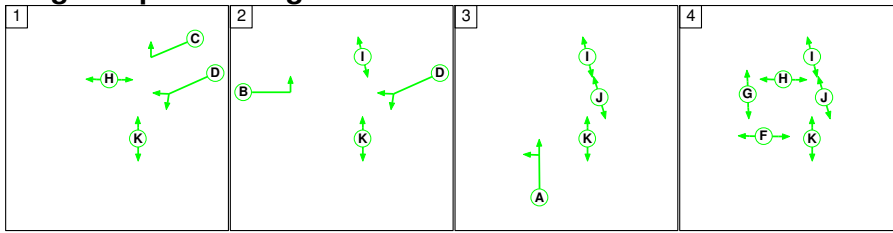
Lane	Scenario 4: PM 2034 DN
Junction: West Street/John Street/Newport Street/Queen's Road	
1/1	594
1/2	49
2/1	0
3/1	261
4/1	150
5/1	504
6/1	490
7/1	768

Lane Saturation Flows

Junction: West Street/John Street/Newport Street/Queen's Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A3054 John St)	3.25	0.00	Y	Arm 4 Left Arm 6 Ahead	30.00 Inf	25.3 % 74.7 %	1916	1916
1/2 (A3054 John St)	3.25	0.00	Y	Arm 7 Right	7.50	100.0 %	1617	1617
2/1 (Newport St)	3.00	0.00	Y	Arm 4 Left Arm 6 Ahead Arm 7 Right	6.00 Inf 12.00	0.0 % 0.0 % 0.0 %	1915	1915
3/1 (West St (South))	3.70	0.00	Y	Arm 6 Left Arm 7 Ahead	6.23 Inf	17.6 % 82.4 %	1904	1904
4/1 (West St (South) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Queen's Road)	3.00	0.00	Y	Arm 7 Left	12.00	100.0 %	1702	1702
6/1 (Queen's Road Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (West Road (North) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	3	9	7	5
Change Point	0	13	29	41

Signal Timings Diagram

