TRAFFIC AND TRANSPORTATION 13

CONTENTS

TABLES

FIGURES

APPENDICES

INTRODUCTION

Background

13.1 Roadplan Consulting was appointed by SLR Consulting Ireland to identify and assess the traffic and transportation impacts of a proposed planning application to increase the rate of inert soil and stone waste intake at Roadstone's established waste recovery facility at Huntstown Quarry, Finglas, Dublin 11, from a maximum of 750,000 tonnes per annum at present to a maximum of 1,500,000 tonnes per annum in future years.

13.2 This chapter predicts the trips expected to be generated by the proposed development, and the impacts of those trips on the operational performance of the local road network and junctions, in particular the following:

- R135 / N2 Slip Road - Priority Junction
- R135 / Elm Road - Signalised Junction
- R135 / L3125 - Signalised Junction
- R135 / N2 - Roundabout Junction

Existing Development

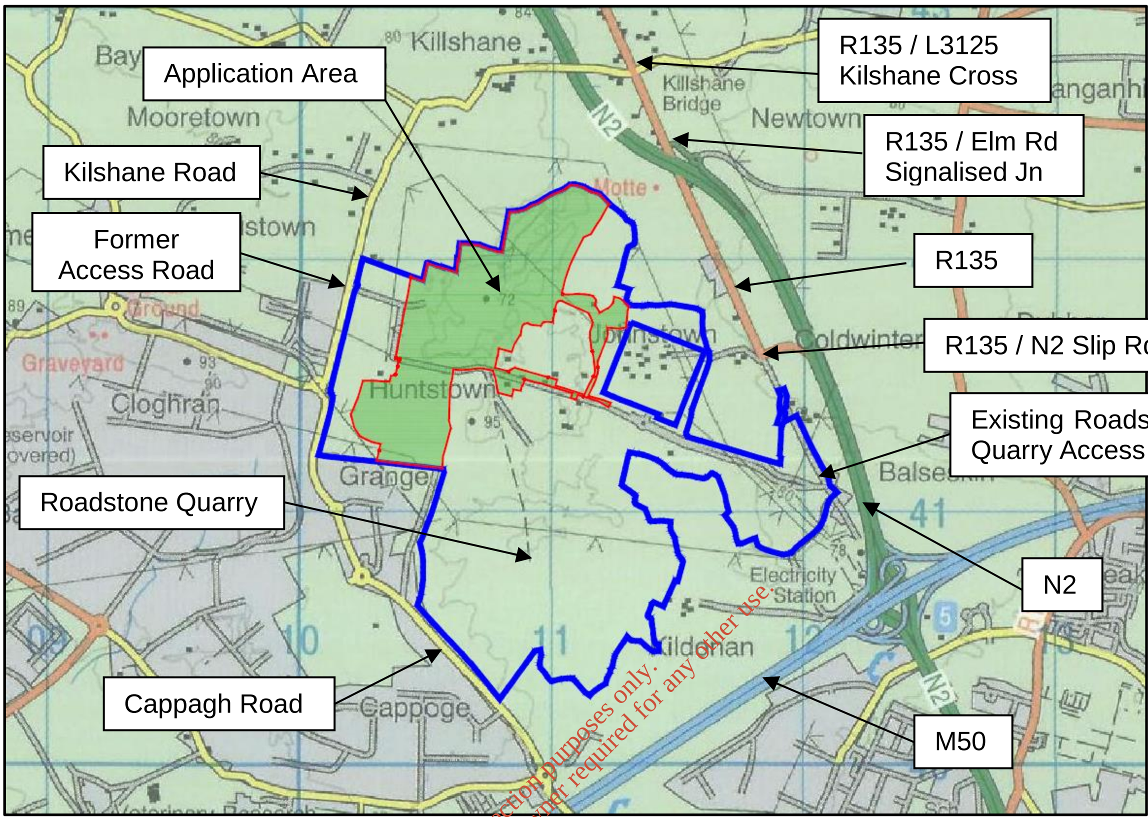
13.3 Existing development at Huntstown Quarry is primarily tied to ongoing rock extraction and processing. In addition to established quarrying activities, several associated value-added activities are undertaken at the quarry, including production of concrete blocks and readymix concrete.

13.4 The restoration of the entire quarry complex at Huntstown comprising backfilling of 4 separate quarry voids using imported soil and stone waste was previously granted planning permission by Fingal County Council and An Bord Pleanála (Ref. FW12-0022 and ABP Ref. 241693). Backfilling of the North Quarry commenced in October 2015 at permitted rate of 750,000 tonnes per annum. As this activity is technically classified as a waste recovery activity, it is also subject to control by way of an existing EPA waste licence issued in February 2015 (Ref. W0277-01).

13.5 The quarry and application site are located within the townlands of Huntstown and Kilshane, Co. Dublin, approximately 2.5km north-west of the Dublin suburb of Finglas and 2km north-west of the interchange between the N2 Dual Carriageway and the M50 Motorway. Positioned north of the M50 motorway, the quarry has two access points: the primary entrance located on the eastern boundary of the Roadstone property holding, located off the R135 Regional Road, also known as the North Road, and a secondary access (which has been closed in recent years and is no longer in use), located on the western boundary of the property, along the Kilshane Road. The location of the application site, and both existing accesses, are shown on Figure 13-1.

13.6 The existing site infrastructure at the quarry complex includes internal haul roads, offices and staff welfare facilities, plant storage and maintenance sheds, refuelling facilities and crushing, grading and processing plant used to process blasted rock.

Figure 13-1
Site Location Map



Proposed Development

13.7 This application relates to a proposed increase in the current maximum permitted rate of waste intake at the licensed soil recovery facility at Huntstown Quarry, from a maximum of 750,000 tonnes per annum at present to a maximum of 1,500,000 tonnes per annum in future years. If backfilling progresses at the maximum envisaged rate, the proposed duration of soil recovery and restoration activities at the North Quarry and West Quarry would be approximately 6 years.

Existing Site Access

13.8 Huntstown Quarry is currently accessed via the North Road (R135). The access road leading from North Road to the quarry complex is shared by quarry traffic and traffic going to and from Huntstown Power Station. The access road is approximately 7.3m wide at the site entrance and divides as it runs towards the principal quarries and waste recovery facility. The widths of the inbound and outbound lanes are approximately 3.7m.

Future Site Access

13.9 As this application is tied to a previous grant of planning permission and an existing waste licence, all of the proposed increased waste intake will be imported and delivered via the existing entrance / access road leading off the R135 North Road, located on the eastern side of the Huntstown Quarry complex. The former access road from the Kilshane Road to the west of the quarry complex will not be used.

Existing Road Network

13.10 The existing road network within the vicinity of the application site is illustrated in Figure 13-1 and is described further below.

13.11 The existing road network around the recovery facility and application site is defined by:

- The R135 regional road to the east, which previously served as the N2 National Primary Road (up to May 2006). This road is known locally as the North Road. It intersects with the N2 Dual carriageway at the Cherryhound Interchange to the north and forms a cul-de-sac to the south (severed by the re-aligned N2);
- a local road, known as the Kilshane Road (or Cappagh Road) to the west and north of the Huntstown quarry complex; and
- The M50 Motorway which lies south of the existing quarry.

13.12 The N2 Dual Carriageway between the M50 Motorway and Cherryhound Interchange runs immediately east of the R135 Regional Road. It continues northwards from the Cherryhound Interchange as the M2 Motorway to the north of Ashbourne Co. Meath. From there, it becomes the N2 National Primary Road and continues northwards as a single carriageway road through the counties of Meath, Louth and Monaghan to the border with Northern Ireland.

13.13 In relation to the local road network, the application site and the Huntstown Quarry complex in general, is located to the north of the M50 motorway, west of the R135 Regional Road (North Road) and the N2 Dual Carriageway and east and south of the Kilshane Road.

13.14 Much of the road network around the application site has been upgraded in recent years. The N2 dual carriageway / M2 motorway opened in May 2006 and led to a large and immediate reduction in traffic levels along the former N2 National Primary Road (now the R135 Regional Road) immediately east of Huntstown Quarry. Upgrading of the M50 to provide three lanes of traffic in both directions was also completed in 2010, as was the upgrading of its interchange with the N2 dual carriageway at Finglas to provide for a free-flow interchange.

13.15 The existing R135 (North Road) comprises of a single carriageway road generally of about 7.5m width with hard shoulders of varying width. The alignment essentially runs straight from the existing quarry entrance northwards up to the N2 / M2 motorway at the Cherryhound interchange and southwards to the point at which it is severed by the M50 motorway at Finglas.

13.16 A speed limit of 50kph applies along the existing R135 regional road. This speed limit applies to traffic which travels between the R135 / N2 roundabout junction and the existing entrance to the quarry complex at Huntstown.

Methodology

13.17 HGV traffic travelling to the waste recovery facility via Dublin City and the N2 National Primary Road and/or M50 motorway to the south will access it via the R135 / N2 Slip Road priority junction at Coldwinters. HGV traffic travelling to the facility from the N2 or N3 to the north and north-west will travel via the R135 / N2 Roundabout junction at the Cherryhound Interchange.

13.18 HGV traffic departing the recovery facility and travelling toward the city and M50 motorway will initially travel via the R135 / Elm Road signalised junction and turn back onto the southbound carriageway of the N2 dual carriageway. HGV traffic departing the facility and travelling towards the N2 Dual Carriageway northbound or the N3 will travel via the R135 / N2 Roundabout junction.

13.19 Having regard to the established / future pattern of traffic movements, the methodology adopted for this assessment is summarised as follows:

- A 12-hour Manual Classified Traffic Counts was undertaken by Tracsis Traffic and Data Services on the 22nd of June 2016. Count information was obtained at the following junctions (shown on Figure 13-1):
  1. R135 / N2 Slip Road Priority Junction at Coldwinters
  2. R135 / Elm Road Signalised Junction at Newtown
  3. R135 / L3125 Kilshane Cross Signalised Junction
  4. R135 / N2 Roundabout Junction (link to Cherryhound Interchange)
- Existing Traffic Assessment – A spreadsheet model was created which contains the base year do-nothing traffic count data described above. The traffic count data was used to develop a PICADY model of the R135 / N2 Slip Road priority junction, an ARCADY model of the R135 / N2 roundabout junction and an OSCADY PRO model of the R135 / Elm Road signalised junction and the R135 / L3125 signalised junction.
- Future Year Assessment – The estimated future year traffic volumes on the study area road network, as a result of the increase in background traffic and the additional development related traffic was used to assess the future operational performance of the junctions both at the year of opening of the development and six years after (2023).

Information Reviewed

13.20 In preparing this assessment, Roadplan Consulting has made reference to:

- the *Fingal Development Plan 2011 – 2017,*
- The Institute of Highways and Transportation *Guidelines on the Preparation of Traffic Impact Assessments,*
- the *TII Transport Assessment Guidelines,*
- the *TII National Traffic Model*.
- opening of the development (2017) and six years after (2023).

THE EXISTING ENVIRONMENT

Existing Traffic Flows

13.21 The 12-hour traffic flows for each junction are provided in Appendix 13-A – Traffic Count Data. Traffic flows along the R135 were recorded for the four junctions identified previously. The daily profile of traffic flow at each junction along the R135 is shown in the figures below, as is the percentage of each vehicle class. The traffic flows during the busiest AM and PM peak hours were also abstracted from the surveyed data and are shown in the tables below:

Figure 13-2
R135 / N2 Slip Road Priority Junction Traffic Profile

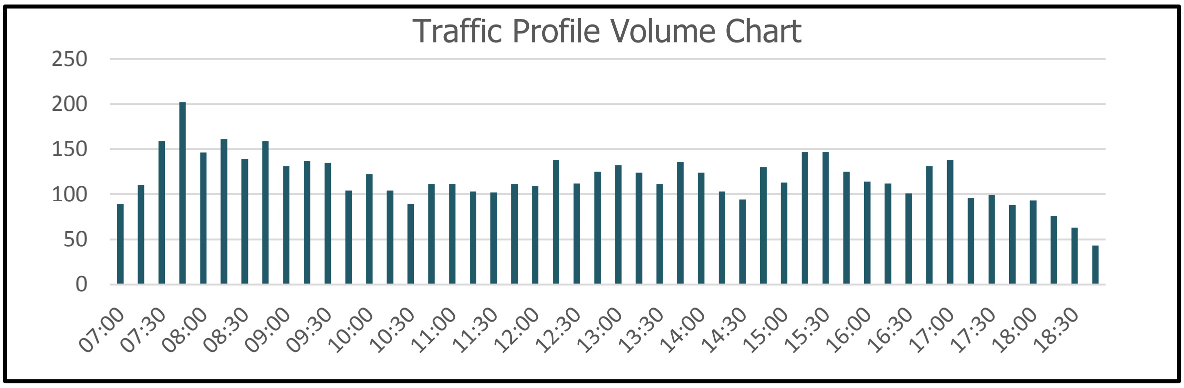


Figure 13-3
R135 / N2 Slip Road Priority Junction Vehicle Percentages

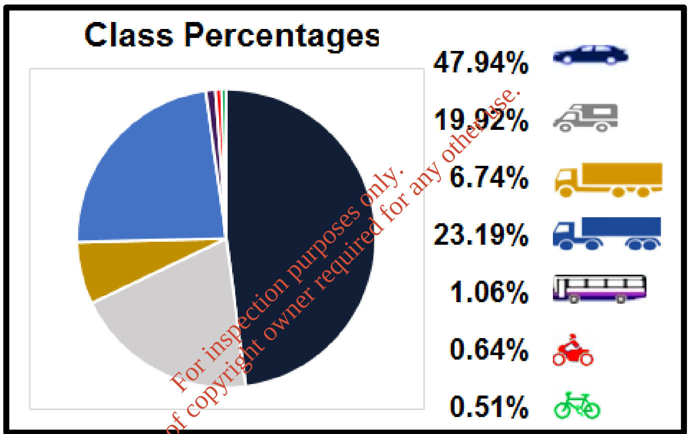


Table 13-1
2016 AM Peak Existing (07:30 – 08:30)

From / To	R135 (North)	N2 Slip Rd	R135 (South)	Totals
R135 (North)		0	58	**58**
N2 Slip Rd	396		128	**524**
R135 (South)	86	0		**86**
Totals	**482**	**0**	**186**	**668**

Table 13-2
2016 PM Peak Existing (16:45 – 17:45) –

From / To	R135 (North)	N2 Slip Rd	R135 (South)	Totals
R135 (North)		0	20	**20**
N2 Slip Rd	308		20	**328**
R135 (South)	116	0		**116**
Totals	**424**	**0**	**40**	**464**

Principal features of the existing traffic flows at the R135 / N2 Slip Road priority junction are as follows:

- Overall flows are higher in the am peak compared to the pm peak, with the main traffic flows travelling along the N2 Slip Road;
- The N2 slip is one-way only with turning from the R135 Regional Road prohibited;
- The percentage of HGV movement is high with HGVs comprising approximately 30% of traffic travelling through the junction.

13.22 The daily profile of traffic flow at for the R135 / Elm Road signalised junction is shown in the figures below, as is the percentage of each vehicle class. The traffic flows during the busiest AM and PM peak hours were abstracted from the surveyed data and are shown in the tables below:

Figure 13-4
R135 / Elm Road Signalised Junction

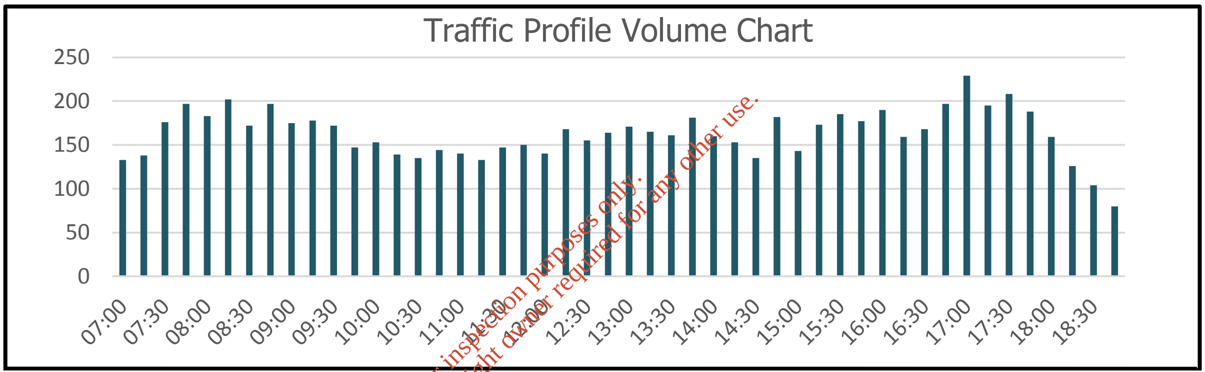


Figure 13-5
R135 / Elm Road Signalised Junction Vehicle Percentages

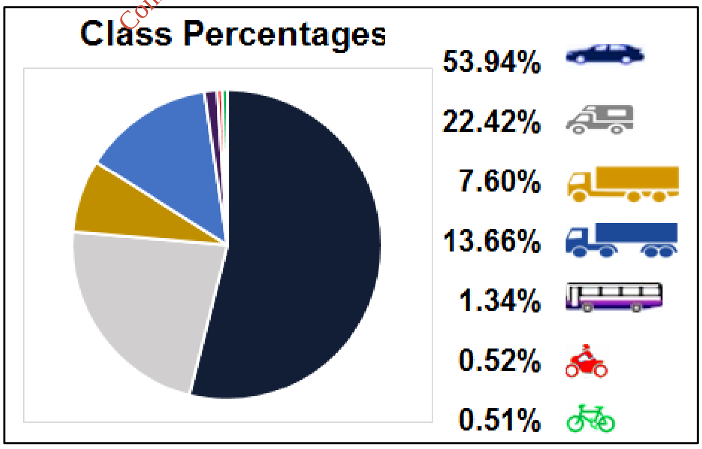


Table 13-3
2016 AM Peak Existing (07:30 – 08:30)

From / To	R135 (North)	Elm Road	R135 (South)	Totals
R135 (North)		230	63	**293**
Elm Road	21		3	**24**
R135 (South)	319	122		**441**
Totals	**340**	**352**	**66**	**758**

Table 13-4
2016 PM Peak Existing (16:45 – 17:45)

From / To	R135 (North)	Elm Road	R135 (South)	Totals
R135 (North)		313	21	**334**
Elm Road	29		2	**31**
R135 (South)	320	144		**464**
Totals	**349**	**457**	**23**	**829**

Principal features of the existing traffic flows at the R135 / Elm Road Signalised junction are as follows:

- Overall flows are slightly higher in the pm peak compared to the am peak;
- Traffic volumes turning from Elm Road are low in both the am and pm peak;
- The R135 / Elm Road junction provides access to the N2 for vehicles travelling southbound only;
- The percentage of HGV movement is high with HGVs comprising approximately 21% of traffic travelling through the junction.

13.23 The daily profile of traffic flow at for the R135 / L3125 Kilshane crossroads signalised junction is shown in the figures below, as is the percentage of each vehicle class. The traffic flows during the busiest AM and PM peak hours were abstracted from the surveyed data and are shown in the tables below:

Figure 13-6
R135 / L3125 Signalised Junction Traffic Profile

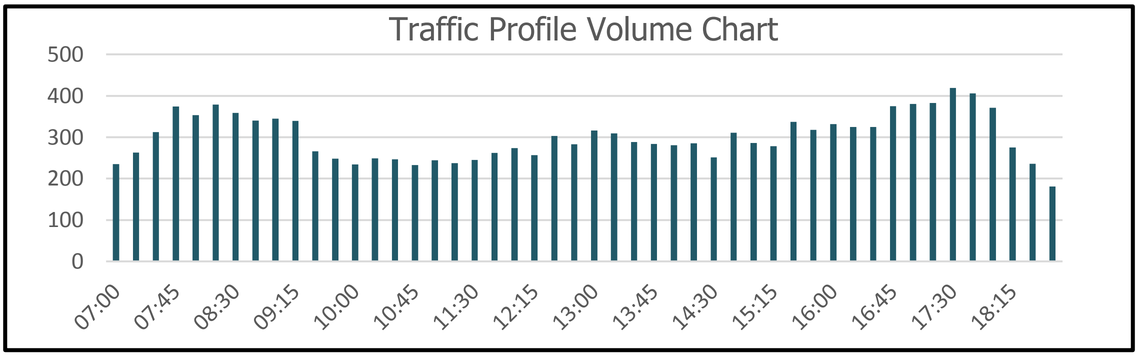


Figure 13-7
R135 / L3125 Signalised Junction Vehicle Percentages

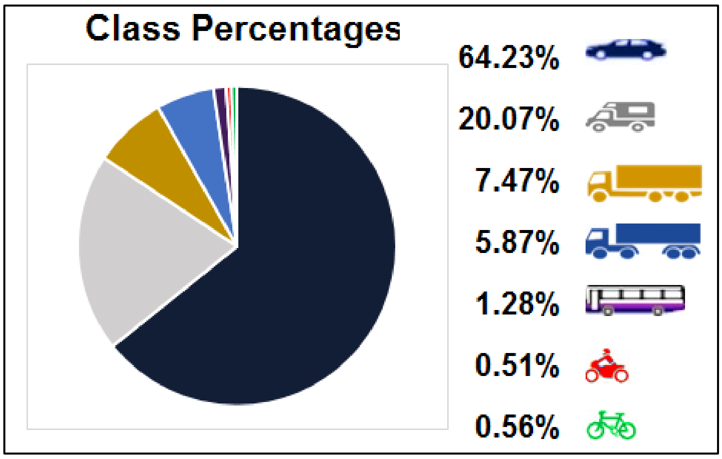


Table 13-5
2016 AM Peak Existing (07:30 – 08:30)

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)		219	117	29	**365**
L3125 (East)	82		90	320	**492**
R135 (South)	59	73		205	**337**
L3125 (West)	9	134	81		**224**
Totals	**150**	**426**	**288**	**554**	**1418**

Table 13-6
2016 PM Peak Existing (16:45 – 17:45)

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)		168	86	16	**270**
L3125 (East)	204		85	199	**488**
R135 (South)	111	120		110	**341**
L3125 (West)	22	273	163		**458**
Totals	**337**	**561**	**334**	**325**	**1557**

Principal features of the existing traffic flows at the existing R135 / L3125 Signalised junction are as follows;

- Overall flows are slightly higher in the pm peak compared to the am peak;
- The traffic flow travelling along the L3125 local road is higher than that along the R135 Regional Road;
- The L3125 provides access to Ballycoolin Industrial estate to the west and Dublin Airport to the east.

13.24 The daily profile of traffic flow at for the R135 / N2 roundabout junction is shown in the figures below, as is the percentage of each vehicle class. The traffic flows during the busiest AM and PM peak hours were abstracted from the surveyed data and are shown in the tables below:

Figure 13-8
R135 / N2 Roundabout Junction Traffic Profile

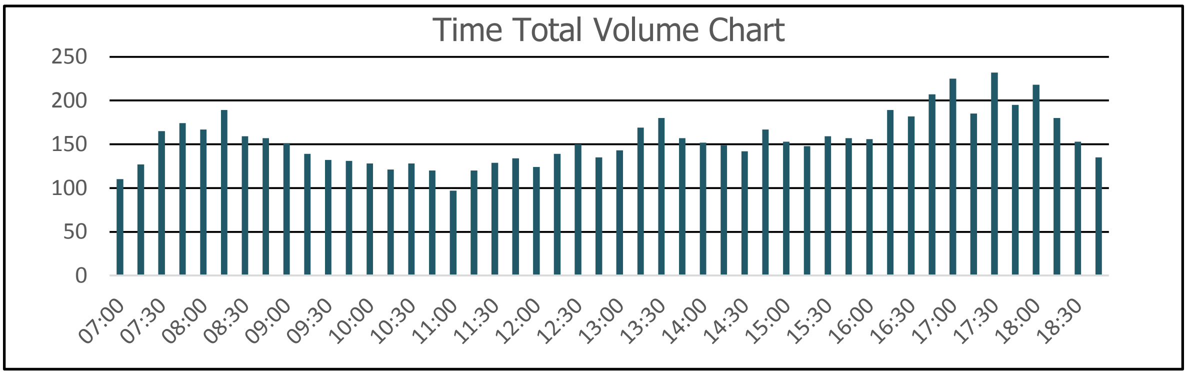


Figure 13-9
R135 / L3125 Signalised Junction Vehicle Percentages

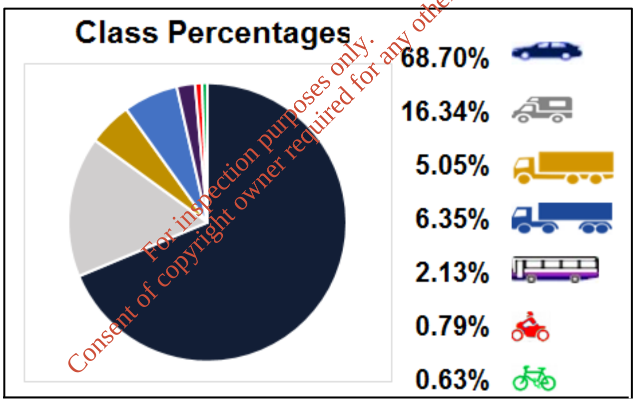


Table 13-7
2016 AM Peak Existing (07:30 – 08:30)

From / To	R135 (North)	R135 (South)	N2 Slip Rd	Totals
R135 (North)		170	139	**309**
R135 (South)	48		88	**136**
N2 Slip Rd	63	186		**249**
Totals	**111**	**356**	**229**	**694**

Table 13-8
2016 PM Peak Existing (16:45 – 17:45)

From / To	R135 (North)	R135 (South)	N2 Slip Rd	Totals
R135 (North)		111	86	**197**
R135 (South)	185		175	**360**
N2 Slip Rd	127	160		**278**
Totals	**312**	**271**	**261**	**844**

Principal features of the existing traffic flows at the R135 / N2 Roundabout junction are as follows:

- Overall flows are slightly higher in the pm peak compared to the am peak;
- The flows along the N2 Slip Road are low.

Non-Car Access / Transport

13.25 To ascertain opportunities for sustainability, consideration has been given to non-car accessibility for the application site.

13.26 Although operation of the facility will be very dependent on road based haulage, staff will require transport means to get to and from work. Non-car accessibility will help reduce traffic impact and also promote social inclusion by providing means of transport to the application site to those who do not have access to a private car.

13.27 Access to the application site on foot is by way of the existing pedestrian footway situated to the eastern side of North Road. At approximately 1.5m in width, this footway extends along North Road northwards until reaching the northbound N2 Slip Road / North Road priority junction where it terminates. Pedestrians can then utilise the footpath situated to the western side of the R135 which extends for a short distance in the direction of Cherryhound interchange before terminating at a bus stop. For employees wishing to access this bus stop on foot it is an approximate distance of 1.8 kilometres away or a 25 minute walk (based upon an average walking distance of 1.2m per second.)

13.28 A large number of residential dwellings can be reached within a 5 kilometre cycle from the site which, assuming an average speed of 15kmh, equates to a 20 minute cycle ride. This includes the northern suburbs of Santry, Finglas, Charlestown, Dunsink and Castlenock and settlements to the north of the M50 Blanchardstown, Mulhuddart and Tyrellstown.

13.29 Adequate provision has already been made for pedestrians and cyclists within the visitor area with internal pedestrian walkways segregated from vehicles and cycle parking provided for those members of staff (or visitors) wishing to travel via bicycle. Whilst the Applicant is limited by what can realistically be undertaken to further improve non-car accessibility within the quarry complex, should the development proposal give rise to an increase in members of staff / visitors wishing to travel via bicycle then additional bicycle parking can be provided.

13.30 The closest bus stop to the application site is situated on the North Road (R135), to the north of the N2 off-slip. The bus stop is a simple flag-post stop which is served by the Number 103 and 107 services operated by Bus Eireann. Both of the routes that service the bus stop run from Dublin to surrounding towns and villages.

13.31 The Number 103 service runs between Dublin City and Ashbourne / Ratoath. The service operates 7 days a week and begins at 06:30 in the morning and runs at approximately 20 minute intervals throughout the day until approximately midnight.

13.32 The Number 107 service runs between Dublin City and Navan, Nobber and Kells. The service operates 7 days a week and begins at 09:00 in the morning and runs at least four services in either direction throughout the day.

13.33 As identified above the local bus service is limited; however there are regular 20 minute services available from central Dublin throughout the day, seven days per week. Individual travel by bus to the application site is therefore available as an alternative to the car.

Site Access Sightlines

13.34 The requirements for sightlines are stated in the TII Design Manual for Urban Roads and Streets (DMURS). Sightlines are measured along the mainline from a driver's viewing position on the access road, 3.0m back from the mainline edge.

13.35 Access to the development is from the existing Roadstone Quarry Access onto the R135. The posted speed limit of the R135 at the existing access to the quarry is 50kph. The existing access provides a sightline in excess of 200m in each direction when assessed in accordance with the DMURS.

Accident History

13.36 Accident data has been obtained from the Road Safety Authority (RSA) website at www.rsa.ie. The website provides an interactive online mapping tool which has been navigated to the area of interest in order to determine the local accident history.

13.37 Accident data covering a nine year period 2005 to 2013 is provided. Over some of this period, the North Road / R135 Regional Road was designated a National Primary Road and carried significantly higher traffic volumes.

13.38 The information provided by the RSA is rudimentary and only provides the number of collisions and the seriousness of the collisions, along with basic details of each incident. The definitions of the severities are given below:

- Fatal (a crash resulting in death);
- Serious (detention in hospital : includes paralysis, fractures and severe lacerations);
- Minor (includes whiplash, strains and minor lacerations).

13.39 No accidents were recorded at the existing access to the Huntstown quarry complex. Two minor accidents were recorded south of the existing access and one minor accident was recorded north of the existing access. At the existing R135 / Elm Road signalised junction one minor accident was recorded.

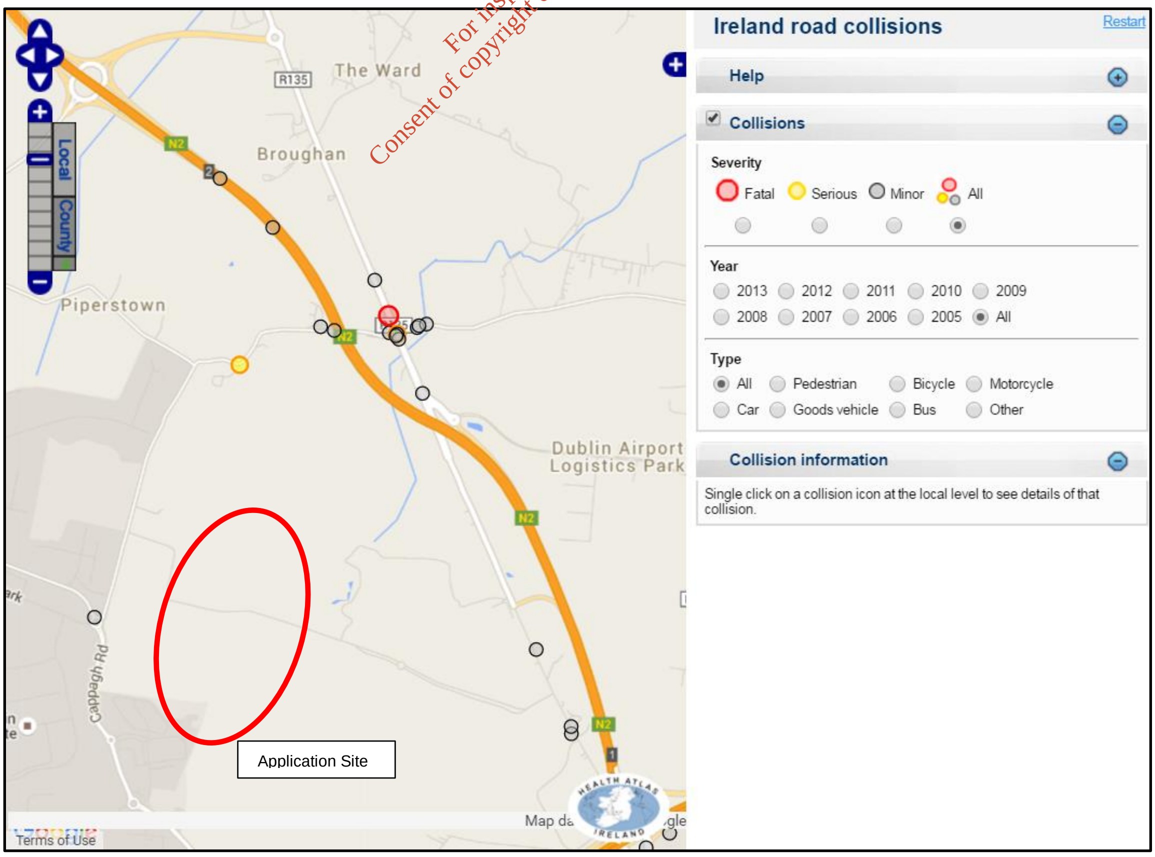
13.40 At the existing R135 / L3125 signalised junction (Kilshane Cross), one fatal accident, one serious accident and eight minor accidents were recorded. A summary of the collision history broken down into vehicle type is provided in Table 13.9 below:

Table 13-9
Road Collision History

Vehicle Type	Fatal Collision	Serious Collision	Minor Collision	All Collision
Bus	0	0	0	0
Goods Vehicle	0	1	2	3
Car	0	0	6	6
Motorcycle	1	0	4	5
Bicycle	0	0	0	0
Pedestrian	0	0	0	0
Other	0	0	0	0
Total	1	1	12	14

13.41 The location of each collision is shown in Figure 13.10 below

Figure 13-10
Road Collisions



Proposed Road Network Improvements

13.42 Fingal County Council has published proposals to provide a future link road from the existing R135 / N2 roundabout to Dublin Airport. This road scheme is identified as a development objective in the Airport Local Area Plan.

13.43 It is envisaged that existing traffic flows at the R135 / L3125 Kilshane Crossroad signalised junction will significantly reduce following construction of the airport link road scheme as a result of re-distribution of traffic flows.

IMPACT OF THE PROPOSED DEVELOPMENT

Future Trip Generation

13.44 The proposed development will generate an increase in the rate of soil and stone waste intake from 750,000 tonnes per annum to 1,500,000 tonnes per annum (an increase of 750,000 tonnes per annum).

13.45 The existing quarry and recovery facility operate between 07:00 to 18:00 on Monday to Saturday and approximately 300 days annually (based on 6 days a week for 50 weeks).

13.46 It is anticipated that the waste material will arrive in 20 tonne consignments. Table 13.10 below provides a forecast of the average weekday traffic that is anticipated to be generated by the proposed increase of waste material intake.

Table 13-10
Future Trip Generation

	Volume (Tonnes)	Annual Loads (HGVs)	Average Daily Loads (HGVs)	Average Hourly Loads (HGVs)
OPERATION Waste Material Intake (20t)	750,000	37,500	130	12

Distribution and Assignment

13.47 Table 13-10 above indicates that the average increase in daily trip generation of HGV traffic as a result of the increase in waste material intake is 130 HGV loads per day. This equates to a total of 260 HGV movements per day (two-way trips).

13.48 The proposed development will be operational for approximately 11 hours per day with a total of 130 trips per day. Therefore for a 1 hour period there will be approximately 12 trips per hour (130 trips / 11 hours) arriving and departing from the proposed development. The table below shows the expected AM and PM peak flows to and from the development.

Table 13-11
Peak hour Flows

	Trips to Development	Trips from Development
AM Peak	12	12
PM Peak	12	12

13.49 It is envisaged that all HGV's importing waste material to the recovery facility / quarry complex will approach the site along the M50 Motorway and / or the N2 Dual Carriageway and enter the site using the existing North Road entrance.

13.50 As such, all the proposed development traffic within the assessment have been distributed in line with the existing traffic patterns as surveyed.

Other Planned Developments

13.51 Planning has previously been granted to Roadstone to for a total aggregate and concrete output of up to 2 million tonnes per annum from the established quarry operations over a 20 year period from 2014 (Fingal County Council Ref. No FW12A-0022 and An Bord Pleanala Ref. No. 06F.241693). The proposed development will generate approximately 330 trips per day (based on working 6 days a week for 50 weeks, arriving and departing in 20 tonne consignments).

13.52 Planning permission has also been granted for a proposed Anaerobic Digestion (AD) Facility at Huntstown Quarry. (Planning Ref. FW13A/0089). The proposed development will generate approximately 60 trips per day. Access to the proposed AD facility will be via the existing R135 / Quarry Access priority junction.

13.53 Although it is currently uncertain when the AD facility will be developed or become operational, it has been assumed for the purposes of this assessment that the development will be fully operational by 2023.

13.54 Sensitivity testing of the above developments has been carried out to show the impact these developments will have on the existing road network with the proposed increased intake to the recovery facility in place in 2023.

Traffic Increase

13.55 The TII issues a range of traffic growth factors to be applied to existing traffic flows which are broken down into three groups; low growth, medium growth and high growth. Due to the close proximity of the M50 motorway and the N2 dual carriageway to the quarry complex and application site at Huntstown, it is assumed that medium growth is most likely for the R135 Regional Road.

13.56 The zone in which the quarry complex is located is numbered 821 in the TII National Traffic Model. The medium growth factors for each operational phase are as follows:

Table 13-12
Future Year Traffic Growth

Road	2016 Existing	2017 Development Operational	2023 Development Operational
All Roads	1.00	+ 0.71%	+ 4.36%

13.57 The above percentages have been used to predict the increase in background traffic along the R135 that will occur in future years. It should be noted that these growth factors do not apply to predicted trips generated by the proposed development under assessment. Full summary tables and predicted future traffic flows for 2017 and 2023 future years are included in Appendix 13-B – Traffic Flow Sheets.

Junction Capacity Assessment

13.58 Capacity assessments using the computer programme PICADY for the existing R135 / N2 Slip Road priority junction and ARCADY for the existing R135 / N2 roundabout junction have been carried out, with and without the proposed development. Full details and results of capacity assessments are presented in Appendix 13-C – PICADY Results and in Appendix 13-D – ARCADY Results

13.59 The parameters shown in the tables are defined as follows:

- **Ratio of Flow to Capacity (RFC)** is a factor indicating the flow on a junction arm relative to its capacity. An RFC of 1.0 means the junction has reached its ultimate capacity and an RFC of 0.85 means that the junction has reached its reserve capacity.
- **Avg. Queue** is the average number of vehicles queued over the time period on the junction approach.
- **Queue delay** is the average number of seconds delay to each vehicle in the time period.
- **Total Delay** is the total number of vehicle hours of delay to all vehicles at the junction over the time period.

R135 / N2 Slip Road Priority Junction

13.60 The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing R135 / N2 Slip Road priority junction at Coldwinters.

Table 13-13
R135 / N2 Slip Road Priority Junction : AM Peak

AM Peak			2016	2017 No Dev	2017 With Dev	2023 No Dev	2023 With Dev	2023 Sensitivity Flows
R135 / N2 Slip Road Priority Junction	R135 North	RFC value	-	-	-	-	-	-
		Average Queue (Vehicles)	-	-	-	-	-	-
		Average delay (sec / veh)	-	-	-	-	-	-
		Total Delay (veh / min)	-	-	-	-	-	-
	N2 Slip Road	RFC value	0.87	0.88	0.89	0.92	0.93	0.96
		Average Queue (Vehicles)	6	6	6	8	9	11
		Average delay (sec / veh)	28	29	31	34	36	47
		Total Delay (veh / min)	5.20	5.38	5.78	6.79	7.60	9.86
	R135 South	RFC value	-	-	-	-	-	-
		Average Queue (Vehicles)	-	-	-	-	-	-
		Average delay (sec / veh)	-	-	-	-	-	-
		Total Delay (veh / min)	-	-	-	-	-	-

Table 13-14
R135 / N2 Slip Road Priority Junction : PM Peak

PM Peak			2016	2017 No Dev	2017 With Dev	2023 No Dev	2023 With Dev	2023 Sensitivity Flows
R135 / N2 Slip Road Priority Junction	R135 North	RFC value	-	-	-	-	-	-
		Average Queue (Vehicles)	-	-	-	-	-	-
		Average delay (sec / veh)	-	-	-	-	-	-
		Total Delay (veh / min)	-	-	-	-	-	-
	N2 Slip Road	RFC value	0.68	0.69	0.70	0.72	0.73	0.75
		Average Queue (Vehicles)	2	2	2	2	3	3
		Average delay (sec / veh)	17	18	18	19	19	20
		Total Delay (veh / min)	2.13	2.16	2.24	2.44	2.51	2.74
	R135 South	RFC value	-	-	-	-	-	-
		Average Queue (Vehicles)	-	-	-	-	-	-
		Average delay (sec / veh)	-	-	-	-	-	-
		Total Delay (veh / min)	-	-	-	-	-	-

13.61 The tables above indicate that at present the R135 / N2 Slip Road priority junction operates at capacity with queues and delays during the AM peak hour. During the PM peak hour, the junction will operate within capacity with small queues and delays.

13.62 Queues were noted at the junction and a maximum queue of 8 vehicles was noted at the junction during the traffic count, which correlates with the junction assessment.

13.63 With the increased soil waste intake rate in place in 2017 and 2023, the junction will operate at capacity with queues and delays during the AM peak hour. During the PM peak hour, the junction will operate within capacity with small queues and delays.

13.64 In 2023 during the AM peak hour, the junction has a maximum queue of 9 vehicles. The slip road from the N2 is approximately 200m in length and it is unlikely that vehicles will queue back to the N2 dual carriageway.

R135 / N2 Link Road Roundabout Junction

13.65 The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing R135 / N2 Link Road priority junction.

Table 13-15
R135 / N2 Link Road Roundabout Junction : AM Peak

AM Peak			2016	2017 No Dev	2017 With Dev	2023 No Dev	2023 With Dev
R135 / N2 Link Road Roundabout Junction	R135 North	RFC value	0.22	0.22	0.23	0.23	0.24
		Average Queue (Vehicles)	0	0	0	0	0
		Average delay (sec / veh)	3	3	3	3	3
		Total Delay (veh / min)	0.33	0.34	0.35	0.36	0.37
	R135 South	RFC value	0.09	0.10	0.10	0.10	0.11
		Average Queue (Vehicles)	0	0	0	0	0
		Average delay (sec / veh)	2	2	2	2	2
		Total Delay (veh / min)	0.12	0.13	0.14	0.14	0.14
	N2 Link Road	RFC value	0.18	0.18	0.18	0.19	0.19
		Average Queue (Vehicles)	0	0	0	0	0
		Average delay (sec / veh)	3	3	3	3	3
		Total Delay (veh / min)	0.26	0.26	0.26	0.27	0.28

Table 13-16
R135 / N2 Link Road Roundabout Junction : PM Peak

PM Peak			2016	2017 No Dev	2017 With Dev	2023 No Dev	2023 With Dev
R135 / N2 Link Road Roundabout Junction	R135 North	RFC value	0.13	0.14	0.14	0.14	0.15
		Average Queue (Vehicles)	0	0	0	0	0
		Average delay (sec / veh)	2	2	2	2	2
		Total Delay (veh / min)	0.18	0.19	0.20	0.20	0.20
	R135 South	RFC value	0.22	0.22	0.22	0.23	0.23
		Average Queue (Vehicles)	0	0	0	0	0
		Average delay (sec / veh)	2	2	2	2	2
		Total Delay (veh / min)	0.33	0.34	0.34	0.36	0.37
	N2 Link Road	RFC value	0.22	0.22	0.22	0.23	0.23
		Average Queue (Vehicles)	0	0	0	0	0
		Average delay (sec / veh)	3	3	3	3	3
		Total Delay (veh / min)	0.33	0.34	0.34	0.36	0.37

13.66 The tables above indicate that at present the R135 / N2 Link Road roundabout junction will operate within capacity, with no queues and minimal delays during the AM and PM peak hours.

13.67 With the proposed development in place in 2017 and 2023 the roundabout junction will operate within capacity with no queues and minimal delays during the AM and PM peak hours.

Signalised Junctions

13.68 Capacity assessments using the computer programme OSCADY PRO have also been carried out, with and without the proposed development, on the following junctions:

- R135 / Elm Road Signalised Junction
- R135 / L3125 Signalised Junction

13.69 Full details capacity assessments are contained in Appendix 13-E – OSCADY PRO Results.

13.70 The parameters shown in the tables are defined as follows:

- **Max Degree of Saturation (%)** is a ratio of demand to capacity on each approach to the 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 90% are typically regarded as suffering from traffic congestion, with queues of vehicles beginning to form.
- **Queue at end of Red** is the number of vehicles queued on the approach arm at the end of red.
- **Average Delay** is the average number of seconds delay to each vehicle in the time period.
- **Practical Reserve Capacity** is the capacity available relative to a capacity of 90%. A positive PRC indicates that a junction has spare capacity and may be able to accept more traffic. A negative PRC indicates that the junction is over capacity and is suffering from traffic congestion.

R135 / Elm Road Signalised Junction

13.71 The following tables show the predicted degree of saturation, average queue lengths, average vehicle delay, total junction delays and practical reserve capacity for the existing R135 / Elm Road signalised junction.

Table 13-17
R135 / Elm Road Signalised Junction : AM Peak

AM Peak			2016	2017 No Dev	2017 With Dev	2023 No Dev	2023 With Dev	2023 With Sensitivity Flows
R135 / Elm Road Signalised Junction	R135 North	Max DoS %	28%	29%	29%	30%	30%	31%
		Q red (pcu's)	5	5	5	5	5	5
		Average delay (s)	24	25	25	25	25	28
		PRC %	219.81	213.13	211.14	200.64	198.81	189.06
	N2 Slip Road	Max DoS %	18%	18%	18%	19%	19%	19%
		Q red (pcu's)	1	1	1	1	1	1
		Average delay (s)	56	56	57	57	57	57
		PRC %	396.98	396.98	396.98	377.11	377.11	377.11
	R135 South	Max DoS %	29&	29%	29%	30%	30%	31%
		Q red (pcu's)	4	4	4	5	5	5
		Average delay (s)	29	28	28	28	28	28
		PRC %	212.59	211.11	210.03	203.86	197.93	192.35

Table 13-18
R135 / Elm Road Signalised Junction : PM Peak

PM Peak			2016	2017 No Dev	2017 With Dev	2023 No Dev	2023 With Dev	2023 With Sensitivity Flows
R135 / Elm Road Signalised Junction	R135 North	Max DoS %	31%	31%	32%	32%	33%	34%
		Q red (pcu's)	5	5	5	5	6	6
		Average delay (s)	20	20	21	20	22	23
		PRC %	193.95	192.36	182.98	180.25	171.31	165.20
	N2 Slip Road	Max DoS %	25%	25%	25%	26%	26%	26%
		Q red (pcu's)	1	1	1	1	1	1
		Average delay (s)	59	59	59	59	59	59
		PRC %	261.44	261.44	261.44	240.79	240.79	240.79
	R135 South	Max DoS %	31%	32%	32%	33%	33%	34%
		Q red (pcu's)	4	4	4	5	5	5
		Average delay (s)	32	32	32	33	33	33
		PRC %	189.15	185.94	185.34	175.23	173.81	164.92

13.72 The tables above indicate that at present the R135 / Elm Road signalised junction operates within capacity with minimal queues and delays during the AM and PM peak hour.

13.73 With the development in place in 2017 and 2023 the junction will continue to operate within capacity with minimal queues and delays during the AM and PM peak hour.

R135 / L3125 Kilshane Crossroads Signalised Junction

13.74 The following tables show the predicted degree of saturation, average queue lengths, average vehicle delay, total junction delays and practical reserve capacity for the existing R135 / Elm Road signalised junction.

Table 13-19
R135 / L3125 Signalised Junction : AM Peak

AM Peak			2016	2017 No Dev	2017 With Dev	2023 No Dev	2023 With Dev	2023 With Link Rd	2023 With Sensitivity Flows
R135 / L3125 Signalised junction	R135 North	Max DoS %	47%	47%	48%	49%	50%	33%	34%
		Q red (pcu's)	12	12	12	12	12	8	9
		Average delay (s)	42	42	43	43	43	39	39
		PRC %	92.75	91.34	86.76	83.25	80.71	171.49	164.17
	L3125 East	Max DoS %	84%	85%	87%	89%	91%	87%	89%
		Q red (pcu's)	17	17	18	19	20	17	18
		Average delay (s)	51	51	55	56	60	56	64
		PRC %	6.11	5.38	3.06	1.02	-1.20	3.61	1.17
	R135 South	Max DoS %	84%	85%	86%	88%	89%	87%	88%
		Q red (pcu's)	12	12	12	13	14	13	14
		Average delay (s)	95	97	93	101	98	97	79
		PRC %	6.78	5.83	4.24	1.88	0.44	4.10	2.26
	L3125 West	Max DoS %	88%	89%	85%	93%	89%	86%	86%
		Q red (pcu's)	12	13	12	14	14	12	12
		Average delay (s)	82	83	75	91	98	74	80
		PRC %	1.30	0.66	4.94	-3.62	0.48	4.58	4.58

13.75 The table above indicate that, at present, the R135 / L3125 signalised junction is operating at capacity, with queues and delays during the AM peak hour.

13.76 With the proposed development and increased intake in place in 2017, the junction will continue to operate at capacity, with queues and delays during the AM peak hour.

13.77 With the proposed development in place in 2023, the junction will reach its maximum capacity, with queues and delays forming during the AM peak hour.

13.78 It should be noted that with no development in place in 2023, the junction will have reached its maximum capacity, with queues and delays forming during the AM peak hour.

13.79 With the opening of the Western (Airport) Link Road from the R135 / N2 roundabout to Dublin Airport, the impact on the R135 / L3125 signalised junction will be reduced. For the purposed of this assessment, it was assumed that 50% of the traffic flows travelling from the R135 North direction to the L3125 East and from the L3125 East direction to the R135 North would now travel via the Western Link Road. As a result, the signalised junction will operate within capacity in 2023, with queues and delays during the AM peak hour.

13.80 Sensitivity testing of the other approved planning applications within the area (identified previously) indicates that the junction will operate within capacity in 2023, with queues and delays with the opening of the Western Link Road.

Table 13-20
R135 / L3125 Signalised Junction : PM Peak

PM Peak			2016	2017 No Dev	2017 With Dev	2023 No Dev	2023 With Dev	2023 With Link Rd	2023 With Sensitivity Flows
R135 / L3125 Signalised junction	R135 North	Max DoS %	44%	44%	43%	46%	45%	28%	30%
		Q red (pcu's)	9	9	9	10	10	6	7
		Average delay (s)	47	47	46	53	53	42	42
		PRC %	102.77	101.43	106.71	92.53	97.75	217.58	205.44
	L3125 East	Max DoS %	91%	92%	92%	96%	96%	89%	89%
		Q red (pcu's)	19	20	20	23	23	17	17
		Average delay (s)	63	64	64	72	72	65	71
		PRC %	-1.40	-2.41	-2.41	-6.26	-6.29	1.09	1.09
	R135 South	Max DoS %	93%	93%	92%	98%	96%	88%	89%
		Q red (pcu's)	13	13	13	15	14	12	13
		Average delay (s)	119	121	125	131	135	78	86
		PRC %	-3.47	-4.14	-3.22	-8.25	-6.90	1.97	1.33
	L3125 West	Max DoS %	89%	90%	93%	94%	97%	88%	91%
		Q red (pcu's)	15	15	17	18	19	15	17
		Average delay (s)	73	74	82	82	92	68	84
		PRC %	0.37	-0.36	-3.63	-4.52	-7.65	1.74	-1.39

13.81 The table above indicates that at present the R135 / L3125 signalised junction operates outside capacity, with queues and delays during the PM peak hour.

13.82 In 2017 and 2023, if the proposed development is not in place, the R135 / L3125 signalised operates outside capacity, with queues and delays during the PM peak hour.

13.83 With the development in place in 2017 and 2023, the junction will continue to operate outside capacity, with queues and delays during the PM peak hour.

13.84 With the opening of the Western (Airport) Link Road from the R135 / N2 roundabout to Dublin Airport, the impact on the R135 / L3125 signalised junction will reduce. For the purposes of this assessment, it was assumed that 50% of the traffic flows travelling from the R135 North direction to the L3125 East and from the L3125 East direction to the R135 North would now travel via the Western Link Road. As a result, the signalised junction will operate within capacity in 2023, with queues and delays during the AM peak hour.

13.85 Sensitivity testing of granted planning applications within the area indicates that the junction will operate within capacity in 2023 with queues and delays with the opening of the Western Link Road.

Road Capacity Assessment

13.86 A capacity assessment of the R135 has been undertaken to determine the impact the proposed development flows will have on the R135 Regional Road. The AM and PM peak hour traffic counts have been converted to AADT (Annual Average Daily Traffic) using the methodology in TII Project Appraisal Guidelines '*Unit 16.2 Expansion Factors for Short Period Traffic Counts*'.

13.87 The vehicle flows (Annual Average Daily Traffic) given in Table 6/1 of TD 9/12 of the Design Manual for Roads and Bridges represent the approximate two-way flows which correspond to Level of Service D in reasonably level terrain. This is the level of service at which passing becomes extremely difficult and begins to affect the overall flow of the road.

13.88 Table 6/1 of the TII TD 9/12 indicates that the R135 would be considered as a Type 2 Single Carriageway, with a capacity of 8,600 AADT for a Level of Service D.

13.89 Tables 13-21, 13-22 and 13-23 below calculate the existing AADT for the R135 and the future AADT for the R135 when the development is operational in the years 2017 and 2023.

Table 13-21
2016 Existing Annual Average Daily Traffic

<table>
<tr><td colspan="5">STEP 1: Conversion of short period traffic counts to average daily traffic</td></tr>
<tr><td></td><td>Flows</td><td>PAG* factor</td><td>Daily flow (Flows/PAG*factor)</td><td>Average Daily traffic for 22nd June 2016</td></tr>
<tr><td>AM peak (07:30 – 08:30)</td><td>633</td><td>0.07</td><td>9,042</td><td rowspan="2">8,315</td></tr>
<tr><td>PM peak (16:45 – 17:45)</td><td>683</td><td>0.09</td><td>7,588</td></tr>
<tr><td colspan="5">* Project Appraisal Guidelines</td></tr>
<tr><td colspan="5">STEP 2: Conversion of average daily traffic to weekly average daily traffic</td></tr>
<tr><td colspan="2">Average Daily traffic for 22nd June 2016</td><td colspan="2">PAG* factor</td><td>WADT
Weekly Average Daily Traffic
(Avg. Daily traffic * PAG factor)</td></tr>
<tr><td colspan="2">8,315</td><td colspan="2">0.97</td><td>8,065</td></tr>
<tr><td colspan="5">STEP 3: Conversion of weekly average daily traffic to annual average daily traffic)</td></tr>
<tr><td colspan="2">WADT</td><td colspan="2">PAG* factor</td><td>AADT
Annually Average Daily Traffic
(WADT * PAG factor)</td></tr>
<tr><td colspan="2">8,065</td><td colspan="2">0.96</td><td>7,742</td></tr>
</table>

13.90 From Table 13-21 above the existing AADT for the R135 is 7,742 AADT which is below the recommended 8,600 AADT for a Level of Service D for a Type 2 Single Carriageway.

Table 13-22
2017 Proposed Annual Average Daily Traffic with Development Flows

STEP 1: Conversion of short period traffic counts to average daily traffic				
	Flows	PAG* factor	Daily flow (Flows/PAG*factor)	Average Daily traffic for 22nd June 2017
AM peak (07:30 – 08:30)	649	0.07	9,271	8,519
PM peak (16:45 – 17:45)	699	0.09	7,767	
** Project Appraisal Guidelines*				
STEP 2: Conversion of average daily traffic to weekly average daily traffic				
Average Daily traffic for 22nd June 2017	PAG* factor	WADT *Weekly Average Daily Traffic* (Avg. Daily traffic * PAG factor)		
8,519	0.97	8,263		
STEP 3: Conversion of weekly average daily traffic to annual average daily traffic)				
WADT	PAG* factor	**AADT** *Annually Average Daily Traffic* (WADT * PAG factor)		
8,263	0.96	**7,932**		

13.91 From Table 13-22 above, the AADT for the R135 in 2017 with the development fully operational is 7,932 AADT which is below the recommended 8,600 AADT for a Level of Service D for a Type 2 Single Carriageway.

Table 13-23
2023 Proposed Annual Average Daily Traffic with Development Flows

STEP 1: Conversion of short period traffic counts to average daily traffic				
	Flows	PAG* factor	Daily flow (Flows/PAG*factor)	Average Daily traffic for 22nd June 2023
AM peak (07:30 – 08:30)	677	0.07	9,671	8,891
PM peak (16:45 – 17:45)	730	0.09	8,111	
** Project Appraisal Guidelines*				
STEP 2: Conversion of average daily traffic to weekly average daily traffic				
Average Daily traffic for 22nd June 2016	PAG* factor	WADT *Weekly Average Daily Traffic* (Avg. Daily traffic * PAG factor)		
8,891	0.97	8,624		
STEP 3: Conversion of weekly average daily traffic to annual average daily traffic)				
WADT	PAG* factor	**AADT** *Annually Average Daily Traffic* (WADT * PAG factor)		
8,624	0.98	**8,451**		

13.92 From Table 13-23 above, the AADT for the R135 in 2023 with the development fully operational is 8,451 AADT which is below the recommended 8,600 AADT for a Level of Service D for a Type 2 Single Carriageway.

CUMULATIVE TRAFFIC IMPACTS

13.93 During the 12 hour traffic count undertaken on 22 June 2016, the HGV traffic movement to and from the quarry was recorded by Roadstone Ltd. The level of quarry outputs and activities that occurred on the day of the traffic survey are summarised in Table 13-24 below.

Table 13-24
Outputs from Huntstown Quarry on 22 June 2016

Material	Volume (Tonnes)	Traffic Movements
Concrete Volume	946	158
Cement	283	10
Sand	1229	49
Clay (Intake)	2488	138
Stone	4489	204
Masonry		6
Total		**565**

13.94 From Table 13-24 above, it can be seen that the waste intake on the day of the survey was 2488 tonnes (138 trips), which is close to the average daily level of 130 trips associated with the maximum permitted waste intake rate of 750,000 tonnes per annum.

13.95 The cumulative traffic impacts arising from quarry activities on the day of the survey was however in excess of the average level which was indicated by the EIS assessment undertaken in support of the 2012 planning application for continued operation of the quarry.

13.96 The planning application postulated a maximum output level from quarry operations of 2 million tonnes per annum (an average of 6,660 tonnes per day or an average of 330 trips per day). In the event, the total recorded number of trips to and from the quarry on the day of the traffic survey was 427, which is in excess of the average projected traffic levels (at maximum output) envisaged by the 2012 assessment.

13.97 The main reasons for the high level of activity at the quarry on the day of the traffic survey, which is unlikely to be repeated on a continual or ongoing basis, are understood to be as follows:

- activity in the construction industry is seasonal in nature – longer, drier days in summer months generate more activity and greater demand for construction materials;
- there was a particular increase / spike in activities at the quarry, in response to increased demand from on that particular day / week;
- the traffic levels travelling to and from the quarry (particularly concrete) are short-term only and are expected to reduce planning permission has been secured for a new concrete production facility at Feltrim Quarry.

13.98 As the traffic levels recorded on the date of the traffic survey were in excess of the average cumulative levels which will arise if all planned and permitted development around the Huntstown quarry complex does arise in the future

(,an average of 390 trips per day), the junction and road capacity analysis and assessments presented in this impact assessment in respect of the increased waste intake to the existing recovery facility are deemed to be robust and to indicate that additional road / junction capacity constraints (other than those already likely to occur) will not occur in the future if all planned / proposed future development materialises.

PROPOSED MITIGATION MEASURES

13.99 It has been demonstrated in this chapter that the development proposal would generate an increase in HGV movements on the surrounding local network when compared to existing levels. HGV traffic can be of particular concern to both local residents and highway users, and the mitigation measures outlined below should be adopted to alleviate these concerns:

- Roadstone Ltd should adhere to a routing policy to ensure all movements are made via the strategic road network to avoid HGV's passing through residential areas as far as is practical and
- Roadstone Ltd should employ a policy of safety and environmental awareness for all HGV drivers accessing the recovery facility.

CONCLUSIONS

13.100 This chapter assesses the traffic and transport implications of the proposed increase in the current rate of waste intake at its licensed inert soil recovery facility at Huntstown Quarry from a maximum of 750,000 tonnes per annum at present to a maximum of 1,500,000 tonnes per annum. The intake of waste material will have a life span of 6 years.

13.101 The principal objective of this assessment is to provide a detailed consideration of the proposed development in terms of highways and transportation planning. This includes details of all the traffic and movement activity associated with the proposed development, and any resulting traffic and transport related impacts.

13.102 The application site is well located in terms of access to the strategic highway network and all HGV traffic can be routed on roads considered suitable to accommodate frequent HGV movement.

13.103 Junction capacity assessment was carried out to determine the impact the additional development trips would have on the existing junctions within the vicinity of the proposed development. The analysis showed that the existing R135 / Elm Road signalised junction and the R135 / N2 Slip Road roundabout junction will operate when the development is operational in 2017 and 2023.

13.104 The R135 / N2 Slip Road priority junction and the R135 / L3125 signalised junction are currently operating at capacity. With the development operational in 2017 and 2023, both junctions will continue to operate at capacity, with queues and delays during the AM and PM peak hours. It should be noted the development flows will have an insignificant impact on the operational performance of both junctions, as the junctions are operating at capacity with no development in place in 2017 and 2023 during the AM and PM peak hours.

13.105 With the opening of the Western Link Road traffic flows travelling through the R135 / L3125 signalised junction to and from Dublin Airport will re-distribute onto the Western Link Road. As a result the R135 / L3125 signalised junction will operate within capacity in 2017 and 2023 during the AM and PM peak hours with the proposed development in place.

13.106 A road capacity assessment of the R135 (North Road) was carried out to determine the impact the additional development flows would have on the R135 Regional Road. The AM and PM peak hour flows were converted to AADT using the methodology in TII Project Appraisal Guidelines. Table 6/1 of the TII TD 9/12 indicated that the R135 would be considered as a Type 2 Single Carriageway with a capacity of 8,600 AADT for a level of Service D.

13.107 The assessment showed that in 2016 the R135 operates within capacity for a level of service D, with an existing AADT level 7742 vehicles.

13.108 In 2017 and 2023 with the additional development trips and an increase in the background flows, the R135 will have a proposed AADT of 7,932 in 2017 and a proposed AADT of 8,451 in 2023, which is below the recommended AADT capacity for a Level of Service D for a Type 2 Single Carriageway.

13.109 A review of accident records on the surrounding highway network covering the period from 2006 to 2013 showed that no fatal or serious incidents were recorded at the North Road access to the Huntstown Quarry Complex. The one fatal incident and one serious incident recorded both occurred at Kilshane Cross.

13.110 Three minor incidents occurred in close proximity to the North Road quarry access. However it appears these took place prior to the N2 road realignment and upgrading. None are therefore specifically relevant to the development proposal, both in terms of location and incident detail. As such, it is considered that the proposed development would not have a significant impact on road safety.

13.111 Overall it is considered that the development proposal would have a minimal impact in terms of highways and transportation. For the above reasons the proposed development of the site accords with the national, regional and county planning policies and is considered to be acceptable in traffic and transport terms.

APPENDICES

APPENDIX 13-A
TRAFFIC COUNT DATA

Tracsis plc
Traffic and Data Services

Client: Roadplan Consulting
Job No: 3082-IRE Huntstown Quarry
Survey Date: 22/06/2016
Survey Method: Video Observation
Weather AM: Cloudy
Weather PM Cloudy
Site No: Site 1
Road: N2 / R135 Roundabout

Entry: Arm A - R135 (N)

	Destination: Arm A - R135 (N)								Destination: Arm B - R135 (S)								Destination: Arm C - N2 On/ Off Slip Road								Arm
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	0	0	0	0	0	0	0	0	15	5	1	0	0	0	1	22	18	8	2	1	0	0	0	29	51
07:15	0	0	0	0	0	0	0	0	17	6	3	3	2	0	0	31	15	6	4	1	1	0	0	27	58
07:30	0	0	0	0	0	0	0	0	24	10	0	1	2	1	0	38	17	6	6	1	1	0	0	31	69
07:45	0	0	0	0	0	0	0	0	34	6	1	1	3	0	2	47	23	3	1	1	0	1	0	29	76
1 Hr	0	0	0	0	0	0	0	0	90	27	5	5	7	1	3	138	73	23	13	4	2	1	0	116	254
08:00	0	0	0	0	0	0	0	0	37	8	0	0	2	0	1	48	22	7	2	3	0	0	0	34	82
08:15	0	0	0	0	0	0	0	0	31	4	1	0	0	1	0	37	28	8	3	1	3	2	0	45	82
08:30	0	0	0	0	0	0	0	0	19	4	1	0	1	0	0	25	20	5	3	1	0	0	0	29	54
08:45	0	0	0	0	0	0	0	0	19	3	1	1	2	0	0	26	23	5	1	1	2	1	0	33	59
1 Hr	0	0	0	0	0	0	0	0	106	19	3	1	5	1	1	136	93	25	9	6	5	3	0	141	277
09:00	0	0	0	0	0	0	0	0	20	3	1	1	1	0	1	27	20	3	1	0	0	0	0	24	51
09:15	0	0	0	0	0	0	0	0	25	4	1	0	2	0	0	32	15	2	0	3	0	0	0	20	52
09:30	0	0	0	0	0	0	0	0	28	6	0	0	0	0	0	34	14	4	2	1	0	0	0	21	55
09:45	0	0	0	0	0	0	0	0	30	5	0	0	1	0	0	36	11	8	2	3	0	0	0	24	60
1 Hr	0	0	0	0	0	0	0	0	103	18	2	1	4	0	1	129	60	17	5	7	0	0	0	89	218
10:00	0	0	0	0	0	0	0	0	11	4	1	1	2	0	1	20	13	10	3	3	0	0	0	29	49
10:15	0	0	0	0	0	0	0	0	13	4	1	3	0	0	0	21	13	5	1	0	0	0	0	19	40
10:30	0	0	0	0	0	0	0	0	22	5	1	0	1	0	0	29	9	1	1	0	0	2	0	13	42
10:45	0	0	0	0	0	0	0	0	9	2	1	2	1	1	0	16	15	3	2	2	0	0	0	22	38
1 Hr	0	0	0	0	0	0	0	0	55	15	4	6	4	1	1	86	50	19	7	5	0	2	0	83	169
11:00	0	0	0	0	0	0	0	0	16	7	0	1	2	0	1	27	3	1	3	0	0	0	0	7	34
11:15	0	0	0	0	0	0	0	0	17	3	2	1	0	0	0	23	11	1	1	0	0	0	0	13	36
11:30	0	0	0	0	0	0	0	0	22	2	4	1	1	0	0	30	7	3	3	2	0	0	0	15	45
11:45	0	0	0	0	0	0	0	0	23	5	0	1	2	0	0	31	10	2	1	1	0	0	0	14	45
1 Hr	0	0	0	0	0	0	0	0	78	17	6	4	5	0	1	111	31	7	8	3	0	0	0	49	160
12:00	0	0	0	0	0	0	0	0	12	5	1	1	0	0	0	19	10	0	3	1	0	0	0	14	33
12:15	0	0	0	0	0	0	0	0	15	5	2	0	1	1	1	25	15	3	0	1	0	1	0	20	45
12:30	0	1	1	0	0	0	0	2	19	5	0	1	0	0	0	25	13	6	2	0	0	1	0	22	49
12:45	0	1	0	0	0	0	0	1	16	4	2	0	1	0	0	23	9	1	1	0	0	0	0	11	35
1 Hr	0	2	1	0	0	0	0	3	62	19	5	2	2	1	1	92	47	10	6	2	0	2	0	67	162
13:00	0	0	0	0	0	0	0	0	14	6	0	0	2	0	0	22	17	4	1	1	0	0	0	23	45
13:15	1	0	0	0	0	2	0	3	29	7	2	1	0	0	0	39	10	1	1	0	0	0	0	12	54
13:30	0	0	0	0	0	0	0	0	27	5	1	1	1	1	1	37	20	3	0	1	0	0	0	24	61
13:45	0	0	0	0	0	0	0	0	19	3	0	2	1	1	0	26	22	2	2	0	0	0	0	26	52
1 Hr	1	0	0	0	0	2	0	3	89	21	3	4	4	2	1	124	69	10	4	2	0	0	0	85	212
14:00	1	0	0	0	0	0	0	1	23	3	1	0	1	0	0	28	19	4	2	1	0	0	0	26	55
14:15	0	0	0	0	0	0	0	0	19	9	1	0	1	0	0	30	9	4	4	1	0	0	0	18	48
14:30	0	0	0	0	0	0	0	0	26	7	0	0	1	0	0	34	11	5	1	1	0	0	0	18	52
14:45	0	0	0	0	0	0	0	0	26	7	0	0	1	1	2	37	16	6	2	0	0	0	0	24	61
1 Hr	1	0	0	0	0	0	0	1	94	26	2	0	4	1	2	129	55	19	9	3	0	0	0	86	216
15:00	0	0	0	0	0	0	0	0	16	3	0	0	2	0	0	21	23	2	2	0	0	0	0	27	48
15:15	0	0	0	0	0	0	0	0	20	1	0	0	0	0	0	21	18	3	3	0	0	0	0	24	45
15:30	0	0	0	0	0	0	0	0	19	6	0	2	1	0	0	28	12	5	1	0	0	0	0	18	46
15:45	0	0	0	0	0	0	0	0	18	3	1	1	1	0	1	25	11	3	2	1	0	1	0	18	43
1 Hr	0	0	0	0	0	0	0	0	73	13	1	3	4	0	1	95	64	13	8	1	0	1	0	87	182
16:00	0	0	0	0	0	0	0	0	17	4	3	0	2	0	0	26	12	5	0	0	0	0	0	17	43
16:15	0	0	0	0	0	0	0	0	18	2	0	0	0	4	0	24	19	5	0	0	1	1	0	26	50
16:30	0	0	0	0	0	0	0	0	16	1	0	0	1	0	0	18	16	4	1	0	0	0	0	21	39
16:45	0	0	0	0	0	0	0	0	28	3	1	0	1	0	0	33	16	7	0	0	0	0	0	23	56
1 Hr	0	0	0	0	0	0	0	0	79	10	4	0	4	4	0	101	63	21	1	0	1	1	0	87	188
17:00	0	0	0	0	0	0	0	0	23	4	0	1	1	0	3	32	19	6	1	0	0	0	0	26	58
17:15	0	0	0	0	0	0	0	0	13	6	0	1	2	0	1	23	15	1	0	2	0	0	0	18	41
17:30	0	0	0	0	0	0	0	0	14	6	1	1	0	1	0	23	15	3	1	0	0	0	0	19	42
17:45	0	0	0	0	0	0	0	0	18	1	0	0	0	1	0	20	13	2	0	1	0	0	0	16	36
1 Hr	0	0	0	0	0	0	0	0	68	17	1	3	3	2	4	98	62	12	2	3	0	0	0	79	177
18:00	0	1	0	0	0	0	0	1	17	1	1	1	3	0	1	24	21	3	0	0	0	0	0	24	49
18:15	0	0	0	0	0	0	0	0	19	1	0	0	0	0	0	20	14	3	2	0	0	0	0	19	39
18:30	0	0	0	0	0	0	0	0	17	1	0	0	0	0	0	18	14	2	0	0	0	0	0	16	34
18:45	0	0	0	0	0	0	0	0	17	1	0	0	3	0	0	21	11	3	1	1	0	0	0	16	37
1 Hr	0	1	0	0	0	0	0	1	70	4	1	1	6	0	1	83	60	11	3	1	0	0	0	75	159
12 Hrs	2	3	1	0	0	2	0	8	967	206	37	30	52	13	17	1322	727	187	75	37	8	10	0	1044	2374
Check								8								1322								1044	2374
Total	2	3	1	0	0	2	0	8	967	206	37	30	52	13	17	1322	727	187	75	37	8	10	0	1044	2374
Check								8								1322								1044	2374

Entry: Arm B - R135 (S)

	Destination: Arm A - R135 (N)								Destination: Arm B - R135 (S)								Destination: Arm C - N2 On/ Off Slip Road								Arm
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	9	2	0	0	0	0	0	11	0	0	0	0	0	0	0	0	3	0	2	1	0	0	0	6	17
07:15	6	6	0	1	0	0	0	13	0	0	0	0	0	0	0	0	8	1	2	3	0	0	0	14	27
07:30	1	3	0	0	3	0	0	7	0	0	0	0	0	0	0	0	12	4	0	3	1	0	0	20	27
07:45	10	4	0	1	0	0	0	15	0	0	0	0	0	0	0	0	11	3	0	7	0	0	0	21	36
1 Hr	26	15	0	2	3	0	0	46	0	0	0	0	0	0	0	0	34	8	4	14	1	0	0	61	107
08:00	7	2	0	1	1	0	1	12	0	0	0	0	0	0	0	0	12	5	0	3	0	0	0	20	32
08:15	5	5	0	0	1	2	1	14	0	0	0	0	0	0	0	0	14	6	3	4	0	0	0	27	41
08:30	6	1	3	0	1	0	0	11	0	0	0	0	0	0	0	0	12	2	1	4	0	1	0	20	31
08:45	7	3	0	1	1	0	0	12	0	1	0	0	0	0	0	1	14	3	1	3	0	0	0	21	34
1 Hr	25	11	3	2	4	2	2	49	0	1	0	0	0	0	0	1	52	16	5	14	0	1	0	88	138
09:00	7	2	2	1	2	0	0	14	0	0	0	0	0	0	0	0	15	2	3	6	0	0	0	26	40
09:15	6	5	1	3	1	0	0	16	0	0	0	0	0	0	0	0	10	1	2	9	0	0	0	22	38
09:30	13	1	2	1	0	0	0	17	0	0	0	0	0	0	0	0	9	3	1	2	0	0	0	15	32
09:45	5	6	1	1	2	0	0	15	0	0	0	0	0	0	0	0	6	3	2	3	0	0	0	14	29
1 Hr	31	14	6	6	5	0	0	62	0	0	0	0	0	0	0	0	40	9	8	20	0	0	0	77	139
10:00	11	6	0	0	1	0	0	18	0	0	0	0	0	0	0	0	10	2	1	3	1	0	0	17	35
10:15	16	3	3	1	0	0	0	23	0	0	0	0	0	0	0	0	9	6	0	5	1	0	0	21	44
10:30	17	8	1	2	1	0	0	29	1	0	0	0	0	0	0	1	11	4	2	5	1	0	0	23	53
10:45	15	2	1	0	1	0	0	19	0	0	0	0	0	0	0	0	17	3	1	2	1	0	0	24	43
1 Hr	59	19	5	3	3	0	0	89	1	0	0	0	0	0	0	1	47	15	4	15	4	0	0	85	175
11:00	17	2	1	2	1	0	0	23	0	0	0	0	0	0	0	0	5	2	1	2	1	0	0	11	34
11:15	17	4	2	2	2	0	2	29	0	0	0	0	0	0	0	0	7	2	0	3	1	0	0	13	42
11:30	13	6	2	1	0	0	0	22	0	0	0	0	0	0	0	0	9	3	4	4	1	0	0	21	43
11:45	21	5	1	1	2	0	0	30	0	0	0	0	0	0	0	0	6	2	3	4	1	1	1	18	48
1 Hr	68	17	6	6	5	0	2	104	0	0	0	0	0	0	0	0	27	9	8	13	4	1	1	63	167
12:00	25	10	2	1	1	0	0	39	0	0	0	0	0	0	0	0	7	2	1	5	0	0	0	15	54
12:15	24	4	0	0	0	1	0	29	0	0	0	0	0	0	0	0	17	4	2	3	1	0	0	27	56
12:30	17	5	1	0	2	0	0	25	0	1	1	0	0	0	0	2	12	2	2	4	1	0	1	22	49
12:45	20	9	2	2	2	0	0	35	0	0	0	0	0	0	0	0	11	1	3	2	0	0	0	17	52
1 Hr	86	28	5	3	5	1	0	128	0	1	1	0	0	0	0	2	47	9	8	14	2	0	1	81	211
13:00	21	3	1	0	1	0	0	26	3	0	0	0	0	0	0	3	17	4	1	2	1	0	0	25	54
13:15	33	4	0	0	1	0	0	38	0	0	0	1	0	0	0	1	15	6	2	4	1	0	0	28	67
13:30	19	1	2	0	0	0	0	22	0	0	0	0	0	0	0	0	23	3	3	2	0	0	0	31	53
13:45	22	5	2	1	1	0	0	31	0	1	0	0	0	0	0	1	11	3	3	8	0	0	0	25	57
1 Hr	95	13	5	1	3	0	0	117	3	1	0	1	0	0	0	5	66	16	9	16	2	0	0	109	231
14:00	18	2	0	1	2	0	0	23	0	0	0	0	0	0	0	0	19	6	2	5	0	0	0	32	55
14:15	19	7	1	0	1	1	0	29	0	0	0	0	0	0	0	0	14	2	2	5	0	0	0	23	52
14:30	22	3	0	1	0	0	0	26	0	0	0	0	0	0	0	0	10	1	2	4	0	0	0	17	43
14:45	22	5	1	2	2	1	0	33	0	0	0	0	0	0	0	0	19	8	2	4	1	0	0	34	67
1 Hr	81	17	2	4	5	2	0	111	0	0	0	0	0	0	0	0	62	17	8	18	1	0	0	106	217
15:00	21	7	0	2	1	0	0	31	0	0	0	1	0	0	0	1	10	5	4	5	0	0	0	24	56
15:15	21	6	0	0	1	0	0	28	0	0	0	0	0	0	0	0	20	2	0	2	0	0	0	24	52
15:30	35	0	2	1	0	0	0	38	1	1	0	0	0	0	0	2	15	3	0	7	2	0	0	27	67
15:45	21	5	1	1	2	0	4	34	0	0	0	0	0	0	0	0	17	7	1	7	2	0	0	34	68
1 Hr	98	18	3	4	4	0	4	131	1	1	0	1	0	0	0	3	62	17	5	21	4	0	0	109	243
16:00	22	3	3	2	1	1	0	32	0	0	0	0	0	0	0	0	19	9	1	5	0	0	0	34	66
16:15	29	9	2	1	1	0	0	42	0	0	0	0	0	0	0	0	27	7	2	7	0	0	0	43	85
16:30	21	4	1	3	0	1	0	30	0	0	0	1	0	0	0	1	18	8	3	4	1	0	0	34	65
16:45	29	8	1	2	1	0	1	42	0	0	0	1	0	0	0	1	36	8	1	3	0	0	0	48	91
1 Hr	101	24	7	8	3	2	1	146	0	0	0	2	0	0	0	2	100	32	7	19	1	0	0	159	307
17:00	29	10	4	0	2	2	2	49	0	1	0	0	0	0	0	1	30	8	2	3	0	0	1	44	94
17:15	34	5	1	3	0	0	1	44	0	0	0	1	0	0	0	1	17	5	3	3	0	1	0	29	74
17:30	39	7	1	0	1	0	2	50	0	0	0	0	0	0	0	0	43	10	0	1	0	0	0	54	104
17:45	27	3	2	1	2	1	4	40	0	0	0	0	0	0	0	0	51	5	0	0	0	0	0	56	96
1 Hr	129	25	8	4	5	3	9	183	0	1	0	1	0	0	0	2	141	28	5	7	0	1	1	183	368
18:00	40	6	3	0	3	1	2	55	0	0	0	0	0	0	0	0	40	4	1	3	0	0	1	49	104
18:15	30	1	0	0	2	3	0	36	0	1	0	0	0	0	0	1	43	9	1	2	0	0	0	55	92
18:30	19	5	0	0	0	0	0	24	1	1	0	0	0	0	0	2	33	4	1	1	0	0	0	39	65
18:45	18	6	0	0	2	2	1	29	0	0	0	0	0	0	0	0	22	3	2	2	1	0	0	30	59
1 Hr	107	18	3	0	7	6	3	144	1	2	0	0	0	0	0	3	138	20	5	8	1	0	1	173	320
12 Hrs	906	219	53	43	52	16	21	1310	6	7	1	5	0	0	0	19	816	196	76	179	20	3	4	1294	2623
Check								1310								19								1294	2623
Total	906	219	53	43	52	16	21	1310	6	7	1	5	0	0	0	19	816	196	76	179	20	3	4	1294	2623
Check								1310								19								1294	2623

Entry: Arm C - N2 On/ Off Slip Road

	Destination: Arm A - R135 (N)								Destination: Arm B - R135 (S)								Destination: Arm C - N2 On/ Off Slip Road								Arm
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	3	2	3	2	0	0	0	10	23	6	2	1	0	0	0	32	0	0	0	0	0	0	0	0	42
07:15	2	4	1	0	0	0	0	7	25	5	0	2	1	0	1	34	0	1	0	0	0	0	0	1	42
07:30	8	4	0	0	0	0	0	12	39	9	1	5	2	1	0	57	0	0	0	0	0	0	0	0	69
07:45	9	6	1	0	0	0	0	16	30	13	0	2	0	0	0	45	0	1	0	0	0	0	0	1	62
1 Hr	22	16	5	2	0	0	0	45	117	33	3	10	3	1	1	168	0	2	0	0	0	0	0	2	215
08:00	10	4	0	0	0	0	0	14	27	8	2	2	0	0	0	39	0	0	0	0	0	0	0	0	53
08:15	16	4	0	0	0	1	0	21	34	6	1	4	0	0	0	45	0	0	0	0	0	0	0	0	66
08:30	19	6	0	1	0	0	0	26	37	7	1	3	0	0	0	48	0	0	0	0	0	0	0	0	74
08:45	13	4	1	1	0	0	0	19	34	6	2	3	0	0	0	45	0	0	0	0	0	0	0	0	64
1 Hr	58	18	1	2	0	1	0	80	132	27	6	12	0	0	0	177	0	0	0	0	0	0	0	0	257
09:00	11	4	3	1	0	0	0	19	25	8	2	3	3	0	0	41	0	0	0	0	0	0	0	0	60
09:15	13	3	1	1	0	0	0	18	19	5	1	6	0	0	0	31	0	0	0	0	0	0	0	0	49
09:30	16	3	2	2	0	0	0	23	11	4	0	6	1	0	0	22	0	0	0	0	0	0	0	0	45
09:45	16	6	0	0	0	0	0	22	15	3	0	0	1	0	0	19	0	0	1	0	0	0	0	1	42
1 Hr	56	16	6	4	0	0	0	82	70	20	3	15	5	0	0	113	0	0	1	0	0	0	0	1	196
10:00	11	6	3	1	0	0	1	22	10	4	1	4	0	0	0	19	1	2	0	0	0	0	0	3	44
10:15	9	3	2	1	0	0	0	15	17	1	2	1	0	0	0	21	1	0	0	0	0	0	0	1	37
10:30	9	2	0	0	0	0	0	11	12	4	1	3	1	0	0	21	1	0	0	0	0	0	0	1	33
10:45	10	3	4	0	0	0	0	17	14	2	0	6	0	0	0	22	0	0	0	0	0	0	0	0	39
1 Hr	39	14	9	2	0	0	1	65	53	11	4	14	1	0	0	83	3	2	0	0	0	0	0	5	153
11:00	8	2	1	0	0	0	0	11	10	4	2	2	0	0	0	18	0	0	0	0	0	0	0	0	29
11:15	12	5	2	2	0	2	0	23	14	3	1	0	0	0	0	18	1	0	0	0	0	0	0	1	42
11:30	14	3	1	0	0	1	0	19	11	5	1	2	1	0	0	20	1	0	0	1	0	0	0	2	41
11:45	16	2	2	1	0	0	0	21	11	5	0	4	0	0	0	20	0	0	0	0	0	0	0	0	41
1 Hr	50	12	6	3	0	3	0	74	46	17	4	8	1	0	0	76	2	0	0	1	0	0	0	3	153
12:00	12	3	1	1	0	1	0	18	12	3	0	1	0	0	0	16	3	0	0	0	0	0	0	3	37
12:15	9	2	1	1	0	0	0	13	18	3	1	2	1	0	0	25	0	0	0	0	0	0	0	0	38
12:30	17	4	4	2	0	1	0	28	19	3	1	0	1	0	0	24	0	0	0	0	0	0	0	0	52
12:45	14	5	4	0	0	0	0	23	14	2	0	6	3	0	0	25	0	0	0	0	0	0	0	0	48
1 Hr	52	14	10	4	0	2	0	82	63	11	2	9	5	0	0	90	3	0	0	0	0	0	0	3	175
13:00	15	3	3	0	0	0	0	21	17	3	1	2	0	0	0	23	0	0	0	0	0	0	0	0	44
13:15	16	4	3	0	0	0	0	23	19	3	2	1	0	0	0	25	0	0	0	0	0	0	0	0	48
13:30	27	5	2	0	0	0	0	34	25	3	1	1	0	0	0	30	2	0	0	0	0	0	0	2	66
13:45	17	5	1	1	0	0	0	24	18	4	0	2	0	0	0	24	0	0	0	0	0	0	0	0	48
1 Hr	75	17	9	1	0	0	0	102	79	13	4	6	0	0	0	102	2	0	0	0	0	0	0	2	206
14:00	15	5	0	1	1	0	0	22	10	2	2	4	1	0	1	20	0	0	0	0	0	0	0	0	42
14:15	16	5	2	2	0	0	0	25	15	1	2	5	1	0	0	24	0	0	0	0	0	0	0	0	49
14:30	11	4	2	0	0	0	0	17	18	6	3	2	1	0	0	30	0	0	0	0	0	0	0	0	47
14:45	11	2	3	0	0	0	0	16	12	4	2	5	0	0	0	23	0	0	0	0	0	0	0	0	39
1 Hr	53	16	7	3	1	0	0	80	55	13	9	16	3	0	1	97	0	0	0	0	0	0	0	0	177
15:00	20	4	2	0	1	0	0	27	13	3	0	4	1	0	0	21	0	1	0	0	0	0	0	1	49
15:15	21	4	2	0	0	0	0	27	15	5	1	3	0	0	0	24	0	0	0	0	0	0	0	0	51
15:30	11	1	2	2	0	0	0	16	22	3	2	3	0	0	0	30	0	0	0	0	0	0	0	0	46
15:45	13	6	0	3	0	0	0	22	13	3	3	5	0	0	0	24	0	0	0	0	0	0	0	0	46
1 Hr	65	15	6	5	1	0	0	92	63	14	6	15	1	0	0	99	0	1	0	0	0	0	0	1	192
16:00	17	9	3	1	0	0	1	31	12	2	0	1	0	0	0	15	1	0	0	0	0	0	0	1	47
16:15	19	7	2	3	0	0	0	31	10	3	2	7	1	0	0	23	0	0	0	0	0	0	0	0	54
16:30	30	7	0	1	1	0	0	39	29	7	1	1	0	0	0	38	1	0	0	0	0	0	0	1	78
16:45	18	7	2	2	0	0	0	29	23	3	1	3	1	0	0	31	0	0	0	0	0	0	0	0	60
1 Hr	84	30	7	7	1	0	1	130	74	15	4	12	2	0	0	107	2	0	0	0	0	0	0	2	239
17:00	26	5	3	0	0	1	0	35	30	5	0	2	0	0	0	37	0	0	1	0	0	0	0	1	73
17:15	18	8	2	0	0	0	0	28	35	4	2	1	0	0	0	42	0	0	0	0	0	0	0	0	70
17:30	27	5	1	1	0	1	0	35	44	0	1	5	0	0	0	50	1	0	0	0	0	0	0	1	86
17:45	26	3	2	1	1	0	0	33	22	3	2	2	0	0	0	29	1	0	0	0	0	0	0	1	63
1 Hr	97	21	8	2	1	2	0	131	131	12	5	10	0	0	0	158	2	0	1	0	0	0	0	3	292
18:00	26	3	3	1	0	1	0	34	20	4	2	4	0	1	0	31	0	0	0	0	0	0	0	0	65
18:15	22	4	1	3	0	1	0	31	11	3	0	2	0	1	1	18	0	0	0	0	0	0	0	0	49
18:30	25	2	1	0	0	2	0	30	17	2	0	4	1	0	0	24	0	0	0	0	0	0	0	0	54
18:45	22	3	1	1	0	0	0	27	9	0	0	2	1	0	0	12	0	0	0	0	0	0	0	0	39
1 Hr	95	12	6	5	0	4	0	122	57	9	2	12	2	2	1	85	0	0	0	0	0	0	0	0	207
12 Hrs	746	201	80	40	4	12	2	1085	940	195	52	139	23	3	3	1355	14	5	2	1	0	0	0	22	2462
Check								1085								1355								22	2462
Total	746	201	80	40	4	12	2	1085	940	195	52	139	23	3	3	1355	14	5	2	1	0	0	0	22	2462
Check								1085								1355								22	2462

ORIGIN SUMMARY

	Origin: Arm A - R135 (N)								Origin: Arm B - R135 (S)								Origin: Arm C - N2 On/ Off Slip Road								Origin
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	33	13	3	1	0	0	1	51	12	2	2	1	0	0	0	17	26	8	5	3	0	0	0	42	110
07:15	32	12	7	4	3	0	0	58	14	7	2	4	0	0	0	27	27	10	1	2	1	0	1	42	127
07:30	41	16	6	2	3	1	0	69	13	7	0	3	4	0	0	27	47	13	1	5	2	1	0	69	165
07:45	57	9	2	2	3	1	2	76	21	7	0	8	0	0	0	36	39	20	1	2	0	0	0	62	174
1 Hr	163	50	18	9	9	2	3	254	60	23	4	16	4	0	0	107	139	51	8	12	3	1	1	215	576
08:00	59	15	2	3	2	0	1	82	19	7	0	4	1	0	1	32	37	12	2	2	0	0	0	53	167
08:15	59	12	4	1	3	3	0	82	19	11	3	4	1	2	1	41	50	10	1	4	0	1	0	66	189
08:30	39	9	4	1	1	0	0	54	18	3	4	4	1	1	0	31	56	13	1	4	0	0	0	74	159
08:45	42	8	2	2	4	1	0	59	21	7	1	4	1	0	0	34	47	10	3	4	0	0	0	64	157
1 Hr	199	44	12	7	10	4	1	277	77	28	8	16	4	3	2	138	190	45	7	14	0	1	0	257	672
09:00	40	6	2	1	1	0	1	51	22	4	5	7	2	0	0	40	36	12	5	4	3	0	0	60	151
09:15	40	6	1	3	2	0	0	52	16	6	3	12	1	0	0	38	32	8	2	7	0	0	0	49	139
09:30	42	10	2	1	0	0	0	55	22	4	3	3	0	0	0	32	27	7	2	8	1	0	0	45	132
09:45	41	13	2	3	1	0	0	60	11	9	3	4	2	0	0	29	31	9	1	0	1	0	0	42	131
1 Hr	163	35	7	8	4	0	1	218	71	23	14	26	5	0	0	139	126	36	10	19	5	0	0	196	553
10:00	24	14	4	4	2	0	1	49	21	8	1	3	2	0	0	35	22	12	4	5	0	0	1	44	128
10:15	26	9	2	3	0	0	0	40	25	9	3	6	1	0	0	44	27	4	4	2	0	0	0	37	121
10:30	31	6	2	0	1	2	0	42	29	12	3	7	2	0	0	53	22	6	1	3	1	0	0	33	128
10:45	24	5	3	4	1	1	0	38	32	5	2	2	2	0	0	43	24	5	4	6	0	0	0	39	120
1 Hr	105	34	11	11	4	3	1	169	107	34	9	18	7	0	0	175	95	27	13	16	1	0	1	153	497
11:00	19	8	3	1	2	0	1	34	22	4	2	4	2	0	0	34	18	6	3	2	0	0	0	29	97
11:15	28	4	3	1	0	0	0	36	24	6	2	5	3	0	2	42	27	8	3	2	0	2	0	42	120
11:30	29	5	7	3	1	0	0	45	22	9	6	5	1	0	0	43	26	8	2	3	1	1	0	41	129
11:45	33	7	1	2	2	0	0	45	27	7	4	5	3	1	1	48	27	7	2	5	0	0	0	41	134
1 Hr	109	24	14	7	5	0	1	160	95	26	14	19	9	1	3	167	98	29	10	12	1	3	0	153	480
12:00	22	5	4	2	0	0	0	33	32	12	3	6	1	0	0	54	27	6	1	2	0	1	0	37	124
12:15	30	8	2	1	1	2	1	45	41	8	2	3	1	1	0	56	27	5	2	3	1	0	0	38	139
12:30	32	12	3	1	0	1	0	49	29	8	4	4	3	0	1	49	36	7	5	2	1	1	0	52	150
12:45	25	6	3	0	1	0	0	35	31	10	5	4	2	0	0	52	28	7	4	6	3	0	0	48	135
1 Hr	109	31	12	4	2	3	1	162	133	38	14	17	7	1	1	211	118	25	12	13	5	2	0	175	548
13:00	31	10	1	1	2	0	0	45	41	7	2	2	2	0	0	54	32	6	4	2	0	0	0	44	143
13:15	40	8	3	1	0	2	0	54	48	10	2	5	2	0	0	67	35	7	5	1	0	0	0	48	169
13:30	47	8	1	2	1	1	1	61	42	4	5	2	0	0	0	53	54	8	3	1	0	0	0	66	180
13:45	41	5	2	2	1	1	0	52	33	9	5	9	1	0	0	57	35	9	1	3	0	0	0	48	157
1 Hr	159	31	7	6	4	4	1	212	164	30	14	18	5	0	0	231	156	30	13	7	0	0	0	206	649
14:00	43	7	3	1	1	0	0	55	37	8	2	6	2	0	0	55	25	7	2	5	2	0	1	42	152
14:15	28	13	5	1	1	0	0	48	33	9	3	5	1	1	0	52	31	6	4	7	1	0	0	49	149
14:30	37	12	1	1	1	0	0	52	32	4	2	5	0	0	0	43	29	10	5	2	1	0	0	47	142
14:45	42	13	2	0	1	1	2	61	41	13	3	6	3	1	0	67	23	6	5	5	0	0	0	39	167
1 Hr	150	45	11	3	4	1	2	216	143	34	10	22	6	2	0	217	108	29	16	19	4	0	1	177	610
15:00	39	5	2	0	2	0	0	48	31	12	4	8	1	0	0	56	33	8	2	4	2	0	0	49	153
15:15	38	4	3	0	0	0	0	45	41	8	0	2	1	0	0	52	36	9	3	3	0	0	0	51	148
15:30	31	11	1	2	1	0	0	46	51	4	2	8	2	0	0	67	33	4	4	5	0	0	0	46	159
15:45	29	6	3	2	1	1	1	43	38	12	2	8	4	0	4	68	26	9	3	8	0	0	0	46	157
1 Hr	137	26	9	4	4	1	1	182	161	36	8	26	8	0	4	243	128	30	12	20	2	0	0	192	617
16:00	29	9	3	0	2	0	0	43	41	12	4	7	1	1	0	66	30	11	3	2	0	0	1	47	156
16:15	37	7	0	0	1	5	0	50	56	16	4	8	1	0	0	85	29	10	4	10	1	0	0	54	189
16:30	32	5	1	0	1	0	0	39	39	12	4	8	1	1	0	65	60	14	1	2	1	0	0	78	182
16:45	44	10	1	0	1	0	0	56	65	16	2	6	1	0	1	91	41	10	3	5	1	0	0	60	207
1 Hr	142	31	5	0	5	5	0	188	201	56	14	29	4	2	1	307	160	45	11	19	3	0	1	239	734
17:00	42	10	1	1	1	0	3	58	59	19	6	3	2	2	3	94	56	10	4	2	0	1	0	73	225
17:15	28	7	0	3	2	0	1	41	51	10	4	7	0	1	1	74	53	12	4	1	0	0	0	70	185
17:30	29	9	2	1	0	1	0	42	82	17	1	1	1	0	2	104	72	5	2	6	0	1	0	86	232
17:45	31	3	0	1	0	1	0	36	78	8	2	1	2	1	4	96	49	6	4	3	1	0	0	63	195
1 Hr	130	29	3	6	3	2	4	177	270	54	13	12	5	4	10	368	230	33	14	12	1	2	0	292	837
18:00	38	5	1	1	3	0	1	49	80	10	4	3	3	1	3	104	46	7	5	5	0	2	0	65	218
18:15	33	4	2	0	0	0	0	39	73	11	1	2	2	3	0	92	33	7	1	5	0	2	1	49	180
18:30	31	3	0	0	0	0	0	34	53	10	1	1	0	0	0	65	42	4	1	4	1	2	0	54	153
18:45	28	4	1	1	3	0	0	37	40	9	2	2	3	2	1	59	31	3	1	3	1	0	0	39	135
1 Hr	130	16	4	2	6	0	1	159	246	40	8	8	8	6	4	320	152	21	8	17	2	6	1	207	686
12 Hrs	1696	396	113	67	60	25	17	2374	1728	422	130	227	72	19	25	2623	1700	401	134	180	27	15	5	2462	7459
Check								2374								2623								2462	7459
Total	1696	396	113	67	60	25	17	2374	1728	422	130	227	72	19	25	2623	1700	401	134	180	27	15	5	2462	7459
Check								2374								2623								2462	7459

DESTINATION SUMMARY

	Destination: Arm A - R135 (N)								Destination: Arm B - R135 (S)								Destination: Arm C - N2 On/ Off Slip Road								Dest
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	12	4	3	2	0	0	0	21	38	11	3	1	0	0	1	54	21	8	4	2	0	0	0	35	110
07:15	8	10	1	1	0	0	0	20	42	11	3	5	3	0	1	65	23	8	6	4	1	0	0	42	127
07:30	9	7	0	0	3	0	0	19	63	19	1	6	4	2	0	95	29	10	6	4	2	0	0	51	165
07:45	19	10	1	1	0	0	0	31	64	19	1	3	3	0	2	92	34	7	1	8	0	1	0	51	174
1 Hr	48	31	5	4	3	0	0	91	207	60	8	15	10	2	4	306	107	33	17	18	3	1	0	179	576
08:00	17	6	0	1	1	0	1	26	64	16	2	2	2	0	1	87	34	12	2	6	0	0	0	54	167
08:15	21	9	0	0	1	3	1	35	65	10	2	4	0	1	0	82	42	14	6	5	3	2	0	72	189
08:30	25	7	3	1	1	0	0	37	56	11	2	3	1	0	0	73	32	7	4	5	0	1	0	49	159
08:45	20	7	1	2	1	0	0	31	53	10	3	4	2	0	0	72	37	8	2	4	2	1	0	54	157
1 Hr	83	29	4	4	4	3	2	129	238	47	9	13	5	1	1	314	145	41	14	20	5	4	0	229	672
09:00	18	6	5	2	2	0	0	33	45	11	3	4	4	0	1	68	35	5	4	6	0	0	0	50	151
09:15	19	8	2	4	1	0	0	34	44	9	2	6	2	0	0	63	25	3	2	12	0	0	0	42	139
09:30	29	4	4	3	0	0	0	40	39	10	0	6	1	0	0	56	23	7	3	3	0	0	0	36	132
09:45	21	12	1	1	2	0	0	37	45	8	0	0	2	0	0	55	17	11	5	6	0	0	0	39	131
1 Hr	87	30	12	10	5	0	0	144	173	38	5	16	9	0	1	242	100	26	14	27	0	0	0	167	553
10:00	22	12	3	1	1	0	1	40	21	8	2	5	2	0	1	39	24	14	4	6	1	0	0	49	128
10:15	25	6	5	2	0	0	0	38	30	5	3	4	0	0	0	42	23	11	1	5	1	0	0	41	121
10:30	26	10	1	2	1	0	0	40	35	9	2	3	2	0	0	51	21	5	3	5	1	2	0	37	128
10:45	25	5	5	0	1	0	0	36	23	4	1	8	1	1	0	38	32	6	3	4	1	0	0	46	120
1 Hr	98	33	14	5	3	0	1	154	109	26	8	20	5	1	1	170	100	36	11	20	4	2	0	173	497
11:00	25	4	2	2	1	0	0	34	26	11	2	3	2	0	1	45	8	3	4	2	1	0	0	18	97
11:15	29	9	4	4	2	2	2	52	31	6	3	1	0	0	0	41	19	3	1	3	1	0	0	27	120
11:30	27	9	3	1	0	1	0	41	33	7	5	3	2	0	0	50	17	6	7	7	1	0	0	38	129
11:45	37	7	3	2	2	0	0	51	34	10	0	5	2	0	0	51	16	4	4	5	1	1	1	32	134
1 Hr	118	29	12	9	5	3	2	178	124	34	10	12	6	0	1	187	60	16	16	17	4	1	1	115	480
12:00	37	13	3	2	1	1	0	57	24	8	1	2	0	0	0	35	20	2	4	6	0	0	0	32	124
12:15	33	6	1	1	0	1	0	42	33	8	3	2	2	1	1	50	32	7	2	4	1	1	0	47	139
12:30	34	10	6	2	2	1	0	55	38	9	2	1	1	0	0	51	25	8	4	4	1	1	1	44	150
12:45	34	15	6	2	2	0	0	59	30	6	2	6	4	0	0	48	20	2	4	2	0	0	0	28	135
1 Hr	138	44	16	7	5	3	0	213	125	31	8	11	7	1	1	184	97	19	14	16	2	2	1	151	548
13:00	36	6	4	0	1	0	0	47	34	9	1	2	2	0	0	48	34	8	2	3	1	0	0	48	143
13:15	50	8	3	0	1	2	0	64	48	10	4	3	0	0	0	65	25	7	3	4	1	0	0	40	169
13:30	46	6	4	0	0	0	0	56	52	8	2	2	1	1	1	67	45	6	3	3	0	0	0	57	180
13:45	39	10	3	2	1	0	0	55	37	8	0	4	1	1	0	51	33	5	5	8	0	0	0	51	157
1 Hr	171	30	14	2	3	2	0	222	171	35	7	11	4	2	1	231	137	26	13	18	2	0	0	196	649
14:00	34	7	0	2	3	0	0	46	33	5	3	4	2	0	1	48	38	10	4	6	0	0	0	58	152
14:15	35	12	3	2	1	1	0	54	34	10	3	5	2	0	0	54	23	6	6	6	0	0	0	41	149
14:30	33	7	2	1	0	0	0	43	44	13	3	2	2	0	0	64	21	6	3	5	0	0	0	35	142
14:45	33	7	4	2	2	1	0	49	38	11	2	5	1	1	2	60	35	14	4	4	1	0	0	58	167
1 Hr	135	33	9	7	6	2	0	192	149	39	11	16	7	1	3	226	117	36	17	21	1	0	0	192	610
15:00	41	11	2	2	2	0	0	58	29	6	0	5	3	0	0	43	33	8	6	5	0	0	0	52	153
15:15	42	10	2	0	1	0	0	55	35	6	1	3	0	0	0	45	38	5	3	2	0	0	0	48	148
15:30	46	1	4	3	0	0	0	54	42	10	2	5	1	0	0	60	27	8	1	7	2	0	0	45	159
15:45	34	11	1	4	2	0	4	56	31	6	4	6	1	0	1	49	28	10	3	8	2	1	0	52	157
1 Hr	163	33	9	9	5	0	4	223	137	28	7	19	5	0	1	197	126	31	13	22	4	1	0	197	617
16:00	39	12	6	3	1	1	1	63	29	6	3	1	2	0	0	41	32	14	1	5	0	0	0	52	156
16:15	48	16	4	4	1	0	0	73	28	5	2	7	1	4	0	47	46	12	2	7	1	1	0	69	189
16:30	51	11	1	4	1	1	0	69	45	8	1	2	1	0	0	57	35	12	4	4	1	0	0	56	182
16:45	47	15	3	4	1	0	1	71	51	6	2	4	2	0	0	65	52	15	1	3	0	0	0	71	207
1 Hr	185	54	14	15	4	2	2	276	153	25	8	14	6	4	0	210	165	53	8	19	2	1	0	248	734
17:00	55	15	7	0	2	3	2	84	53	10	0	3	1	0	3	70	49	14	4	3	0	0	1	71	225
17:15	52	13	3	3	0	0	1	72	48	10	2	3	2	0	1	66	32	6	3	5	0	1	0	47	185
17:30	66	12	2	1	1	1	2	85	58	6	2	6	0	1	0	73	59	13	1	1	0	0	0	74	232
17:45	53	6	4	2	3	1	4	73	40	4	2	2	0	1	0	49	65	7	0	1	0	0	0	73	195
1 Hr	226	46	16	6	6	5	9	314	199	30	6	14	3	2	4	258	205	40	8	10	0	1	1	265	837
18:00	66	10	6	1	3	2	2	90	37	5	3	5	3	1	1	55	61	7	1	3	0	0	1	73	218
18:15	52	5	1	3	2	4	0	67	30	5	0	2	0	1	1	39	57	12	3	2	0	0	0	74	180
18:30	44	7	1	0	0	2	0	54	35	4	0	4	1	0	0	44	47	6	1	1	0	0	0	55	153
18:45	40	9	1	1	2	2	1	56	26	1	0	2	4	0	0	33	33	6	3	3	1	0	0	46	135
1 Hr	202	31	9	5	7	10	3	267	128	15	3	13	8	2	2	171	198	31	8	9	1	0	1	248	686
12 Hrs	1654	423	134	83	56	30	23	2403	1913	408	90	174	75	16	20	2696	1557	388	153	217	28	13	4	2360	7459
Check								2403								2696								2360	7459
Total	1654	423	134	83	56	30	23	2403	1913	408	90	174	75	16	20	2696	1557	388	153	217	28	13	4	2360	7459
Check								2403								2696								2360	7459

Tracsis plc
Traffic and Data Services

Client: Roadplan Consulting
Job No: 3082-IRE Huntstown Quarry
Survey Date: 22/06/2016
Survey Method: Video Observation
Weather AM: Cloudy
Weather PM Cloudy
Site No: Site 2
Road: R135 / Elm Road Junction

Entry: Arm A - R135 (N)

Destination: Arm A - R135 (N)

	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12 Hrs	0	0	0	0	0	0	0	0
Check								0
Total	0	0	0	0	0	0	0	0
Check								0

Destination: Arm B - Elm Road

	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	31	6	5	6	0	2	0	50
07:15	29	10	6	4	2	0	1	52
07:30	25	12	10	7	2	1	1	58
07:45	35	11	6	2	3	0	0	57
1 Hr	120	39	27	19	7	3	2	217
08:00	26	17	4	7	1	0	0	55
08:15	34	13	10	1	0	1	1	60
08:30	18	15	9	3	1	0	0	46
08:45	25	12	6	5	1	0	0	49
1 Hr	103	57	29	16	3	1	1	210
09:00	24	19	8	1	1	0	0	53
09:15	35	15	6	5	1	0	1	63
09:30	29	20	8	2	1	0	0	60
09:45	21	15	10	6	0	0	0	52
1 Hr	109	69	32	14	3	0	1	228
10:00	19	16	4	3	1	0	0	43
10:15	27	19	2	8	1	0	0	57
10:30	22	22	3	3	1	0	0	51
10:45	20	18	6	6	1	0	0	51
1 Hr	88	75	15	20	4	0	0	202
11:00	26	12	5	4	0	0	0	47
11:15	20	12	4	2	1	0	0	39
11:30	31	20	9	4	1	1	0	66
11:45	24	18	5	6	0	0	0	53
1 Hr	101	62	23	16	2	1	0	205
12:00	24	16	7	8	1	0	0	56
12:15	19	14	7	4	1	0	1	46
12:30	30	11	7	3	0	0	0	51
12:45	36	19	3	5	1	0	0	64
1 Hr	109	60	24	20	3	0	1	217
13:00	28	10	3	2	1	0	0	44
13:15	31	12	1	6	1	1	0	52
13:30	29	18	4	4	1	1	0	57
13:45	31	16	6	5	0	0	1	59
1 Hr	119	56	14	17	3	2	1	212
14:00	30	14	7	4	1	0	0	56
14:15	33	13	3	2	2	1	0	54
14:30	30	18	6	5	1	0	0	60
14:45	26	17	8	4	0	0	0	55
1 Hr	119	62	24	15	4	1	0	225
15:00	29	9	3	3	2	1	0	47
15:15	28	8	7	3	0	0	0	46
15:30	40	13	1	6	1	0	0	61
15:45	39	15	5	6	1	0	0	66
1 Hr	136	45	16	18	4	1	0	220
16:00	43	19	4	3	2	0	0	71
16:15	39	10	5	4	0	0	0	58
16:30	47	18	1	1	1	3	0	71
16:45	48	12	3	3	0	0	0	66
1 Hr	177	59	13	11	3	3	0	266
17:00	58	13	1	3	1	0	0	76
17:15	63	12	1	3	1	1	0	81
17:30	70	9	4	3	1	2	1	90
17:45	78	10	2	4	0	0	0	94
1 Hr	269	44	8	13	3	3	1	341
18:00	64	6	1	1	1	1	0	74
18:15	34	7	1	0	1	0	0	43
18:30	39	7	0	1	0	1	0	48
18:45	27	4	0	0	2	0	0	33
1 Hr	164	24	2	2	4	2	0	198
12 Hrs	1614	652	227	181	43	17	7	2741
Check								2741
Total	1614	652	227	181	43	17	7	2741
Check								2741

Destination: Arm C - R135 (S)

	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	5	2	0	1	0	0	2	10
07:15	2	1	0	2	1	0	0	6
07:30	16	2	0	3	0	0	2	23
07:45	11	7	0	1	0	0	0	19
1 Hr	34	12	0	7	1	0	4	58
08:00	7	3	0	0	0	0	3	13
08:15	3	1	0	4	0	0	0	8
08:30	2	0	0	2	0	0	1	5
08:45	2	2	0	4	0	0	0	8
1 Hr	14	6	0	10	0	0	4	34
09:00	1	2	1	3	0	0	0	7
09:15	4	2	0	3	0	0	1	10
09:30	6	1	0	7	0	0	0	14
09:45	6	3	0	2	0	0	0	11
1 Hr	17	8	1	15	0	0	1	42
10:00	2	4	1	2	0	0	1	10
10:15	3	4	0	2	0	0	0	9
10:30	3	0	0	1	0	0	0	4
10:45	5	1	0	7	0	0	0	13
1 Hr	13	9	1	12	0	0	1	36
11:00	5	2	0	1	0	0	1	9
11:15	3	2	0	3	0	0	0	8
11:30	2	3	0	0	0	0	0	5
11:45	4	0	0	4	0	0	0	8
1 Hr	14	7	0	8	0	0	1	30
12:00	7	0	0	3	0	0	0	10
12:15	9	2	0	0	0	0	0	11
12:30	4	2	0	1	0	0	0	7
12:45	9	2	1	0	0	0	0	12
1 Hr	29	6	1	4	0	0	0	40
13:00	9	2	1	6	0	0	0	18
13:15	6	2	0	5	0	0	0	13
13:30	2	2	0	5	0	0	0	9
13:45	7	1	0	1	0	0	0	9
1 Hr	24	7	1	17	0	0	0	49
14:00	5	1	0	4	0	0	0	10
14:15	7	1	1	1	0	0	0	10
14:30	2	1	0	0	0	0	0	3
14:45	6	3	0	6	0	0	0	15
1 Hr	20	6	1	11	0	0	0	38
15:00	1	0	0	4	0	0	0	5
15:15	7	0	0	5	0	0	0	12
15:30	2	3	0	1	0	0	0	6
15:45	2	0	1	2	0	0	0	5
1 Hr	12	3	1	12	0	0	0	28
16:00	0	2	1	4	0	0	0	7
16:15	2	0	1	2	0	0	0	5
16:30	0	0	0	2	0	0	0	2
16:45	4	0	0	3	0	0	0	7
1 Hr	6	2	2	11	0	0	0	21
17:00	2	1	0	1	0	0	1	5
17:15	2	0	0	2	0	0	1	5
17:30	1	2	0	1	0	0	0	4
17:45	1	0	0	2	0	0	0	3
1 Hr	6	3	0	6	0	0	2	17
18:00	2	0	0	5	1	0	1	9
18:15	1	0	2	3	0	0	1	7
18:30	2	0	0	0	0	0	0	2
18:45	0	1	0	0	0	0	0	1
1 Hr	5	1	2	8	1	0	2	19
12 Hrs	194	70	10	121	2	0	15	412
Check								412
Total	194	70	10	121	2	0	15	412
Check								412

Arm Totals

	Arm Totals
07:00	60
07:15	58
07:30	81
07:45	76
1 Hr	275
08:00	68
08:15	68
08:30	51
08:45	57
1 Hr	244
09:00	60
09:15	73
09:30	74
09:45	63
1 Hr	270
10:00	53
10:15	66
10:30	55
10:45	64
1 Hr	238
11:00	56
11:15	47
11:30	71
11:45	61
1 Hr	235
12:00	66
12:15	57
12:30	58
12:45	76
1 Hr	257
13:00	62
13:15	65
13:30	66
13:45	68
1 Hr	261
14:00	66
14:15	64
14:30	63
14:45	70
1 Hr	263
15:00	52
15:15	58
15:30	67
15:45	71
1 Hr	248
16:00	78
16:15	63
16:30	73
16:45	73
1 Hr	287
17:00	81
17:15	86
17:30	94
17:45	97
1 Hr	358
18:00	83
18:15	50
18:30	50
18:45	34
1 Hr	217
12 Hrs	3153
Check	3153
Total	3153
Check	3153

Entry: Arm B - Elm Road

Destination: Arm A - R135 (N)

	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	0	1	0	0	0	0	0	1
07:15	2	0	3	0	0	0	0	5
07:30	1	2	0	0	0	0	0	3
07:45	4	2	0	0	0	0	0	6
1 Hr	7	5	3	0	0	0	0	15
08:00	2	5	0	0	0	0	0	7
08:15	3	1	0	1	0	0	0	5
08:30	2	1	1	1	0	0	0	5
08:45	5	2	0	0	0	0	0	7
1 Hr	12	9	1	2	0	0	0	24
09:00	2	2	1	0	0	0	0	5
09:15	1	3	1	1	0	0	0	6
09:30	1	0	1	0	0	0	0	2
09:45	0	1	0	0	0	0	0	1
1 Hr	4	6	3	1	0	0	0	14
10:00	0	2	0	0	0	0	0	2
10:15	0	0	1	0	0	0	0	1
10:30	1	1	0	0	0	0	0	2
10:45	0	2	0	0	0	0	0	2
1 Hr	1	5	1	0	0	0	0	7
11:00	0	0	0	0	0	0	0	0
11:15	0	1	0	0	0	0	1	2
11:30	0	2	0	0	0	0	0	2
11:45	2	0	0	0	0	0	0	2
1 Hr	2	3	0	0	0	0	1	6
12:00	1	1	0	0	0	0	0	2
12:15	2	1	0	0	0	0	0	3
12:30	3	2	0	0	0	0	0	5
12:45	3	1	0	0	0	0	0	4
1 Hr	9	5	0	0	0	0	0	14
13:00	3	0	1	0	0	0	0	4
13:15	2	2	0	0	1	0	0	5
13:30	6	0	1	0	0	0	0	7
13:45	0	0	0	0	0	0	0	0
1 Hr	11	2	2	0	1	0	0	16
14:00	3	1	0	0	0	0	0	4
14:15	6	0	0	0	0	0	0	6
14:30	2	1	0	0	0	0	0	3
14:45	1	0	0	1	0	0	0	2
1 Hr	12	2	0	1	0	0	0	15
15:00	0	0	0	1	0	0	0	1
15:15	1	0	0	1	0	0	0	2
15:30	3	0	0	0	0	0	0	3
15:45	0	1	0	0	0	0	0	1
1 Hr	4	1	0	2	0	0	0	7
16:00	3	3	1	0	0	0	1	8
16:15	1	1	0	0	0	0	0	2
16:30	3	1	1	0	0	0	0	5
16:45	3	1	0	0	0	0	0	4
1 Hr	10	6	2	0	0	0	1	19
17:00	5	2	1	0	0	0	0	8
17:15	3	0	0	0	0	0	1	4
17:30	13	0	0	0	0	0	0	13
17:45	4	0	0	0	0	0	0	4
1 Hr	25	2	1	0	0	0	1	29
18:00	2	1	0	0	0	0	2	5
18:15	1	2	0	1	0	0	0	4
18:30	0	1	0	0	0	0	0	1
18:45	1	1	0	0	0	0	0	2
1 Hr	4	5	0	1	0	0	2	12
12 Hrs	101	51	13	7	1	0	5	178
Check								178
Total	101	51	13	7	1	0	5	178
Check								178

Destination: Arm B - Elm Road

	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	1	0	0	0	0	0	0	1
1 Hr	1	0	0	0	0	0	0	1
12:00	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
13:00	1	0	0	0	0	0	0	1
13:15	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0
1 Hr	1	0	0	0	0	0	0	1
14:00	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12 Hrs	2	0	0	0	0	0	0	2
Check								2
Total	2	0	0	0	0	0	0	2
Check								2

Destination: Arm C - R135 (S)

	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	1	1	0	0	0	0	0	2
07:45	0	0	0	0	0	0	0	0
1 Hr	1	1	0	0	0	0	0	2
08:00	0	0	0	0	0	0	0	0
08:15	0	0	1	0	0	0	0	1
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
1 Hr	0	0	1	0	0	0	0	1
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
10:00	1	0	0	0	0	0	0	1
10:15	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0
1 Hr	1	0	0	0	0	0	0	1
11:00	1	0	0	0	0	0	0	1
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0
1 Hr	1	0	0	0	0	0	0	1
12:00	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0
12:45	0	1	0	0	0	0	0	1
1 Hr	0	1	0	0	0	0	0	1
13:00	2	0	0	0	0	0	0	2
13:15	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0
1 Hr	2	0	0	0	0	0	0	2
14:00	0	1	0	0	0	0	0	1
14:15	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0
1 Hr	0	1	0	0	0	0	0	1
15:00	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	0	1
17:30	1	0	0	0	0	0	0	1
17:45	1	0	0	0	0	0	0	1
1 Hr	3	0	0	0	0	0	0	3
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12 Hrs	8	3	1	0	0	0	0	12
Check								12
Total	8	3	1	0	0	0	0	12
Check								12

Arm Totals

	Arm Totals
07:00	1
07:15	5
07:30	5
07:45	6
1 Hr	17
08:00	7
08:15	6
08:30	5
08:45	7
1 Hr	25
09:00	5
09:15	6
09:30	2
09:45	1
1 Hr	14
10:00	3
10:15	1
10:30	2
10:45	2
1 Hr	8
11:00	1
11:15	2
11:30	2
11:45	3
1 Hr	8
12:00	2
12:15	3
12:30	5
12:45	5
1 Hr	15
13:00	7
13:15	5
13:30	7
13:45	0
1 Hr	19
14:00	5
14:15	6
14:30	3
14:45	2
1 Hr	16
15:00	1
15:15	2
15:30	3
15:45	1
1 Hr	7
16:00	8
16:15	2
16:30	5
16:45	4
1 Hr	19
17:00	8
17:15	5
17:30	14
17:45	5
1 Hr	32
18:00	5
18:15	4
18:30	1
18:45	2
1 Hr	12
12 Hrs	192
Check	192
Total	192
Check	192

Entry: Arm C - R135 (S)

	Destination: Arm A - R135 (N)								Destination: Arm B - Elm Road								Destination: Arm C - R135 (S)								Arm
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	29	13	6	2	0	0	0	50	8	11	0	3	0	0	0	22	0	0	0	0	0	0	0	0	72
07:15	28	9	5	4	1	0	0	47	8	12	1	7	0	0	0	28	0	0	0	0	0	0	0	0	75
07:30	31	13	7	10	3	0	0	64	9	8	0	9	0	0	0	26	0	0	0	0	0	0	0	0	90
07:45	52	26	2	10	1	0	0	91	9	6	1	8	0	0	0	24	0	0	0	0	0	0	0	0	115
1 Hr	140	61	20	26	5	0	0	252	34	37	2	27	0	0	0	100	0	0	0	0	0	0	0	0	352
08:00	46	14	5	6	0	0	1	72	10	5	0	21	0	0	0	36	0	0	0	0	0	0	0	0	108
08:15	62	20	2	5	1	2	0	92	21	3	1	11	0	0	0	36	0	0	0	0	0	0	0	0	128
08:30	50	22	3	2	0	1	0	78	27	4	0	7	0	0	0	38	0	0	0	0	0	0	0	0	116
08:45	57	15	9	12	2	1	0	96	20	1	1	15	0	0	0	37	0	0	0	0	0	0	0	0	133
1 Hr	215	71	19	25	3	4	1	338	78	13	2	54	0	0	0	147	0	0	0	0	0	0	0	0	485
09:00	47	15	8	12	1	0	0	83	20	1	1	5	0	0	0	27	0	0	0	0	0	0	0	0	110
09:15	44	14	3	8	2	1	0	72	11	4	1	11	0	0	0	27	0	0	0	0	0	0	0	0	99
09:30	33	18	5	9	3	0	0	68	8	5	0	15	0	0	0	28	0	0	0	0	0	0	0	0	96
09:45	23	23	6	5	0	0	0	57	7	4	1	14	0	0	0	26	0	0	0	0	0	0	0	0	83
1 Hr	147	70	22	34	6	1	0	280	46	14	3	45	0	0	0	108	0	0	0	0	0	0	0	0	388
10:00	30	17	9	7	1	1	0	65	8	2	3	18	0	0	0	31	1	0	0	0	0	0	0	1	97
10:15	25	12	6	6	2	0	0	51	8	2	1	10	0	0	0	21	0	0	0	0	0	0	0	0	72
10:30	26	22	3	4	2	0	0	57	8	5	0	8	0	0	0	21	0	0	0	0	0	0	0	0	78
10:45	22	17	5	7	1	0	0	52	11	3	0	12	0	0	0	26	0	0	0	0	0	0	0	0	78
1 Hr	103	68	23	24	6	1	0	225	35	12	4	48	0	0	0	99	1	0	0	0	0	0	0	1	325
11:00	27	14	8	4	1	1	0	55	9	3	2	14	0	0	0	28	0	0	0	0	0	0	0	0	83
11:15	17	22	7	10	0	0	0	56	9	4	1	14	0	0	0	28	0	0	0	0	0	0	0	0	84
11:30	17	21	6	9	0	0	0	53	6	1	2	12	0	0	0	21	0	0	0	0	0	0	0	0	74
11:45	27	17	7	5	2	0	0	58	8	2	1	17	0	0	0	28	0	0	0	0	0	0	0	0	86
1 Hr	88	74	28	28	3	1	0	222	32	10	6	57	0	0	0	105	0	0	0	0	0	0	0	0	327
12:00	26	15	9	5	1	0	0	56	4	2	0	10	0	0	0	16	0	0	0	0	0	0	0	0	72
12:15	40	23	3	10	2	0	0	78	15	4	1	10	0	0	0	30	0	0	0	0	0	0	0	0	108
12:30	42	17	8	5	2	0	0	74	4	4	0	10	0	0	0	18	0	0	0	0	0	0	0	0	92
12:45	34	10	10	6	0	0	0	60	10	2	2	9	0	0	0	23	0	0	0	0	0	0	0	0	83
1 Hr	142	65	30	26	5	0	0	268	33	12	3	39	0	0	0	87	0	0	0	0	0	0	0	0	355
13:00	34	19	10	7	1	0	0	71	15	5	0	11	0	0	0	31	0	0	0	0	0	0	0	0	102
13:15	39	16	4	4	1	0	0	64	15	4	0	11	1	0	0	31	0	0	0	0	0	0	0	0	95
13:30	37	11	8	6	0	0	0	62	8	5	1	12	0	0	0	26	0	0	0	0	0	0	0	0	88
13:45	44	21	7	10	2	0	0	84	16	2	3	8	0	0	0	29	0	0	0	0	0	0	0	0	113
1 Hr	154	67	29	27	4	0	0	281	54	16	4	42	1	0	0	117	0	0	0	0	0	0	0	0	398
14:00	25	15	5	9	1	1	0	56	16	3	0	14	0	0	0	33	0	0	0	0	0	0	0	0	89
14:15	27	20	8	4	1	0	0	60	8	4	1	10	0	0	0	23	0	0	0	0	0	0	0	0	83
14:30	27	9	4	10	1	0	0	51	8	2	0	8	0	0	0	18	0	0	0	0	0	0	0	0	69
14:45	38	22	11	8	1	1	0	81	16	1	2	10	0	0	0	29	0	0	0	0	0	0	0	0	110
1 Hr	117	66	28	31	4	2	0	248	48	10	3	42	0	0	0	103	0	0	0	0	0	0	0	0	351
15:00	27	11	9	7	1	0	0	55	16	4	2	12	0	1	0	35	0	0	0	0	0	0	0	0	90
15:15	38	18	8	12	2	0	0	78	22	3	1	9	0	0	0	35	0	0	0	0	0	0	0	0	113
15:30	37	26	8	9	2	0	0	82	19	3	1	10	0	0	0	33	0	0	0	0	0	0	0	0	115
15:45	29	19	9	6	1	1	2	67	14	11	1	12	0	0	0	38	0	0	0	0	0	0	0	0	105
1 Hr	131	74	34	34	6	1	2	282	71	21	5	43	0	1	0	141	0	0	0	0	0	0	0	0	423
16:00	21	24	7	12	1	0	0	65	16	13	2	8	0	0	0	39	0	0	0	0	0	0	0	0	104
16:15	36	12	5	8	1	0	0	62	11	12	5	4	0	0	0	32	0	0	0	0	0	0	0	0	94
16:30	32	13	2	14	0	2	1	64	16	6	0	4	0	0	0	26	0	0	0	0	0	0	0	0	90
16:45	49	14	7	10	2	0	0	82	21	8	4	4	0	1	0	38	0	0	0	0	0	0	0	0	120
1 Hr	138	63	21	44	4	2	1	273	64	39	11	20	0	1	0	135	0	0	0	0	0	0	0	0	408
17:00	56	17	8	7	1	1	1	91	35	7	4	1	0	2	0	49	0	0	0	0	0	0	0	0	140
17:15	47	12	2	7	2	2	0	72	23	6	2	1	0	0	0	32	0	0	0	0	0	0	0	0	104
17:30	49	11	7	4	1	0	3	75	13	8	1	3	0	0	0	25	0	0	0	0	0	0	0	0	100
17:45	42	6	7	4	2	1	1	63	11	9	1	2	0	0	0	23	0	0	0	0	0	0	0	0	86
1 Hr	194	46	24	22	6	4	5	301	82	30	8	7	0	2	0	129	0	0	0	0	0	0	0	0	430
18:00	33	4	4	2	2	1	2	48	15	7	1	0	0	0	0	23	0	0	0	0	0	0	0	0	71
18:15	34	6	3	5	2	1	0	51	12	5	0	4	0	0	0	21	0	0	0	0	0	0	0	0	72
18:30	28	6	3	3	1	1	1	43	7	2	1	0	0	0	0	10	0	0	0	0	0	0	0	0	53
18:45	16	5	3	0	1	1	1	27	11	5	0	1	0	0	0	17	0	0	0	0	0	0	0	0	44
1 Hr	111	21	13	10	6	4	4	169	45	19	2	5	0	0	0	71	0	0	0	0	0	0	0	0	240
12 Hrs	1680	746	291	331	58	20	13	3139	622	233	53	429	1	4	0	1342	1	0	0	0	0	0	0	1	4482
Check								3139								1342								1	4482
Total	1680	746	291	331	58	20	13	3139	622	233	53	429	1	4	0	1342	1	0	0	0	0	0	0	1	4482
Check								3139								1342								1	4482

ORIGIN SUMMARY

	Origin: Arm A - R135 (N)								Origin: Arm B - Elm Road								Origin: Arm C - R135 (S)								Origin
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	36	8	5	7	0	2	2	60	0	1	0	0	0	0	0	1	37	24	6	5	0	0	0	72	133
07:15	31	11	6	6	3	0	1	58	2	0	3	0	0	0	0	5	36	21	6	11	1	0	0	75	138
07:30	41	14	10	10	2	1	3	81	2	3	0	0	0	0	0	5	40	21	7	19	3	0	0	90	176
07:45	46	18	6	3	3	0	0	76	4	2	0	0	0	0	0	6	61	32	3	18	1	0	0	115	197
1 Hr	154	51	27	26	8	3	6	275	8	6	3	0	0	0	0	17	174	98	22	53	5	0	0	352	644
08:00	33	20	4	7	1	0	3	68	2	5	0	0	0	0	0	7	56	19	5	27	0	0	1	108	183
08:15	37	14	10	5	0	1	1	68	3	1	1	1	0	0	0	6	83	23	3	16	1	2	0	128	202
08:30	20	15	9	5	1	0	1	51	2	1	1	1	0	0	0	5	77	26	3	9	0	1	0	116	172
08:45	27	14	6	9	1	0	0	57	5	2	0	0	0	0	0	7	77	16	10	27	2	1	0	133	197
1 Hr	117	63	29	26	3	1	5	244	12	9	2	2	0	0	0	25	293	84	21	79	3	4	1	485	754
09:00	25	21	9	4	1	0	0	60	2	2	1	0	0	0	0	5	67	16	9	17	1	0	0	110	175
09:15	39	17	6	8	1	0	2	73	1	3	1	1	0	0	0	6	55	18	4	19	2	1	0	99	178
09:30	35	21	8	9	1	0	0	74	1	0	1	0	0	0	0	2	41	23	5	24	3	0	0	96	172
09:45	27	18	10	8	0	0	0	63	0	1	0	0	0	0	0	1	30	27	7	19	0	0	0	83	147
1 Hr	126	77	33	29	3	0	2	270	4	6	3	1	0	0	0	14	193	84	25	79	6	1	0	388	672
10:00	21	20	5	5	1	0	1	53	1	2	0	0	0	0	0	3	39	19	12	25	1	1	0	97	153
10:15	30	23	2	10	1	0	0	66	0	0	1	0	0	0	0	1	33	14	7	16	2	0	0	72	139
10:30	25	22	3	4	1	0	0	55	1	1	0	0	0	0	0	2	34	27	3	12	2	0	0	78	135
10:45	25	19	6	13	1	0	0	64	0	2	0	0	0	0	0	2	33	20	5	19	1	0	0	78	144
1 Hr	101	84	16	32	4	0	1	238	2	5	1	0	0	0	0	8	139	80	27	72	6	1	0	325	571
11:00	31	14	5	5	0	0	1	56	1	0	0	0	0	0	0	1	36	17	10	18	1	1	0	83	140
11:15	23	14	4	5	1	0	0	47	0	1	0	0	0	0	1	2	26	26	8	24	0	0	0	84	133
11:30	33	23	9	4	1	1	0	71	0	2	0	0	0	0	0	2	23	22	8	21	0	0	0	74	147
11:45	28	18	5	10	0	0	0	61	3	0	0	0	0	0	0	3	35	19	8	22	2	0	0	86	150
1 Hr	115	69	23	24	2	1	1	235	4	3	0	0	0	0	1	8	120	84	34	85	3	1	0	327	570
12:00	31	16	7	11	1	0	0	66	1	1	0	0	0	0	0	2	30	17	9	15	1	0	0	72	140
12:15	28	16	7	4	1	0	1	57	2	1	0	0	0	0	0	3	55	27	4	20	2	0	0	108	168
12:30	34	13	7	4	0	0	0	58	3	2	0	0	0	0	0	5	46	21	8	15	2	0	0	92	155
12:45	45	21	4	5	1	0	0	76	3	2	0	0	0	0	0	5	44	12	12	15	0	0	0	83	164
1 Hr	138	66	25	24	3	0	1	257	9	6	0	0	0	0	0	15	175	77	33	65	5	0	0	355	627
13:00	37	12	4	8	1	0	0	62	6	0	1	0	0	0	0	7	49	24	10	18	1	0	0	102	171
13:15	37	14	1	11	1	1	0	65	2	2	0	0	1	0	0	5	54	20	4	15	2	0	0	95	165
13:30	31	20	4	9	1	1	0	66	6	0	1	0	0	0	0	7	45	16	9	18	0	0	0	88	161
13:45	38	17	6	6	0	0	1	68	0	0	0	0	0	0	0	0	60	23	10	18	2	0	0	113	181
1 Hr	143	63	15	34	3	2	1	261	14	2	2	0	1	0	0	19	208	83	33	69	5	0	0	398	678
14:00	35	15	7	8	1	0	0	66	3	2	0	0	0	0	0	5	41	18	5	23	1	1	0	89	160
14:15	40	14	4	3	2	1	0	64	6	0	0	0	0	0	0	6	35	24	9	14	1	0	0	83	153
14:30	32	19	6	5	1	0	0	63	2	1	0	0	0	0	0	3	35	11	4	18	1	0	0	69	135
14:45	32	20	8	10	0	0	0	70	1	0	0	1	0	0	0	2	54	23	13	18	1	1	0	110	182
1 Hr	139	68	25	26	4	1	0	263	12	3	0	1	0	0	0	16	165	76	31	73	4	2	0	351	630
15:00	30	9	3	7	2	1	0	52	0	0	0	1	0	0	0	1	43	15	11	19	1	1	0	90	143
15:15	35	8	7	8	0	0	0	58	1	0	0	1	0	0	0	2	60	21	9	21	2	0	0	113	173
15:30	42	16	1	7	1	0	0	67	3	0	0	0	0	0	0	3	56	29	9	19	2	0	0	115	185
15:45	41	15	6	8	1	0	0	71	0	1	0	0	0	0	0	1	43	30	10	18	1	1	2	105	177
1 Hr	148	48	17	30	4	1	0	248	4	1	0	2	0	0	0	7	202	95	39	77	6	2	2	423	678
16:00	43	21	5	7	2	0	0	78	3	3	1	0	0	0	1	8	37	37	9	20	1	0	0	104	190
16:15	41	10	6	6	0	0	0	63	1	1	0	0	0	0	0	2	47	24	10	12	1	0	0	94	159
16:30	47	18	1	3	1	3	0	73	3	1	1	0	0	0	0	5	48	19	2	18	0	2	1	90	168
16:45	52	12	3	6	0	0	0	73	3	1	0	0	0	0	0	4	70	22	11	14	2	1	0	120	197
1 Hr	183	61	15	22	3	3	0	287	10	6	2	0	0	0	1	19	202	102	32	64	4	3	1	408	714
17:00	60	14	1	4	1	0	1	81	5	2	1	0	0	0	0	8	91	24	12	8	1	3	1	140	229
17:15	65	12	1	5	1	1	1	86	4	0	0	0	0	0	1	5	70	18	4	8	2	2	0	104	195
17:30	71	11	4	4	1	2	1	94	14	0	0	0	0	0	0	14	62	19	8	7	1	0	3	100	208
17:45	79	10	2	6	0	0	0	97	5	0	0	0	0	0	0	5	53	15	8	6	2	1	1	86	188
1 Hr	275	47	8	19	3	3	3	358	28	2	1	0	0	0	1	32	276	76	32	29	6	6	5	430	820
18:00	66	6	1	6	2	1	1	83	2	1	0	0	0	0	2	5	48	11	5	2	2	1	2	71	159
18:15	35	7	3	3	1	0	1	50	1	2	0	1	0	0	0	4	46	11	3	9	2	1	0	72	126
18:30	41	7	0	1	0	1	0	50	0	1	0	0	0	0	0	1	35	8	4	3	1	1	1	53	104
18:45	27	5	0	0	2	0	0	34	1	1	0	0	0	0	0	2	27	10	3	1	1	1	1	44	80
1 Hr	169	25	4	10	5	2	2	217	4	5	0	1	0	0	2	12	156	40	15	15	6	4	4	240	469
12 Hrs	1808	722	237	302	45	17	22	3153	111	54	14	7	1	0	5	192	2303	979	344	760	59	24	13	4482	7827
Check								3153								192								4482	7827
Total	1808	722	237	302	45	17	22	3153	111	54	14	7	1	0	5	192	2303	979	344	760	59	24	13	4482	7827
Check								3153								192								4482	7827

DESTINATION SUMMARY

	Destination: Arm A - R135 (N)								Destination: Arm B - Elm Road								Destination: Arm C - R135 (S)								Dest
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	29	14	6	2	0	0	0	51	39	17	5	9	0	2	0	72	5	2	0	1	0	0	2	10	133
07:15	30	9	8	4	1	0	0	52	37	22	7	11	2	0	1	80	2	1	0	2	1	0	0	6	138
07:30	32	15	7	10	3	0	0	67	34	20	10	16	2	1	1	84	17	3	0	3	0	0	2	25	176
07:45	56	28	2	10	1	0	0	97	44	17	7	10	3	0	0	81	11	7	0	1	0	0	0	19	197
1 Hr	147	66	23	26	5	0	0	267	154	76	29	46	7	3	2	317	35	13	0	7	1	0	4	60	644
08:00	48	19	5	6	0	0	1	79	36	22	4	28	1	0	0	91	7	3	0	0	0	0	3	13	183
08:15	65	21	2	6	1	2	0	97	55	16	11	12	0	1	1	96	3	1	1	4	0	0	0	9	202
08:30	52	23	4	3	0	1	0	83	45	19	9	10	1	0	0	84	2	0	0	2	0	0	1	5	172
08:45	62	17	9	12	2	1	0	103	45	13	7	20	1	0	0	86	2	2	0	4	0	0	0	8	197
1 Hr	227	80	20	27	3	4	1	362	181	70	31	70	3	1	1	357	14	6	1	10	0	0	4	35	754
09:00	49	17	9	12	1	0	0	88	44	20	9	6	1	0	0	80	1	2	1	3	0	0	0	7	175
09:15	45	17	4	9	2	1	0	78	46	19	7	16	1	0	1	90	4	2	0	3	0	0	1	10	178
09:30	34	18	6	9	3	0	0	70	37	25	8	17	1	0	0	88	6	1	0	7	0	0	0	14	172
09:45	23	24	6	5	0	0	0	58	28	19	11	20	0	0	0	78	6	3	0	2	0	0	0	11	147
1 Hr	151	76	25	35	6	1	0	294	155	83	35	59	3	0	1	336	17	8	1	15	0	0	1	42	672
10:00	30	19	9	7	1	1	0	67	27	18	7	21	1	0	0	74	4	4	1	2	0	0	1	12	153
10:15	25	12	7	6	2	0	0	52	35	21	3	18	1	0	0	78	3	4	0	2	0	0	0	9	139
10:30	27	23	3	4	2	0	0	59	30	27	3	11	1	0	0	72	3	0	0	1	0	0	0	4	135
10:45	22	19	5	7	1	0	0	54	31	21	6	18	1	0	0	77	5	1	0	7	0	0	0	13	144
1 Hr	104	73	24	24	6	1	0	232	123	87	19	68	4	0	0	301	15	9	1	12	0	0	1	38	571
11:00	27	14	8	4	1	1	0	55	35	15	7	18	0	0	0	75	6	2	0	1	0	0	1	10	140
11:15	17	23	7	10	0	0	1	58	29	16	5	16	1	0	0	67	3	2	0	3	0	0	0	8	133
11:30	17	23	6	9	0	0	0	55	37	21	11	16	1	1	0	87	2	3	0	0	0	0	0	5	147
11:45	29	17	7	5	2	0	0	60	33	20	6	23	0	0	0	82	4	0	0	4	0	0	0	8	150
1 Hr	90	77	28	28	3	1	1	228	134	72	29	73	2	1	0	311	15	7	0	8	0	0	1	31	570
12:00	27	16	9	5	1	0	0	58	28	18	7	18	1	0	0	72	7	0	0	3	0	0	0	10	140
12:15	42	24	3	10	2	0	0	81	34	18	8	14	1	0	1	76	9	2	0	0	0	0	0	11	168
12:30	45	19	8	5	2	0	0	79	34	15	7	13	0	0	0	69	4	2	0	1	0	0	0	7	155
12:45	37	11	10	6	0	0	0	64	46	21	5	14	1	0	0	87	9	3	1	0	0	0	0	13	164
1 Hr	151	70	30	26	5	0	0	282	142	72	27	59	3	0	1	304	29	7	1	4	0	0	0	41	627
13:00	37	19	11	7	1	0	0	75	44	15	3	13	1	0	0	76	11	2	1	6	0	0	0	20	171
13:15	41	18	4	4	2	0	0	69	46	16	1	17	2	1	0	83	6	2	0	5	0	0	0	13	165
13:30	43	11	9	6	0	0	0	69	37	23	5	16	1	1	0	83	2	2	0	5	0	0	0	9	161
13:45	44	21	7	10	2	0	0	84	47	18	9	13	0	0	1	88	7	1	0	1	0	0	0	9	181
1 Hr	165	69	31	27	5	0	0	297	174	72	18	59	4	2	1	330	26	7	1	17	0	0	0	51	678
14:00	28	16	5	9	1	1	0	60	46	17	7	18	1	0	0	89	5	2	0	4	0	0	0	11	160
14:15	33	20	8	4	1	0	0	66	41	17	4	12	2	1	0	77	7	1	1	1	0	0	0	10	153
14:30	29	10	4	10	1	0	0	54	38	20	6	13	1	0	0	78	2	1	0	0	0	0	0	3	135
14:45	39	22	11	9	1	1	0	83	42	18	10	14	0	0	0	84	6	3	0	6	0	0	0	15	182
1 Hr	129	68	28	32	4	2	0	263	167	72	27	57	4	1	0	328	20	7	1	11	0	0	0	39	630
15:00	27	11	9	8	1	0	0	56	45	13	5	15	2	2	0	82	1	0	0	4	0	0	0	5	143
15:15	39	18	8	13	2	0	0	80	50	11	8	12	0	0	0	81	7	0	0	5	0	0	0	12	173
15:30	40	26	8	9	2	0	0	85	59	16	2	16	1	0	0	94	2	3	0	1	0	0	0	6	185
15:45	29	20	9	6	1	1	2	68	53	26	6	18	1	0	0	104	2	0	1	2	0	0	0	5	177
1 Hr	135	75	34	36	6	1	2	289	207	66	21	61	4	2	0	361	12	3	1	12	0	0	0	28	678
16:00	24	27	8	12	1	0	1	73	59	32	6	11	2	0	0	110	0	2	1	4	0	0	0	7	190
16:15	37	13	5	8	1	0	0	64	50	22	10	8	0	0	0	90	2	0	1	2	0	0	0	5	159
16:30	35	14	3	14	0	2	1	69	63	24	1	5	1	3	0	97	0	0	0	2	0	0	0	2	168
16:45	52	15	7	10	2	0	0	86	69	20	7	7	0	1	0	104	4	0	0	3	0	0	0	7	197
1 Hr	148	69	23	44	4	2	2	292	241	98	24	31	3	4	0	401	6	2	2	11	0	0	0	21	714
17:00	61	19	9	7	1	1	1	99	93	20	5	4	1	2	0	125	2	1	0	1	0	0	1	5	229
17:15	50	12	2	7	2	2	1	76	86	18	3	4	1	1	0	113	3	0	0	2	0	0	1	6	195
17:30	62	11	7	4	1	0	3	88	83	17	5	6	1	2	1	115	2	2	0	1	0	0	0	5	208
17:45	46	6	7	4	2	1	1	67	89	19	3	6	0	0	0	117	2	0	0	2	0	0	0	4	188
1 Hr	219	48	25	22	6	4	6	330	351	74	16	20	3	5	1	470	9	3	0	6	0	0	2	20	820
18:00	35	5	4	2	2	1	4	53	79	13	2	1	1	1	0	97	2	0	0	5	1	0	1	9	159
18:15	35	8	3	6	2	1	0	55	46	12	1	4	1	0	0	64	1	0	2	3	0	0	1	7	126
18:30	28	7	3	3	1	1	1	44	46	9	1	1	0	1	0	58	2	0	0	0	0	0	0	2	104
18:45	17	6	3	0	1	1	1	29	38	9	0	1	2	0	0	50	0	1	0	0	0	0	0	1	80
1 Hr	115	26	13	11	6	4	6	181	209	43	4	7	4	2	0	269	5	1	2	8	1	0	2	19	469
12 Hrs	1781	797	304	338	59	20	18	3317	2238	885	280	610	44	21	7	4085	203	73	11	121	2	0	15	425	7827
Check								3317								4085								425	7827
Total	1781	797	304	338	59	20	18	3317	2238	885	280	610	44	21	7	4085	203	73	11	121	2	0	15	425	7827
Check								3317								4085								425	7827

Tracsis plc
Traffic and Data Services

Client:	Roadplan Consulting
Job No:	3082-IRE Huntstown Quarry
Survey Date:	22/06/2016
Survey Method:	Video Observation
Weather AM:	Cloudy
Weather PM	Cloudy
Site No:	Site 3
Road:	R135 / N2 Offslip

Entry: Arm A - R135 (N)

	Destination: Arm A - R135 (N)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	1	0	0	0	0	0	0	1
1 Hr	1	0	0	0	0	0	0	1
10:00	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	1	1
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	1	1
12:00	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0
14:15	1	0	0	0	0	0	0	1
14:30	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0
1 Hr	1	0	0	0	0	0	0	1
15:00	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12 Hrs	2	0	0	0	0	0	1	3
Check								3
Total	2	0	0	0	0	0	1	3
Check								3

	Destination: Arm B - N2 Offslip							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12 Hrs	0	0	0	0	0	0	0	0
Check								0
Total	0	0	0	0	0	0	0	0
Check								0

	Destination: Arm C - R135 (S)								Arm
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	2	1	0	1	0	0	2	6	6
07:15	5	1	0	2	1	0	0	9	9
07:30	15	3	1	2	0	0	2	23	23
07:45	9	7	0	0	0	0	0	16	16
1 Hr	31	12	1	5	1	0	4	54	54
08:00	4	3	0	1	0	0	3	11	11
08:15	2	2	0	4	0	0	0	8	8
08:30	2	0	0	2	0	0	1	5	5
08:45	1	1	1	4	0	1	0	8	8
1 Hr	9	6	1	11	0	1	4	32	32
09:00	0	1	1	3	0	0	0	5	5
09:15	2	2	0	2	0	0	1	7	7
09:30	5	1	0	8	0	0	0	14	14
09:45	2	1	0	2	0	0	0	5	6
1 Hr	9	5	1	15	0	0	1	31	32
10:00	2	3	0	2	0	0	0	7	7
10:15	3	3	0	2	0	0	1	9	9
10:30	3	0	0	0	0	0	0	3	3
10:45	2	0	0	7	0	0	0	9	9
1 Hr	10	6	0	11	0	0	1	28	28
11:00	5	3	0	1	0	0	0	9	10
11:15	2	2	0	3	0	0	0	7	7
11:30	2	1	0	0	0	0	0	3	3
11:45	3	1	0	2	0	0	0	6	6
1 Hr	12	7	0	6	0	0	0	25	26
12:00	4	0	0	5	0	0	0	9	9
12:15	5	2	0	0	0	0	0	7	7
12:30	3	2	0	1	0	0	0	6	6
12:45	5	3	1	0	0	0	0	9	9
1 Hr	17	7	1	6	0	0	0	31	31
13:00	7	1	1	5	0	0	0	14	14
13:15	5	1	0	5	0	0	0	11	11
13:30	3	3	0	6	0	0	0	12	12
13:45	4	1	0	1	0	0	0	6	6
1 Hr	19	6	1	17	0	0	0	43	43
14:00	3	2	0	4	0	0	0	9	9
14:15	3	1	1	1	0	0	0	6	7
14:30	2	0	0	0	0	0	0	2	2
14:45	2	2	0	5	0	1	0	10	10
1 Hr	10	5	1	10	0	1	0	27	28
15:00	2	0	0	5	0	0	0	7	7
15:15	3	1	0	5	0	0	0	9	9
15:30	1	2	0	1	0	0	0	4	4
15:45	0	0	1	2	0	0	0	3	3
1 Hr	6	3	1	13	0	0	0	23	23
16:00	0	2	1	4	0	0	0	7	7
16:15	1	0	1	2	0	0	0	4	4
16:30	1	0	0	2	0	0	0	3	3
16:45	2	0	0	3	0	0	0	5	5
1 Hr	4	2	2	11	0	0	0	19	19
17:00	1	1	0	1	0	0	1	4	4
17:15	3	0	0	2	0	0	1	6	6
17:30	2	2	0	1	0	0	0	5	5
17:45	1	0	0	2	0	0	0	3	3
1 Hr	7	3	0	6	0	0	2	18	18
18:00	2	0	0	5	1	0	1	9	9
18:15	1	0	2	3	0	0	1	7	7
18:30	1	0	0	0	0	0	0	1	1
18:45	0	0	0	0	0	0	0	0	0
1 Hr	4	0	2	8	1	0	2	17	17
12 Hrs	138	62	11	119	2	2	14	348	351
Check								348	351
Total	138	62	11	119	2	2	14	348	351
Check								348	351

Entry: Arm B - N2 Offslip

	Destination: Arm A - R135 (N)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	36	22	5	2	0	0	0	65
07:15	36	22	6	2	1	0	0	67
07:30	44	23	7	10	2	0	0	86
07:45	84	28	2	1	1	0	0	116
1 Hr	200	95	20	15	4	0	0	334
08:00	53	16	6	4	0	0	0	79
08:15	85	25	2	2	1	0	0	115
08:30	72	18	2	3	0	1	0	96
08:45	78	15	10	6	2	1	0	112
1 Hr	288	74	20	15	3	2	0	402
09:00	65	14	8	7	1	0	0	95
09:15	54	16	5	5	2	1	0	83
09:30	37	20	3	6	3	0	0	69
09:45	25	19	6	3	0	0	0	53
1 Hr	181	69	22	21	6	1	0	300
10:00	33	17	10	7	1	1	0	69
10:15	30	12	6	3	3	0	0	54
10:30	24	23	4	1	1	0	0	53
10:45	33	17	4	5	1	0	0	60
1 Hr	120	69	24	16	6	1	0	236
11:00	31	16	8	2	1	1	0	59
11:15	19	22	10	6	0	0	0	57
11:30	21	17	5	6	1	0	0	50
11:45	25	15	6	6	1	0	0	53
1 Hr	96	70	29	20	3	1	0	219
12:00	25	14	9	2	1	0	0	51
12:15	41	26	3	5	2	0	0	77
12:30	32	14	9	5	2	0	0	62
12:45	37	12	10	5	0	0	0	64
1 Hr	135	66	31	17	5	0	0	254
13:00	32	23	7	8	1	0	0	71
13:15	30	15	5	3	2	0	0	55
13:30	31	19	6	4	0	0	0	60
13:45	48	21	9	3	2	0	0	83
1 Hr	141	78	27	18	5	0	0	269
14:00	37	14	3	7	1	1	0	63
14:15	26	18	8	3	1	0	0	56
14:30	31	14	4	4	1	0	0	54
14:45	34	25	10	3	1	1	0	74
1 Hr	128	71	25	17	4	2	0	247
15:00	29	13	9	6	1	1	0	59
15:15	42	19	6	6	1	0	0	74
15:30	41	28	9	5	2	0	0	85
15:45	34	24	9	3	1	1	0	72
1 Hr	146	84	33	20	5	2	0	290
16:00	21	27	7	3	1	0	0	59
16:15	31	20	7	8	1	1	0	68
16:30	32	15	4	5	0	1	0	57
16:45	47	13	8	9	2	0	0	79
1 Hr	131	75	26	25	4	2	0	263
17:00	54	19	10	4	1	1	0	89
17:15	37	17	5	3	2	2	0	66
17:30	42	16	9	6	1	0	0	74
17:45	32	14	7	5	2	1	1	62
1 Hr	165	66	31	18	6	4	1	291
18:00	28	12	5	3	1	1	0	50
18:15	21	9	3	6	2	1	0	42
18:30	23	5	4	3	2	1	0	38
18:45	19	9	2	1	0	1	0	32
1 Hr	91	35	14	13	5	4	0	162
12 Hrs	1822	852	302	215	56	19	1	3267
Check								3267
Total	1822	852	302	215	56	19	1	3267
Check								3267

	Destination: Arm B - N2 Offslip							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12 Hrs	0	0	0	0	0	0	0	0
Check								0
Total	0	0	0	0	0	0	0	0
Check								0

	Destination: Arm C - R135 (S)								Arm
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	7	0	1	4	0	0	0	12	77
07:15	12	3	1	6	0	0	0	22	89
07:30	18	7	0	10	0	0	0	35	121
07:45	27	10	0	10	0	2	0	49	165
1 Hr	64	20	2	30	0	2	0	118	452
08:00	10	3	0	10	0	1	0	24	103
08:15	4	3	0	12	0	1	0	20	135
08:30	7	1	0	13	0	0	0	21	117
08:45	2	1	0	8	0	0	0	11	123
1 Hr	23	8	0	43	0	2	0	76	478
09:00	4	0	0	12	0	0	0	16	111
09:15	6	3	1	15	0	1	0	26	109
09:30	4	4	1	14	0	0	0	23	92
09:45	2	2	0	12	0	0	0	16	69
1 Hr	16	9	2	53	0	1	0	81	381
10:00	4	2	3	8	0	0	0	17	86
10:15	4	2	0	17	0	0	0	23	77
10:30	0	0	2	10	0	0	0	12	65
10:45	7	0	1	12	0	0	0	20	80
1 Hr	15	4	6	47	0	0	0	72	308
11:00	1	1	1	10	0	0	0	13	72
11:15	3	0	2	7	0	0	0	12	69
11:30	6	3	0	20	0	0	0	29	79
11:45	6	1	0	15	0	0	0	22	75
1 Hr	16	5	3	52	0	0	0	76	295
12:00	8	1	0	7	0	0	0	16	67
12:15	5	1	2	9	0	0	0	17	94
12:30	12	0	3	10	0	0	0	25	87
12:45	6	3	0	12	0	0	0	21	85
1 Hr	31	5	5	38	0	0	0	79	333
13:00	1	2	0	9	0	0	0	12	83
13:15	7	0	1	9	0	0	0	17	72
13:30	4	0	1	11	0	0	0	16	76
13:45	4	1	0	11	0	0	0	16	99
1 Hr	16	3	2	40	0	0	0	61	330
14:00	8	1	1	11	0	0	0	21	84
14:15	7	1	0	10	0	0	0	18	74
14:30	2	0	1	13	0	1	0	17	71
14:45	6	1	1	9	0	0	0	17	91
1 Hr	23	3	3	43	0	1	0	73	320
15:00	3	1	0	12	0	0	0	16	75
15:15	8	0	1	13	0	0	0	22	96
15:30	6	1	0	13	0	0	0	20	105
15:45	2	1	1	10	0	0	0	14	86
1 Hr	19	3	2	48	0	0	0	72	362
16:00	1	1	0	7	0	0	0	9	68
16:15	3	1	0	2	0	0	0	6	74
16:30	5	1	1	6	0	0	0	13	70
16:45	1	1	0	6	0	1	0	9	88
1 Hr	10	4	1	21	0	1	0	37	300
17:00	2	1	1	1	0	0	0	5	94
17:15	0	3	0	2	0	0	0	5	71
17:30	1	0	0	0	0	0	0	1	75
17:45	2	0	0	3	0	0	0	5	67
1 Hr	5	4	1	6	0	0	0	16	307
18:00	4	0	0	3	0	0	0	7	57
18:15	1	0	0	2	0	0	0	3	45
18:30	3	0	0	2	0	0	0	5	43
18:45	1	0	0	1	0	0	0	2	34
1 Hr	9	0	0	8	0	0	0	17	179
12 Hrs	247	68	27	429	0	7	0	778	4045
Check								778	4045
Total	247	68	27	429	0	7	0	778	4045
Check								778	4045

Entry: Arm C - R135 (S)

Time	Destination: Arm A - R135 (N) CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	1	1	0	4	0	0	0	6
07:15	1	0	0	11	0	0	0	12
07:30	1	1	1	11	1	0	0	15
07:45	2	3	0	14	0	2	0	21
1 Hr	5	5	1	40	1	2	0	54
08:00	2	2	1	26	0	0	1	32
08:15	4	1	1	10	0	2	0	18
08:30	7	3	0	7	0	0	0	17
08:45	5	1	1	21	0	0	0	28
1 Hr	18	7	3	64	0	2	1	95
09:00	3	1	0	11	0	0	0	15
09:15	3	3	2	13	0	0	0	21
09:30	3	4	0	22	0	0	0	29
09:45	5	8	1	15	0	0	0	29
1 Hr	14	16	3	61	0	0	0	94
10:00	8	5	1	15	0	0	0	29
10:15	4	2	1	11	0	0	0	18
10:30	7	4	0	10	0	0	0	21
10:45	5	2	0	15	0	0	0	22
1 Hr	24	13	2	51	0	0	0	90
11:00	9	1	2	17	0	0	0	29
11:15	6	4	3	14	0	0	0	27
11:30	3	2	1	14	0	0	0	20
11:45	7	3	1	19	0	0	0	30
1 Hr	25	10	7	64	0	0	0	106
12:00	12	7	1	13	0	0	0	33
12:15	15	0	1	21	0	0	0	37
12:30	8	6	0	5	0	0	0	19
12:45	18	2	2	9	0	0	0	31
1 Hr	53	15	4	48	0	0	0	120
13:00	19	3	1	11	0	0	1	35
13:15	20	6	1	14	0	0	0	41
13:30	10	0	2	11	0	0	0	23
13:45	12	2	1	16	0	0	0	31
1 Hr	61	11	5	52	0	0	1	130
14:00	12	1	1	17	0	0	0	31
14:15	6	4	1	10	0	1	0	22
14:30	7	0	0	14	0	0	0	21
14:45	11	3	2	13	0	0	0	29
1 Hr	36	8	4	54	0	1	0	103
15:00	15	0	2	14	0	0	0	31
15:15	24	1	1	16	0	0	0	42
15:30	21	2	0	15	0	0	0	38
15:45	12	7	2	13	0	0	2	36
1 Hr	72	10	5	58	0	0	2	147
16:00	13	8	1	17	0	0	0	39
16:15	15	6	3	10	0	0	0	34
16:30	15	3	0	9	0	0	1	28
16:45	24	8	1	4	0	1	0	38
1 Hr	67	25	5	40	0	1	1	139
17:00	26	5	2	4	0	2	1	40
17:15	8	5	0	4	0	0	2	19
17:30	13	3	0	2	0	0	1	19
17:45	14	2	0	1	0	0	0	17
1 Hr	61	15	2	11	0	2	4	95
18:00	21	2	0	1	1	0	2	27
18:15	19	3	0	2	0	0	0	24
18:30	15	2	0	1	0	0	1	19
18:45	7	1	0	0	0	0	1	9
1 Hr	62	8	0	4	1	0	4	79
12 Hrs	498	143	41	547	2	8	13	1252
Check								1252
Total	498	143	41	547	2	8	13	1252
Check								1252

Time	Destination: Arm B - N2 Offslip CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12 Hrs	0	0	0	0	0	0	0	0
Check								0
Total	0	0	0	0	0	0	0	0
Check								0

Time	Destination: Arm C - R135 (S) CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Arm Totals
07:00	0	0	0	0	0	0	0	0	6
07:15	0	0	0	0	0	0	0	0	12
07:30	0	0	0	0	0	0	0	0	15
07:45	0	0	0	0	0	0	0	0	21
1 Hr	0	0	0	0	0	0	0	0	54
08:00	0	0	0	0	0	0	0	0	32
08:15	0	0	0	0	0	0	0	0	18
08:30	0	0	0	0	0	0	0	0	17
08:45	0	0	0	0	0	0	0	0	28
1 Hr	0	0	0	0	0	0	0	0	95
09:00	0	0	0	0	0	0	0	0	15
09:15	0	0	0	0	0	0	0	0	21
09:30	0	0	0	0	0	0	0	0	29
09:45	0	0	0	0	0	0	0	0	29
1 Hr	0	0	0	0	0	0	0	0	94
10:00	0	0	0	0	0	0	0	0	29
10:15	0	0	0	0	0	0	0	0	18
10:30	0	0	0	0	0	0	0	0	21
10:45	0	0	0	0	0	0	0	0	22
1 Hr	0	0	0	0	0	0	0	0	90
11:00	0	0	0	0	0	0	0	0	29
11:15	0	0	0	0	0	0	0	0	27
11:30	0	0	0	0	0	0	0	0	20
11:45	0	0	0	0	0	0	0	0	30
1 Hr	0	0	0	0	0	0	0	0	106
12:00	0	0	0	0	0	0	0	0	33
12:15	0	0	0	0	0	0	0	0	37
12:30	0	0	0	0	0	0	0	0	19
12:45	0	0	0	0	0	0	0	0	31
1 Hr	0	0	0	0	0	0	0	0	120
13:00	0	0	0	0	0	0	0	0	35
13:15	0	0	0	0	0	0	0	0	41
13:30	0	0	0	0	0	0	0	0	23
13:45	0	0	0	0	0	0	0	0	31
1 Hr	0	0	0	0	0	0	0	0	130
14:00	0	0	0	0	0	0	0	0	31
14:15	0	0	0	0	0	0	0	0	22
14:30	0	0	0	0	0	0	0	0	21
14:45	0	0	0	0	0	0	0	0	29
1 Hr	0	0	0	0	0	0	0	0	103
15:00	0	0	0	0	0	0	0	0	31
15:15	0	0	0	0	0	0	0	0	42
15:30	0	0	0	0	0	0	0	0	38
15:45	0	0	0	0	0	0	0	0	36
1 Hr	0	0	0	0	0	0	0	0	147
16:00	0	0	0	0	0	0	0	0	39
16:15	0	0	0	0	0	0	0	0	34
16:30	0	0	0	0	0	0	0	0	28
16:45	0	0	0	0	0	0	0	0	38
1 Hr	0	0	0	0	0	0	0	0	139
17:00	0	0	0	0	0	0	0	0	40
17:15	0	0	0	0	0	0	0	0	19
17:30	0	0	0	0	0	0	0	0	19
17:45	1	0	0	0	0	0	0	1	18
1 Hr	1	0	0	0	0	0	0	1	96
18:00	0	0	0	0	0	0	0	0	27
18:15	0	0	0	0	0	0	0	0	24
18:30	0	0	0	0	0	0	0	0	19
18:45	0	0	0	0	0	0	0	0	9
1 Hr	0	0	0	0	0	0	0	0	79
12 Hrs	1	0	0	0	0	0	0	1	1253
Check								1	1253
Total	1	0	0	0	0	0	0	1	1253
Check								1	1253

ORIGIN SUMMARY

Time	Origin: Arm A - R135 (N) CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	2	1	0	1	0	0	2	6
07:15	5	1	0	2	1	0	0	9
07:30	15	3	1	2	0	0	2	23
07:45	9	7	0	0	0	0	0	16
1 Hr	31	12	1	5	1	0	4	54
08:00	4	3	0	1	0	0	3	11
08:15	2	2	0	4	0	0	0	8
08:30	2	0	0	2	0	0	1	5
08:45	1	1	1	4	0	1	0	8
1 Hr	9	6	1	11	0	1	4	32
09:00	0	1	1	3	0	0	0	5
09:15	2	2	0	2	0	0	1	7
09:30	5	1	0	8	0	0	0	14
09:45	3	1	0	2	0	0	0	6
1 Hr	10	5	1	15	0	0	1	32
10:00	2	3	0	2	0	0	0	7
10:15	3	3	0	2	0	0	1	9
10:30	3	0	0	0	0	0	0	3
10:45	2	0	0	7	0	0	0	9
1 Hr	10	6	0	11	0	0	1	28
11:00	5	3	0	1	0	0	1	10
11:15	2	2	0	3	0	0	0	7
11:30	2	1	0	0	0	0	0	3
11:45	3	1	0	2	0	0	0	6
1 Hr	12	7	0	6	0	0	1	26
12:00	4	0	0	5	0	0	0	9
12:15	5	2	0	0	0	0	0	7
12:30	3	2	0	1	0	0	0	6
12:45	5	3	1	0	0	0	0	9
1 Hr	17	7	1	6	0	0	0	31
13:00	7	1	1	5	0	0	0	14
13:15	5	1	0	5	0	0	0	11
13:30	3	3	0	6	0	0	0	12
13:45	4	1	0	1	0	0	0	6
1 Hr	19	6	1	17	0	0	0	43
14:00	3	2	0	4	0	0	0	9
14:15	4	1	1	1	0	0	0	7
14:30	2	0	0	0	0	0	0	2
14:45	2	2	0	5	0	1	0	10
1 Hr	11	5	1	10	0	1	0	28
15:00	2	0	0	5	0	0	0	7
15:15	3	1	0	5	0	0	0	9
15:30	1	2	0	1	0	0	0	4
15:45	0	0	1	2	0	0	0	3
1 Hr	6	3	1	13	0	0	0	23
16:00	0	2	1	4	0	0	0	7
16:15	1	0	1	2	0	0	0	4
16:30	1	0	0	2	0	0	0	3
16:45	2	0	0	3	0	0	0	5
1 Hr	4	2	2	11	0	0	0	19
17:00	1	1	0	1	0	0	1	4
17:15	3	0	0	2	0	0	1	6
17:30	2	2	0	1	0	0	0	5
17:45	1	0	0	2	0	0	0	3
1 Hr	7	3	0	6	0	0	2	18
18:00	2	0	0	5	1	0	1	9
18:15	1	0	2	3	0	0	1	7
18:30	1	0	0	0	0	0	0	1
18:45	0	0	0	0	0	0	0	0
1 Hr	4	0	2	8	1	0	2	17
12 Hrs	140	62	11	119	2	2	15	351
Check								351
Total	140	62	11	119	2	2	15	351
Check								351

Time	Origin: Arm B - N2 Offslip CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	43	22	6	6	0	0	0	77
07:15	48	25	7	8	1	0	0	89
07:30	62	30	7	20	2	0	0	121
07:45	111	38	2	11	1	2	0	165
1 Hr	264	115	22	45	4	2	0	452
08:00	63	19	6	14	0	1	0	103
08:15	89	28	2	14	1	1	0	135
08:30	79	19	2	16	0	1	0	117
08:45	80	16	10	14	2	1	0	123
1 Hr	311	82	20	58	3	4	0	478
09:00	69	14	8	19	1	0	0	111
09:15	60	19	6	20	2	2	0	109
09:30	41	24	4	20	3	0	0	92
09:45	27	21	6	15	0	0	0	69
1 Hr	197	78	24	74	6	2	0	381
10:00	37	19	13	15	1	1	0	86
10:15	34	14	6	20	3	0	0	77
10:30	24	23	6	11	1	0	0	65
10:45	40	17	5	17	1	0	0	80
1 Hr	135	73	30	63	6	1	0	308
11:00	32	17	9	12	1	1	0	72
11:15	22	22	12	13	0	0	0	69
11:30	27	20	5	26	1	0	0	79
11:45	31	16	6	21	1	0	0	75
1 Hr	112	75	32	72	3	1	0	295
12:00	33	15	9	9	1	0	0	67
12:15	46	27	5	14	2	0	0	94
12:30	44	14	12	15	2	0	0	87
12:45	43	15	10	17	0	0	0	85
1 Hr	166	71	36	55	5	0	0	333
13:00	33	25	7	17	1	0	0	83
13:15	37	15	6	12	2	0	0	72
13:30	35	19	7	15	0	0	0	76
13:45	52	22	9	14	2	0	0	99
1 Hr	157	81	29	58	5	0	0	330
14:00	45	15	4	18	1	1	0	84
14:15	33	19	8	13	1	0	0	74
14:30	33	14	5	17	1	1	0	71
14:45	40	26	11	12	1	1	0	91
1 Hr	151	74	28	60	4	3	0	320
15:00	32	14	9	18	1	1	0	75
15:15	50	19	7	19	1	0	0	96
15:30	47	29	9	18	2	0	0	105
15:45	36	25	10	13	1	1	0	86
1 Hr	165	87	35	68	5	2	0	362
16:00	22	28	7	10	1	0	0	68
16:15	34	21	7	10	1	1	0	74
16:30	37	16	5	11	0	1	0	70
16:45	48	14	8	15	2	1	0	88
1 Hr	141	79	27	46	4	3	0	300
17:00	56	20	11	5	1	1	0	94
17:15	37	20	5	5	2	2	0	71
17:30	43	16	9	6	1	0	0	75
17:45	34	14	7	8	2	1	1	67
1 Hr	170	70	32	24	6	4	1	307
18:00	32	12	5	6	1	1	0	57
18:15	22	9	3	8	2	1	0	45
18:30	26	5	4	5	2	1	0	43
18:45	20	9	2	2	0	1	0	34
1 Hr	100	35	14	21	5	4	0	179
12 Hrs	2069	920	329	644	56	26	1	4045
Check								4045
Total	2069	920	329	644	56	26	1	4045
Check								4045

Time	Origin: Arm C - R135 (S) CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Origin Totals
07:00	1	1	0	4	0	0	0	6	89
07:15	1	0	0	11	0	0	0	12	110
07:30	1	1	1	11	1	0	0	15	159
07:45	2	3	0	14	0	2	0	21	202
1 Hr	5	5	1	40	1	2	0	54	560
08:00	2	2	1	26	0	0	1	32	146
08:15	4	1	1	10	0	2	0	18	161
08:30	7	3	0	7	0	0	0	17	139
08:45	5	1	1	21	0	0	0	28	159
1 Hr	18	7	3	64	0	2	1	95	605
09:00	3	1	0	11	0	0	0	15	131
09:15	3	3	2	13	0	0	0	21	137
09:30	3	4	0	22	0	0	0	29	135
09:45	5	8	1	15	0	0	0	29	104
1 Hr	14	16	3	61	0	0	0	94	507
10:00	8	5	1	15	0	0	0	29	122
10:15	4	2	1	11	0	0	0	18	104
10:30	7	4	0	10	0	0	0	21	89
10:45	5	2	0	15	0	0	0	22	111
1 Hr	24	13	2	51	0	0	0	90	426
11:00	9	1	2	17	0	0	0	29	111
11:15	6	4	3	14	0	0	0	27	103
11:30	3	2	1	14	0	0	0	20	102
11:45	7	3	1	19	0	0	0	30	111
1 Hr	25	10	7	64	0	0	0	106	427
12:00	12	7	1	13	0	0	0	33	109
12:15	15	0	1	21	0	0	0	37	138
12:30	8	6	0	5	0	0	0	19	112
12:45	18	2	2	9	0	0	0	31	125
1 Hr	53	15	4	48	0	0	0	120	484
13:00	19	3	1	11	0	0	1	35	132
13:15	20	6	1	14	0	0	0	41	124
13:30	10	0	2	11	0	0	0	23	111
13:45	12	2	1	16	0	0	0	31	136
1 Hr	61	11	5	52	0	0	1	130	503
14:00	12	1	1	17	0	0	0	31	124
14:15	6	4	1	10	0	1	0	22	103
14:30	7	0	0	14	0	0	0	21	94
14:45	11	3	2	13	0	0	0	29	130
1 Hr	36	8	4	54	0	1	0	103	451
15:00	15	0	2	14	0	0	0	31	113
15:15	24	1	1	16	0	0	0	42	147
15:30	21	2	0	15	0	0	0	38	147
15:45	12	7	2	13	0	0	2	36	125
1 Hr	72	10	5	58	0	0	2	147	532
16:00	13	8	1	17	0	0	0	39	114
16:15	15	6	3	10	0	0	0	34	112
16:30	15	3	0	9	0	0	1	28	101
16:45	24	8	1	4	0	1	0	38	131
1 Hr	67	25	5	40	0	1	1	139	458
17:00	26	5	2	4	0	2	1	40	138
17:15	8	5	0	4	0	0	2	19	96
17:30	13	3	0	2	0	0	1	19	99
17:45	15	2	0	1	0	0	0	18	88
1 Hr	62	15	2	11	0	2	4	96	421
18:00	21	2	0	1	1	0	2	27	93
18:15	19	3	0	2	0	0	0	24	76
18:30	15	2	0	1	0	0	1	19	63
18:45	7	1	0	0	0	0	1	9	43
1 Hr	62	8	0	4	1	0	4	79	275
12 Hrs	499	143	41	547	2	8	13	1253	5649
Check								1253	5649
Total	499	143	41	547	2	8	13	1253	5649
Check								1253	5649

DESTINATION SUMMARY

	Destination: Arm A - R135 (N)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	37	23	5	6	0	0	0	71
07:15	37	22	6	13	1	0	0	79
07:30	45	24	8	21	3	0	0	101
07:45	86	31	2	15	1	2	0	137
1 Hr	205	100	21	55	5	2	0	388
08:00	55	18	7	30	0	0	1	111
08:15	89	26	3	12	1	2	0	133
08:30	79	21	2	10	0	1	0	113
08:45	83	16	11	27	2	1	0	140
1 Hr	306	81	23	79	3	4	1	497
09:00	68	15	8	18	1	0	0	110
09:15	57	19	7	18	2	1	0	104
09:30	40	24	3	28	3	0	0	98
09:45	31	27	7	18	0	0	0	83
1 Hr	196	85	25	82	6	1	0	395
10:00	41	22	11	22	1	1	0	98
10:15	34	14	7	14	3	0	0	72
10:30	31	27	4	11	1	0	0	74
10:45	38	19	4	20	1	0	0	82
1 Hr	144	82	26	67	6	1	0	326
11:00	40	17	10	19	1	1	1	89
11:15	25	26	13	20	0	0	0	84
11:30	24	19	6	20	1	0	0	70
11:45	32	18	7	25	1	0	0	83
1 Hr	121	80	36	84	3	1	1	326
12:00	37	21	10	15	1	0	0	84
12:15	56	26	4	26	2	0	0	114
12:30	40	20	9	10	2	0	0	81
12:45	55	14	12	14	0	0	0	95
1 Hr	188	81	35	65	5	0	0	374
13:00	51	26	8	19	1	0	1	106
13:15	50	21	6	17	2	0	0	96
13:30	41	19	8	15	0	0	0	83
13:45	60	23	10	19	2	0	0	114
1 Hr	202	89	32	70	5	0	1	399
14:00	49	15	4	24	1	1	0	94
14:15	33	22	9	13	1	1	0	79
14:30	38	14	4	18	1	0	0	75
14:45	45	28	12	16	1	1	0	103
1 Hr	165	79	29	71	4	3	0	351
15:00	44	13	11	20	1	1	0	90
15:15	66	20	7	22	1	0	0	116
15:30	62	30	9	20	2	0	0	123
15:45	46	31	11	16	1	1	2	108
1 Hr	218	94	38	78	5	2	2	437
16:00	34	35	8	20	1	0	0	98
16:15	46	26	10	18	1	1	0	102
16:30	47	18	4	14	0	1	1	85
16:45	71	21	9	13	2	1	0	117
1 Hr	198	100	31	65	4	3	1	402
17:00	80	24	12	8	1	3	1	129
17:15	45	22	5	7	2	2	2	85
17:30	55	19	9	8	1	0	1	93
17:45	46	16	7	6	2	1	1	79
1 Hr	226	81	33	29	6	6	5	386
18:00	49	14	5	4	2	1	2	77
18:15	40	12	3	8	2	1	0	66
18:30	38	7	4	4	2	1	1	57
18:45	26	10	2	1	0	1	1	41
1 Hr	153	43	14	17	6	4	4	241
12 Hrs	2322	995	343	762	58	27	15	4522
Check								4522
Total	2322	995	343	762	58	27	15	4522
Check								4522

	Destination: Arm B - N2 Offslip							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0
1 Hr	0	0	0	0	0	0	0	0
12 Hrs	0	0	0	0	0	0	0	0
Check								0
Total	0	0	0	0	0	0	0	0
Check								0

	Destination: Arm C - R135 (S)								Dest Totals
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	
07:00	9	1	1	5	0	0	2	18	89
07:15	17	4	1	8	1	0	0	31	110
07:30	33	10	1	12	0	0	2	58	159
07:45	36	17	0	10	0	2	0	65	202
1 Hr	95	32	3	35	1	2	4	172	560
08:00	14	6	0	11	0	1	3	35	146
08:15	6	5	0	16	0	1	0	28	161
08:30	9	1	0	15	0	0	1	26	139
08:45	3	2	1	12	0	1	0	19	159
1 Hr	32	14	1	54	0	3	4	108	605
09:00	4	1	1	15	0	0	0	21	131
09:15	8	5	1	17	0	1	1	33	137
09:30	9	5	1	22	0	0	0	37	135
09:45	4	3	0	14	0	0	0	21	104
1 Hr	25	14	3	68	0	1	1	112	507
10:00	6	5	3	10	0	0	0	24	122
10:15	7	5	0	19	0	0	1	32	104
10:30	3	0	2	10	0	0	0	15	89
10:45	9	0	1	19	0	0	0	29	111
1 Hr	25	10	6	58	0	0	1	100	426
11:00	6	4	1	11	0	0	0	22	111
11:15	5	2	2	10	0	0	0	19	103
11:30	8	4	0	20	0	0	0	32	102
11:45	9	2	0	17	0	0	0	28	111
1 Hr	28	12	3	58	0	0	0	101	427
12:00	12	1	0	12	0	0	0	25	109
12:15	10	3	2	9	0	0	0	24	138
12:30	15	2	3	11	0	0	0	31	112
12:45	11	6	1	12	0	0	0	30	125
1 Hr	48	12	6	44	0	0	0	110	484
13:00	8	3	1	14	0	0	0	26	132
13:15	12	1	1	14	0	0	0	28	124
13:30	7	3	1	17	0	0	0	28	111
13:45	8	2	0	12	0	0	0	22	136
1 Hr	35	9	3	57	0	0	0	104	503
14:00	11	3	1	15	0	0	0	30	124
14:15	10	2	1	11	0	0	0	24	103
14:30	4	0	1	13	0	1	0	19	94
14:45	8	3	1	14	0	1	0	27	130
1 Hr	33	8	4	53	0	2	0	100	451
15:00	5	1	0	17	0	0	0	23	113
15:15	11	1	1	18	0	0	0	31	147
15:30	7	3	0	14	0	0	0	24	147
15:45	2	1	2	12	0	0	0	17	125
1 Hr	25	6	3	61	0	0	0	95	532
16:00	1	3	1	11	0	0	0	16	114
16:15	4	1	1	4	0	0	0	10	112
16:30	6	1	1	8	0	0	0	16	101
16:45	3	1	0	9	0	1	0	14	131
1 Hr	14	6	3	32	0	1	0	56	458
17:00	3	2	1	2	0	0	1	9	138
17:15	3	3	0	4	0	0	1	11	96
17:30	3	2	0	1	0	0	0	6	99
17:45	4	0	0	5	0	0	0	9	88
1 Hr	13	7	1	12	0	0	2	35	421
18:00	6	0	0	8	1	0	1	16	93
18:15	2	0	2	5	0	0	1	10	76
18:30	4	0	0	2	0	0	0	6	63
18:45	1	0	0	1	0	0	0	2	43
1 Hr	13	0	2	16	1	0	2	34	275
12 Hrs	386	130	38	548	2	9	14	1127	5649
Check								1127	5649
Total	386	130	38	548	2	9	14	1127	5649
Check								1127	5649

Tracsis plc
Traffic and Data Services

Client: Roadplan Consulting
Job No: 3082-IRE Huntstown Quarry
Survey Date: 22/06/2016
Survey Method: Video Observation
Weather AM: Cloudy
Weather PM Cloudy
Site No: Site 6
Road: Kilshane Cross

Entry: Arm A - R135 (N)

	Destination: Arm A - R135 (N)								Destination: Arm B - Kilshane Way (E)								Destination: Arm C - R135 (S)								Destination: Arm D - Kilshane Way (W)								Arm
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	0	0	0	0	0	0	0	0	20	8	2	1	1	0	0	32	12	3	1	1	0	0	1	18	0	0	0	0	0	0	0	0	50
07:15	0	0	0	0	0	0	0	0	22	7	2	1	1	0	1	34	5	4	3	2	2	0	0	16	3	2	1	1	0	0	0	7	57
07:30	0	0	0	0	0	0	0	0	45	12	0	2	3	1	0	63	19	5	4	3	1	0	2	34	2	1	0	0	0	0	0	3	100
07:45	0	0	0	0	0	0	0	0	30	15	1	3	0	0	0	49	19	8	0	1	3	0	1	32	5	1	0	0	0	0	0	6	87
1 Hr	0	0	0	0	0	0	0	0	117	42	5	7	5	1	1	178	55	20	8	7	6	0	4	100	10	4	1	1	0	0	0	16	294
08:00	0	0	0	0	0	0	0	0	36	4	0	2	1	0	0	43	14	9	0	2	1	0	4	30	4	6	0	0	0	0	0	10	83
08:15	0	0	0	0	0	0	0	0	53	8	2	1	0	0	0	64	11	3	1	4	0	1	1	21	7	2	1	0	0	0	0	10	95
08:30	0	0	0	0	0	0	0	0	49	9	1	0	0	0	0	59	7	8	0	1	1	0	1	18	4	1	0	0	0	0	0	5	82
08:45	0	0	0	0	0	0	0	0	31	7	1	3	0	0	0	42	12	2	0	3	2	0	0	19	9	1	1	0	0	1	0	12	73
1 Hr	0	0	0	0	0	0	0	0	169	28	4	6	1	0	0	208	44	22	1	10	4	1	6	88	24	10	2	0	0	1	0	37	333
09:00	0	0	0	0	0	0	0	0	27	6	0	1	3	0	0	37	9	5	3	1	0	0	1	19	8	2	0	0	1	0	0	11	67
09:15	0	0	0	0	0	0	0	0	25	4	2	1	0	0	0	32	19	2	1	3	1	0	1	27	5	3	0	0	0	0	0	8	67
09:30	0	0	0	0	0	0	0	0	19	3	1	1	1	0	0	25	14	7	3	6	1	0	0	31	3	1	0	0	0	0	0	4	60
09:45	0	0	0	0	0	0	0	0	24	7	0	0	1	0	0	32	13	7	1	2	0	0	0	23	2	0	0	0	0	0	0	2	57
1 Hr	0	0	0	0	0	0	0	0	95	20	3	3	5	0	0	126	55	21	8	12	2	0	2	100	18	6	0	0	1	0	0	25	251
10:00	0	0	0	0	0	0	0	0	17	3	1	2	1	0	0	24	5	5	0	2	1	0	1	14	1	2	2	0	0	0	0	5	43
10:15	0	0	0	0	0	0	0	0	19	3	2	0	0	0	0	24	9	5	0	1	1	0	0	16	0	1	0	1	0	0	0	2	42
10:30	0	0	0	0	0	0	0	0	23	3	3	1	1	0	0	31	7	4	0	1	1	0	0	13	4	1	0	1	0	0	0	6	50
10:45	0	0	0	0	0	0	0	0	5	2	2	1	0	1	0	11	4	5	0	6	1	0	0	16	3	0	0	0	0	0	0	3	30
1 Hr	0	0	0	0	0	0	0	0	64	11	8	4	2	1	0	90	25	19	0	10	4	0	1	59	8	4	2	2	0	0	0	16	165
11:00	0	0	0	0	0	0	0	0	19	6	2	1	1	0	0	29	11	4	0	1	0	0	1	17	2	2	0	0	0	0	0	4	50
11:15	0	0	0	0	0	0	0	0	19	4	5	0	0	0	0	28	6	7	0	3	1	0	0	17	1	1	1	0	0	0	0	3	48
11:30	0	0	0	0	0	0	0	0	19	2	1	1	1	0	0	24	8	2	3	0	1	0	0	14	4	3	0	0	0	0	0	7	45
11:45	0	0	0	0	0	0	0	0	20	6	0	0	0	0	0	26	12	3	2	4	0	0	0	21	4	2	2	0	0	0	0	8	55
1 Hr	0	0	0	0	0	0	0	0	77	18	8	2	2	0	0	107	37	16	5	8	2	0	1	69	11	8	3	0	0	0	0	22	198
12:00	0	0	0	0	0	0	0	0	18	0	0	1	1	0	0	20	8	3	1	2	1	0	0	15	4	2	0	0	0	0	0	6	41
12:15	0	0	0	0	0	0	0	0	20	5	1	2	1	0	0	29	10	4	0	1	1	0	1	17	3	2	0	0	0	1	0	6	52
12:30	0	0	0	0	0	0	0	0	31	5	2	0	1	0	0	39	12	4	4	0	0	0	0	20	3	2	0	0	0	0	0	5	64
12:45	0	0	0	0	0	0	0	0	22	4	0	1	1	0	0	28	10	4	0	0	1	0	0	15	3	1	2	0	0	0	0	6	49
1 Hr	0	0	0	0	0	0	0	0	91	14	3	4	4	0	0	116	40	15	5	3	3	0	1	67	13	7	2	0	0	1	0	23	206
13:00	0	0	0	0	0	0	0	0	21	3	2	0	2	0	0	28	16	5	1	7	1	0	0	30	4	0	1	0	0	0	0	5	63
13:15	0	0	0	0	0	0	0	0	35	4	2	0	0	0	0	41	17	6	1	5	1	0	0	30	11	1	0	0	0	0	0	12	83
13:30	0	0	0	0	0	0	0	0	20	3	2	0	0	0	1	26	13	9	0	5	1	1	0	29	6	3	0	0	0	0	0	9	64
13:45	0	0	0	0	0	0	0	0	28	3	0	0	0	0	0	31	12	4	0	3	0	0	0	19	2	0	0	0	0	0	0	2	52
1 Hr	0	0	0	0	0	0	0	0	104	13	6	0	2	0	1	126	58	24	2	20	3	1	0	108	23	4	1	0	0	0	0	28	262
14:00	0	0	0	0	0	0	0	0	21	3	3	2	2	0	1	32	16	5	0	2	1	0	0	24	7	2	0	0	0	0	0	9	65
14:15	0	0	0	0	0	0	0	0	30	8	1	4	1	0	0	44	15	3	2	1	1	1	0	23	3	0	0	0	0	0	0	3	70
14:30	0	0	0	0	0	0	0	0	28	8	2	0	1	0	0	39	14	9	1	2	1	0	0	27	1	1	0	0	0	0	0	2	68
14:45	0	0	0	0	0	0	0	0	18	7	2	3	0	0	2	32	12	3	0	5	0	1	0	21	4	1	0	0	0	0	0	5	58
1 Hr	0	0	0	0	0	0	0	0	97	26	8	9	4	0	3	147	57	20	3	10	3	2	0	95	15	4	0	0	0	0	0	19	261
15:00	0	0	0	0	0	0	0	0	31	8	0	1	1	0	0	41	7	4	0	2	2	0	0	15	6	2	2	0	0	0	0	10	66
15:15	0	0	0	0	0	0	0	0	21	1	1	1	0	0	0	24	16	2	0	4	0	0	0	22	2	0	1	0	0	0	0	3	49
15:30	0	0	0	0	0	0	0	0	28	5	0	4	0	0	0	37	19	7	0	1	1	0	0	28	5	1	2	0	0	0	0	8	73
15:45	0	0	0	0	0	0	0	0	19	5	1	1	0	1	1	28	11	3	2	1	1	0	0	18	1	2	0	0	0	0	0	3	49
1 Hr	0	0	0	0	0	0	0	0	99	19	2	7	1	1	1	130	53	16	2	8	4	0	0	83	14	5	5	0	0	0	0	24	237
16:00	0	0	0	0	0	0	0	0	18	3	1	1	1	0	0	24	11	6	1	4	1	0	0	23	3	1	0	0	0	0	0	4	51
16:15	0	0	0	0	0	0	0	0	21	5	3	2	1	1	0	33	10	1	1	2	0	0	0	14	2	2	1	1	0	0	0	6	53
16:30	0	0	0	0	0	0	0	0	31	6	0	0	0	0	0	37	7	5	0	2	1	3	0	18	2	2	1	0	0	0	0	5	60
16:45	0	0	0	0	0	0	0	0	37	3	0	0	1	0	0	41	19	3	1	3	0	0	1	27	3	0	0	1	0	0	0	4	72
1 Hr	0	0	0	0	0	0	0	0	107	17	4	3	3	1	0	135	47	15	3	11	2	3	1	82	10	5	2	2	0	0	0	19	236
17:00	0	0	0	0	0	0	0	0	28	5	0	3	1	0	1	38	9	5	0	1	0	0	1	16	4	0	0	0	0	0	0	4	58
17:15	0	0	0	0	0	0	0	0	41	3	1	0	0	0	0	45	14	6	0	1	1	0	1	23	2	1	0	0	0	0	0	3	71
17:30	0	0	0	0	0	0	0	0	37	4	0	3	0	0	0	44	10	4	2	1	1	1	1	20	4	0	0	1	0	0	0	5	69
17:45	0	0	0	0	0	0	0	0	34	2	0	1	1	0	0	38	19	2	2	3	0	0	1	27	1	0	0	1	0	0	0	2	67
1 Hr	0	0	0	0	0	0	0	0	140	14	1	7	2	0	1	165	52	17	4	6	2	1	4	86	11	1	0	2	0	0	0	14	265
18:00	0	0	0	0	0	0	0	0	26	1	0	1	1	1	1	31	12	1	1	5	2	0	0	21	1	0	0	0	0	0	0	1	53
18:15	0	0	0	0	0	0	0	0	25	3	0	0	0	1	0	29	8	4	2	2	0	0	1	17	1	0	0	0	0	0	0	1	47
18:30	0	0	0	0	0	0	0	0	27	4	0	2	1	0	0	34	15	2	0	0	0	0	0	17	4	0	0	0	0	0	0	4	55
18:45	0	0	0	0	0	0	0	0	18	0	0	1	1	0	0	20	8	2	0	0	2	0	0	12	3	2	0	0	0	0	0	5	37
1 Hr	0	0	0	0	0	0	0	0	96	8	0	4	3	2	1	114	43	9	3	7	4	0	1	67	9	2	0	0	0	0	0	11	192
12 Hrs	0	0	0	0	0	0	0	0	1256	230	52	56	34	6	8	1642	566	214	44	112	39	8	21	1004	166	60	18	7	1	2	0	254	2900
Check								0								1642								1004								254	2900
Total	0	0	0	0	0	0	0	0	1256	230	52	56	34	6	8	1642	566	214	44	112	39	8	21	1004	166	60	18	7	1	2	0	254	2900
Check								0																1004								254	2900

Entry: Arm B - Kilshane Way (E)

	Destination: Arm A - R135 (N)								Destination: Arm B - Kilshane Way (E)								Destination: Arm C - R135 (S)								Destination: Arm D - Kilshane Way (W)								Arm
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	9	3	1	3	0	0	0	16	0	0	0	0	0	0	0	0	24	2	0	0	0	2	0	28	42	3	2	1	0	0	0	48	92
07:15	13	2	0	1	0	0	0	16	0	0	0	0	0	0	0	0	24	4	1	1	0	0	0	30	56	13	1	1	0	0	0	71	117
07:30	16	0	0	3	1	0	0	20	0	0	0	0	0	0	0	0	19	3	2	2	0	1	0	27	56	8	1	1	0	0	1	67	114
07:45	12	5	0	2	0	0	0	19	0	0	0	0	0	0	0	0	14	6	1	1	0	0	0	22	66	15	2	1	0	0	1	85	126
1 Hr	50	10	1	9	1	0	0	71	0	0	0	0	0	0	0	0	81	15	4	4	0	3	0	107	220	39	6	4	0	0	2	271	449
08:00	18	1	1	2	0	0	1	23	0	0	0	0	0	0	0	0	14	5	2	1	0	0	0	22	72	9	2	0	0	0	1	84	129
08:15	16	2	1	1	0	0	0	20	0	0	0	0	0	0	0	0	14	3	1	1	0	0	0	19	73	7	4	0	0	0	0	84	123
08:30	11	2	0	1	0	1	0	15	0	0	0	0	0	0	0	0	5	2	2	3	0	0	0	12	81	8	6	0	0	0	0	95	122
08:45	8	7	0	1	0	0	0	16	0	0	0	0	0	0	0	0	10	1	1	1	0	0	0	13	72	11	5	2	0	1	0	91	120
1 Hr	53	12	2	5	0	1	1	74	0	0	0	0	0	0	0	0	43	11	6	6	0	0	0	66	298	35	17	2	0	1	1	354	494
09:00	8	3	2	2	0	0	0	15	0	0	0	0	0	0	0	0	15	5	2	2	1	0	0	25	78	12	8	2	0	0	2	102	142
09:15	16	5	2	4	0	0	0	27	0	0	0	0	0	0	0	0	15	5	1	3	0	0	0	24	54	17	3	1	1	0	1	77	128
09:30	5	0	2	0	0	0	0	7	0	0	0	0	0	0	0	0	12	0	1	1	0	0	0	14	31	17	4	1	1	0	0	54	75
09:45	10	2	1	1	0	0	0	14	0	0	0	0	0	0	0	0	6	4	3	3	0	0	0	16	30	7	4	1	0	1	0	43	73
1 Hr	39	10	7	7	0	0	0	63	0	0	0	0	0	0	0	0	48	14	7	9	1	0	0	79	193	53	19	5	2	1	3	276	418
10:00	16	4	1	3	1	0	0	25	0	0	0	0	0	0	0	0	6	3	2	0	0	0	0	11	23	6	7	1	0	0	0	37	73
10:15	17	3	4	1	0	0	0	25	0	0	0	0	0	0	0	0	12	4	1	6	0	0	0	23	31	3	2	1	1	0	0	38	86
10:30	23	8	0	3	1	0	0	35	0	0	0	0	0	0	0	0	5	2	1	3	0	0	0	11	18	12	5	1	0	0	0	36	82
10:45	23	3	2	2	1	0	0	31	0	0	0	0	0	0	0	0	9	5	1	6	0	0	0	21	27	9	2	0	0	0	0	38	90
1 Hr	79	18	7	9	3	0	0	116	0	0	0	0	0	0	0	0	32	14	5	15	0	0	0	66	99	30	16	3	1	0	0	149	331
11:00	16	6	1	2	3	0	0	28	0	0	0	0	0	0	0	0	13	2	1	3	0	0	0	19	15	9	5	2	1	0	1	33	80
11:15	13	1	2	3	1	0	0	20	0	0	0	0	0	0	0	0	6	2	3	0	0	0	0	11	20	5	9	1	0	1	0	36	67
11:30	14	7	3	2	1	0	0	27	0	0	0	0	0	0	0	0	12	11	0	1	0	0	0	24	27	12	5	0	0	0	0	44	95
11:45	20	2	2	5	1	1	1	32	0	0	0	0	0	0	0	0	5	2	3	2	0	0	0	12	21	5	5	1	0	0	0	32	76
1 Hr	63	16	8	12	6	1	1	107	0	0	0	0	0	0	0	0	36	17	7	6	0	0	0	66	83	31	24	4	1	1	1	145	318
12:00	24	1	1	1	0	0	0	27	0	0	0	0	0	0	0	0	11	2	1	4	0	0	0	18	15	13	8	0	1	0	0	37	82
12:15	24	3	2	1	1	1	0	32	0	0	0	0	0	0	0	0	8	3	2	2	0	0	0	15	12	7	3	2	0	0	0	24	71
12:30	17	4	5	2	2	0	1	31	0	0	0	0	0	0	0	0	6	1	0	2	0	0	0	9	21	6	4	2	0	0	0	33	73
12:45	23	3	4	3	0	0	0	33	0	0	0	0	0	0	0	0	17	4	2	1	0	0	0	24	17	9	4	1	0	0	0	31	88
1 Hr	88	11	12	7	3	1	1	123	0	0	0	0	0	0	0	0	42	10	5	9	0	0	0	66	65	35	19	5	1	0	0	125	314
13:00	30	3	2	2	2	0	0	39	0	0	0	0	0	0	0	0	14	2	0	1	0	0	0	17	35	11	8	0	0	0	0	54	110
13:15	20	6	2	0	0	0	0	28	0	0	0	0	0	0	0	0	7	2	2	2	0	1	0	14	22	7	5	1	0	1	0	36	78
13:30	28	5	3	0	0	0	0	36	0	0	0	0	0	0	0	0	8	5	1	3	0	0	0	17	27	12	3	0	0	0	0	42	95
13:45	20	7	2	3	0	0	0	32	0	0	0	0	0	0	0	0	5	4	1	2	0	0	0	12	35	5	3	0	0	0	0	43	87
1 Hr	98	21	9	5	2	0	0	135	0	0	0	0	0	0	0	0	34	13	4	8	0	1	0	60	119	35	19	1	0	1	0	175	370
14:00	21	3	1	4	0	0	0	29	0	0	0	0	0	0	0	0	6	4	3	3	0	0	0	16	27	8	2	0	0	0	0	37	82
14:15	21	5	2	1	0	0	0	29	0	0	0	0	0	0	0	0	11	1	1	1	0	1	0	15	29	6	3	0	1	0	0	39	83
14:30	15	1	0	0	0	0	0	16	0	0	0	0	0	0	0	0	9	3	2	2	0	0	0	16	25	8	1	1	0	1	0	36	68
14:45	34	7	4	2	1	0	0	48	0	0	0	0	0	0	0	0	11	6	3	4	0	0	0	24	35	10	5	1	0	0	0	51	123
1 Hr	91	16	7	7	1	0	0	122	0	0	0	0	0	0	0	0	37	14	9	10	0	1	0	71	116	32	11	2	1	1	0	163	356
15:00	20	5	1	1	0	0	0	27	0	0	0	0	0	0	0	0	9	2	1	4	0	0	0	16	29	13	6	1	0	0	0	49	92
15:15	25	7	0	1	0	0	0	33	0	0	0	0	0	0	0	0	4	1	1	1	0	0	0	7	30	8	5	0	0	1	0	44	84
15:30	37	5	0	0	3	0	0	45	0	0	0	0	0	0	0	0	7	1	0	5	0	0	0	13	28	12	6	1	0	0	0	47	105
15:45	31	3	1	5	0	0	2	42	0	0	0	0	0	0	0	0	8	3	0	0	0	0	0	11	19	11	8	1	0	1	0	40	93
1 Hr	113	20	2	7	3	0	2	147	0	0	0	0	0	0	0	0	28	7	2	10	0	0	0	47	106	44	25	3	0	2	0	180	374
16:00	29	7	1	1	0	0	0	38	0	0	0	0	0	0	0	0	7	8	0	1	0	0	0	16	30	9	7	2	0	0	0	48	102
16:15	33	12	2	1	0	0	0	48	0	0	0	0	0	0	0	0	5	2	2	4	0	0	0	13	29	7	5	1	0	0	0	42	103
16:30	26	5	2	3	1	0	0	37	0	0	0	0	0	0	0	0	10	5	0	0	0	0	0	15	26	6	2	1	0	0	0	35	87
16:45	42	10	3	1	0	0	0	56	0	0	0	0	0	0	0	0	5	2	1	1	0	0	0	9	42	7	6	2	1	1	0	59	124
1 Hr	130	34	8	6	1	0	0	179	0	0	0	0	0	0	0	0	27	17	3	6	0	0	0	53	127	29	20	6	1	1	0	184	416
17:00	29	11	3	2	0	0	1	46	0	0	0	0	0	0	0	0	16	1	0	2	0	0	0	19	30	3	1	2	0	0	0	36	101
17:15	41	4	1	2	0	0	0	48	0	0	0	0	0	0	0	0	24	3	0	1	0	0	0	28	45	11	2	1	0	0	0	59	135
17:30	49	5	0	0	0	0	0	54	0	0	0	0	0	0	0	0	23	5	0	1	0	0	0	29	32	5	6	0	1	0	1	45	128
17:45	51	4	1	1	0	0	0	57	0	0	0	0	0	0	0	0	23	2	0	2	1	0	0	28	43	6	2	0	1	0	0	52	137
1 Hr	170	24	5	5	0	0	1	205	0	0	0	0	0	0	0	0	86	11	0	6	1	0	0	104	150	25	11	3	2	0	1	192	501
18:00	53	8	2	2	0	0	1	66	0	0	0	0	0	0	0	0	17	2	0	0	0	0	1	20	55	5	2	2	0	1	2	67	153
18:15	45	5	0	0	0	3	0	53	0	0	0	0	0	0	0	0	9	1	0	1	0	0	0	11	34	7	2	0	5	0	0	48	112
18:30	28	10	1	0	0	0	0	39	0	0	0	0	0	0	0	0	11	1	0	1	0	1	0	14	17	6	1	3	0	0	0	27	80
18:45	28	4	1	2	1	1	0	37	0	0	0	0	0	0	0	0	7	2	0	0	0	0	0	9	13	4	1	0	3	0	0	21	67
1 Hr	154	27	4	4	1	4	1	195	0	0	0	0	0	0	0	0	44	6	0	2	0	1	1	54	119	22	6	5	8	1	2	163	412
12 Hrs	1128	219	72	83	21	7	7	1537	0	0	0	0	0	0	0	0	538	149	52	91	2	6	1	839	1695	410	193	43	17	9	10	2377	4753
Check								1537								0								839								2377	4753
Total	1128	219	72	83	21	7	7	1537	0	0	0	0	0	0	0	0	538	149	52	91	2	6	1	839	1695	410	193	43	17	9	10	2377	4753
Check								1537								0								839								2377	4753

Entry: Arm C - R135 (S)

	Destination: Arm A - R135 (N)								Destination: Arm B - Kilshane Way (E)								Destination: Arm C - R135 (S)								Destination: Arm D - Kilshane Way (W)								Arm
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	3	3	1	1	0	0	0	8	9	4	1	1	0	0	0	15	0	0	0	0	0	0	0	0	16	9	4	0	0	0	0	29	52
07:15	3	3	1	1	1	0	0	9	9	1	2	2	0	0	0	14	0	0	0	0	0	0	0	0	18	5	4	1	0	0	0	28	51
07:30	0	2	0	3	2	0	0	7	8	4	1	4	1	0	0	18	0	0	0	0	0	0	0	0	18	10	5	2	0	0	0	35	60
07:45	10	3	0	5	0	0	1	19	11	6	0	5	0	0	0	22	0	0	0	0	0	0	0	0	39	25	2	0	0	0	0	66	107
1 Hr	16	11	2	10	3	0	1	43	37	15	4	12	1	0	0	69	0	0	0	0	0	0	0	0	91	49	15	3	0	0	0	158	270
08:00	1	10	0	2	1	0	1	15	9	0	2	2	0	0	0	13	0	0	0	0	0	0	0	0	33	9	2	3	0	0	0	47	75
08:15	8	3	0	4	1	2	0	18	18	2	0	0	0	0	0	20	0	0	0	0	0	0	0	0	39	13	3	2	0	0	0	57	95
08:30	7	2	2	1	0	0	0	12	8	7	0	0	0	0	0	15	0	0	0	0	0	0	0	0	40	21	2	2	0	1	0	66	93
08:45	7	1	1	4	2	0	0	15	6	2	1	4	0	0	0	13	0	0	0	0	0	0	0	0	47	13	5	4	0	1	0	70	98
1 Hr	23	16	3	11	4	2	1	60	41	11	3	6	0	0	0	61	0	0	0	0	0	0	0	0	159	56	12	11	0	2	0	240	361
09:00	7	4	2	3	1	0	0	17	10	3	3	2	0	0	0	18	0	0	0	0	0	0	0	0	32	10	4	2	0	0	0	48	83
09:15	2	5	3	8	1	0	0	19	4	5	0	3	0	1	0	13	0	0	0	0	0	0	0	0	35	7	3	3	1	0	0	49	81
09:30	12	3	1	3	0	0	0	19	3	6	0	3	0	0	0	12	0	0	0	0	0	0	0	0	21	14	4	2	1	0	0	42	73
09:45	5	5	1	3	2	0	0	16	8	2	1	3	0	0	0	14	0	0	0	0	0	0	0	0	11	15	4	0	0	0	0	30	60
1 Hr	26	17	7	17	4	0	0	71	25	16	4	11	0	1	0	57	0	0	0	0	0	0	0	0	99	46	15	7	2	0	0	169	297
10:00	7	8	1	3	1	0	0	20	7	3	2	1	0	1	0	14	0	0	0	0	0	0	0	0	17	10	5	1	0	0	0	33	67
10:15	11	2	1	4	1	0	0	19	6	2	1	2	0	0	0	11	0	0	0	0	0	0	0	0	11	8	7	1	1	0	0	28	58
10:30	8	6	1	2	1	0	0	18	4	2	3	1	0	0	0	10	0	0	0	0	0	0	0	0	13	15	0	1	1	0	0	30	58
10:45	4	4	0	2	1	0	0	11	9	2	1	2	0	0	0	14	0	0	0	0	0	0	0	0	13	9	4	2	0	0	0	28	53
1 Hr	30	20	3	11	4	0	0	68	26	9	7	6	0	1	0	49	0	0	0	0	0	0	0	0	54	42	16	5	2	0	0	119	236
11:00	3	4	1	0	1	0	0	9	5	3	2	3	0	0	0	13	0	0	0	0	0	0	0	0	15	9	5	1	0	1	0	31	53
11:15	4	3	2	2	0	0	2	13	4	6	0	3	0	0	0	13	0	0	0	0	0	0	0	0	15	10	4	5	0	0	0	34	60
11:30	3	5	1	3	0	0	0	12	3	3	3	1	0	0	0	10	0	0	0	0	0	0	0	0	7	12	2	2	0	0	1	24	46
11:45	13	4	1	3	2	0	0	23	4	6	2	4	0	0	0	16	0	0	0	0	0	0	0	0	13	11	3	2	0	0	0	29	68
1 Hr	23	16	5	8	3	0	2	57	16	18	7	11	0	0	0	52	0	0	0	0	0	0	0	0	50	42	14	10	0	1	1	118	227
12:00	10	4	0	4	1	0	0	19	8	3	3	1	0	0	0	15	0	0	0	0	0	0	0	0	12	9	6	2	0	0	0	29	63
12:15	18	6	1	5	0	0	0	30	9	4	1	4	0	0	0	18	0	0	0	0	0	0	0	0	11	12	2	1	1	0	0	27	75
12:30	22	7	1	3	2	0	0	35	10	7	4	1	0	0	0	22	0	0	0	0	0	0	0	0	13	11	3	0	0	0	0	27	84
12:45	14	6	2	2	1	0	0	25	8	3	2	3	0	0	0	16	0	0	0	0	0	0	0	0	16	3	4	1	0	0	0	24	65
1 Hr	64	23	4	14	4	0	0	109	35	17	10	9	0	0	0	71	0	0	0	0	0	0	0	0	52	35	15	4	1	0	0	107	287
13:00	15	3	2	3	1	0	0	24	8	6	1	3	0	0	0	18	0	0	0	0	0	0	0	0	12	10	10	2	0	0	0	34	76
13:15	15	4	0	1	1	0	0	21	14	4	8	2	1	0	0	29	0	0	0	0	0	0	0	0	11	13	0	0	0	0	0	24	74
13:30	22	1	2	4	0	0	0	29	10	1	1	0	0	0	0	12	0	0	0	0	0	0	0	0	10	10	7	2	0	0	0	29	70
13:45	13	3	3	4	2	0	0	25	14	5	1	3	0	0	0	23	0	0	0	0	0	0	0	0	13	7	4	3	0	0	0	27	75
1 Hr	65	11	7	12	4	0	0	99	46	16	11	8	1	0	0	82	0	0	0	0	0	0	0	0	46	40	21	7	0	0	0	114	295
14:00	12	4	1	4	1	0	0	22	6	1	0	4	0	0	0	11	0	0	0	0	0	0	0	0	11	10	5	2	0	1	0	29	62
14:15	14	7	2	1	1	1	0	26	7	3	3	2	0	0	0	15	0	0	0	0	0	0	0	0	14	11	3	0	0	0	0	28	69
14:30	8	3	1	7	1	0	0	20	5	4	2	1	0	0	0	12	0	0	0	0	0	0	0	0	10	6	1	3	0	0	0	20	52
14:45	11	3	0	5	1	1	0	21	16	5	0	1	0	0	0	22	0	0	0	0	0	0	0	0	6	12	6	1	0	0	0	25	68
1 Hr	45	17	4	17	4	2	0	89	34	13	5	8	0	0	0	60	0	0	0	0	0	0	0	0	41	39	15	6	0	1	0	102	251
15:00	11	3	3	4	1	0	0	22	7	4	3	3	0	0	0	17	0	0	0	0	0	0	0	0	13	11	8	2	0	0	0	34	73
15:15	14	2	0	5	1	0	0	22	10	6	1	3	0	0	0	20	0	0	0	0	0	0	0	0	14	7	4	4	1	0	0	30	72
15:30	7	5	2	7	1	0	0	22	15	7	1	1	0	0	0	24	0	0	0	0	0	0	0	0	21	11	6	3	0	0	0	41	87
15:45	10	4	1	4	1	0	2	22	11	6	5	1	0	0	0	23	0	0	0	0	0	0	0	0	7	12	1	0	1	0	0	21	66
1 Hr	42	14	6	20	4	0	2	88	43	23	10	8	0	0	0	84	0	0	0	0	0	0	0	0	55	41	19	9	2	0	0	126	298
16:00	7	7	2	8	1	1	0	26	10	6	1	2	0	0	0	19	0	0	0	0	0	0	0	0	11	11	7	2	0	0	1	32	77
16:15	13	6	0	5	1	0	0	25	15	5	1	4	0	0	0	25	0	0	0	0	0	0	0	0	8	8	4	1	0	0	0	21	71
16:30	10	4	1	6	0	1	1	23	16	4	1	5	0	1	0	27	0	0	0	0	0	0	0	0	7	7	1	2	0	0	0	17	67
16:45	19	6	0	4	2	0	0	31	15	2	1	2	0	0	0	20	0	0	0	0	0	0	0	0	17	9	5	3	0	0	0	34	85
1 Hr	49	23	3	23	4	2	1	105	56	17	4	13	0	1	0	91	0	0	0	0	0	0	0	0	43	35	17	8	0	0	1	104	300
17:00	17	4	1	1	1	1	1	26	26	2	2	3	0	0	0	33	0	0	0	0	0	0	0	0	18	10	4	4	0	0	0	36	95
17:15	15	5	1	3	0	0	1	25	22	5	0	1	1	2	0	31	0	0	0	0	0	0	0	0	10	6	3	1	0	0	0	20	76
17:30	17	6	1	1	1	0	3	29	25	5	3	3	0	0	0	36	0	0	0	0	0	0	0	0	12	3	3	2	0	0	0	20	85
17:45	24	0	4	2	2	1	1	34	15	2	2	0	0	0	0	19	0	0	0	0	0	0	0	0	10	6	3	3	0	0	0	22	75
1 Hr	73	15	7	7	4	2	6	114	88	14	7	7	1	2	0	119	0	0	0	0	0	0	0	0	50	25	13	10	0	0	0	98	331
18:00	16	1	0	1	3	1	3	25	16	2	3	0	0	0	0	21	0	0	0	0	0	0	0	0	3	3	2	0	0	0	0	8	54
18:15	18	6	0	1	2	0	0	27	13	3	0	1	0	1	0	18	0	0	0	0	0	0	0	0	2	2	3	3	0	0	1	11	56
18:30	12	1	0	2	1	0	1	17	13	3	0	2	0	1	0	19	0	0	0	0	0	0	0	0	2	3	3	0	0	0	0	8	44
18:45	4	2	1	1	1	1	1	11	8	4	1	0	0	0	0	13	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	7	31
1 Hr	50	10	1	5	7	2	5	80	50	12	4	3	0	2	0	71	0	0	0	0	0	0	0	0	14	8	8	3	0	0	1	34	185
12 Hrs	506	193	52	155	49	10	18	983	497	181	76	102	3	7	0	866	0	0	0	0	0	0	0	0	754	458	180	83	7	4	3	1489	3338
Check								983								866								0								1489	3338
Total	506	193	52	155	49	10	18	983	497	181	76	102	3	7	0	866	0	0	0	0	0	0	0	0	754	458	180	83	7	4	3	1489	3338
Check								983								866								0								1489	3338

Entry: Arm D - Kilshane Way (W)

	Destination: Arm A - R135 (N)								Destination: Arm B - Kilshane Way (E)								Destination: Arm C - R135 (S)								Destination: Arm D - Kilshane Way (W)								Arm
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	Totals
07:00	2	0	2	1	0	0	0	5	16	1	4	0	1	0	0	22	1	2	7	3	0	0	1	14	0	0	0	0	0	0	0	0	41
07:15	0	1	0	0	0	0	0	1	16	4	3	0	1	0	0	24	0	4	5	2	1	0	1	13	0	0	0	0	0	0	0	0	38
07:30	1	1	0	0	0	0	0	2	7	5	6	0	5	0	0	23	1	5	3	3	1	0	0	13	0	0	0	0	0	0	0	0	38
07:45	0	0	0	0	0	0	0	0	20	6	3	1	0	0	0	30	12	5	5	2	0	0	0	24	0	0	0	0	0	0	0	0	54
1 Hr	3	2	2	1	0	0	0	8	59	16	16	1	7	0	0	99	14	16	20	10	2	0	2	64	0	0	0	0	0	0	0	0	171
08:00	1	1	0	1	0	0	0	3	31	3	9	2	0	0	0	45	5	5	7	1	0	0	0	18	0	0	0	0	0	0	0	0	66
08:15	0	3	0	1	0	0	0	4	23	8	3	0	0	0	2	36	10	8	7	1	0	0	0	26	0	0	0	0	0	0	0	0	66
08:30	4	3	1	0	0	0	0	8	18	11	3	3	0	0	0	35	5	7	7	0	0	0	0	19	0	0	0	0	0	0	0	0	62
08:45	0	0	0	0	0	0	0	0	13	8	5	1	0	0	0	27	4	8	6	4	0	0	0	22	0	0	0	0	0	0	0	0	49
1 Hr	5	7	1	2	0	0	0	15	85	30	20	6	0	0	2	143	24	28	27	6	0	0	0	85	0	0	0	0	0	0	0	0	243
09:00	1	1	0	0	0	0	0	2	18	10	3	0	0	1	0	32	3	11	4	1	0	0	0	19	0	0	0	0	0	0	0	0	53
09:15	1	0	1	0	0	0	0	2	24	13	2	0	0	0	0	39	6	10	5	1	0	0	0	22	0	0	0	0	0	0	0	0	63
09:30	3	1	2	0	0	0	0	6	15	3	7	1	0	0	0	26	8	13	2	3	0	0	0	26	0	0	0	0	0	0	0	0	58
09:45	0	4	2	0	0	0	0	6	14	12	2	1	0	0	0	29	5	9	8	1	0	0	0	23	0	0	0	0	0	0	0	0	58
1 Hr	5	6	5	0	0	0	0	16	71	38	14	2	0	1	0	126	22	43	19	6	0	0	0	90	0	0	0	0	0	0	0	0	232
10:00	0	0	0	0	0	0	0	0	13	6	3	1	0	0	0	23	12	10	3	3	0	0	0	28	0	0	0	0	0	0	0	0	51
10:15	6	0	0	0	0	0	0	6	13	9	5	1	0	0	0	28	12	13	1	3	0	0	0	29	0	0	0	0	0	0	0	0	63
10:30	1	2	1	0	0	0	0	4	6	9	4	3	0	0	1	23	13	14	3	0	0	0	0	30	0	0	0	0	0	0	0	0	57
10:45	0	0	1	0	0	0	0	1	22	8	4	1	0	0	0	35	10	8	2	4	0	0	0	24	0	0	0	0	0	0	0	0	60
1 Hr	7	2	2	0	0	0	0	11	54	32	16	6	0	0	1	109	47	45	9	10	0	0	0	111	0	0	0	0	0	0	0	0	231
11:00	4	1	0	0	0	0	0	5	17	10	7	2	0	0	0	36	8	8	4	0	0	0	0	20	0	0	0	0	0	0	0	0	61
11:15	2	4	0	0	0	0	0	6	18	10	4	1	0	0	0	33	11	8	1	3	0	0	0	23	0	0	0	0	0	0	0	0	62
11:30	1	1	0	0	0	0	0	2	15	6	6	0	0	1	0	28	16	4	7	1	0	1	0	29	0	0	0	0	0	0	0	0	59
11:45	2	1	0	0	0	0	0	3	18	9	1	2	1	0	1	32	11	13	1	3	0	0	0	28	0	0	0	0	0	0	0	0	63
1 Hr	9	7	0	0	0	0	0	16	68	35	18	5	1	1	1	129	46	33	13	7	0	1	0	100	0	0	0	0	0	0	0	0	245
12:00	5	2	0	0	0	0	0	7	22	17	8	1	0	0	0	48	14	9	6	4	0	0	0	33	0	0	0	0	0	0	0	0	88
12:15	6	2	0	0	0	0	0	8	15	4	4	2	0	0	0	25	11	8	6	1	0	0	0	26	0	0	0	0	0	0	0	0	59
12:30	5	1	1	0	0	0	0	7	28	14	5	0	0	1	0	48	13	9	5	0	0	0	0	27	0	0	0	0	0	0	0	0	82
12:45	5	3	0	0	0	0	0	8	23	9	2	2	0	0	1	37	17	14	3	2	0	0	0	36	0	0	0	0	0	0	0	0	81
1 Hr	21	8	1	0	0	0	0	30	88	44	19	5	0	1	1	158	55	40	20	7	0	0	0	122	0	0	0	0	0	0	0	0	310
13:00	7	1	0	0	0	0	0	8	30	7	5	0	0	1	0	43	10	2	4	0	0	0	0	16	0	0	0	0	0	0	0	0	67
13:15	8	0	0	1	0	0	0	9	32	2	4	2	0	1	0	41	16	6	1	1	0	0	0	24	0	0	0	0	0	0	0	0	74
13:30	1	4	0	0	0	0	0	5	25	6	2	0	0	0	0	33	11	6	3	1	0	0	0	21	0	0	0	0	0	0	0	0	59
13:45	4	0	1	0	0	0	0	5	21	7	3	1	1	0	0	33	20	7	5	0	0	0	0	32	0	0	0	0	0	0	0	0	70
1 Hr	20	5	1	1	0	0	0	27	108	22	14	3	1	2	0	150	57	21	13	2	0	0	0	93	0	0	0	0	0	0	0	0	270
14:00	1	0	0	0	0	0	0	1	29	7	5	1	0	0	0	42	15	7	4	3	0	0	0	29	0	0	0	0	0	0	0	0	72
14:15	3	0	0	0	0	0	0	3	28	7	4	0	0	0	0	39	11	7	3	0	0	0	0	21	0	0	0	0	0	0	0	0	63
14:30	2	2	0	0	0	0	0	4	24	7	3	0	0	1	0	35	10	10	3	1	0	0	0	24	0	0	0	0	0	0	0	0	63
14:45	5	1	0	0	0	0	0	6	18	10	4	0	0	0	0	32	10	9	4	1	0	0	0	24	0	0	0	0	0	0	0	0	62
1 Hr	11	3	0	0	0	0	0	14	99	31	16	1	0	1	0	148	46	33	14	5	0	0	0	98	0	0	0	0	0	0	0	0	260
15:00	2	2	1	0	0	0	0	5	19	5	3	0	0	0	0	27	15	3	2	2	0	1	0	23	0	0	0	0	0	0	0	0	55
15:15	3	2	1	0	0	0	0	6	30	7	2	0	0	0	0	39	15	5	7	1	0	0	0	28	0	0	0	0	0	0	0	0	73
15:30	2	0	0	0	0	0	0	2	30	10	2	1	0	1	0	44	14	9	1	2	0	0	0	26	0	0	0	0	0	0	0	0	72
15:45	4	2	1	0	0	0	0	7	40	15	3	2	0	1	1	62	24	9	6	2	0	0	0	41	0	0	0	0	0	0	0	0	110
1 Hr	11	6	3	0	0	0	0	20	119	37	10	3	0	2	1	172	68	26	16	7	0	1	0	118	0	0	0	0	0	0	0	0	310
16:00	1	2	3	1	0	0	0	7	37	15	0	1	0	0	0	53	29	7	2	3	1	0	0	42	0	0	0	0	0	0	0	0	102
16:15	4	1	0	0	0	0	0	5	41	14	0	1	0	0	0	56	26	7	3	1	0	0	0	37	0	0	0	0	0	0	0	0	98
16:30	3	3	0	0	0	0	0	6	53	10	2	2	0	0	0	67	26	11	1	0	0	0	0	38	0	0	0	0	0	0	0	0	111
16:45	2	1	0	0	0	0	0	3	46	9	0	0	0	0	0	55	28	5	1	2	0	0	0	36	0	0	0	0	0	0	0	0	94
1 Hr	10	7	3	1	0	0	0	21	177	48	2	4	0	0	0	231	109	30	7	6	1	0	0	153	0	0	0	0	0	0	0	0	405
17:00	3	3	1	0	0	0	0	7	59	10	1	0	0	1	0	71	36	10	1	1	0	0	0	48	0	0	0	0	0	0	0	0	126
17:15	3	0	1	0	0	0	0	4	54	4	3	0	0	0	0	61	26	5	2	2	0	1	0	36	0	0	0	0	0	0	0	0	101
17:30	5	3	0	0	0	0	0	8	74	9	1	1	0	0	1	86	34	5	1	2	0	1	0	43	0	0	0	0	0	0	0	0	137
17:45	7	0	0	0	0	0	0	7	72	4	0	0	0	0	0	76	36	6	1	1	0	0	0	44	0	0	0	0	0	0	0	0	127
1 Hr	18	6	2	0	0	0	0	26	259	27	5	1	0	1	1	294	132	26	5	6	0	2	0	171	0	0	0	0	0	0	0	0	491
18:00	4	1	0	0	0	0	0	5	57	1	4	0	0	1	0	63	38	3	1	0	0	0	1	43	0	0	0	0	0	0	0	0	111
18:15	2	1	0	0	0	0	0	3	31	1	0	1	0	1	2	36	19	2	0	0	0	0	0	21	0	0	0	0	0	0	0	0	60
18:30	1	1	0	0	0	0	0	2	32	5	0	0	0	0	1	38	15	2	0	0	0	0	0	17	0	0	0	0	0	0	0	0	57
18:45	3	3	0	0	0	0	0	6	23	2	1	0	0	0	0	26	13	1	0	0	0	0	0	14	0	0	0	0	0	0	0	0	46
1 Hr	10	6	0	0	0	0	0	16	143	9	5	1	0	2	3	163	85	8	1	0	0	0	1	95	0	0	0	0	0	0	0	0	274
12 Hrs	130	65	20	5	0	0	0	220	1330	369	155	38	9	11	10	1922	705	349	164	72	3	4	3	1300	0	0	0	0	0	0	0	0	3442
Check								220								1922								1300								0	3442
Total	130	65	20	5	0	0	0	220	1330	369	155	38	9	11	10	1922	705	349	164	72	3	4	3	1300	0	0	0	0	0	0	0	0	3442
Check								220								1922								1300								0	3442

ORIGIN SUMMARY

	Origin: Arm A - R135 (N)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	32	11	3	2	1	0	1	50
07:15	30	13	6	4	3	0	1	57
07:30	66	18	4	5	4	1	2	100
07:45	54	24	1	4	3	0	1	87
1 Hr	182	66	14	15	11	1	5	294
08:00	54	19	0	4	2	0	4	83
08:15	71	13	4	5	0	1	1	95
08:30	60	18	1	1	1	0	1	82
08:45	52	10	2	6	2	1	0	73
1 Hr	237	60	7	16	5	2	6	333
09:00	44	13	3	2	4	0	1	67
09:15	49	9	3	4	1	0	1	67
09:30	36	11	4	7	2	0	0	60
09:45	39	14	1	2	1	0	0	57
1 Hr	168	47	11	15	8	0	2	251
10:00	23	10	3	4	2	0	1	43
10:15	28	9	2	2	1	0	0	42
10:30	34	8	3	3	2	0	0	50
10:45	12	7	2	7	1	1	0	30
1 Hr	97	34	10	16	6	1	1	165
11:00	32	12	2	2	1	0	1	50
11:15	26	12	6	3	1	0	0	48
11:30	31	7	4	1	2	0	0	45
11:45	36	11	4	4	0	0	0	55
1 Hr	125	42	16	10	4	0	1	198
12:00	30	5	1	3	2	0	0	41
12:15	33	11	1	3	2	1	1	52
12:30	46	11	6	0	1	0	0	64
12:45	35	9	2	1	2	0	0	49
1 Hr	144	36	10	7	7	1	1	206
13:00	41	8	4	7	3	0	0	63
13:15	63	11	3	5	1	0	0	83
13:30	39	15	2	5	1	1	1	64
13:45	42	7	0	3	0	0	0	52
1 Hr	185	41	9	20	5	1	1	262
14:00	44	10	3	4	3	0	1	65
14:15	48	11	3	5	2	1	0	70
14:30	43	18	3	2	2	0	0	68
14:45	34	11	2	8	0	1	2	58
1 Hr	169	50	11	19	7	2	3	261
15:00	44	14	2	3	3	0	0	66
15:15	39	3	2	5	0	0	0	49
15:30	52	13	2	5	1	0	0	73
15:45	31	10	3	2	1	1	1	49
1 Hr	166	40	9	15	5	1	1	237
16:00	32	10	2	5	2	0	0	51
16:15	33	8	5	5	1	1	0	53
16:30	40	13	1	2	1	3	0	60
16:45	59	6	1	4	1	0	1	72
1 Hr	164	37	9	16	5	4	1	236
17:00	41	10	0	4	1	0	2	58
17:15	57	10	1	1	1	0	1	71
17:30	51	8	2	5	1	1	1	69
17:45	54	4	2	5	1	0	1	67
1 Hr	203	32	5	15	4	1	5	265
18:00	39	2	1	6	3	1	1	53
18:15	34	7	2	2	0	1	1	47
18:30	46	6	0	2	1	0	0	55
18:45	29	4	0	1	3	0	0	37
1 Hr	148	19	3	11	7	2	2	192
12 Hrs	1988	504	114	175	74	16	29	2900
Check								2900
Total	1988	504	114	175	74	16	29	2900
Check								2900

	Origin: Arm B - Kilshane Way (E)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	75	8	3	4	0	2	0	92
07:15	93	19	2	3	0	0	0	117
07:30	91	11	3	6	1	1	1	114
07:45	92	26	3	4	0	0	1	126
1 Hr	351	64	11	17	1	3	2	449
08:00	104	15	5	3	0	0	2	129
08:15	103	12	6	2	0	0	0	123
08:30	97	12	8	4	0	1	0	122
08:45	90	19	6	4	0	1	0	120
1 Hr	394	58	25	13	0	2	2	494
09:00	101	20	12	6	1	0	2	142
09:15	85	27	6	8	1	0	1	128
09:30	48	17	7	2	1	0	0	75
09:45	46	13	8	5	0	1	0	73
1 Hr	280	77	33	21	3	1	3	418
10:00	45	13	10	4	1	0	0	73
10:15	60	10	7	8	1	0	0	86
10:30	46	22	6	7	1	0	0	82
10:45	59	17	5	8	1	0	0	90
1 Hr	210	62	28	27	4	0	0	331
11:00	44	17	7	7	4	0	1	80
11:15	39	8	14	4	1	1	0	67
11:30	53	30	8	3	1	0	0	95
11:45	46	9	10	8	1	1	1	76
1 Hr	182	64	39	22	7	2	2	318
12:00	50	16	10	5	1	0	0	82
12:15	44	13	7	5	1	1	0	71
12:30	44	11	9	6	2	0	1	73
12:45	57	16	10	5	0	0	0	88
1 Hr	195	56	36	21	4	1	1	314
13:00	79	16	10	3	2	0	0	110
13:15	49	15	9	3	0	2	0	78
13:30	63	22	7	3	0	0	0	95
13:45	60	16	6	5	0	0	0	87
1 Hr	251	69	32	14	2	2	0	370
14:00	54	15	6	7	0	0	0	82
14:15	61	12	6	2	1	1	0	83
14:30	49	12	3	3	0	1	0	68
14:45	80	23	12	7	1	0	0	123
1 Hr	244	62	27	19	2	2	0	356
15:00	58	20	8	6	0	0	0	92
15:15	59	16	6	2	0	1	0	84
15:30	72	18	6	6	3	0	0	105
15:45	58	17	9	6	0	1	2	93
1 Hr	247	71	29	20	3	2	2	374
16:00	66	24	8	4	0	0	0	102
16:15	67	21	9	6	0	0	0	103
16:30	62	16	4	4	1	0	0	87
16:45	89	19	10	4	1	1	0	124
1 Hr	284	80	31	18	2	1	0	416
17:00	75	15	4	6	0	0	1	101
17:15	110	18	3	4	0	0	0	135
17:30	104	15	6	1	1	0	1	128
17:45	117	12	3	3	2	0	0	137
1 Hr	406	60	16	14	3	0	2	501
18:00	125	15	4	4	0	1	4	153
18:15	88	13	2	1	5	3	0	112
18:30	56	17	2	4	0	1	0	80
18:45	48	10	2	2	4	1	0	67
1 Hr	317	55	10	11	9	6	4	412
12 Hrs	3361	778	317	217	40	22	18	4753
Check								4753
Total	3361	778	317	217	40	22	18	4753
Check								4753

	Origin: Arm C - R135 (S)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	28	16	6	2	0	0	0	52
07:15	30	9	7	4	1	0	0	51
07:30	26	16	6	9	3	0	0	60
07:45	60	34	2	10	0	0	1	107
1 Hr	144	75	21	25	4	0	1	270
08:00	43	19	4	7	1	0	1	75
08:15	65	18	3	6	1	2	0	95
08:30	55	30	4	3	0	1	0	93
08:45	60	16	7	12	2	1	0	98
1 Hr	223	83	18	28	4	4	1	361
09:00	49	17	9	7	1	0	0	83
09:15	41	17	6	14	2	1	0	81
09:30	36	23	5	8	1	0	0	73
09:45	24	22	6	6	2	0	0	60
1 Hr	150	79	26	35	6	1	0	297
10:00	31	21	8	5	1	1	0	67
10:15	28	12	9	7	2	0	0	58
10:30	25	23	4	4	2	0	0	58
10:45	26	15	5	6	1	0	0	53
1 Hr	110	71	26	22	6	1	0	236
11:00	23	16	8	4	1	1	0	53
11:15	23	19	6	10	0	0	2	60
11:30	13	20	6	6	0	0	1	46
11:45	30	21	6	9	2	0	0	68
1 Hr	89	76	26	29	3	1	3	227
12:00	30	16	9	7	1	0	0	63
12:15	38	22	4	10	1	0	0	75
12:30	45	25	8	4	2	0	0	84
12:45	38	12	8	6	1	0	0	65
1 Hr	151	75	29	27	5	0	0	287
13:00	35	19	13	8	1	0	0	76
13:15	40	21	8	3	2	0	0	74
13:30	42	12	10	6	0	0	0	70
13:45	40	15	8	10	2	0	0	75
1 Hr	157	67	39	27	5	0	0	295
14:00	29	15	6	10	1	1	0	62
14:15	35	21	8	3	1	1	0	69
14:30	23	13	4	11	1	0	0	52
14:45	33	20	6	7	1	1	0	68
1 Hr	120	69	24	31	4	3	0	251
15:00	31	18	14	9	1	0	0	73
15:15	38	15	5	12	2	0	0	72
15:30	43	23	9	11	1	0	0	87
15:45	28	22	7	5	2	0	2	66
1 Hr	140	78	35	37	6	0	2	298
16:00	28	24	10	12	1	1	1	77
16:15	36	19	5	10	1	0	0	71
16:30	33	15	3	13	0	2	1	67
16:45	51	17	6	9	2	0	0	85
1 Hr	148	75	24	44	4	3	2	300
17:00	61	16	7	8	1	1	1	95
17:15	47	16	4	5	1	2	1	76
17:30	54	14	7	6	1	0	3	85
17:45	49	8	9	5	2	1	1	75
1 Hr	211	54	27	24	5	4	6	331
18:00	35	6	5	1	3	1	3	54
18:15	33	11	3	5	2	1	1	56
18:30	27	7	3	4	1	1	1	44
18:45	19	6	2	1	1	1	1	31
1 Hr	114	30	13	11	7	4	6	185
12 Hrs	1757	832	308	340	59	21	21	3338
Check								3338
Total	1757	832	308	340	59	21	21	3338
Check								3338

	Origin: Arm D - Kilshane Way (W)								Origin Totals
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	
07:00	19	3	13	4	1	0	1	41	235
07:15	16	9	8	2	2	0	1	38	263
07:30	9	11	9	3	6	0	0	38	312
07:45	32	11	8	3	0	0	0	54	374
1 Hr	76	34	38	12	9	0	2	171	1184
08:00	37	9	16	4	0	0	0	66	353
08:15	33	19	10	2	0	0	2	66	379
08:30	27	21	11	3	0	0	0	62	359
08:45	17	16	11	5	0	0	0	49	340
1 Hr	114	65	48	14	0	0	2	243	1431
09:00	22	22	7	1	0	1	0	53	345
09:15	31	23	8	1	0	0	0	63	339
09:30	26	17	11	4	0	0	0	58	266
09:45	19	25	12	2	0	0	0	58	248
1 Hr	98	87	38	8	0	1	0	232	1198
10:00	25	16	6	4	0	0	0	51	234
10:15	31	22	6	4	0	0	0	63	249
10:30	20	25	8	3	0	0	1	57	247
10:45	32	16	7	5	0	0	0	60	233
1 Hr	108	79	27	16	0	0	1	231	963
11:00	29	19	11	2	0	0	0	61	244
11:15	31	22	5	4	0	0	0	62	237
11:30	32	11	13	1	0	2	0	59	245
11:45	31	23	2	5	1	0	1	63	262
1 Hr	123	75	31	12	1	2	1	245	988
12:00	41	28	14	5	0	0	0	88	274
12:15	32	14	10	3	0	0	0	59	257
12:30	46	24	11	0	0	1	0	82	303
12:45	45	26	5	4	0	0	1	81	283
1 Hr	164	92	40	12	0	1	1	310	1117
13:00	47	10	9	0	0	1	0	67	316
13:15	56	8	5	4	0	1	0	74	309
13:30	37	16	5	1	0	0	0	59	288
13:45	45	14	9	1	1	0	0	70	284
1 Hr	185	48	28	6	1	2	0	270	1197
14:00	45	14	9	4	0	0	0	72	281
14:15	42	14	7	0	0	0	0	63	285
14:30	36	19	6	1	0	1	0	63	251
14:45	33	20	8	1	0	0	0	62	311
1 Hr	156	67	30	6	0	1	0	260	1128
15:00	36	10	6	2	0	1	0	55	286
15:15	48	14	10	1	0	0	0	73	278
15:30	46	19	3	3	0	1	0	72	337
15:45	68	26	10	4	0	1	1	110	318
1 Hr	198	69	29	10	0	3	1	310	1219
16:00	67	24	5	5	1	0	0	102	332
16:15	71	22	3	2	0	0	0	98	325
16:30	82	24	3	2	0	0	0	111	325
16:45	76	15	1	2	0	0	0	94	375
1 Hr	296	85	12	11	1	0	0	405	1357
17:00	98	23	3	1	0	1	0	126	380
17:15	83	9	6	2	0	1	0	101	383
17:30	113	17	2	3	0	1	1	137	419
17:45	115	10	1	1	0	0	0	127	406
1 Hr	409	59	12	7	0	3	1	491	1588
18:00	99	5	5	0	0	1	1	111	371
18:15	52	4	0	1	0	1	2	60	275
18:30	48	8	0	0	0	0	1	57	236
18:45	39	6	1	0	0	0	0	46	181
1 Hr	238	23	6	1	0	2	4	274	1063
12 Hrs	2165	783	339	115	12	15	13	3442	14433
Check								3442	14433
Total	2165	783	339	115	12	15	13	3442	14433
Check								3442	14433

DESTINATION SUMMARY

	Destination: Arm A - R135 (N)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	14	6	4	5	0	0	0	29
07:15	16	6	1	2	1	0	0	26
07:30	17	3	0	6	3	0	0	29
07:45	22	8	0	7	0	0	1	38
1 Hr	69	23	5	20	4	0	1	122
08:00	20	12	1	5	1	0	2	41
08:15	24	8	1	6	1	2	0	42
08:30	22	7	3	2	0	1	0	35
08:45	15	8	1	5	2	0	0	31
1 Hr	81	35	6	18	4	3	2	149
09:00	16	8	4	5	1	0	0	34
09:15	19	10	6	12	1	0	0	48
09:30	20	4	5	3	0	0	0	32
09:45	15	11	4	4	2	0	0	36
1 Hr	70	33	19	24	4	0	0	150
10:00	23	12	2	6	2	0	0	45
10:15	34	5	5	5	1	0	0	50
10:30	32	16	2	5	2	0	0	57
10:45	27	7	3	4	2	0	0	43
1 Hr	116	40	12	20	7	0	0	195
11:00	23	11	2	2	4	0	0	42
11:15	19	8	4	5	1	0	2	39
11:30	18	13	4	5	1	0	0	41
11:45	35	7	3	8	3	1	1	58
1 Hr	95	39	13	20	9	1	3	180
12:00	39	7	1	5	1	0	0	53
12:15	48	11	3	6	1	1	0	70
12:30	44	12	7	5	4	0	1	73
12:45	42	12	6	5	1	0	0	66
1 Hr	173	42	17	21	7	1	1	262
13:00	52	7	4	5	3	0	0	71
13:15	43	10	2	2	1	0	0	58
13:30	51	10	5	4	0	0	0	70
13:45	37	10	6	7	2	0	0	62
1 Hr	183	37	17	18	6	0	0	261
14:00	34	7	2	8	1	0	0	52
14:15	38	12	4	2	1	1	0	58
14:30	25	6	1	7	1	0	0	40
14:45	50	11	4	7	2	1	0	75
1 Hr	147	36	11	24	5	2	0	225
15:00	33	10	5	5	1	0	0	54
15:15	42	11	1	6	1	0	0	61
15:30	46	10	2	7	4	0	0	69
15:45	45	9	3	9	1	0	4	71
1 Hr	166	40	11	27	7	0	4	255
16:00	37	16	6	10	1	1	0	71
16:15	50	19	2	6	1	0	0	78
16:30	39	12	3	9	1	1	1	66
16:45	63	17	3	5	2	0	0	90
1 Hr	189	64	14	30	5	2	1	305
17:00	49	18	5	3	1	1	2	79
17:15	59	9	3	5	0	0	1	77
17:30	71	14	1	1	1	0	3	91
17:45	82	4	5	3	2	1	1	98
1 Hr	261	45	14	12	4	2	7	345
18:00	73	10	2	3	3	1	4	96
18:15	65	12	0	1	2	3	0	83
18:30	41	12	1	2	1	0	1	58
18:45	35	9	2	3	2	2	1	54
1 Hr	214	43	5	9	8	6	6	291
12 Hrs	1764	477	144	243	70	17	25	2740
Check								2740
Total	1764	477	144	243	70	17	25	2740
Check								2740

	Destination: Arm B - Kilshane Way (E)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	45	13	7	2	2	0	0	69
07:15	47	12	7	3	2	0	1	72
07:30	60	21	7	6	9	1	0	104
07:45	61	27	4	9	0	0	0	101
1 Hr	213	73	25	20	13	1	1	346
08:00	76	7	11	6	1	0	0	101
08:15	94	18	5	1	0	0	2	120
08:30	75	27	4	3	0	0	0	109
08:45	50	17	7	8	0	0	0	82
1 Hr	295	69	27	18	1	0	2	412
09:00	55	19	6	3	3	1	0	87
09:15	53	22	4	4	0	1	0	84
09:30	37	12	8	5	1	0	0	63
09:45	46	21	3	4	1	0	0	75
1 Hr	191	74	21	16	5	2	0	309
10:00	37	12	6	4	1	1	0	61
10:15	38	14	8	3	0	0	0	63
10:30	33	14	10	5	1	0	1	64
10:45	36	12	7	4	0	1	0	60
1 Hr	144	52	31	16	2	2	1	248
11:00	41	19	11	6	1	0	0	78
11:15	41	20	9	4	0	0	0	74
11:30	37	11	10	2	1	1	0	62
11:45	42	21	3	6	1	0	1	74
1 Hr	161	71	33	18	3	1	1	288
12:00	48	20	11	3	1	0	0	83
12:15	44	13	6	8	1	0	0	72
12:30	69	26	11	1	1	1	0	109
12:45	53	16	4	6	1	0	1	81
1 Hr	214	75	32	18	4	1	1	345
13:00	59	16	8	3	2	1	0	89
13:15	81	10	14	4	1	1	0	111
13:30	55	10	5	0	0	0	1	71
13:45	63	15	4	4	1	0	0	87
1 Hr	258	51	31	11	4	2	1	358
14:00	56	11	8	7	2	0	1	85
14:15	65	18	8	6	1	0	0	98
14:30	57	19	7	1	1	1	0	86
14:45	52	22	6	4	0	0	2	86
1 Hr	230	70	29	18	4	1	3	355
15:00	57	17	6	4	1	0	0	85
15:15	61	14	4	4	0	0	0	83
15:30	73	22	3	6	0	1	0	105
15:45	70	26	9	4	0	2	2	113
1 Hr	261	79	22	18	1	3	2	386
16:00	65	24	2	4	1	0	0	96
16:15	77	24	4	7	1	1	0	114
16:30	100	20	3	7	0	1	0	131
16:45	98	14	1	2	1	0	0	116
1 Hr	340	82	10	20	3	2	0	457
17:00	113	17	3	6	1	1	1	142
17:15	117	12	4	1	1	2	0	137
17:30	136	18	4	7	0	0	1	166
17:45	121	8	2	1	1	0	0	133
1 Hr	487	55	13	15	3	3	2	578
18:00	99	4	7	1	1	2	1	115
18:15	69	7	0	2	0	3	2	83
18:30	72	12	0	4	1	1	1	91
18:45	49	6	2	1	1	0	0	59
1 Hr	289	29	9	8	3	6	4	348
12 Hrs	3083	780	283	196	46	24	18	4430
Check								4430
Total	3083	780	283	196	46	24	18	4430
Check								4430

	Destination: Arm C - R135 (S)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total
07:00	37	7	8	4	0	2	2	60
07:15	29	12	9	5	3	0	1	59
07:30	39	13	9	8	2	1	2	74
07:45	45	19	6	4	3	0	1	78
1 Hr	150	51	32	21	8	3	6	271
08:00	33	19	9	4	1	0	4	70
08:15	35	14	9	6	0	1	1	66
08:30	17	17	9	4	1	0	1	49
08:45	26	11	7	8	2	0	0	54
1 Hr	111	61	34	22	4	1	6	239
09:00	27	21	9	4	1	0	1	63
09:15	40	17	7	7	1	0	1	73
09:30	34	20	6	10	1	0	0	71
09:45	24	20	12	6	0	0	0	62
1 Hr	125	78	34	27	3	0	2	269
10:00	23	18	5	5	1	0	1	53
10:15	33	22	2	10	1	0	0	68
10:30	25	20	4	4	1	0	0	54
10:45	23	18	3	16	1	0	0	61
1 Hr	104	78	14	35	4	0	1	236
11:00	32	14	5	4	0	0	1	56
11:15	23	17	4	6	1	0	0	51
11:30	36	17	10	2	1	1	0	67
11:45	28	18	6	9	0	0	0	61
1 Hr	119	66	25	21	2	1	1	235
12:00	33	14	8	10	1	0	0	66
12:15	29	15	8	4	1	0	1	58
12:30	31	14	9	2	0	0	0	56
12:45	44	22	5	3	1	0	0	75
1 Hr	137	65	30	19	3	0	1	255
13:00	40	9	5	8	1	0	0	63
13:15	40	14	4	8	1	1	0	68
13:30	32	20	4	9	1	1	0	67
13:45	37	15	6	5	0	0	0	63
1 Hr	149	58	19	30	3	2	0	261
14:00	37	16	7	8	1	0	0	69
14:15	37	11	6	2	1	2	0	59
14:30	33	22	6	5	1	0	0	67
14:45	33	18	7	10	0	1	0	69
1 Hr	140	67	26	25	3	3	0	264
15:00	31	9	3	8	2	1	0	54
15:15	35	8	8	6	0	0	0	57
15:30	40	17	1	8	1	0	0	67
15:45	43	15	8	3	1	0	0	70
1 Hr	149	49	20	25	4	1	0	248
16:00	47	21	3	8	2	0	0	81
16:15	41	10	6	7	0	0	0	64
16:30	43	21	1	2	1	3	0	71
16:45	52	10	3	6	0	0	1	72
1 Hr	183	62	13	23	3	3	1	288
17:00	61	16	1	4	0	0	1	83
17:15	64	14	2	4	1	1	1	87
17:30	67	14	3	4	1	2	1	92
17:45	78	10	3	6	1	0	1	99
1 Hr	270	54	9	18	3	3	4	361
18:00	67	6	2	5	2	0	2	84
18:15	36	7	2	3	0	0	1	49
18:30	41	5	0	1	0	1	0	48
18:45	28	5	0	0	2	0	0	35
1 Hr	172	23	4	9	4	1	3	216
12 Hrs	1809	712	260	275	44	18	25	3143
Check								3143
Total	1809	712	260	275	44	18	25	3143
Check								3143

	Destination: Arm D - Kilshane Way (W)								Dest Totals
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	Total	
07:00	58	12	6	1	0	0	0	77	235
07:15	77	20	6	3	0	0	0	106	263
07:30	76	19	6	3	0	0	1	105	312
07:45	110	41	4	1	0	0	1	157	374
1 Hr	321	92	22	8	0	0	2	445	1184
08:00	109	24	4	3	0	0	1	141	353
08:15	119	22	8	2	0	0	0	151	379
08:30	125	30	8	2	0	1	0	166	359
08:45	128	25	11	6	0	3	0	173	340
1 Hr	481	101	31	13	0	4	1	631	1431
09:00	118	24	12	4	1	0	2	161	345
09:15	94	27	6	4	2	0	1	134	339
09:30	55	32	8	3	2	0	0	100	266
09:45	43	22	8	1	0	1	0	75	248
1 Hr	310	105	34	12	5	1	3	470	1198
10:00	41	18	14	2	0	0	0	75	234
10:15	42	12	9	3	2	0	0	68	249
10:30	35	28	5	3	1	0	0	72	247
10:45	43	18	6	2	0	0	0	69	233
1 Hr	161	76	34	10	3	0	0	284	963
11:00	32	20	10	3	1	1	1	68	244
11:15	36	16	14	6	0	1	0	73	237
11:30	38	27	7	2	0	0	1	75	245
11:45	38	18	10	3	0	0	0	69	262
1 Hr	144	81	41	14	1	2	2	285	988
12:00	31	24	14	2	1	0	0	72	274
12:15	26	21	5	3	1	1	0	57	257
12:30	37	19	7	2	0	0	0	65	303
12:45	36	13	10	2	0	0	0	61	283
1 Hr	130	77	36	9	2	1	0	255	1117
13:00	51	21	19	2	0	0	0	93	316
13:15	44	21	5	1	0	1	0	72	309
13:30	43	25	10	2	0	0	0	80	288
13:45	50	12	7	3	0	0	0	72	284
1 Hr	188	79	41	8	0	1	0	317	1197
14:00	45	20	7	2	0	1	0	75	281
14:15	46	17	6	0	1	0	0	70	285
14:30	36	15	2	4	0	1	0	58	251
14:45	45	23	11	2	0	0	0	81	311
1 Hr	172	75	26	8	1	2	0	284	1128
15:00	48	26	16	3	0	0	0	93	286
15:15	46	15	10	4	1	1	0	77	278
15:30	54	24	14	4	0	0	0	96	337
15:45	27	25	9	1	1	1	0	64	318
1 Hr	175	90	49	12	2	2	0	330	1219
16:00	44	21	14	4	0	0	1	84	332
16:15	39	17	10	3	0	0	0	69	325
16:30	35	15	4	3	0	0	0	57	325
16:45	62	16	11	6	1	1	0	97	375
1 Hr	180	69	39	16	1	1	1	307	1357
17:00	52	13	5	6	0	0	0	76	380
17:15	57	18	5	2	0	0	0	82	383
17:30	48	8	9	3	1	0	1	70	419
17:45	54	12	5	4	1	0	0	76	406
1 Hr	211	51	24	15	2	0	1	304	1588
18:00	59	8	4	2	0	1	2	76	371
18:15	37	9	5	3	5	0	1	60	275
18:30	23	9	4	3	0	0	0	39	236
18:45	23	6	1	0	3	0	0	33	181
1 Hr	142	32	14	8	8	1	3	208	1063
12 Hrs	2615	928	391	133	25	15	13	4120	14433
Check								4120	14433
Total	2615	928	391	133	25	15	13	4120	14433
Check								4120	14433

APPENDIX 13-B
TRAFFIC FLOW SHEETS

R135 / N2 Slip Road Priority Junction - AM Peak Hour

2016 Existing AM Peak

From / To	R135 (North)	N2 Slip Road	R135 (South)	Totals
R135 (North)	0	0	58	**58**
N2 Slip Road	396	0	128	**524**
R135 (South)	86	0	0	**86**
Totals	**482**	**0**	**186**	**668**

2017 AM Peak No Development (Existing + TII Growth Factors)

From / To	R135 (North)	N2 Slip Road	R135 (South)	Totals
R135 (North)	0	0	58	**58**
N2 Slip Road	399	0	129	**528**
R135 (South)	87	0	0	**87**
Totals	**485**	**0**	**187**	**673**

2017 AM Peak Development Flows

From / To	R135 (North)	N2 Slip Road	R135 (South)	Totals
R135 (North)	0	0	6	**6**
N2 Slip Road	0	0	6	**6**
R135 (South)	12	0	0	**12**
Totals	**12**	**0**	**12**	**24**

2017 AM Peak With Development

From / To	R135 (North)	N2 Slip Road	R135 (South)	Totals
R135 (North)	0	0	64	**64**
N2 Slip Road	399	0	135	**534**
R135 (South)	99	0	0	**99**
Totals	**497**	**0**	**199**	**697**

2023 AM Peak No Development (Existing + TII Growth Factors)

From / To	R135 (North)	N2 Slip Road	R135 (South)	Totals
R135 (North)	0	0	61	**61**
N2 Slip Road	416	0	135	**551**
R135 (South)	90	0	0	**90**
Totals	**507**	**0**	**195**	**702**

2023 AM Peak With Development

From / To	R135 (North)	N2 Slip Road	R135 (South)	Totals
R135 (North)	0	0	67	**67**
N2 Slip Road	416	0	141	**557**
R135 (South)	102	0	0	**102**
Totals	**519**	**0**	**207**	**726**

2023 AM Peak Sensitivity Flows

From / To	R135 (North)	N2 Slip Road	R135 (South)	Totals
R135 (North)	0	0	16	**16**
N2 Slip Road	0	0	16	**16**
R135 (South)	32	0	0	**32**
Totals	**32**	**0**	**32**	**64**

2023 AM Peak With Development Flows + Sensitivity Flows

From / To	R135 (North)	N2 Slip Road	R135 (South)	Totals
R135 (North)	0	0	83	**83**
N2 Slip Road	416	0	157	**573**
R135 (South)	134	0	0	**134**
Totals	**551**	**0**	**239**	**790**

R135 / N2 Slip Road Priority Junction - PM Peak Hour

2016 Existing PM Peak

From / To	R135 (North)	N2 Slip Road	R135 (South)	**Totals**
R135 (North)	0	0	20	**20**
N2 Slip Road	308	0	20	**328**
R135 (South)	116	0	0	**116**
Totals	**424**	**0**	**40**	**464**

2017 PM Peak No Development (Existing + TII Growth Factors)

From / To	R135 (North)	N2 Slip Road	R135 (South)	**Totals**
R135 (North)	0	0	20	**20**
N2 Slip Road	310	0	20	**330**
R135 (South)	117	0	0	**117**
Totals	**427**	**0**	**40**	**467**

2017 PM Peak Development Flows

From / To	R135 (North)	N2 Slip Road	R135 (South)	**Totals**
R135 (North)	0	0	6	**6**
N2 Slip Road	0	0	6	**6**
R135 (South)	12	0	0	**12**
Totals	**12**	**0**	**12**	**24**

2017 PM Peak With Development

From / To	R135 (North)	N2 Slip Road	R135 (South)	**Totals**
R135 (North)	0	0	26	**26**
N2 Slip Road	310	0	26	**336**
R135 (South)	129	0	0	**129**
Totals	**439**	**0**	**52**	**491**

2023 PM Peak No Development (Existing + TII Growth Factors)

From / To	R135 (North)	N2 Slip Road	R135 (South)	**Totals**
R135 (North)	0	0	21	**21**
N2 Slip Road	324	0	21	**345**
R135 (South)	122	0	0	**122**
Totals	**446**	**0**	**42**	**488**

2023 PM Peak With Development

From / To	R135 (North)	N2 Slip Road	R135 (South)	**Totals**
R135 (North)	0	0	27	**27**
N2 Slip Road	324	0	27	**351**
R135 (South)	134	0	0	**134**
Totals	**458**	**0**	**54**	**512**

2023 PM Peak Sensitivity Flows

From / To	R135 (North)	N2 Slip Road	R135 (South)	**Totals**
R135 (North)	0	0	16	**16**
N2 Slip Road	0	0	16	**16**
R135 (South)	32	0	0	**32**
Totals	**32**	**0**	**32**	**64**

2023 PM Peak With Development Flows + Sensitivity Flows

From / To	R135 (North)	N2 Slip Road	R135 (South)	**Totals**
R135 (North)	0	0	43	**43**
N2 Slip Road	324	0	43	**367**
R135 (South)	166	0	0	**166**
Totals	**490**	**0**	**86**	**576**

R135 / Elm Road Signalised Junction - AM Peak Hour

2016 Existing AM Peak

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	230	63	**293**
Elm Road	21	0	3	**24**
R135 (South)	319	122	0	**441**
Totals	**340**	**352**	**66**	**758**

2016 AM Peak PCU Flows

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	283	71	**354**
Elm Road	22	0	4	**26**
R135 (South)	371	173	0	**544**
Totals	**393**	**456**	**75**	**924**

2017 AM Peak No Development (PCU Flows + TII Growth Factors)

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	285	72	**357**
Elm Road	22	0	4	**26**
R135 (South)	374	174	0	**548**
Totals	**396**	**459**	**76**	**931**

2017 AM Peak Development Flows

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	0	6	**6**
Elm Road	0	0	0	**0**
R135 (South)	6	6	0	**12**
Totals	**6**	**6**	**6**	**18**

2017 AM Peak With Development

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	285	78	**363**
Elm Road	22	0	4	**26**
R135 (South)	380	180	0	**560**
Totals	**402**	**465**	**82**	**949**

2023 AM Peak No Development (Existing + TII Growth Factors)

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	297	75	**372**
Elm Road	23	0	4	**27**
R135 (South)	390	182	0	**572**
Totals	**413**	**479**	**79**	**971**

2023 AM Peak With Development

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	297	81	**378**
Elm Road	23	0	4	**27**
R135 (South)	396	188	0	**584**
Totals	**419**	**485**	**85**	**989**

2023 AM Peak Sensitivity Flows

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	0	16	**16**
Elm Road	0	0	0	**0**
R135 (South)	16	16	0	**32**
Totals	**16**	**16**	**16**	**48**

2023 AM Peak With Development Flows + Sensitivity Flows

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	297	97	**394**
Elm Road	23	0	4	**27**
R135 (South)	412	204	0	**616**
Totals	**435**	**501**	**101**	**1037**

R135 / Elm Road Signalised Junction - PM Peak Hour

2016 Existing PM Peak

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	313	21	**334**
Elm Road	29	0	2	**31**
R135 (South)	320	144	0	**464**
Totals	**349**	**457**	**23**	**829**

2016 PM Peak PCU Flows

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	337	28	**365**
Elm Road	30	0	2	**32**
R135 (South)	378	164	0	**542**
Totals	**408**	**501**	**30**	**939**

2017 PM Peak No Development (PCU Flows + TII Growth Factors)

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	339	28	**368**
Elm Road	30	0	2	**32**
R135 (South)	381	165	0	**546**
Totals	**411**	**505**	**30**	**946**

2017 PM Peak Development Flows

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	0	6	**6**
Elm Road	0	0	0	**0**
R135 (South)	6	6	0	**12**
Totals	**6**	**6**	**6**	**18**

2017 PM Peak With Development

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	339	34	**374**
Elm Road	30	0	2	**32**
R135 (South)	387	171	0	**558**
Totals	**417**	**511**	**36**	**964**

2023 PM Peak No Development (Existing + TII Growth Factors)

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	354	29	**384**
Elm Road	32	0	2	**34**
R135 (South)	397	172	0	**570**
Totals	**429**	**527**	**32**	**987**

2023 PM Peak With Development

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	354	35	**390**
Elm Road	32	0	2	**34**
R135 (South)	403	178	0	**582**
Totals	**435**	**533**	**38**	**1005**

2023 PM Peak Sensitivity Flows

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	0	16	**16**
Elm Road	0	0	0	**0**
R135 (South)	16	16	0	**32**
Totals	**16**	**16**	**16**	**48**

2023 PM Peak With Development Flows + Sensitivity Flows

From / To	R135 (North)	Elm Road	R135 (South)	**Totals**
R135 (North)	0	354	51	**406**
Elm Road	32	0	2	**34**
R135 (South)	419	194	0	**614**
Totals	**451**	**549**	**54**	**1053**

R135 / L3125 Signalised Junction - AM Peak Hour

2016 Existing AM Peak

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	219	117	29	**365**
L3125 (East)	82	0	90	320	**492**
R135 (South)	59	73	0	205	**337**
L3125 (West)	9	134	81	0	**224**
Totals	**150**	**426**	**288**	**554**	**1418**

2016 AM Peak PCU Flows

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	234	137	30	**401**
L3125 (East)	93	0	101	331	**525**
R135 (South)	77	88	0	224	**389**
L3125 (West)	11	163	111	0	**285**
Totals	**181**	**485**	**349**	**585**	**1600**

2017 AM Peak No Development (PCU Flows + TII Growth Factors)

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	236	138	30	**404**
L3125 (East)	94	0	102	333	**529**
R135 (South)	78	89	0	226	**392**
L3125 (West)	11	164	112	0	**287**
Totals	**182**	**488**	**351**	**589**	**1611**

2017 AM Peak Development Flows

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	0	6	0	**6**
L3125 (East)	0	0	0	0	**0**
R135 (South)	6	0	0	0	**6**
L3125 (West)	0	0	0	0	**0**
Totals	**6**	**0**	**6**	**0**	**12**

2017 AM Peak With Development

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	236	144	30	**410**
L3125 (East)	94	0	102	333	**529**
R135 (South)	84	89	0	226	**398**
L3125 (West)	11	164	112	0	**287**
Totals	**188**	**488**	**357**	**589**	**1623**

2023 AM Peak No Development (PCU Flows + TII Growth Factors)

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	246	144	32	**421**
L3125 (East)	98	0	106	348	**552**
R135 (South)	81	92	0	235	**409**
L3125 (West)	12	171	117	0	**300**
Totals	**190**	**510**	**367**	**615**	**1682**

2023 AM Peak With Development

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	246	150	32	**427**
L3125 (East)	98	0	106	348	**552**
R135 (South)	87	92	0	235	**415**
L3125 (West)	12	171	117	0	**300**
Totals	**196**	**510**	**373**	**615**	**1694**

R135 / L3125 Signalised Junction - PM Peak Hour

2016 Existing PM Peak

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	168	86	16	**270**
N2 Slip Road	204	0	85	199	**488**
R135 (South)	111	120	0	110	**341**
L3125 (West)	22	273	163	0	**458**
Totals	**337**	**561**	**334**	**325**	**1557**

2016 PM Peak PCU Flows

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	177	97	18	**292**
N2 Slip Road	216	0	91	221	**528**
R135 (South)	127	136	0	135	**398**
L3125 (West)	24	179	175	0	**378**
Totals	**367**	**492**	**363**	**374**	**1596**

2017 PM Peak No Development (PCU Flows + TII Growth Factors)

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	178	98	18	**294**
N2 Slip Road	218	0	92	223	**532**
R135 (South)	128	137	0	136	**401**
L3125 (West)	24	180	176	0	**381**
Totals	**370**	**495**	**366**	**377**	**1607**

2017 PM Peak Development Flows

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	0	6	0	**6**
N2 Slip Road	0	0	0	0	**0**
R135 (South)	6	0	0	0	**6**
L3125 (West)	0	0	0	0	**0**
Totals	**6**	**0**	**6**	**0**	**12**

2017 PM Peak With Development

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	178	104	18	**300**
N2 Slip Road	218	0	92	223	**532**
R135 (South)	134	137	0	136	**407**
L3125 (West)	24	180	176	0	**381**
Totals	**376**	**495**	**372**	**377**	**1619**

2023 PM Peak No Development (PCU Flows + TII Growth Factors)

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	186	102	19	**307**
N2 Slip Road	227	0	96	232	**555**
R135 (South)	133	143	0	142	**418**
L3125 (West)	25	188	184	0	**397**
Totals	**386**	**517**	**382**	**393**	**1677**

2023 PM Peak With Development

From / To	R135 (North)	N2 Slip Road	R135 (South)	L3125 (West)	Totals
R135 (North)	0	186	108	19	**313**
N2 Slip Road	227	0	96	232	**555**
R135 (South)	139	143	0	142	**424**
L3125 (West)	25	188	184	0	**397**
Totals	**392**	**517**	**388**	**393**	**1689**

R135 / L3125 Signalised Junction - AM Peak Hour

2016 Existing AM Peak

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)	0	219	117	29	**365**
L3125 (East)	82	0	90	320	**492**
R135 (South)	59	73	0	205	**337**
L3125 (West)	9	134	81	0	**224**
Totals	**150**	**426**	**288**	**554**	**1418**

2016 AM Peak PCU Flows + Re-distributed Flows

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)	0	117	137	30	**284**
L3125 (East)	46	0	101	331	**478**
R135 (South)	77	88	0	224	**389**
L3125 (West)	11	163	111	0	**285**
Totals	**134**	**368**	**349**	**585**	**1436**

2017 AM Peak No Development (PCU Flows + TII Growth Factors)

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)	0	118	138	30	**286**
L3125 (East)	46	0	102	333	**481**
R135 (South)	78	89	0	226	**392**
L3125 (West)	11	164	112	0	**287**
Totals	**135**	**371**	**351**	**589**	**1446**

2017 AM Peak Development Flows

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)	0	0	6	0	**6**
L3125 (East)	0	0	0	0	**0**
R135 (South)	6	0	0	0	**6**
L3125 (West)	0	0	0	0	**0**
Totals	**6**	**0**	**6**	**0**	**12**

2017 AM Peak With Development

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)	0	118	144	30	**292**
L3125 (East)	46	0	102	333	**481**
R135 (South)	84	89	0	226	**398**
L3125 (West)	11	164	112	0	**287**
Totals	**141**	**371**	**357**	**589**	**1458**

2023 AM Peak No Development (PCU Flows + TII Growth Factors)

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)	0	123	144	32	**298**
L3125 (East)	48	0	106	348	**502**
R135 (South)	81	92	0	235	**409**
L3125 (West)	12	171	117	0	**300**
Totals	**141**	**387**	**367**	**615**	**1509**

2023 AM Peak With Development + Opening of Aiport Link Road

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)	0	123	150	32	**304**
L3125 (East)	48	0	106	348	**502**
R135 (South)	87	92	0	235	**415**
L3125 (West)	12	171	117	0	**300**
Totals	**147**	**387**	**373**	**615**	**1521**

2023 AM Peak Sensitivity Flows

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)	0	0	16	0	**16**
L3125 (East)	0	0	0	0	**0**
R135 (South)	16	0	0	0	**16**
L3125 (West)	0	0	0	0	**0**
Totals	**16**	**0**	**16**	**0**	**32**

2023 AM Peak With Development Flows + Sensitivity Flows

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	Totals
R135 (North)	0	123	166	32	**320**
L3125 (East)	48	0	106	348	**502**
R135 (South)	103	92	0	235	**431**
L3125 (West)	12	171	117	0	**300**
Totals	**163**	**387**	**389**	**615**	**1553**

R135 / L3125 Signalised Junction - PM Peak Hour

2016 Existing PM Peak

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	**Totals**
R135 (North)	0	168	86	16	**270**
L3125 (East)	204	0	85	199	**488**
R135 (South)	111	120	0	110	**341**
L3125 (West)	22	273	163	0	**458**
Totals	**337**	**561**	**334**	**325**	**1557**

2016 PM Peak PCU Flows + Re-distributed Flows

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	**Totals**
R135 (North)	0	88	97	18	**203**
L3125 (East)	108	0	91	221	**420**
R135 (South)	127	136	0	135	**398**
L3125 (West)	24	179	175	0	**378**
Totals	**259**	**403**	**363**	**374**	**1399**

2017 PM Peak No Development (PCU Flows + TII Growth Factors)

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	**Totals**
R135 (North)	0	89	98	18	**204**
L3125 (East)	109	0	92	223	**423**
R135 (South)	128	137	0	136	**401**
L3125 (West)	24	180	176	0	**381**
Totals	**261**	**406**	**366**	**377**	**1409**

2017 PM Peak Development Flows

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	**Totals**
R135 (North)	0	0	6	0	**6**
L3125 (East)	0	0	0	0	**0**
R135 (South)	6	0	0	0	**6**
L3125 (West)	0	0	0	0	**0**
Totals	**6**	**0**	**6**	**0**	**12**

2017 PM Peak With Development

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	**Totals**
R135 (North)	0	89	104	18	**210**
L3125 (East)	109	0	92	223	**423**
R135 (South)	134	137	0	136	**407**
L3125 (West)	24	180	176	0	**381**
Totals	**267**	**406**	**372**	**377**	**1421**

2023 PM Peak No Development (PCU Flows + TII Growth Factors)

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	**Totals**
R135 (North)	0	92	102	19	**213**
L3125 (East)	114	0	96	232	**441**
R135 (South)	133	143	0	142	**418**
L3125 (West)	25	188	184	0	**397**
Totals	**272**	**424**	**382**	**393**	**1470**

2023 PM Peak With Development + Opeing of Airport Link Road

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	**Totals**
R135 (North)	0	92	108	19	**219**
L3125 (East)	114	0	96	232	**441**
R135 (South)	139	143	0	142	**424**
L3125 (West)	25	188	184	0	**397**
Totals	**278**	**424**	**388**	**393**	**1482**

2023 PM Peak Sensitivity Flows

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	**Totals**
R135 (North)	0	0	16	0	**16**
L3125 (East)	0	0	0	0	**0**
R135 (South)	16	0	0	0	**16**
L3125 (West)	0	0	0	0	**0**
Totals	**16**	**0**	**16**	**0**	**32**

2023 PM Peak With Development Flows + Sensitivity Flows

From / To	R135 (North)	L3125 (East)	R135 (South)	L3125 (West)	**Totals**
R135 (North)	0	92	124	19	**235**
L3125 (East)	114	0	96	232	**441**
R135 (South)	155	143	0	142	**440**
L3125 (West)	25	188	184	0	**397**
Totals	**294**	**424**	**404**	**393**	**1514**

R135 / N2 Roundabout Junction - AM Peak Hour

2016 Existing AM Peak

From / To	R135 (North)	R135 (South)	N2 Slip Road	Totals
R135 (North)	0	170	139	**309**
R135 (South)	48	0	88	**136**
N2 Slip Road	63	186	0	**249**
Totals	**111**	**356**	**227**	**694**

2017 AM Peak No Development (Existing + TII Growth Factors)

From / To	R135 (North)	R135 (South)	N2 Slip Road	Totals
R135 (North)	0	171	140	**311**
R135 (South)	48	0	89	**137**
N2 Slip Road	63	187	0	**251**
Totals	**112**	**359**	**229**	**699**

2017 AM Peak Development Flows

From / To	R135 (North)	R135 (South)	N2 Slip Road	Totals
R135 (North)	0	0	6	**6**
R135 (South)	0	0	6	**6**
N2 Slip Road	0	0	0	**0**
Totals	**0**	**0**	**12**	**12**

2017 AM Peak With Development

From / To	R135 (North)	R135 (South)	N2 Slip Road	Totals
R135 (North)	0	171	146	**317**
R135 (South)	48	0	95	**143**
N2 Slip Road	63	187	0	**251**
Totals	**112**	**359**	**241**	**711**

2023 AM Peak No Development (Existing + TII Growth Factors)

From / To	R135 (North)	R135 (South)	N2 Slip Road	Totals
R135 (North)	0	179	146	**325**
R135 (South)	50	0	92	**143**
N2 Slip Road	66	195	0	**262**
Totals	**117**	**374**	**239**	**729**

2023 AM Peak With Development

From / To	R135 (North)	R135 (South)	N2 Slip Road	Totals
R135 (North)	0	179	152	**331**
R135 (South)	50	0	98	**149**
N2 Slip Road	66	195	0	**262**
Totals	**117**	**374**	**251**	**741**

R135 / N2 Roundabout Junction - PM Peak Hour

2016 Existing PM Peak

From / To	R135 (North)	R135 (South)	N2 Slip Road	**Totals**
R135 (North)	0	111	86	**197**
R135 (South)	185	0	175	**360**
N2 Slip Road	127	160	0	**287**
Totals	**312**	**271**	**261**	**844**

2017 PM Peak No Development (Existing + TII Growth Factors)

From / To	R135 (North)	R135 (South)	N2 Slip Road	**Totals**
R135 (North)	0	112	87	**198**
R135 (South)	186	0	176	**363**
N2 Slip Road	128	161	0	**289**
Totals	**314**	**273**	**263**	**850**

2017 PM Peak Development Flows

From / To	R135 (North)	R135 (South)	N2 Slip Road	**Totals**
R135 (North)	0	0	6	**6**
R135 (South)	0	0	6	**6**
N2 Slip Road	0	0	0	**0**
Totals	**0**	**0**	**12**	**12**

2017 PM Peak With Development

From / To	R135 (North)	R135 (South)	N2 Slip Road	**Totals**
R135 (North)	0	112	93	**204**
R135 (South)	186	0	182	**369**
N2 Slip Road	128	161	0	**289**
Totals	**314**	**273**	**275**	**862**

2023 PM Peak No Development (Existing + TII Growth Factors)

From / To	R135 (North)	R135 (South)	N2 Slip Road	**Totals**
R135 (North)	0	117	90	**207**
R135 (South)	194	0	184	**378**
N2 Slip Road	133	168	0	**302**
Totals	**328**	**285**	**274**	**887**

2023 PM Peak With Development

From / To	R135 (North)	R135 (South)	N2 Slip Road	**Totals**
R135 (North)	0	117	96	**213**
R135 (South)	194	0	190	**384**
N2 Slip Road	133	168	0	**302**
Totals	**328**	**285**	**286**	**899**

APPENDIX 13-C
PICADY RESULTS

```
  CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

                     PICADY 5.0  ANALYSIS PROGRAM
                        RELEASE 3.0        (JUNE 2006)

              ADAPTED FROM PICADY/3 WHICH IS CROWN COPYRIGHT
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                 FOR SALES AND DISTRIBUTION INFORMATION,
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                           TRL SOFTWARE BUREAU
               TEL: CROWTHORNE (01344) 770758, FAX: 770864
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           --------------------------------------------------------


 THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
 IN NO WAY  RELIEVED OF HIS RESPONSIBILITY  FOR THE CORRECTNESS  OF THE SOLUTION


 Run with file:-
 "C:\PICADY\2016\16047-02\R135 - N2 Slip Road Priority Junction.vpi"
(drive-on-the-left ) at 09:30:29 on Thursday, 4 August 2016


.RUN INFORMATION
 ***************

   RUN TITLE: Huntstown Quarry
    LOCATION: Huntstown
        DATE: 17/07/16
      CLIENT: Roadstone
  ENUMERATOR: Roadplan Consulting
  JOB NUMBER: 16047-02
      STATUS: TIA
 DESCRIPTION:

 .MAJOR/MINOR JUNCTION CAPACITY AND DELAY
  ***************************************

  INPUT DATA
  ----------

                   MAJOR ROAD (ARM C) ---------------------- MAJOR ROAD (ARM A)
                                                I
                                                I
                                                I
                                                I
                                                I
                                                I
                                           MINOR ROAD (ARM B)

 ARM A IS R135 North
 ARM B IS N2 Slip Road
 ARM C IS R135 South

 STREAM LABELLING CONVENTION
 ---------------------------

        STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

        STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

        ETC.
```

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.20 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 200.0 M.
- BLOCKS TRAFFIC	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 50.0 M.
- VISIBILITY TO RIGHT	(VB-A) 50.0 M.
- LANE 1 WIDTH	(WB-C) -
- LANE 2 WIDTH	(WB-A) -
- WIDTH AT 0 M FROM JUNC.	6.00 M.
- WIDTH AT 5 M FROM JUNC.	6.00 M.
- WIDTH AT 10 M FROM JUNC.	6.00 M.
- WIDTH AT 15 M FROM JUNC.	6.00 M.
- WIDTH AT 20 M FROM JUNC.	6.00 M.
- LENGTH OF FLARED SECTION	10 VEHS

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2016 AM Peak - Existing Flows

TIME PERIOD BEGINS 07.15 AND ENDS 08.45

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.73	1.09	0.73
ARM B	15.00	45.00	75.00	6.55	9.83	6.55
ARM C	15.00	45.00	75.00	1.08	1.61	1.08

.

TIME	FROM/TO	ARM A	ARM B	ARM C
07.15 - 08.45				
	ARM A	0.000	0.000	1.000
		0.0	0.0	58.0
		(0.0)	(0.0)	(14.0)
	ARM B	0.756	0.000	0.244
		396.0	0.0	128.0
		(10.0)	(0.0)	(33.0)
	ARM C	1.000	0.000	0.000
		86.0	0.0	0.0
		(60.0)	(0.0)	(0.0)

(TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S))

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

. QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2016 AM Peak - Existing Flows
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
B-C	1.61	5.84	0.275		0.00	0.37	5.2		0.23
B-A	4.97	8.61	0.577		0.00	1.31	17.9		0.26
C-A	1.08								
C-B	0.00	10.26	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.73								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
B-C	1.92	5.55	0.345		0.37	0.51	7.4		0.27
B-A	5.93	8.52	0.696		1.31	2.13	29.3		0.37
C-A	1.29								
C-B	0.00	10.22	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-C	2.35	4.70	0.500		0.51	0.95	13.1		0.42
B-A	7.27	8.40	0.865		2.13	4.88	60.4		0.68
C-A	1.58								
C-B	0.00	10.17	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.06								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-C	2.35	4.47	0.526		0.95	1.06	15.4		0.47
B-A	7.27	8.40	0.865		4.88	5.44	78.0		0.80
C-A	1.58								
C-B	0.00	10.17	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.06								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	1.92	5.47	0.351		1.06	0.56	8.9		0.29
B-A	5.93	8.52	0.696		5.44	2.47	42.7		0.45
C-A	1.29								
C-B	0.00	10.22	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-C	1.61	5.80	0.277		0.56	0.39	6.1		0.24
B-A	4.97	8.61	0.577		2.47	1.42	23.0		0.29
C-A	1.08								
C-B	0.00	10.26	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.73								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.5	*
08.00	0.9	*
08.15	1.1	*
08.30	0.6	*
08.45	0.4	

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.3	*
07.45	2.1	**
08.00	4.9	*****
08.15	5.4	*****
08.30	2.5	**
08.45	1.4	*

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.
QUEUE FOR STREAM   C-B
-------------------------
TIME SEGMENT    NO. OF
  ENDING      VEHICLES
              IN QUEUE
  07.30          0.0
  07.45          0.0
  08.00          0.0
  08.15          0.0
  08.30          0.0
  08.45          0.0

.
                QUEUEING DELAY INFORMATION OVER WHOLE PERIOD
                --------------------------------------------
```

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	176.2	117.5	56.1	0.32	56.1	0.32
B-A	545.1	363.4	251.3	0.46	251.4	0.46
C-A	118.4	78.9				
C-B	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	79.8	53.2				
ALL	919.5	613.0	307.4	0.33	307.5	0.33

```
* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.


END OF JOB
```

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections

.

.TRAFFIC DEMAND DATA

.

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2017 AM Peak - No Development

TIME PERIOD BEGINS 07.15 AND ENDS 08.45

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.73	1.09	0.73
ARM B	15.00	45.00	75.00	6.60	9.90	6.60
ARM C	15.00	45.00	75.00	1.09	1.63	1.09

.

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S): ARM A	ARM B	ARM C
07.15 - 08.45				
	ARM A	0.000	0.000	1.000
		0.0	0.0	58.0
		(0.0)	(0.0)	(14.0)
	ARM B	0.756	0.000	0.244
		399.0	0.0	129.0
		(10.0)	(0.0)	(33.0)
	ARM C	1.000	0.000	0.000
		87.0	0.0	0.0
		(60.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2017 AM Peak - No Development
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
B-C	1.62	5.83	0.278		0.00	0.38	5.3		0.23
B-A	5.01	8.61	0.582		0.00	1.33	18.2		0.27
C-A	1.09								
C-B	0.00	10.26	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.73								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
B-C	1.93	5.54	0.349		0.38	0.52	7.5		0.28
B-A	5.98	8.52	0.702		1.33	2.19	29.9		0.38
C-A	1.30								
C-B	0.00	10.22	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-C	2.37	4.63	0.511		0.52	0.99	13.6		0.43
B-A	7.32	8.39	0.872		2.19	5.08	62.5		0.70
C-A	1.60								
C-B	0.00	10.17	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.06								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-C	2.37	4.37	0.542		0.99	1.13	16.2		0.49
B-A	7.32	8.39	0.872		5.08	5.70	81.5		0.84
C-A	1.60								
C-B	0.00	10.17	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.06								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	1.93	5.45	0.355		1.13	0.57	9.1		0.29
B-A	5.98	8.52	0.702		5.70	2.55	44.3		0.46
C-A	1.30								
C-B	0.00	10.22	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-C	1.62	5.79	0.279		0.57	0.40	6.2		0.24
B-A	5.01	8.61	0.582		2.55	1.45	23.5		0.29
C-A	1.09								
C-B	0.00	10.26	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.73								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.5	*
08.00	1.0	*
08.15	1.1	*
08.30	0.6	*
08.45	0.4	

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.3	*
07.45	2.2	**
08.00	5.1	*****
08.15	5.7	******
08.30	2.5	***
08.45	1.4	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	177.6	118.4	58.0	0.33	58.0	0.33
B-A	549.2	366.1	260.0	0.47	260.1	0.47
C-A	119.7	79.8				
C-B	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	79.8	53.2				
ALL	926.3	617.6	317.9	0.34	318.1	0.34

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2017 AM Peak - With Development

TIME PERIOD BEGINS 07.15 AND ENDS 08.45

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.80	1.20	0.80
ARM B	15.00	45.00	75.00	6.68	10.01	6.68
ARM C	15.00	45.00	75.00	1.24	1.86	1.24

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S): ARM A	ARM B	ARM C
07.15 - 08.45				
	ARM A	0.000	0.000	1.000
		0.0	0.0	64.0
		(0.0)	(0.0)	(14.0)
	ARM B	0.747	0.000	0.253
		399.0	0.0	135.0
		(10.0)	(0.0)	(33.0)
	ARM C	1.000	0.000	0.000
		99.0	0.0	0.0
		(60.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2017 AM Peak - With Development
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
B-C	1.69	5.84	0.290		0.00	0.40	5.6		0.24
B-A	5.01	8.51	0.588		0.00	1.37	18.6		0.27
C-A	1.24								
C-B	0.00	10.24	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.80								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
B-C	2.02	5.54	0.365		0.40	0.56	8.0		0.28
B-A	5.98	8.41	0.711		1.37	2.27	31.0		0.39
C-A	1.48								
C-B	0.00	10.20	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.96								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-C	2.48	4.52	0.548		0.56	1.14	15.4		0.47
B-A	7.32	8.27	0.885		2.27	5.45	66.2		0.75
C-A	1.82								
C-B	0.00	10.14	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.17								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-C	2.48	4.19	0.591		1.14	1.35	19.3		0.57
B-A	7.32	8.27	0.885		5.45	6.20	88.2		0.91
C-A	1.82								
C-B	0.00	10.14	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.17								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	2.02	5.43	0.373		1.35	0.61	9.9		0.30
B-A	5.98	8.41	0.711		6.20	2.67	47.3		0.49
C-A	1.48								
C-B	0.00	10.20	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.96								

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 I  TIME      DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END       DELAY     GEOMETRIC DELAY    AVERAGE DELAY I
 I           (VEH/MIN) (VEH/MIN) CAPACITY    FLOW     QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/       PER ARRIVING  I
 I                                (RFC)   (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 08.30-08.45                                                                                                     I
 I  B-C        1.69     5.80     0.292                 0.61    0.42       6.6                           0.25       I
 I  B-A        5.01     8.51     0.588                 2.67    1.49      24.2                           0.30       I
 I  C-A        1.24                                                                                                I
 I  C-B        0.00    10.24     0.000                 0.00    0.00       0.0                           0.00       I
 I  A-B        0.00                                                                                                I
 I  A-C        0.80                                                                                                I
 I                                                                                                                 I
.-----------------------------------------------------------------------------------------------------------------------
.
 QUEUE FOR STREAM   B-C
 -------------------------
 TIME SEGMENT    NO. OF
   ENDING       VEHICLES
                IN QUEUE
   07.30           0.4
   07.45           0.6    *
   08.00           1.1    *
   08.15           1.4    *
   08.30           0.6    *
   08.45           0.4
.
 QUEUE FOR STREAM   B-A
 -------------------------
 TIME SEGMENT    NO. OF
   ENDING       VEHICLES
                IN QUEUE
   07.30           1.4    *
   07.45           2.3    **
   08.00           5.4    *****
   08.15           6.2    ******
   08.30           2.7    ***
   08.45           1.5    *
.
 QUEUE FOR STREAM   C-B
 -------------------------
 TIME SEGMENT    NO. OF
   ENDING       VEHICLES
                IN QUEUE
   07.30           0.0
   07.45           0.0
   08.00           0.0
   08.15           0.0
   08.30           0.0
   08.45           0.0
.
                QUEUEING DELAY INFORMATION OVER WHOLE PERIOD
                --------------------------------------------

 ---------------------------------------------------------------------------
 I STREAM I   TOTAL DEMAND  I   * QUEUEING *      I * INCLUSIVE QUEUEING * I
 I        I                 I    * DELAY *        I        * DELAY *       I
 I        I--------------------------------------------------------------I
 I        I  (VEH)   (VEH/H) I  (MIN)     (MIN/VEH) I    (MIN)     (MIN/VEH) I
 ---------------------------------------------------------------------------
 I  B-C   I  185.8 I  123.9 I    64.9 I    0.35   I      64.9 I    0.35    I
 I  B-A   I  549.2 I  366.1 I   275.5 I    0.50   I     275.6 I    0.50    I
 I  C-A   I  136.3 I   90.8 I         I           I           I            I
 I  C-B   I    0.0 I    0.0 I     0.0 I    0.00   I       0.0 I    0.00    I
 I  A-B   I    0.0 I    0.0 I         I           I           I            I
 I  A-C   I   88.1 I   58.7 I         I           I           I            I
 ---------------------------------------------------------------------------
 I  ALL   I  959.4 I  639.6 I   340.3 I    0.35   I     340.5 I    0.35    I
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 * DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.


 END OF JOB
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.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections
.

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 AM Peak - No Development

TIME PERIOD BEGINS 07.15 AND ENDS 08.45

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.76	1.14	0.76
ARM B	15.00	45.00	75.00	6.89	10.33	6.89
ARM C	15.00	45.00	75.00	1.13	1.69	1.13

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TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S): ARM A	ARM B	ARM C
07.15 - 08.45				
	ARM A	0.000	0.000	1.000
		0.0	0.0	61.0
		(0.0)	(0.0)	(14.0)
	ARM B	0.755	0.000	0.245
		416.0	0.0	135.0
		(10.0)	(0.0)	(33.0)
	ARM C	1.000	0.000	0.000
		90.0	0.0	0.0
		(60.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 AM Peak - No Development
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
B-C	1.69	5.78	0.293		0.00	0.41	5.7		0.24
B-A	5.22	8.58	0.608		0.00	1.48	20.0		0.28
C-A	1.13								
C-B	0.00	10.25	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.77								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
B-C	2.02	5.45	0.371		0.41	0.57	8.2		0.29
B-A	6.23	8.49	0.734		1.48	2.52	34.1		0.42
C-A	1.35								
C-B	0.00	10.21	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.91								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-C	2.48	4.10	0.605		0.57	1.40	18.5		0.58
B-A	7.63	8.36	0.913		2.52	6.47	76.5		0.84
C-A	1.65								
C-B	0.00	10.16	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.12								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-C	2.48	3.53	0.702		1.40	2.04	27.5		0.87
B-A	7.63	8.36	0.913		6.47	7.63	106.8		1.08
C-A	1.65								
C-B	0.00	10.16	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.12								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	2.02	5.27	0.383		2.04	0.64	10.9		0.33
B-A	6.23	8.49	0.734		7.63	3.05	56.5		0.57
C-A	1.35								
C-B	0.00	10.21	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.91								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-C	1.69	5.73	0.296		0.64	0.43	6.8		0.25
B-A	5.22	8.58	0.608		3.05	1.62	26.5		0.31
C-A	1.13								
C-B	0.00	10.25	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.77								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.6	*
08.00	1.4	*
08.15	2.0	**
08.30	0.6	*
08.45	0.4	

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.5	*
07.45	2.5	***
08.00	6.5	******
08.15	7.6	********
08.30	3.0	***
08.45	1.6	**

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	185.8	123.9	77.5	0.42	77.6	0.42
B-A	572.6	381.7	320.5	0.56	320.6	0.56
C-A	123.9	82.6				
C-B	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	84.0	56.0				
ALL	966.3	644.2	398.0	0.41	398.2	0.41

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* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 AM Peak - With Development

TIME PERIOD BEGINS 07.15 AND ENDS 08.45

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.84	1.26	0.84
ARM B	15.00	45.00	75.00	6.96	10.44	6.96
ARM C	15.00	45.00	75.00	1.27	1.91	1.27

TIME	FROM/TO	TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
07.15 - 08.45				
	ARM A	0.000	0.000	1.000
		0.0	0.0	67.0
		(0.0)	(0.0)	(14.0)
	ARM B	0.747	0.000	0.253
		416.0	0.0	141.0
		(10.0)	(0.0)	(33.0)
	ARM C	1.000	0.000	0.000
		102.0	0.0	0.0
		(60.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 AM Peak - With Development
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
B-C	1.77	5.79	0.306		0.00	0.43	6.0		0.25
B-A	5.22	8.49	0.615		0.00	1.52	20.5		0.29
C-A	1.28								
C-B	0.00	10.23	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.84								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
B-C	2.11	5.44	0.388		0.43	0.62	8.8		0.30
B-A	6.23	8.39	0.743		1.52	2.62	35.3		0.43
C-A	1.53								
C-B	0.00	10.19	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.00								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-C	2.59	3.92	0.660		0.62	1.72	22.2		0.68
B-A	7.63	8.24	0.926		2.62	6.99	81.4		0.90
C-A	1.87								
C-B	0.00	10.13	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.23								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-C	2.59	3.19	0.811		1.72	3.11	39.3		1.28
B-A	7.63	8.24	0.926		6.99	8.42	116.8		1.18
C-A	1.87								
C-B	0.00	10.13	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.23								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	2.11	5.23	0.404		3.11	0.70	12.8		0.36
B-A	6.23	8.39	0.743		8.42	3.22	61.6		0.63
C-A	1.53								
C-B	0.00	10.19	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.00								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-C	1.77	5.74	0.308		0.70	0.46	7.2		0.25
B-A	5.22	8.49	0.615		3.22	1.67	27.4		0.33
C-A	1.28								
C-B	0.00	10.23	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.84								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.6	*
08.00	1.7	**
08.15	3.1	***
08.30	0.7	*
08.45	0.5	

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.5	**
07.45	2.6	***
08.00	7.0	*******
08.15	8.4	********
08.30	3.2	***
08.45	1.7	**

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	194.1	129.4	96.3	0.50	96.3	0.50
B-A	572.6	381.7	343.1	0.60	343.2	0.60
C-A	140.4	93.6				
C-B	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	92.2	61.5				
ALL	999.3	666.2	439.3	0.44	439.5	0.44

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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.SLOPES AND INTERCEPT
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(NB:Streams may be combined, in which case capacity

will be adjusted )

---------------------------------------------------------
I Intercept For Slope For Opposing   Slope For Opposing I
I Stream B-C     Stream  A-C          Stream A-B        I
---------------------------------------------------------
I     602.92           0.22                0.09         I
---------------------------------------------------------
------------------------------------------------------------------------------------------------
I Intercept For Slope For Opposing   Slope For Opposing   Slope For Opposing   Slope For OpposingI
I Stream B-A     Stream  A-C          Stream A-B           Stream  C-A          Stream C-B       I
------------------------------------------------------------------------------------------------
I     476.98           0.21                0.08                 0.13                0.30         I
------------------------------------------------------------------------------------------------
---------------------------------------------------------
I Intercept For Slope For Opposing   Slope For Opposing I
I Stream C-B     Stream  A-C          Stream A-B        I
---------------------------------------------------------
I     689.79           0.25                0.25         I
---------------------------------------------------------
NB These values do not allow for any site specific corrections
.

.TRAFFIC DEMAND DATA
 ------------------
.-----------------------
 I ARM I FLOW SCALE(%) I
 -----------------------
 I A   I      100      I
 I B   I      100      I
 I C   I      100      I
 -----------------------

 Demand set: 2016 PM Peak - Existing Flows


 TIME PERIOD BEGINS 16.30 AND ENDS 18.00

 LENGTH OF TIME PERIOD  -  90   MINUTES.
 LENGTH OF TIME SEGMENT -  15   MINUTES.

 DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

 ---------------------------------------------------------------------------------
 I       I   NUMBER OF MINUTES FROM START WHEN     I   RATE OF FLOW (VEH/MIN)  I
 I  ARM  I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP  I AFTER I
 I       I   TO RISE   I  IS REACHED I  FALLING   I  PEAK  I OF PEAK I PEAK  I
 ---------------------------------------------------------------------------------
 I ARM A I     15.00   I     45.00   I    75.00   I  0.25  I   0.38  I  0.25 I
 I ARM B I     15.00   I     45.00   I    75.00   I  4.10  I   6.15  I  4.10 I
 I ARM C I     15.00   I     45.00   I    75.00   I  1.45  I   2.18  I  1.45 I
 ---------------------------------------------------------------------------------
.
 -----------------------------------------------------------
 I                    I         TURNING PROPORTIONS        I
 I                    I         TURNING COUNTS (VEH/HR)    I
 I                    I        (PERCENTAGE OF H.V.S)       I
 I                    -------------------------------------
 I        TIME        I FROM/TO I  ARM A I  ARM B I  ARM C I
 -----------------------------------------------------------
 I   16.30 - 18.00    I         I        I        I        I
 I                    I  ARM A  I  0.000 I  0.000 I  1.000 I
 I                    I         I    0.0 I    0.0 I   20.0 I
 I                    I         I (  0.0)I (  0.0)I ( 35.0)I
 I                    I         I        I        I        I
 I                    I  ARM B  I  0.939 I  0.000 I  0.061 I
 I                    I         I  308.0 I    0.0 I   20.0 I
 I                    I         I ( 19.0)I (  0.0)I ( 50.0)I
 I                    I         I        I        I        I
 I                    I  ARM C  I  1.000 I  0.000 I  0.000 I
 I                    I         I  116.0 I    0.0 I    0.0 I
 I                    I         I ( 15.0)I (  0.0)I (  0.0)I
 I                    I         I        I        I        I
 -----------------------------------------------------------
```

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2016 PM Peak - Existing Flows
AND FOR TIME PERIOD 2

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-C	0.25	5.12	0.049		0.00	0.05	0.7		0.21
B-A	3.86	8.40	0.460		0.00	0.83	11.6		0.22
C-A	1.46								
C-B	0.00	10.37	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.25								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-C	0.30	4.96	0.060		0.05	0.06	0.9		0.21
B-A	4.61	8.34	0.554		0.83	1.20	17.0		0.27
C-A	1.74								
C-B	0.00	10.36	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.30								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-C	0.37	4.71	0.078		0.06	0.08	1.2		0.23
B-A	5.65	8.25	0.685		1.20	2.03	27.8		0.37
C-A	2.13								
C-B	0.00	10.34	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.37								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-C	0.37	4.69	0.078		0.08	0.08	1.3		0.23
B-A	5.65	8.25	0.685		2.03	2.09	31.0		0.38
C-A	2.13								
C-B	0.00	10.34	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.37								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-C	0.30	4.94	0.061		0.08	0.07	1.0		0.22
B-A	4.61	8.34	0.554		2.09	1.29	20.7		0.28
C-A	1.74								
C-B	0.00	10.36	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.30								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-C	0.25	5.10	0.049		0.07	0.05	0.8		0.21
B-A	3.86	8.40	0.460		1.29	0.87	13.8		0.22
C-A	1.46								
C-B	0.00	10.37	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.25								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	0.8	*
17.00	1.2	*
17.15	2.0	**
17.30	2.1	**
17.45	1.3	*
18.00	0.9	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	27.5	18.4	5.9	0.22	5.9	0.22
B-A	423.9	282.6	121.8	0.29	121.8	0.29
C-A	159.7	106.4				
C-B	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	27.5	18.4				
ALL	638.7	425.8	127.7	0.20	127.8	0.20

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2017 PM Peak - No Development

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.25	0.38	0.25
ARM B	15.00	45.00	75.00	4.13	6.19	4.13
ARM C	15.00	45.00	75.00	1.46	2.19	1.46

TIME	FROM/TO	ARM A	ARM B	ARM C
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)		
16.30 - 18.00				
	ARM A	0.000	0.000	1.000
		0.0	0.0	20.0
		(0.0)	(0.0)	(35.0)
	ARM B	0.939	0.000	0.061
		310.0	0.0	20.0
		(19.0)	(0.0)	(50.0)
	ARM C	1.000	0.000	0.000
		117.0	0.0	0.0
		(15.0)	(0.0)	(0.0)

```
TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

.              QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
               --------------------------------------------------------
                FOR DEMAND SET 2017 PM Peak - No Development
                AND FOR TIME PERIOD      2
.-------------------------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAY  AVERAGE DELAY I
I            (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE    (VEH.MIN/     (VEH.MIN/       PER ARRIVING  I
I                                 (RFC)   (PEDS/MIN)  (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT)   VEHICLE (MIN) I
I 16.30-16.45                                                                                                    I
I   B-C        0.25      5.11     0.049                 0.00    0.05       0.7                              0.21     I
I   B-A        3.89      8.40     0.463                 0.00    0.84      11.7                              0.22     I
I   C-A        1.47                                                                                              I
I   C-B        0.00     10.37     0.000                 0.00    0.00       0.0                              0.00     I
I   A-B        0.00                                                                                              I
I   A-C        0.25                                                                                              I
I                                                                                                                I
.-------------------------------------------------------------------------------------------------------------------
.-------------------------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAY  AVERAGE DELAY I
I            (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE    (VEH.MIN/     (VEH.MIN/       PER ARRIVING  I
I                                 (RFC)   (PEDS/MIN)  (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT)   VEHICLE (MIN) I
I 16.45-17.00                                                                                                    I
I   B-C        0.30      4.95     0.060                 0.05    0.06       0.9                              0.21     I
I   B-A        4.64      8.33     0.557                 0.84    1.21      17.2                              0.27     I
I   C-A        1.75                                                                                              I
I   C-B        0.00     10.36     0.000                 0.00    0.00       0.0                              0.00     I
I   A-B        0.00                                                                                              I
I   A-C        0.30                                                                                              I
I                                                                                                                I
.-------------------------------------------------------------------------------------------------------------------
.-------------------------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAY  AVERAGE DELAY I
I            (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE    (VEH.MIN/     (VEH.MIN/       PER ARRIVING  I
I                                 (RFC)   (PEDS/MIN)  (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT)   VEHICLE (MIN) I
I 17.00-17.15                                                                                                    I
I   B-C        0.37      4.70     0.078                 0.06    0.08       1.2                              0.23     I
I   B-A        5.69      8.25     0.690                 1.21    2.07      28.3                              0.37     I
I   C-A        2.15                                                                                              I
I   C-B        0.00     10.34     0.000                 0.00    0.00       0.0                              0.00     I
I   A-B        0.00                                                                                              I
I   A-C        0.37                                                                                              I
I                                                                                                                I
.-------------------------------------------------------------------------------------------------------------------
.-------------------------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAY  AVERAGE DELAY I
I            (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE    (VEH.MIN/     (VEH.MIN/       PER ARRIVING  I
I                                 (RFC)   (PEDS/MIN)  (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT)   VEHICLE (MIN) I
I 17.15-17.30                                                                                                    I
I   B-C        0.37      4.68     0.078                 0.08    0.08       1.3                              0.23     I
I   B-A        5.69      8.25     0.690                 2.07    2.14      31.6                              0.39     I
I   C-A        2.15                                                                                              I
I   C-B        0.00     10.34     0.000                 0.00    0.00       0.0                              0.00     I
I   A-B        0.00                                                                                              I
I   A-C        0.37                                                                                              I
I                                                                                                                I
.-------------------------------------------------------------------------------------------------------------------
.-------------------------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAY  AVERAGE DELAY I
I            (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE    (VEH.MIN/     (VEH.MIN/       PER ARRIVING  I
I                                 (RFC)   (PEDS/MIN)  (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT)   VEHICLE (MIN) I
I 17.30-17.45                                                                                                    I
I   B-C        0.30      4.94     0.061                 0.08    0.07       1.0                              0.22     I
I   B-A        4.64      8.33     0.557                 2.14    1.31      21.0                              0.28     I
I   C-A        1.75                                                                                              I
I   C-B        0.00     10.36     0.000                 0.00    0.00       0.0                              0.00     I
I   A-B        0.00                                                                                              I
I   A-C        0.30                                                                                              I
I                                                                                                                I
.-------------------------------------------------------------------------------------------------------------------
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.--------------------------------------------------------------------------------------------------------------------
 I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAY   AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/      PER ARRIVING  I
 I                                (RFC)    (PEDS/MIN) (VEHS)  (VEHS) TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 17.45-18.00                                                                                                     I
 I   B-C        0.25      5.10    0.049                 0.07    0.05      0.8                            0.21      I
 I   B-A        3.89      8.40    0.463                 1.31    0.89     14.0                            0.22      I
 I   C-A        1.47                                                                                               I
 I   C-B        0.00     10.37    0.000                 0.00    0.00      0.0                            0.00      I
 I   A-B        0.00                                                                                               I
 I   A-C        0.25                                                                                               I
 I                                                                                                                 I
.--------------------------------------------------------------------------------------------------------------------

.
 QUEUE FOR STREAM   B-C
 -------------------------
 TIME SEGMENT    NO. OF
   ENDING       VEHICLES
                IN QUEUE
   16.45            0.1
   17.00            0.1
   17.15            0.1
   17.30            0.1
   17.45            0.1
   18.00            0.1
.
 QUEUE FOR STREAM   B-A
 -------------------------
 TIME SEGMENT    NO. OF
   ENDING       VEHICLES
                IN QUEUE
   16.45            0.8     *
   17.00            1.2     *
   17.15            2.1     **
   17.30            2.1     **
   17.45            1.3     *
   18.00            0.9     *
.
 QUEUE FOR STREAM   C-B
 -------------------------
 TIME SEGMENT    NO. OF
   ENDING       VEHICLES
                IN QUEUE
   16.45            0.0
   17.00            0.0
   17.15            0.0
   17.30            0.0
   17.45            0.0
   18.00            0.0
.
                QUEUEING DELAY INFORMATION OVER WHOLE PERIOD
                --------------------------------------------

 ---------------------------------------------------------------------------
 I STREAM I   TOTAL DEMAND   I   * QUEUEING *      I * INCLUSIVE QUEUEING * I
 I        I                  I    * DELAY *        I        * DELAY *       I
 I        I-----------------------------------------------------------------I
 I        I  (VEH)   (VEH/H) I  (MIN)    (MIN/VEH) I    (MIN)      (MIN/VEH) I
 ---------------------------------------------------------------------------
 I  B-C   I   27.5 I   18.4 I     6.0 I    0.22   I       6.0  I    0.22   I
 I  B-A   I  426.7 I  284.5 I   123.9 I    0.29   I     123.9  I    0.29   I
 I  C-A   I  161.0 I  107.4 I         I           I            I           I
 I  C-B   I    0.0 I    0.0 I     0.0 I    0.00   I       0.0  I    0.00   I
 I  A-B   I    0.0 I    0.0 I         I           I            I           I
 I  A-C   I   27.5 I   18.4 I         I           I            I           I
 ---------------------------------------------------------------------------
 I  ALL   I  642.8 I  428.5 I   129.8 I    0.20   I     129.9  I    0.20   I
 ---------------------------------------------------------------------------


 * DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.


 END OF JOB
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.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2017 PM Peak - With Development

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.32	0.49	0.32
ARM B	15.00	45.00	75.00	4.20	6.30	4.20
ARM C	15.00	45.00	75.00	1.61	2.42	1.61

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
16.30 - 18.00				
	ARM A	0.000	0.000	1.000
		0.0	0.0	26.0
		(0.0)	(0.0)	(35.0)
	ARM B	0.923	0.000	0.077
		310.0	0.0	26.0
		(19.0)	(0.0)	(50.0)
	ARM C	1.000	0.000	0.000
		129.0	0.0	0.0
		(15.0)	(0.0)	(0.0)

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 TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

 THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

.              QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
               --------------------------------------------------------
                FOR DEMAND SET 2017 PM Peak - With Development
                AND FOR TIME PERIOD     2
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 I  TIME       DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAY   AVERAGE DELAY I
 I            (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE     (VEH.MIN/       (VEH.MIN/      PER ARRIVING  I
 I                                  (RFC)   (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 16.30-16.45                                                                                                       I
 I   B-C        0.33      5.10     0.064                 0.00   0.07       1.0                               0.21      I
 I   B-A        3.89      8.35     0.466                 0.00   0.85      11.8                               0.22      I
 I   C-A        1.62                                                                                                 I
 I   C-B        0.00     10.35     0.000                 0.00   0.00       0.0                               0.00      I
 I   A-B        0.00                                                                                                 I
 I   A-C        0.33                                                                                                 I
 I                                                                                                                   I
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 I  TIME       DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAY   AVERAGE DELAY I
 I            (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE     (VEH.MIN/       (VEH.MIN/      PER ARRIVING  I
 I                                  (RFC)   (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 16.45-17.00                                                                                                       I
 I   B-C        0.39      4.93     0.079                 0.07   0.08       1.2                               0.22      I
 I   B-A        4.64      8.28     0.561                 0.85   1.23      17.4                               0.27      I
 I   C-A        1.93                                                                                                 I
 I   C-B        0.00     10.33     0.000                 0.00   0.00       0.0                               0.00      I
 I   A-B        0.00                                                                                                 I
 I   A-C        0.39                                                                                                 I
 I                                                                                                                   I
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 I  TIME       DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAY   AVERAGE DELAY I
 I            (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE     (VEH.MIN/       (VEH.MIN/      PER ARRIVING  I
 I                                  (RFC)   (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 17.00-17.15                                                                                                       I
 I   B-C        0.48      4.67     0.102                 0.08   0.11       1.6                               0.24      I
 I   B-A        5.69      8.18     0.696                 1.23   2.12      28.9                               0.38      I
 I   C-A        2.37                                                                                                 I
 I   C-B        0.00     10.30     0.000                 0.00   0.00       0.0                               0.00      I
 I   A-B        0.00                                                                                                 I
 I   A-C        0.48                                                                                                 I
 I                                                                                                                   I
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 I  TIME       DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAY   AVERAGE DELAY I
 I            (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE     (VEH.MIN/       (VEH.MIN/      PER ARRIVING  I
 I                                  (RFC)   (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 17.15-17.30                                                                                                       I
 I   B-C        0.48      4.65     0.103                 0.11   0.11       1.7                               0.24      I
 I   B-A        5.69      8.18     0.696                 2.12   2.19      32.5                               0.40      I
 I   C-A        2.37                                                                                                 I
 I   C-B        0.00     10.30     0.000                 0.00   0.00       0.0                               0.00      I
 I   A-B        0.00                                                                                                 I
 I   A-C        0.48                                                                                                 I
 I                                                                                                                   I
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 I  TIME       DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAY   AVERAGE DELAY I
 I            (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE     (VEH.MIN/       (VEH.MIN/      PER ARRIVING  I
 I                                  (RFC)   (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 17.30-17.45                                                                                                       I
 I   B-C        0.39      4.92     0.079                 0.11   0.09       1.4                               0.22      I
 I   B-A        4.64      8.28     0.561                 2.19   1.33      21.4                               0.28      I
 I   C-A        1.93                                                                                                 I
 I   C-B        0.00     10.33     0.000                 0.00   0.00       0.0                               0.00      I
 I   A-B        0.00                                                                                                 I
 I   A-C        0.39                                                                                                 I
 I                                                                                                                   I
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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-C	0.33	5.08	0.064		0.09	0.07	1.1		0.21
B-A	3.89	8.35	0.466		1.33	0.90	14.2		0.23
C-A	1.62								
C-B	0.00	10.35	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.33								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	0.8	*
17.00	1.2	*
17.15	2.1	**
17.30	2.2	**
17.45	1.3	*
18.00	0.9	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	35.8	23.9	7.9	0.22	7.9	0.22
B-A	426.7	284.5	126.2	0.30	126.3	0.30
C-A	177.6	118.4				
C-B	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	35.8	23.9				
ALL	675.8	450.6	134.2	0.20	134.2	0.20

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections

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.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 PM Peak - No Development

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.26	0.39	0.26
ARM B	15.00	45.00	75.00	4.31	6.47	4.31
ARM C	15.00	45.00	75.00	1.52	2.29	1.52

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TIME	FROM/TO	ARM A	ARM B	ARM C
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)		
16.30 - 18.00				
	ARM A	0.000	0.000	1.000
		0.0	0.0	21.0
		(0.0)	(0.0)	(35.0)
	ARM B	0.939	0.000	0.061
		324.0	0.0	21.0
		(19.0)	(0.0)	(50.0)
	ARM C	1.000	0.000	0.000
		122.0	0.0	0.0
		(15.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 PM Peak - No Development
AND FOR TIME PERIOD 2

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-C	0.26	5.08	0.052		0.00	0.05	0.8		0.21
B-A	4.07	8.38	0.485		0.00	0.91	12.7		0.23
C-A	1.53								
C-B	0.00	10.37	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.26								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-C	0.31	4.91	0.064		0.05	0.07	1.0		0.22
B-A	4.85	8.32	0.584		0.91	1.35	19.0		0.28
C-A	1.83								
C-B	0.00	10.35	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.31								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-C	0.39	4.60	0.084		0.07	0.09	1.3		0.24
B-A	5.95	8.23	0.723		1.35	2.39	32.2		0.41
C-A	2.24								
C-B	0.00	10.33	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.39								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-C	0.39	4.57	0.084		0.09	0.09	1.4		0.24
B-A	5.95	8.23	0.723		2.39	2.48	36.7		0.43
C-A	2.24								
C-B	0.00	10.33	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.39								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-C	0.31	4.89	0.064		0.09	0.07	1.1		0.22
B-A	4.85	8.32	0.584		2.48	1.46	23.7		0.30
C-A	1.83								
C-B	0.00	10.35	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.31								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-C	0.26	5.06	0.052		0.07	0.06	0.9		0.21
B-A	4.07	8.38	0.485		1.46	0.97	15.4		0.24
C-A	1.53								
C-B	0.00	10.37	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.26								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	0.9	*
17.00	1.3	*
17.15	2.4	**
17.30	2.5	**
17.45	1.5	*
18.00	1.0	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	28.9	19.3	6.4	0.22	6.4	0.22
B-A	446.0	297.3	139.6	0.31	139.7	0.31
C-A	167.9	111.9				
C-B	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	28.9	19.3				
ALL	671.7	447.8	146.0	0.22	146.0	0.22

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 PM Peak - With Development

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.34	0.51	0.34
ARM B	15.00	45.00	75.00	4.39	6.58	4.39
ARM C	15.00	45.00	75.00	1.67	2.51	1.67

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
16.30 - 18.00				
	ARM A	0.000	0.000	1.000
		0.0	0.0	27.0
		(0.0)	(0.0)	(35.0)
	ARM B	0.923	0.000	0.077
		324.0	0.0	27.0
		(19.0)	(0.0)	(50.0)
	ARM C	1.000	0.000	0.000
		134.0	0.0	0.0
		(15.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 PM Peak - With Development
AND FOR TIME PERIOD 2

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-C	0.34	5.06	0.067		0.00	0.07	1.0		0.21
B-A	4.07	8.33	0.488		0.00	0.92	12.9		0.23
C-A	1.68								
C-B	0.00	10.35	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.34								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-C	0.40	4.89	0.083		0.07	0.09	1.3		0.22
B-A	4.85	8.26	0.588		0.92	1.37	19.2		0.29
C-A	2.01								
C-B	0.00	10.33	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.40								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-C	0.50	4.57	0.108		0.09	0.12	1.7		0.25
B-A	5.95	8.16	0.729		1.37	2.45	33.0		0.42
C-A	2.46								
C-B	0.00	10.30	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.50								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-C	0.50	4.54	0.109		0.12	0.12	1.8		0.25
B-A	5.95	8.16	0.729		2.45	2.56	37.7		0.45
C-A	2.46								
C-B	0.00	10.30	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.50								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-C	0.40	4.87	0.083		0.12	0.09	1.4		0.22
B-A	4.85	8.26	0.588		2.56	1.49	24.1		0.31
C-A	2.01								
C-B	0.00	10.33	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.40								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-C	0.34	5.04	0.067		0.09	0.07	1.1		0.21
B-A	4.07	8.33	0.488		1.49	0.98	15.5		0.24
C-A	1.68								
C-B	0.00	10.35	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.34								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	0.9	*
17.00	1.4	*
17.15	2.5	**
17.30	2.6	***
17.45	1.5	*
18.00	1.0	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	37.2	24.8	8.4	0.23	8.4	0.23
B-A	446.0	297.3	142.5	0.32	142.5	0.32
C-A	184.4	123.0				
C-B	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	37.2	24.8				
ALL	704.7	469.8	150.9	0.21	150.9	0.21

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 AM Peak - Development Flows + Sensitivity Flows

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.04	1.56	1.04
ARM B	15.00	45.00	75.00	7.16	10.74	7.16
ARM C	15.00	45.00	75.00	1.67	2.51	1.67

TIME	FROM/TO	TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
16.30 - 18.00				
	ARM A	0.000	0.000	1.000
		0.0	0.0	83.0
		(0.0)	(0.0)	(14.0)
	ARM B	0.726	0.000	0.274
		416.0	0.0	157.0
		(10.0)	(0.0)	(33.0)
	ARM C	1.000	0.000	0.000
		134.0	0.0	0.0
		(60.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 AM Peak - Development Flows + Sensitivity Flows
AND FOR TIME PERIOD 435

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-C	1.97	5.81	0.339		0.00	0.50	7.0		0.26
B-A	5.22	8.25	0.633		0.00	1.63	21.8		0.31
C-A	1.68								
C-B	0.00	10.18	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.04								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-C	2.35	5.41	0.435		0.50	0.74	10.5		0.32
B-A	6.23	8.12	0.768		1.63	2.93	39.0		0.49
C-A	2.01								
C-B	0.00	10.12	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.24								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-C	2.88	3.28	0.878		0.74	3.99	44.1		1.33
B-A	7.63	7.93	0.962		2.93	8.69	96.8		1.08
C-A	2.46								
C-B	0.00	10.05	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.52								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-C	2.88	3.04	0.948		3.99	6.25	78.7		2.24
B-A	7.63	7.93	0.963		8.69	11.21	150.8		1.55
C-A	2.46								
C-B	0.00	10.05	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.52								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-C	2.35	5.04	0.467		6.25	0.92	21.9		0.49
B-A	6.23	8.12	0.768		11.21	3.81	82.1		0.85
C-A	2.01								
C-B	0.00	10.12	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.24								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-C	1.97	5.75	0.343		0.92	0.54	8.5		0.27
B-A	5.22	8.25	0.633		3.81	1.82	30.4		0.36
C-A	1.68								
C-B	0.00	10.18	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.04								

```
QUEUE FOR STREAM   B-C
-------------------------
TIME SEGMENT    NO. OF
  ENDING       VEHICLES
               IN QUEUE
  16.45           0.5    *
  17.00           0.7    *
  17.15           4.0    ****
  17.30           6.2    ******
  17.45           0.9    *
  18.00           0.5    *

QUEUE FOR STREAM   B-A
-------------------------
TIME SEGMENT    NO. OF
  ENDING       VEHICLES
               IN QUEUE
  16.45           1.6    **
  17.00           2.9    ***
  17.15           8.7    *********
  17.30          11.2    ***********
  17.45           3.8    ****
  18.00           1.8    **

QUEUE FOR STREAM   C-B
-------------------------
TIME SEGMENT    NO. OF
  ENDING       VEHICLES
               IN QUEUE
  16.45           0.0
  17.00           0.0
  17.15           0.0
  17.30           0.0
  17.45           0.0
  18.00           0.0
```


QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	216.1	144.1	170.7	0.79	170.7	0.79
B-A	572.6	381.7	420.8	0.73	421.0	0.74
C-A	184.4	123.0				
C-B	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	114.2	76.2				
ALL	1087.4	724.9	591.5	0.54	591.8	0.54

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
602.92	0.22	0.09

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
476.98	0.21	0.08	0.13	0.30

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
689.79	0.25	0.25

NB These values do not allow for any site specific corrections

.

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 PM Peak - Development Flows + Sensitivity Flows

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.54	0.81	0.54
ARM B	15.00	45.00	75.00	4.59	6.88	4.59
ARM C	15.00	45.00	75.00	2.08	3.11	2.08

.

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
16.30 - 18.00				
	ARM A	0.000	0.000	1.000
		0.0	0.0	43.0
		(0.0)	(0.0)	(35.0)
	ARM B	0.883	0.000	0.117
		324.0	0.0	43.0
		(19.0)	(0.0)	(50.0)
	ARM C	1.000	0.000	0.000
		166.0	0.0	0.0
		(15.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 PM Peak - Development Flows + Sensitivity Flows
AND FOR TIME PERIOD 990

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-C	0.54	5.02	0.107		0.00	0.12	1.7		0.22
B-A	4.07	8.21	0.495		0.00	0.95	13.2		0.23
C-A	2.08								
C-B	0.00	10.28	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.54								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-C	0.64	4.84	0.133		0.12	0.15	2.2		0.24
B-A	4.85	8.11	0.599		0.95	1.43	20.0		0.30
C-A	2.49								
C-B	0.00	10.25	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.64								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-C	0.79	4.48	0.176		0.15	0.21	3.0		0.27
B-A	5.95	7.97	0.746		1.43	2.64	35.3		0.46
C-A	3.05								
C-B	0.00	10.21	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.79								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-C	0.79	4.45	0.177		0.21	0.21	3.2		0.27
B-A	5.95	7.97	0.746		2.64	2.77	40.8		0.49
C-A	3.05								
C-B	0.00	10.21	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.79								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-C	0.64	4.81	0.134		0.21	0.16	2.4		0.24
B-A	4.85	8.11	0.599		2.77	1.56	25.5		0.32
C-A	2.49								
C-B	0.00	10.25	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.64								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-C	0.54	5.00	0.108		0.16	0.12	1.9		0.22
B-A	4.07	8.21	0.495		1.56	1.01	16.1		0.25
C-A	2.08								
C-B	0.00	10.28	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.54								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.2
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.1

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	1.0	*
17.00	1.4	*
17.15	2.6	***
17.30	2.8	***
17.45	1.6	**
18.00	1.0	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-C	59.2	39.5	14.4	0.24	14.4	0.24
B-A	446.0	297.3	150.8	0.34	150.9	0.34
C-A	228.5	152.3				
C-B	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	59.2	39.5				
ALL	792.8	528.5	165.2	0.21	165.3	0.21

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

APPENDIX 13-D
ARCADY RESULTS

```
___________________ A R C A D Y  6 ___________________

   ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


   Analysis Program: Release 4.0 (FEBRUARY 2006)

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Run with file:-
"C:\ARCADY\2016\16047-02\R135 - N2 Roundabout\AM Peak\2016 AM Peak - Existing Flows.vai"
(drive-on-the-left) at 10:23:23 on Wednesday, 20 July 2016

.FILE PROPERTIES
****

```
   RUN TITLE: Huntstown Quarry
    LOCATION: Huntstown
        DATE: 17/07/16
      CLIENT: Roadstone
  ENUMERATOR: Roadplan
  JOB NUMBER: 16047-02
      STATUS: TIA
 DESCRIPTION:
```


.INPUT DATA
****
ARM A - R135 North
ARM B - R135 South
ARM C - N2 Slip Road

.GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT(PCU/MIN)
ARM A	3.50	8.00	30.00	20.00	60.00	51.0	0.562	30.623
ARM B	3.50	9.50	30.00	20.00	60.00	49.0	0.596	33.767
ARM C	7.00	9.00	30.00	3.00	13.00	53.0	0.551	28.086

```
V = approach half-width       L = effective flare length          D = inscribed circle diameter
E = entry width               R = entry radius                    PHI = entry angle
```

.TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100

.TIME PERIOD BEGINS 07.15 AND ENDS 08.45
.LENGTH OF TIME PERIOD - 90   MINUTES.
 LENGTH OF TIME SEGMENT - 15   MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2016 AM Peak - Existing Flows

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.86	5.79	3.86
ARM B	15.00	45.00	75.00	1.70	2.55	1.70
ARM C	15.00	45.00	75.00	3.11	4.67	3.11

DEMAND SET TITLE: 2016 AM Peak - Existing Flows

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
07.15 - 08.45				
	ARM A	0.000	0.550	0.450
		0.0	170.0	139.0
		(0.0)	(7.0)	(16.0)
	ARM B	0.353	0.000	0.647
		48.0	0.0	88.0
		(15.0)	(0.0)	(24.0)
	ARM C	0.253	0.747	0.000
		63.0	186.0	0.0
		(2.0)	(10.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	3.86	26.28	0.147		0.0	0.2	2.5		0.04
ARM B	1.70	26.95	0.063		0.0	0.1	1.0		0.04
ARM C	3.11	25.66	0.121		0.0	0.1	2.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
ARM A	4.61	26.03	0.177		0.2	0.2	3.2		0.05
ARM B	2.03	26.76	0.076		0.1	0.1	1.2		0.04
ARM C	3.72	25.59	0.145		0.1	0.2	2.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	5.65	25.68	0.220		0.2	0.3	4.2		0.05
ARM B	2.49	26.49	0.094		0.1	0.1	1.5		0.04
ARM C	4.55	25.50	0.179		0.2	0.2	3.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	5.65	25.68	0.220		0.3	0.3	4.2		0.05
ARM B	2.49	26.49	0.094		0.1	0.1	1.6		0.04
ARM C	4.55	25.50	0.179		0.2	0.2	3.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	4.61	26.03	0.177		0.3	0.2	3.3		0.05
ARM B	2.03	26.76	0.076		0.1	0.1	1.2		0.04
ARM C	3.72	25.59	0.145		0.2	0.2	2.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	3.86	26.28	0.147		0.2	0.2	2.6		0.04
ARM B	1.70	26.95	0.063		0.1	0.1	1.0		0.04
ARM C	3.11	25.66	0.121		0.2	0.1	2.1		0.04

.QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.2
08.45	0.2

.QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.2
08.00	0.2
08.15	0.2
08.30	0.2
08.45	0.1

. QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	423.7	282.5	20.0	0.05	20.0	0.05
B	186.5	124.3	7.6	0.04	7.6	0.04
C	341.4	227.6	15.7	0.05	15.7	0.05
ALL	951.6	634.4	43.3	0.05	43.3	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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___________________ A R C A D Y  6 ___________________

    ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


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  THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
  IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS  OF THE SOLUTION
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Run with file:-
"C:\ARCADY\2016\16047-02\R135 - N2 Roundabout\AM Peak\2017 AM Peak - No Development.vai"
(drive-on-the-left) at 10:09:18 on Wednesday, 20 July 2016

.FILE PROPERTIES
****

```
  RUN TITLE: Huntstown Quarry
   LOCATION: Huntstown
       DATE: 17/07/16
     CLIENT: Roadstone
 ENUMERATOR: Roadplan
 JOB NUMBER: 16047-02
     STATUS: TIA
DESCRIPTION:
```

.INPUT DATA
****
ARM A - R135 North
ARM B - R135 South
ARM C - N2 Slip Road

.GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	8.00	30.00	20.00	60.00	51.0	0.562	30.623
ARM B	3.50	9.50	30.00	20.00	60.00	49.0	0.596	33.767
ARM C	7.00	9.00	30.00	3.00	13.00	53.0	0.551	28.086

V = approach half-width   L = effective flare length   D = inscribed circle diameter
E = entry width   R = entry radius   PHI = entry angle

.TRAFFIC DEMAND DATA
(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100

.TIME PERIOD BEGINS 07.15 AND ENDS 08.45
.LENGTH OF TIME PERIOD - 90   MINUTES.
 LENGTH OF TIME SEGMENT - 15   MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2017 AM Peak - No Development

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.89	5.83	3.89
ARM B	15.00	45.00	75.00	1.71	2.57	1.71
ARM C	15.00	45.00	75.00	3.13	4.69	3.13

DEMAND SET TITLE: 2017 AM Peak - No Development

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
07.15 - 08.45				
	ARM A	0.000	0.550	0.450
		0.0	171.0	140.0
		(0.0)	(7.0)	(16.0)
	ARM B	0.350	0.000	0.650
		48.0	0.0	89.0
		(15.0)	(0.0)	(24.0)
	ARM C	0.252	0.748	0.000
		63.0	187.0	0.0
		(2.0)	(10.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	3.89	26.27	0.148		0.0	0.2	2.6		0.04
ARM B	1.71	26.94	0.064		0.0	0.1	1.0		0.04
ARM C	3.13	25.66	0.122		0.0	0.1	2.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
ARM A	4.64	26.02	0.178		0.2	0.2	3.2		0.05
ARM B	2.04	26.74	0.076		0.1	0.1	1.2		0.04
ARM C	3.73	25.59	0.146		0.1	0.2	2.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	5.69	25.67	0.221		0.2	0.3	4.2		0.05
ARM B	2.50	26.47	0.095		0.1	0.1	1.5		0.04
ARM C	4.57	25.49	0.179		0.2	0.2	3.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	5.69	25.67	0.222		0.3	0.3	4.3		0.05
ARM B	2.50	26.47	0.095		0.1	0.1	1.6		0.04
ARM C	4.57	25.49	0.179		0.2	0.2	3.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	4.64	26.02	0.178		0.3	0.2	3.3		0.05
ARM B	2.04	26.74	0.076		0.1	0.1	1.3		0.04
ARM C	3.73	25.59	0.146		0.2	0.2	2.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	3.89	26.27	0.148		0.2	0.2	2.6		0.04
ARM B	1.71	26.94	0.064		0.1	0.1	1.0		0.04
ARM C	3.13	25.66	0.122		0.2	0.1	2.1		0.04

.QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.2
08.45	0.2

.QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.2
08.00	0.2
08.15	0.2
08.30	0.2
08.45	0.1

. QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	426.4	284.3	20.2	0.05	20.2	0.05
B	187.9	125.2	7.6	0.04	7.6	0.04
C	342.8	228.5	15.8	0.05	15.8	0.05
ALL	957.1	638.1	43.6	0.05	43.6	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

```
___________________ A R C A D Y  6 ___________________

    ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


    Analysis Program: Release 4.0 (FEBRUARY 2006)

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-------------------------------------------------------------------------------

Run with file:-
"C:\ARCADY\2016\16047-02\R135 - N2 Roundabout\AM Peak\2017 AM Peak - With Development.vai"
(drive-on-the-left ) at 10:10:48 on Wednesday, 20 July 2016

.FILE PROPERTIES
***************

  RUN TITLE: Huntstown Quarry
   LOCATION: Huntstown
       DATE: 17/07/16
     CLIENT: Roadstone
 ENUMERATOR: Roadplan
 JOB NUMBER: 16047-02
     STATUS: TIA
DESCRIPTION:

.INPUT DATA
**********
ARM A - R135 North
ARM B - R135 South
ARM C - N2 Slip Road

.GEOMETRIC DATA
--------------
```

I ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT(PCU/MIN)
ARM A	3.50	8.00	30.00	20.00	60.00	51.0	0.562	30.623
ARM B	3.50	9.50	30.00	20.00	60.00	49.0	0.596	33.767
ARM C	7.00	9.00	30.00	3.00	13.00	53.0	0.551	28.086

```
V = approach half-width       L = effective flare length          D = inscribed circle diameter
E = entry width               R = entry radius                    PHI = entry angle

.TRAFFIC DEMAND DATA
-------------------
(Only sets included in the current run are shown)
```

I ARM	FLOW SCALE(%)
A	100
B	100
C	100

```
.TIME PERIOD BEGINS 07.15 AND ENDS 08.45
.LENGTH OF TIME PERIOD -  90   MINUTES.
 LENGTH OF TIME SEGMENT -  15   MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA
```

DEMAND SET TITLE: 2017 AM Peak - With Development

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.96	5.94	3.96
ARM B	15.00	45.00	75.00	1.79	2.68	1.79
ARM C	15.00	45.00	75.00	3.13	4.69	3.13

DEMAND SET TITLE: 2017 AM Peak - With Development

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
07.15 - 08.45				
	ARM A	0.000	0.539	0.461
		0.0	171.0	146.0
		(0.0)	(7.0)	(16.0)
	ARM B	0.336	0.000	0.664
		48.0	0.0	95.0
		(15.0)	(0.0)	(24.0)
	ARM C	0.252	0.748	0.000
		63.0	187.0	0.0
		(2.0)	(10.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	3.96	26.25	0.151		0.0	0.2	2.6		0.04
ARM B	1.79	26.87	0.067		0.0	0.1	1.1		0.04
ARM C	3.13	25.66	0.122		0.0	0.1	2.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
ARM A	4.73	26.00	0.182		0.2	0.2	3.3		0.05
ARM B	2.13	26.66	0.080		0.1	0.1	1.3		0.04
ARM C	3.73	25.59	0.146		0.1	0.2	2.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	5.80	25.65	0.226		0.2	0.3	4.3		0.05
ARM B	2.61	26.38	0.099		0.1	0.1	1.6		0.04
ARM C	4.57	25.49	0.179		0.2	0.2	3.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	5.80	25.65	0.226		0.3	0.3	4.4		0.05
ARM B	2.61	26.38	0.099		0.1	0.1	1.6		0.04
ARM C	4.57	25.49	0.179		0.2	0.2	3.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	4.73	25.99	0.182		0.3	0.2	3.4		0.05
ARM B	2.13	26.66	0.080		0.1	0.1	1.3		0.04
ARM C	3.73	25.59	0.146		0.2	0.2	2.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	3.96	26.25	0.151		0.2	0.2	2.7		0.04
ARM B	1.79	26.86	0.067		0.1	0.1	1.1		0.04
ARM C	3.13	25.66	0.122		0.2	0.1	2.1		0.04

.QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.2
08.45	0.2

.QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.2
08.00	0.2
08.15	0.2
08.30	0.2
08.45	0.1

. QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	434.7	289.8	20.7	0.05	20.7	0.05
B	196.1	130.7	8.0	0.04	8.0	0.04
C	342.8	228.5	15.8	0.05	15.8	0.05
ALL	973.6	649.0	44.5	0.05	44.5	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

```
                ___________________ A R C A D Y  6 ___________________

                    ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


                    Analysis Program: Release 4.0 (FEBRUARY 2006)

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                Crowthorne House        Fax:   +44 (0) 1344 770864
                Nine Mile Ride          Email: softwarebureau@trl.co.uk
                Wokingham, Berks.       Web:   www.trlsoftware.co.uk
                RG40 3GA,UK
 ---------------------------------------------------------------------------------
  THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
  IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS  OF THE SOLUTION
 ---------------------------------------------------------------------------------
 Run with file:-
 "C:\ARCADY\2016\16047-02\R135 - N2 Roundabout\AM Peak\2023 AM Peak - No Development.vai"
(drive-on-the-left ) at 10:12:31 on Wednesday, 20 July 2016

.FILE PROPERTIES
 ***************

   RUN TITLE: Huntstown Quarry
    LOCATION: Huntstown
        DATE: 17/07/16
      CLIENT: Roadstone
  ENUMERATOR: Roadplan
  JOB NUMBER: 16047-02
      STATUS: TIA
 DESCRIPTION:

.INPUT DATA
 *********
 ARM A - R135 North
 ARM B - R135 South
 ARM C - N2 Slip Road

.GEOMETRIC DATA
 --------------
 -------------------------------------------------------------------------------------------------------------------
 I ARM    I   V (M)    I    E (M)    I   L (M)    I     R (M)    I    D (M)   I   PHI (DEG)   I   SLOPE   I INTERCEPT (PCU/MIN)I
 -------------------------------------------------------------------------------------------------------------------
 I ARM A I    3.50    I     8.00    I    30.00   I     20.00    I   60.00    I      51.0     I  0.562  I         30.623    I
 I ARM B I    3.50    I     9.50    I    30.00   I     20.00    I   60.00    I      49.0     I  0.596  I         33.767    I
 I ARM C I    7.00    I     9.00    I    30.00   I      3.00    I   13.00    I      53.0     I  0.551  I         28.086    I
 -------------------------------------------------------------------------------------------------------------------

 V = approach half-width      L = effective flare length           D = inscribed circle diameter
 E = entry width              R = entry radius                     PHI = entry angle

.TRAFFIC DEMAND DATA
 -------------------

(Only sets included in the current run are shown)

.-----------------------
 I ARM I FLOW SCALE(%) I
 -----------------------
 I A   I      100      I
 I B   I      100      I
 I C   I      100      I
 -----------------------

.TIME PERIOD BEGINS 07.15 AND ENDS 08.45
.LENGTH OF TIME PERIOD  -  90   MINUTES.
 LENGTH OF TIME SEGMENT -  15   MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA
```

DEMAND SET TITLE: 2023 AM Peak - No Development

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	4.06	6.09	4.06
ARM B	15.00	45.00	75.00	1.77	2.66	1.77
ARM C	15.00	45.00	75.00	3.26	4.89	3.26

DEMAND SET TITLE: 2023 AM Peak - No Development

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
07.15 - 08.45				
	ARM A	0.000	0.551	0.449
		0.0	179.0	146.0
		(0.0)	(7.0)	(16.0)
	ARM B	0.352	0.000	0.648
		50.0	0.0	92.0
		(15.0)	(0.0)	(24.0)
	ARM C	0.253	0.747	0.000
		66.0	195.0	0.0
		(2.0)	(10.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	4.06	26.22	0.155		0.0	0.2	2.7		0.05
ARM B	1.77	26.90	0.066		0.0	0.1	1.0		0.04
ARM C	3.26	25.64	0.127		0.0	0.1	2.1		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
ARM A	4.85	25.95	0.187		0.2	0.2	3.4		0.05
ARM B	2.12	26.70	0.079		0.1	0.1	1.3		0.04
ARM C	3.90	25.57	0.152		0.1	0.2	2.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	5.94	25.60	0.232		0.2	0.3	4.5		0.05
ARM B	2.60	26.42	0.098		0.1	0.1	1.6		0.04
ARM C	4.77	25.48	0.187		0.2	0.2	3.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	5.94	25.59	0.232		0.3	0.3	4.5		0.05
ARM B	2.60	26.42	0.098		0.1	0.1	1.6		0.04
ARM C	4.77	25.47	0.187		0.2	0.2	3.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	4.85	25.95	0.187		0.3	0.2	3.5		0.05
ARM B	2.12	26.69	0.079		0.1	0.1	1.3		0.04
ARM C	3.90	25.57	0.152		0.2	0.2	2.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	4.06	26.22	0.155		0.2	0.2	2.8		0.05
ARM B	1.77	26.90	0.066		0.1	0.1	1.1		0.04
ARM C	3.26	25.64	0.127		0.2	0.1	2.2		0.04

.QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.2
08.45	0.2

.QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.2
08.00	0.2
08.15	0.2
08.30	0.2
08.45	0.1

. QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	445.6	297.1	21.4	0.05	21.4	0.05
B	194.7	129.8	7.9	0.04	7.9	0.04
C	357.9	238.6	16.6	0.05	16.6	0.05
ALL	998.2	665.5	45.9	0.05	45.9	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

```
__________________ A R C A D Y  6 __________________

    ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


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Nine Mile Ride          Email: softwarebureau@trl.co.uk
Wokingham, Berks.       Web:   www.trlsoftware.co.uk
RG40 3GA,UK
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---------------------------------------------------------------------------------
 THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
 IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS  OF THE SOLUTION
---------------------------------------------------------------------------------
```

Run with file:-
"C:\ARCADY\2016\16047-02\R135 - N2 Roundabout\AM Peak\2023 AM Peak - With Development.vai"
(drive-on-the-left) at 10:13:55 on Wednesday, 20 July 2016

.FILE PROPERTIES
****

```
  RUN TITLE: Huntstown Quarry
   LOCATION: Huntstown
       DATE: 17/07/16
     CLIENT: Roadstone
 ENUMERATOR: Roadplan
 JOB NUMBER: 16047-02
     STATUS: TIA
DESCRIPTION:
```


.INPUT DATA
****
ARM A - R135 North
ARM B - R135 South
ARM C - N2 Slip Road

.GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	8.00	30.00	20.00	60.00	51.0	0.562	30.623
ARM B	3.50	9.50	30.00	20.00	60.00	49.0	0.596	33.767
ARM C	7.00	9.00	30.00	3.00	13.00	53.0	0.551	28.086

V = approach half-width   L = effective flare length   D = inscribed circle diameter
E = entry width   R = entry radius   PHI = entry angle

.TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100

.TIME PERIOD BEGINS 07.15 AND ENDS 08.45
.LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

```
.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

 DEMAND SET TITLE: 2023 AM Peak - With Development
 -----------------------------------------------------------------------------
 I       I   NUMBER OF MINUTES FROM START WHEN    I   RATE OF FLOW (VEH/MIN) I
 I  ARM  I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP  I AFTER I
 I       I   TO RISE   I  IS REACHED IFALLING   I  PEAK   I OF PEAK I PEAK  I
 -----------------------------------------------------------------------------
 I ARM A I     15.00   I     45.00   I    75.00   I  4.14  I   6.21  I  4.14 I
 I ARM B I     15.00   I     45.00   I    75.00   I  1.85  I   2.78  I  1.85 I
 I ARM C I     15.00   I     45.00   I    75.00   I  3.26  I   4.89  I  3.26 I
 -----------------------------------------------------------------------------
 DEMAND SET TITLE: 2023 AM Peak - With Development
.-----------------------------------------------------------
 I                    I         TURNING PROPORTIONS        I
 I                    I         TURNING COUNTS (VEH/HR)    I
 I                    I        (PERCENTAGE OF H.V.S)       I
 I                    -------------------------------------
 I        TIME        I FROM/TO I  ARM A I  ARM B I  ARM C I
 -----------------------------------------------------------
 I   07.15 - 08.45    I         I        I        I        I
 I                    I  ARM A  I  0.000 I  0.541 I  0.459 I
 I                    I         I    0.0 I  179.0 I  152.0 I
 I                    I         I (  0.0)I (  7.0)I ( 16.0)I
 I                    I         I        I        I        I
 I                    I  ARM B  I  0.338 I  0.000 I  0.662 I
 I                    I         I   50.0 I    0.0 I   98.0 I
 I                    I         I ( 15.0)I (  0.0)I ( 24.0)I
 I                    I         I        I        I        I
 I                    I  ARM C  I  0.253 I  0.747 I  0.000 I
 I                    I         I   66.0 I  195.0 I    0.0 I
 I                    I         I (  2.0)I ( 10.0)I (  0.0)I
 I                    I         I        I        I        I
 -----------------------------------------------------------

.         QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
          --------------------------------------------------------

.------------------------------------------------------------------------------------------------------------------
 I  TIME      DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAY   AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/      PER ARRIVING  I
 I                                (RFC)   (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)   VEHICLE (MIN) I
 I 07.15-07.30                                                                                                   I
 I ARM A       4.14     26.20    0.158                  0.0    0.2        2.8                             0.05      I
 I ARM B       1.85     26.83    0.069                  0.0    0.1        1.1                             0.04      I
 I ARM C       3.26     25.64    0.127                  0.0    0.1        2.1                             0.04      I
 I                                                                                                               I
 ------------------------------------------------------------------------------------------------------------------

.------------------------------------------------------------------------------------------------------------------
 I  TIME      DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAY   AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/      PER ARRIVING  I
 I                                (RFC)   (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)   VEHICLE (MIN) I
 I 07.30-07.45                                                                                                   I
 I ARM A       4.94     25.93    0.191                  0.2    0.2        3.5                             0.05      I
 I ARM B       2.21     26.62    0.083                  0.1    0.1        1.3                             0.04      I
 I ARM C       3.90     25.57    0.152                  0.1    0.2        2.7                             0.05      I
 I                                                                                                               I
 ------------------------------------------------------------------------------------------------------------------

.------------------------------------------------------------------------------------------------------------------
 I  TIME      DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAY   AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/      PER ARRIVING  I
 I                                (RFC)   (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)   VEHICLE (MIN) I
 I 07.45-08.00                                                                                                   I
 I ARM A       6.05     25.57    0.237                  0.2    0.3        4.6                             0.05      I
 I ARM B       2.71     26.33    0.103                  0.1    0.1        1.7                             0.04      I
 I ARM C       4.77     25.48    0.187                  0.2    0.2        3.4                             0.05      I
 I                                                                                                               I
 ------------------------------------------------------------------------------------------------------------------

.------------------------------------------------------------------------------------------------------------------
 I  TIME      DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAY   AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/      PER ARRIVING  I
 I                                (RFC)   (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)   VEHICLE (MIN) I
 I 08.00-08.15                                                                                                   I
 I ARM A       6.05     25.57    0.237                  0.3    0.3        4.6                             0.05      I
 I ARM B       2.71     26.33    0.103                  0.1    0.1        1.7                             0.04      I
 I ARM C       4.77     25.47    0.187                  0.2    0.2        3.4                             0.05      I
 I                                                                                                               I
 ------------------------------------------------------------------------------------------------------------------
```

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	4.94	25.93	0.191		0.3	0.2	3.6		0.05
ARM B	2.21	26.61	0.083		0.1	0.1	1.4		0.04
ARM C	3.90	25.57	0.152		0.2	0.2	2.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	4.14	26.19	0.158		0.2	0.2	2.9		0.05
ARM B	1.85	26.83	0.069		0.1	0.1	1.1		0.04
ARM C	3.26	25.64	0.127		0.2	0.1	2.2		0.04

.QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.2
08.45	0.2

.QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.2
08.00	0.2
08.15	0.2
08.30	0.2
08.45	0.1

. QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	453.9	302.6	21.9	0.05	21.9	0.05
B	202.9	135.3	8.3	0.04	8.3	0.04
C	357.9	238.6	16.6	0.05	16.6	0.05
ALL	1014.7	676.5	46.8	0.05	46.8	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

```
___________________ A R C A D Y  6 ___________________

    ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

    Analysis Program: Release 4.0 (FEBRUARY 2006)

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Wokingham, Berks.       Web:   www.trlsoftware.co.uk
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  THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
  IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS  OF THE SOLUTION
 ---------------------------------------------------------------------------------

 Run with file:-
 "C:\ARCADY\2016\16047-02\R135 - N2 Roundabout\PM Peak\2016 PM Peak - Existing Flows.vai"
(drive-on-the-left ) at 10:17:51 on Wednesday, 20 July 2016

.FILE PROPERTIES
 ***************

   RUN TITLE: Huntstown Quarry
    LOCATION: Huntstown
        DATE: 17/07/16
      CLIENT: Roadstone
  ENUMERATOR: Roadplan
  JOB NUMBER: 16047-02
      STATUS: TIA
 DESCRIPTION:

.INPUT DATA
 *********
 ARM A - R135 North
 ARM B - R135 South
 ARM C - N2 Slip Road

.GEOMETRIC DATA
 --------------
```

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT PCU/MIN)
ARM A	3.50	8.00	30.00	20.00	60.00	51.0	0.562	30.623
ARM B	3.50	9.50	30.00	20.00	60.00	49.0	0.596	33.767
ARM C	7.00	9.00	30.00	3.00	13.00	53.0	0.551	28.086

```
 V = approach half-width       L = effective flare length          D = inscribed circle diameter
 E = entry width               R = entry radius                    PHI = entry angle

.TRAFFIC DEMAND DATA
 -------------------

(Only sets included in the current run are shown)
```

ARM	FLOW SCALE(%)
A	100
B	100
C	100

```
.TIME PERIOD BEGINS 16.30 AND ENDS 18.00
.LENGTH OF TIME PERIOD -  90   MINUTES.
 LENGTH OF TIME SEGMENT -  15   MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA
```

DEMAND SET TITLE: 2016 PM Peak - Existing Flows

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.46	3.69	2.46
ARM B	15.00	45.00	75.00	4.50	6.75	4.50
ARM C	15.00	45.00	75.00	3.59	5.38	3.59

DEMAND SET TITLE: 2016 PM Peak - Existing Flows

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
16.30 - 18.00				
	ARM A	0.000	0.563	0.437
		0.0	111.0	86.0
		(0.0)	(8.0)	(5.0)
	ARM B	0.514	0.000	0.486
		185.0	0.0	175.0
		(9.0)	(0.0)	(9.0)
	ARM C	0.443	0.557	0.000
		127.0	160.0	0.0
		(9.0)	(10.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
ARM A	2.46	27.54	0.089		0.0	0.1	1.4		0.04
ARM B	4.50	30.36	0.148		0.0	0.2	2.6		0.04
ARM C	3.59	24.37	0.147		0.0	0.2	2.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	2.94	27.32	0.108		0.1	0.1	1.8		0.04
ARM B	5.37	30.24	0.178		0.2	0.2	3.2		0.04
ARM C	4.28	24.12	0.178		0.2	0.2	3.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	3.60	27.00	0.133		0.1	0.2	2.3		0.04
ARM B	6.58	30.07	0.219		0.2	0.3	4.1		0.04
ARM C	5.25	23.78	0.221		0.2	0.3	4.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	3.60	27.00	0.133		0.2	0.2	2.3		0.04
ARM B	6.58	30.07	0.219		0.3	0.3	4.2		0.04
ARM C	5.25	23.78	0.221		0.3	0.3	4.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	2.94	27.31	0.108		0.2	0.1	1.8		0.04
ARM B	5.37	30.24	0.178		0.3	0.2	3.3		0.04
ARM C	4.28	24.12	0.178		0.3	0.2	3.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	2.46	27.54	0.089		0.1	0.1	1.5		0.04
ARM B	4.50	30.36	0.148		0.2	0.2	2.6		0.04
ARM C	3.59	24.36	0.147		0.2	0.2	2.6		0.05

.QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.1
18.00	0.1

.QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.2
17.00	0.2
17.15	0.3
17.30	0.3
17.45	0.2
18.00	0.2

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.2
17.00	0.2
17.15	0.3
17.30	0.3
17.45	0.2
18.00	0.2

. QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	270.1	180.1	11.1	0.04	11.1	0.04
B	493.6	329.1	20.0	0.04	20.0	0.04
C	393.5	262.4	20.1	0.05	20.1	0.05
ALL	1157.3	771.5	51.2	0.04	51.2	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

```
___________________ A R C A D Y  6 ___________________

   ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


   Analysis Program: Release 4.0 (FEBRUARY 2006)

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Wokingham, Berks.      Web:   www.trlsoftware.co.uk
RG40 3GA,UK
```

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 --------------------------------------------------------------------------------
  THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
  IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS  OF THE SOLUTION
 --------------------------------------------------------------------------------
 Run with file:-
 "C:\ARCADY\2016\16047-02\R135 - N2 Roundabout\PM Peak\2017 PM Peak - With Development.vai"
(drive-on-the-left ) at 10:20:35 on Wednesday, 20 July 2016

.FILE PROPERTIES
 ***************

   RUN TITLE: Huntstown Quarry
    LOCATION: Huntstown
        DATE: 17/07/16
      CLIENT: Roadstone
  ENUMERATOR: Roadplan
  JOB NUMBER: 16047-02
      STATUS: TIA
 DESCRIPTION:

.INPUT DATA
 *********
 ARM A - R135 North
 ARM B - R135 South
 ARM C - N2 Slip Road

.GEOMETRIC DATA
 --------------
```

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT(PCU/MIN)
ARM A	3.50	8.00	30.00	20.00	60.00	51.0	0.562	30.623
ARM B	3.50	9.50	30.00	20.00	60.00	49.0	0.596	33.767
ARM C	7.00	9.00	30.00	3.00	13.00	53.0	0.551	28.086

```
 V = approach half-width       L = effective flare length          D = inscribed circle diameter
 E = entry width               R = entry radius                    PHI = entry angle

.TRAFFIC DEMAND DATA
 -------------------

(Only sets included in the current run are shown)
```

ARM	FLOW SCALE(%)
A	100
B	100
C	100

```
.TIME PERIOD BEGINS 16.30 AND ENDS 18.00
.LENGTH OF TIME PERIOD  -  90   MINUTES.
 LENGTH OF TIME SEGMENT -  15   MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA
```

DEMAND SET TITLE: 2017 PM Peak - With Development

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.56	3.84	2.56
ARM B	15.00	45.00	75.00	4.60	6.90	4.60
ARM C	15.00	45.00	75.00	3.61	5.42	3.61

DEMAND SET TITLE: 2017 PM Peak - With Development

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
16.30 - 18.00				
	ARM A	0.000	0.546	0.454
		0.0	112.0	93.0
		(0.0)	(8.0)	(5.0)
	ARM B	0.505	0.000	0.495
		186.0	0.0	182.0
		(9.0)	(0.0)	(9.0)
	ARM C	0.443	0.557	0.000
		128.0	161.0	0.0
		(9.0)	(10.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
ARM A	2.56	27.55	0.093		0.0	0.1	1.5		0.04
ARM B	4.60	30.31	0.152		0.0	0.2	2.6		0.04
ARM C	3.61	24.36	0.148		0.0	0.2	2.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	3.06	27.32	0.112		0.1	0.1	1.9		0.04
ARM B	5.49	30.18	0.182		0.2	0.2	3.3		0.04
ARM C	4.31	24.11	0.179		0.2	0.2	3.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	3.75	27.01	0.139		0.1	0.2	2.4		0.04
ARM B	6.73	30.00	0.224		0.2	0.3	4.3		0.04
ARM C	5.28	23.77	0.222		0.2	0.3	4.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	3.75	27.00	0.139		0.2	0.2	2.4		0.04
ARM B	6.73	30.00	0.224		0.3	0.3	4.3		0.04
ARM C	5.28	23.77	0.222		0.3	0.3	4.3		0.05

```
.-----------------------------------------------------------------------------------------------------------------
 I  TIME       DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAY   AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY      FLOW      QUEUE  QUEUE    (VEH.MIN/       (VEH.MIN/      PER ARRIVING  I
 I                                (RFC)     (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 17.30-17.45                                                                                                     I
 I ARM A       3.06     27.32    0.112                  0.2     0.1       1.9                              0.04      I
 I ARM B       5.49     30.18    0.182                  0.3     0.2       3.4                              0.04      I
 I ARM C       4.31     24.11    0.179                  0.3     0.2       3.3                              0.05      I
 I                                                                                                                 I
 -------------------------------------------------------------------------------------------------------------------
.-----------------------------------------------------------------------------------------------------------------
 I  TIME       DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAY   AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY      FLOW      QUEUE  QUEUE    (VEH.MIN/       (VEH.MIN/      PER ARRIVING  I
 I                                (RFC)     (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 17.45-18.00                                                                                                     I
 I ARM A       2.56     27.55    0.093                  0.1     0.1       1.6                              0.04      I
 I ARM B       4.60     30.31    0.152                  0.2     0.2       2.7                              0.04      I
 I ARM C       3.61     24.36    0.148                  0.2     0.2       2.7                              0.05      I
 I                                                                                                                 I
 -------------------------------------------------------------------------------------------------------------------

.QUEUE AT ARM A
 --------------
  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE
   16.45          0.1
   17.00          0.1
   17.15          0.2
   17.30          0.2
   17.45          0.1
   18.00          0.1

.QUEUE AT ARM B
 --------------
  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE
   16.45          0.2
   17.00          0.2
   17.15          0.3
   17.30          0.3
   17.45          0.2
   18.00          0.2


.QUEUE AT ARM C
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE
   16.45          0.2
   17.00          0.2
   17.15          0.3
   17.30          0.3
   17.45          0.2
   18.00          0.2

.                QUEUEING DELAY INFORMATION OVER WHOLE PERIOD
                 --------------------------------------------
 ----------------------------------------------------------------------------
 I  ARM  I    TOTAL DEMAND  I      * QUEUEING *     I  * INCLUSIVE QUEUEING *  I
 I       I                  I       * DELAY *       I          * DELAY *       I
 I       I---------------------------------------------------------------------I
 I       I  (VEH)   (VEH/H) I  (MIN)     (MIN/VEH)  I     (MIN)       (MIN/VEH)  I
 ----------------------------------------------------------------------------
 I   A   I  281.1 I  187.4 I     11.7 I     0.04    I       11.7  I     0.04     I
 I   B   I  504.6 I  336.4 I     20.6 I     0.04    I       20.6  I     0.04     I
 I   C   I  396.3 I  264.2 I     20.2 I     0.05    I       20.2  I     0.05     I
 ----------------------------------------------------------------------------
 I  ALL  I 1182.0 I  788.0 I     52.5 I     0.04    I       52.5  I     0.04     I
 ----------------------------------------------------------------------------

 * DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

 END OF JOB
```

```
___________________ A R C A D Y  6 ___________________

    ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


    Analysis Program: Release 4.0 (FEBRUARY 2006)

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 ---------------------------------------------------------------------------------
  THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
  IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS  OF THE SOLUTION
 ---------------------------------------------------------------------------------
 Run with file:-
 "C:\ARCADY\2016\16047-02\R135 - N2 Roundabout\PM Peak\2023 PM Peak - No Development.vai"
(drive-on-the-left ) at 10:21:42 on Wednesday, 20 July 2016

.FILE PROPERTIES
 ***************
   RUN TITLE: Huntstown Quarry
    LOCATION: Huntstown
        DATE: 17/07/16
      CLIENT: Roadstone
  ENUMERATOR: Roadplan
  JOB NUMBER: 16047-02
      STATUS: TIA
 DESCRIPTION:

.INPUT DATA
 **********
 ARM A - R135 North
 ARM B - R135 South
 ARM C - N2 Slip Road

.GEOMETRIC DATA
 --------------
```


ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT(PCU/MIN)
ARM A	3.50	8.00	30.00	20.00	60.00	51.0	0.562	30.623
ARM B	3.50	9.50	30.00	20.00	60.00	49.0	0.596	33.767
ARM C	7.00	9.00	30.00	3.00	13.00	53.0	0.551	28.086

```
 V = approach half-width       L = effective flare length          D = inscribed circle diameter
 E = entry width               R = entry radius                    PHI = entry angle

.TRAFFIC DEMAND DATA
 -------------------

(Only sets included in the current run are shown)
```

ARM	FLOW SCALE(%)
A	100
B	100
C	100

```
.TIME PERIOD BEGINS 16.30 AND ENDS 18.00
.LENGTH OF TIME PERIOD  -  90   MINUTES.
 LENGTH OF TIME SEGMENT -  15   MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA
```

DEMAND SET TITLE: 2023 PM Peak - No Development

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.59	3.88	2.59
ARM B	15.00	45.00	75.00	4.72	7.09	4.72
ARM C	15.00	45.00	75.00	3.76	5.64	3.76

DEMAND SET TITLE: 2023 PM Peak - No Development

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
16.30 - 18.00				
	ARM A	0.000	0.565	0.435
		0.0	117.0	90.0
		(0.0)	(8.0)	(5.0)
	ARM B	0.513	0.000	0.487
		194.0	0.0	184.0
		(9.0)	(0.0)	(9.0)
	ARM C	0.442	0.558	0.000
		133.0	168.0	0.0
		(9.0)	(10.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
ARM A	2.59	27.48	0.094		0.0	0.1	1.5		0.04
ARM B	4.72	30.33	0.156		0.0	0.2	2.7		0.04
ARM C	3.76	24.31	0.155		0.0	0.2	2.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	3.09	27.24	0.113		0.1	0.1	1.9		0.04
ARM B	5.64	30.21	0.187		0.2	0.2	3.4		0.04
ARM C	4.49	24.04	0.187		0.2	0.2	3.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	3.78	26.92	0.141		0.1	0.2	2.4		0.04
ARM B	6.91	30.03	0.230		0.2	0.3	4.4		0.04
ARM C	5.50	23.69	0.232		0.2	0.3	4.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	3.78	26.92	0.141		0.2	0.2	2.4		0.04
ARM B	6.91	30.03	0.230		0.3	0.3	4.5		0.04
ARM C	5.50	23.69	0.232		0.3	0.3	4.5		0.05

```
.-----------------------------------------------------------------------------------------------------------------------
 I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAY   AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE   (VEH.MIN/       (VEH.MIN/      PER ARRIVING  I
 I                                (RFC)    (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 17.30-17.45                                                                                                   I
 I ARM A       3.09     27.24    0.113                  0.2     0.1       1.9                            0.04      I
 I ARM B       5.64     30.20    0.187                  0.3     0.2       3.5                            0.04      I
 I ARM C       4.49     24.04    0.187                  0.3     0.2       3.5                            0.05      I
 I                                                                                                               I
 -----------------------------------------------------------------------------------------------------------------------
.-----------------------------------------------------------------------------------------------------------------------
 I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAY   AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE   (VEH.MIN/       (VEH.MIN/      PER ARRIVING  I
 I                                (RFC)    (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 17.45-18.00                                                                                                   I
 I ARM A       2.59     27.48    0.094                  0.1     0.1       1.6                            0.04      I
 I ARM B       4.72     30.33    0.156                  0.2     0.2       2.8                            0.04      I
 I ARM C       3.76     24.30    0.155                  0.2     0.2       2.8                            0.05      I
 I                                                                                                               I
 -----------------------------------------------------------------------------------------------------------------------

.QUEUE AT ARM A
 --------------
  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE
   16.45          0.1
   17.00          0.1
   17.15          0.2
   17.30          0.2
   17.45          0.1
   18.00          0.1

.QUEUE AT ARM B
 --------------
  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE
   16.45          0.2
   17.00          0.2
   17.15          0.3
   17.30          0.3
   17.45          0.2
   18.00          0.2

.QUEUE AT ARM C
 --------------
  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE
   16.45          0.2
   17.00          0.2
   17.15          0.3
   17.30          0.3
   17.45          0.2
   18.00          0.2

.                QUEUEING DELAY INFORMATION OVER WHOLE PERIOD
                 --------------------------------------------
 ---------------------------------------------------------------------------
 I  ARM  I   TOTAL DEMAND  I     * QUEUEING *     I  * INCLUSIVE QUEUEING *  I
 I       I                 I      * DELAY *       I         * DELAY *        I
 I       I-----------------------------------------------------------------I
 I       I  (VEH)   (VEH/H) I  (MIN)     (MIN/VEH) I    (MIN)      (MIN/VEH)  I
 ---------------------------------------------------------------------------
 I   A   I  283.8 I  189.2 I    11.8 I    0.04    I      11.8  I     0.04    I
 I   B   I  518.3 I  345.5 I    21.3 I    0.04    I      21.3  I     0.04    I
 I   C   I  412.7 I  275.2 I    21.4 I    0.05    I      21.4  I     0.05    I
 ---------------------------------------------------------------------------
 I  ALL  I 1214.9 I  809.9 I    54.5 I    0.04    I      54.5  I     0.04    I
 ---------------------------------------------------------------------------

 * DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

 END OF JOB
```

```
__________________ A R C A D Y  6 __________________

   ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


   Analysis Program: Release 4.0 (FEBRUARY 2006)

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 Wokingham, Berks.        Web:   www.trlsoftware.co.uk
 RG40 3GA,UK
```

```
--------------------------------------------------------------------------------
 THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
 IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS  OF THE SOLUTION
--------------------------------------------------------------------------------
```

Run with file:-
"C:\ARCADY\2016\16047-02\R135 - N2 Roundabout\PM Peak\2023 PM Peak - With Development.vai"
(drive-on-the-left) at 10:22:40 on Wednesday, 20 July 2016

.FILE PROPERTIES
****

```
   RUN TITLE: Huntstown Quarry
    LOCATION: Huntstown
        DATE: 17/07/16
      CLIENT: Roadstone
  ENUMERATOR: Roadplan
  JOB NUMBER: 16047-02
      STATUS: TIA
 DESCRIPTION:
```


.INPUT DATA
****

ARM A - R135 North
ARM B - R135 South
ARM C - N2 Slip Road

.GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.50	8.00	30.00	20.00	60.00	51.0	0.562	30.623
ARM B	3.50	9.50	30.00	20.00	60.00	49.0	0.596	33.767
ARM C	7.00	9.00	30.00	3.00	13.00	53.0	0.551	28.086

```
V = approach half-width       L = effective flare length           D = inscribed circle diameter
E = entry width               R = entry radius                     PHI = entry angle
```

.TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100

.TIME PERIOD BEGINS 16.30 AND ENDS 18.00
.LENGTH OF TIME PERIOD - 90   MINUTES.
 LENGTH OF TIME SEGMENT - 15   MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2023 PM Peak - With Development

ARM	FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.66	3.99	2.66
ARM B	15.00	45.00	75.00	4.80	7.20	4.80
ARM C	15.00	45.00	75.00	3.76	5.64	3.76

DEMAND SET TITLE: 2023 PM Peak - With Development

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
16.30 - 18.00				
	ARM A	0.000	0.549	0.451
		0.0	117.0	96.0
		(0.0)	(8.0)	(5.0)
	ARM B	0.505	0.000	0.495
		194.0	0.0	190.0
		(9.0)	(0.0)	(9.0)
	ARM C	0.442	0.558	0.000
		133.0	168.0	0.0
		(9.0)	(10.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
ARM A	2.66	27.50	0.097		0.0	0.1	1.6		0.04
ARM B	4.80	30.29	0.158		0.0	0.2	2.8		0.04
ARM C	3.76	24.31	0.155		0.0	0.2	2.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	3.18	27.26	0.117		0.1	0.1	2.0		0.04
ARM B	5.73	30.15	0.190		0.2	0.2	3.5		0.04
ARM C	4.49	24.04	0.187		0.2	0.2	3.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	3.89	26.94	0.145		0.1	0.2	2.5		0.04
ARM B	7.02	29.97	0.234		0.2	0.3	4.5		0.04
ARM C	5.50	23.69	0.232		0.2	0.3	4.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	3.89	26.93	0.145		0.2	0.2	2.5		0.04
ARM B	7.02	29.97	0.234		0.3	0.3	4.6		0.04
ARM C	5.50	23.69	0.232		0.3	0.3	4.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	3.18	27.25	0.117		0.2	0.1	2.0		0.04
ARM B	5.73	30.15	0.190		0.3	0.2	3.6		0.04
ARM C	4.49	24.04	0.187		0.3	0.2	3.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	2.66	27.49	0.097		0.1	0.1	1.6		0.04
ARM B	4.80	30.29	0.158		0.2	0.2	2.9		0.04
ARM C	3.76	24.30	0.155		0.2	0.2	2.8		0.05

.QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.1
18.00	0.1

.QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.2
17.00	0.2
17.15	0.3
17.30	0.3
17.45	0.2
18.00	0.2

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.2
17.00	0.2
17.15	0.3
17.30	0.3
17.45	0.2
18.00	0.2

. QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	292.1	194.7	12.2	0.04	12.2	0.04
B	526.5	351.0	21.8	0.04	21.8	0.04
C	412.7	275.2	21.4	0.05	21.4	0.05
ALL	1231.3	820.9	55.3	0.04	55.3	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

APPENDIX 13-E
OSCADY PRO RESULTS

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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The user of this computer program for the solution of an engineering problem is in no way relieved of their responsibility for the correctness of the solution

File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads.osc
Report generation date: 05/08/2016 16:02:32

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

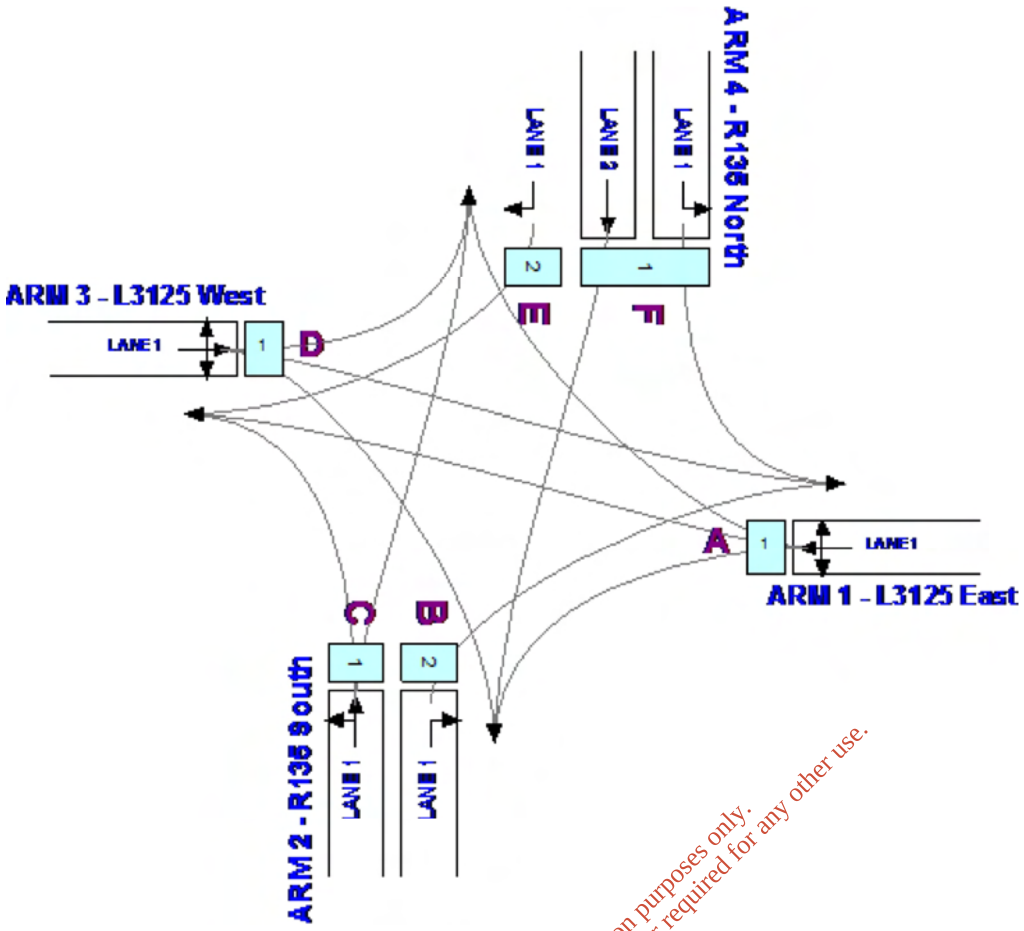
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			0.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

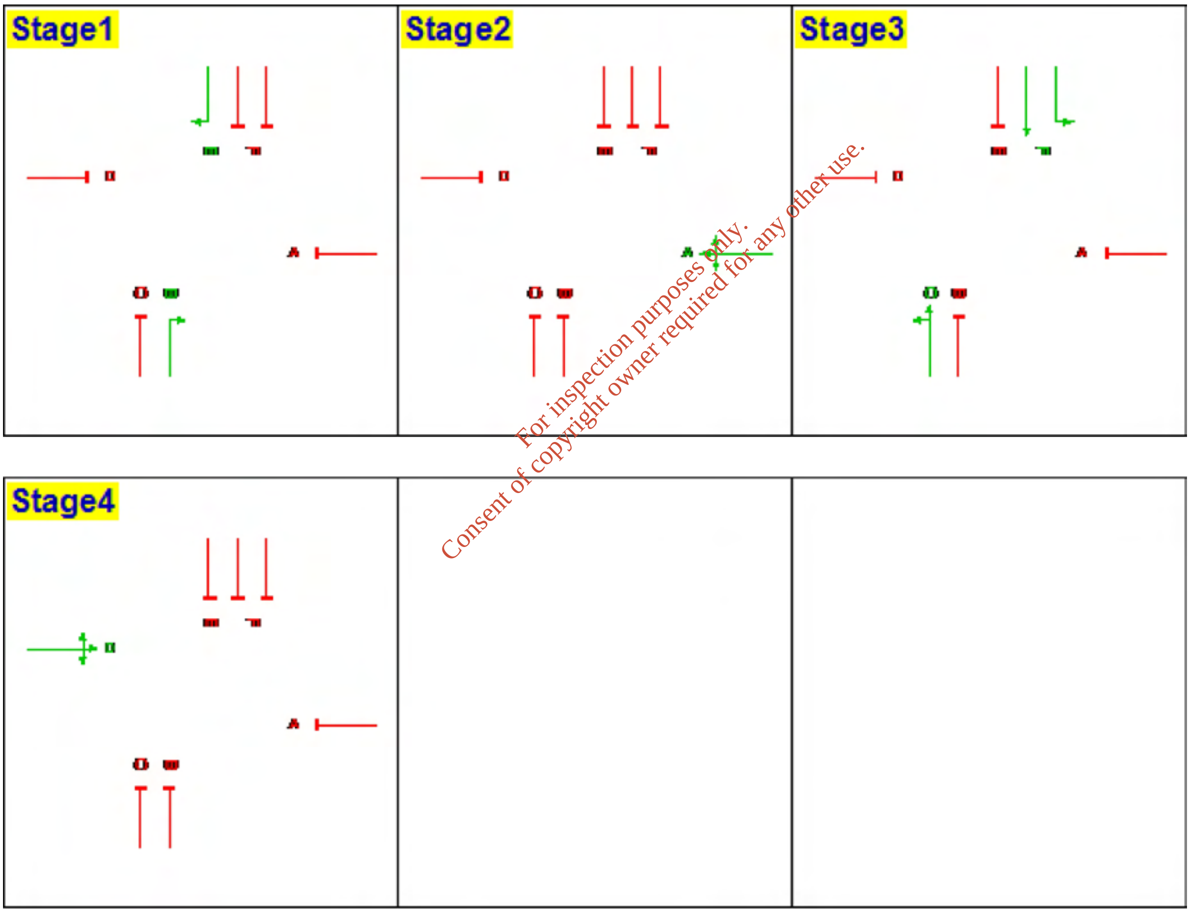
Intergreen Matrix

		To					
		A	B	C	D	E	F
From	A	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	Yes	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set1 - 2016 AM Peak Existing

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	101	331	93
	Arm 2	88	-	224	77
	Arm 3	163	111	-	11
	Arm 4	234	137	30	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - L3125 East	1	A	394	470	576	576	470	394
2 - R135 South	1	C	228	272	333	333	272	228
2 - R135 South	2	B	67	80	98	98	80	67
3 - L3125 West	1	D	214	255	313	313	255	214
4 - R135 North	1	F	277	330	405	405	330	277
4 - R135 North	2	E	21	25	31	31	25	21

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	19	63	18
2 - R135 South	58	20	23
3 - L3125 West	4	57	39
4 - R135 North	58	34	7

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	21.48	20.44	20.44	68.8

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	1.30	21.71	21.71	66.40

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

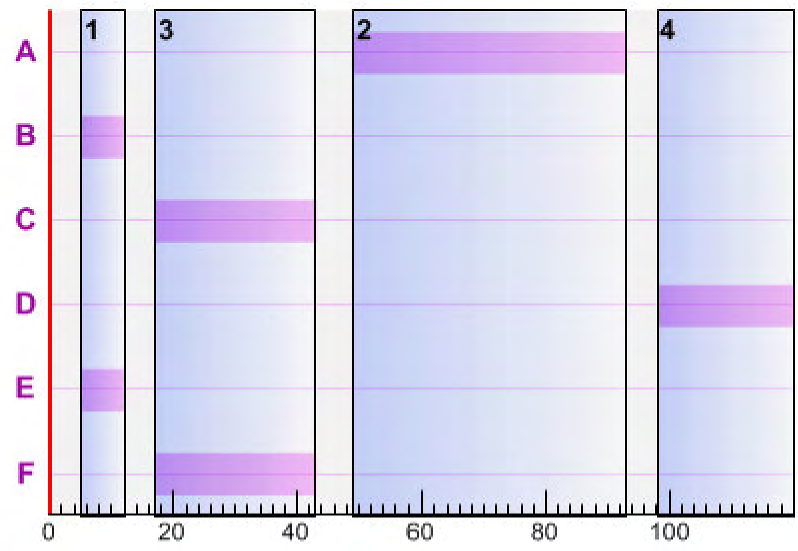
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	7.0	12.0
3	17.0	26.0	43.0
2	49.0	44.0	93.0
4	98.0	22.0	0.0

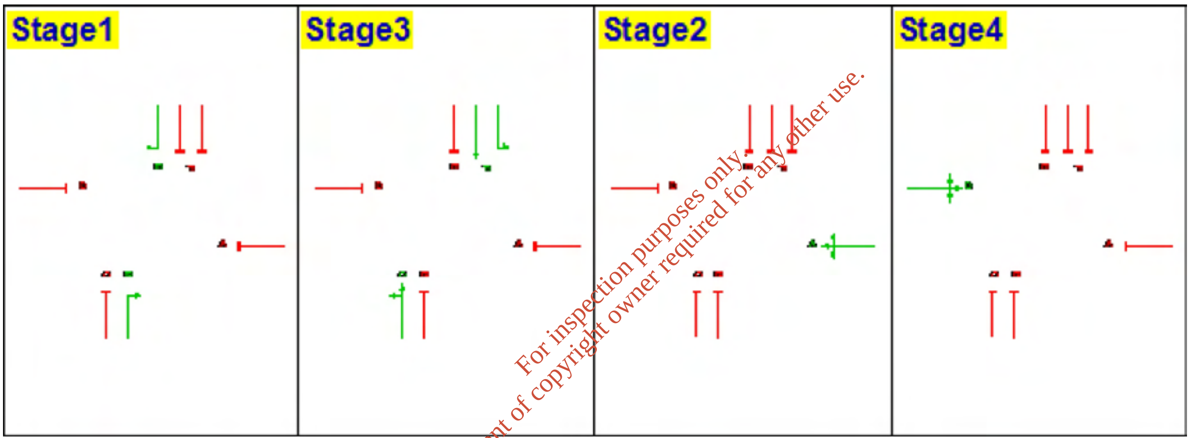
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	49	44.0	93						
B	5	7.0	12						
C	17	26.0	43						
D	98	22.0	0						
E	5	7.0	12						
F	17	26.0	43						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	480	A	45.50	39.92	5.32	70.68	27.33	1.24	12.22	10.99	28.10
2	**1**	278	C	27.50	56.47	4.36	70.36	27.90	1.15	8.72	7.56	10.30
2	**2**	82	B	8.50	82.36	1.88	61.97	45.23	0.66	3.25	2.58	1.70
3	**1**	261	D	23.50	64.03	4.64	74.08	21.48	1.45	8.83	7.38	8.00
4	**1**	337	F	27.50	40.87	3.83	38.85	131.65	0.17	9.46	9.28	19.90
4	**2**	26	E	8.50	56.91	0.41	19.65	358.02	0.03	0.84	0.81	0.80

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	394	1	45.50	34.32	3.76	58.02	55.12	0.56	9.42	8.85	4.90
2	**1**	228	3	27.50	48.83	3.09	57.71	55.95	0.53	6.67	6.14	1.80
2	**2**	67	2	8.50	70.20	1.31	50.64	77.74	0.33	2.43	2.10	0.30
3	**1**	214	4	23.50	53.71	3.19	60.74	48.17	0.62	6.62	5.99	1.40
4	**1**	277	6	27.50	39.74	3.06	31.93	181.83	0.10	7.64	7.53	2.90
4	**2**	21	5	8.50	55.72	0.33	15.87	467.07	0.02	0.67	0.65	0.10

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	470	1	45.50	38.93	5.08	69.21	30.04	1.09	11.83	10.74	4.70
2	**1**	272	3	27.50	54.85	4.14	68.85	30.73	1.00	8.39	7.39	1.70
2	**2**	80	2	8.50	79.12	1.76	60.46	48.86	0.57	3.08	2.52	0.30
3	**1**	255	4	23.50	61.41	4.35	72.38	24.34	1.22	8.42	7.20	1.30
4	**1**	330	6	27.50	40.73	3.73	38.04	136.56	0.16	9.24	9.08	3.30
4	**2**	25	5	8.50	56.66	0.39	18.89	376.34	0.03	0.81	0.78	0.10

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	576	1	45.50	50.51	8.08	84.82	6.11	3.09	16.56	13.47	3.70
2	**1**	333	3	27.50	69.41	6.42	84.29	6.78	2.62	11.79	9.17	1.50
2	**2**	98	2	8.50	95.38	2.60	74.06	21.52	1.16	4.26	3.10	0.30
3	**1**	313	4	23.50	81.61	7.10	88.84	1.30	3.50	12.45	8.95	1.10
4	**1**	405	6	27.50	42.30	4.76	46.69	92.75	0.29	11.61	11.32	3.60
4	**2**	31	5	8.50	58.11	0.50	23.43	284.15	0.05	1.01	0.97	0.20

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	576	1	45.50	52.66	8.43	84.82	6.11	3.21	16.69	13.47	3.70
2	**1**	333	3	27.50	73.75	6.82	84.29	6.78	2.79	11.96	9.17	1.50
2	**2**	98	2	8.50	101.46	2.76	74.06	21.52	1.24	4.33	3.10	0.30
3	**1**	313	4	23.50	90.90	7.90	88.84	1.30	3.89	12.84	8.95	1.10
4	**1**	405	6	27.50	42.32	4.76	46.69	92.75	0.29	11.62	11.32	3.60
4	**2**	31	5	8.50	58.15	0.50	23.43	284.15	0.05	1.01	0.97	0.20

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	470	1	45.50	40.09	5.23	69.21	30.04	1.17	11.91	10.74	4.70
2	**1**	272	3	27.50	57.78	4.37	68.85	30.73	1.12	8.51	7.39	1.70
2	**2**	80	2	8.50	85.73	1.91	60.46	48.86	0.68	3.20	2.52	0.30
3	**1**	255	4	23.50	67.99	4.82	72.38	24.34	1.43	8.63	7.20	1.30
4	**1**	330	6	27.50	40.75	3.74	38.04	136.56	0.17	9.24	9.08	3.30
4	**2**	25	5	8.50	56.72	0.39	18.89	376.34	0.03	0.81	0.78	0.10

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	394	1	45.50	34.63	3.79	58.02	55.12	0.58	9.44	8.85	4.90
2	**1**	228	3	27.50	49.71	3.15	57.71	55.95	0.56	6.70	6.14	1.80
2	**2**	67	2	8.50	73.79	1.37	50.64	77.74	0.37	2.47	2.10	0.30
3	**1**	214	4	23.50	55.28	3.29	60.74	48.17	0.67	6.67	5.99	1.40
4	**1**	277	6	27.50	39.76	3.06	31.93	181.83	0.11	7.64	7.53	2.90
4	**2**	21	5	8.50	55.81	0.33	15.87	467.07	0.02	0.67	0.65	0.10

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads.osc
Report generation date: 05/08/2016 16:05:05

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

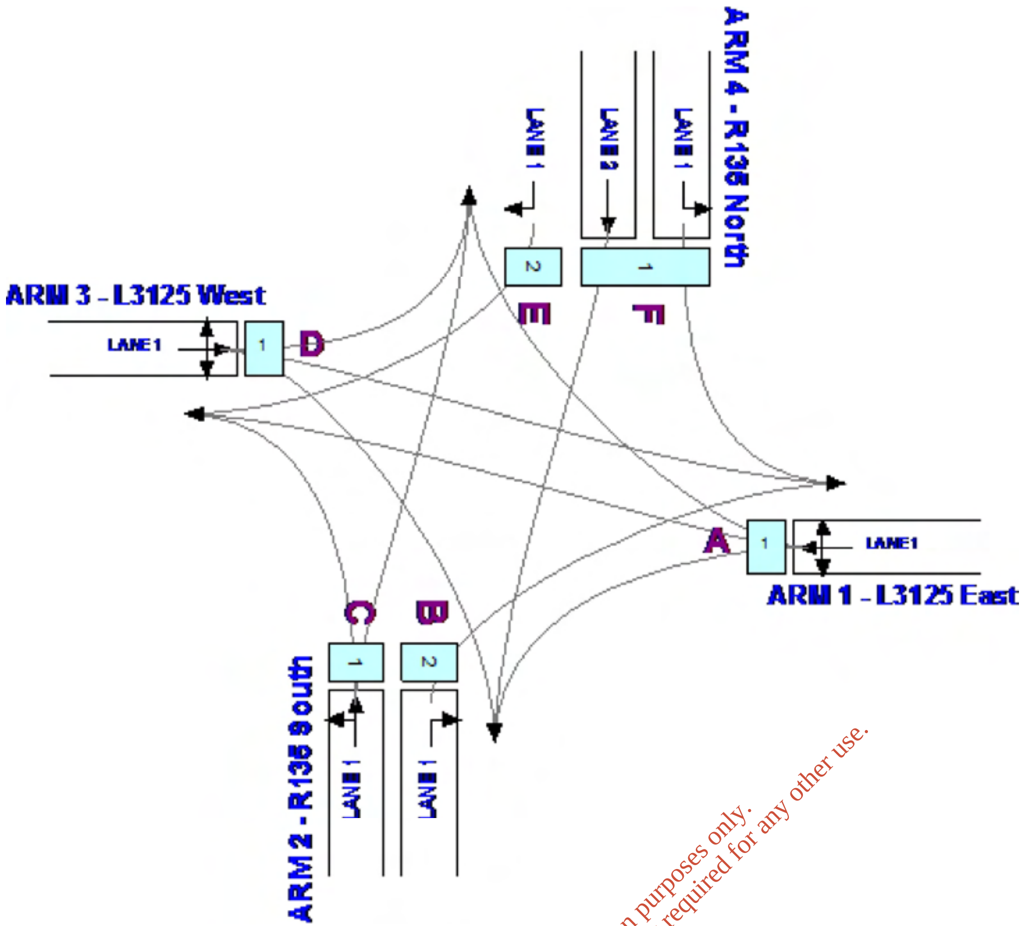
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

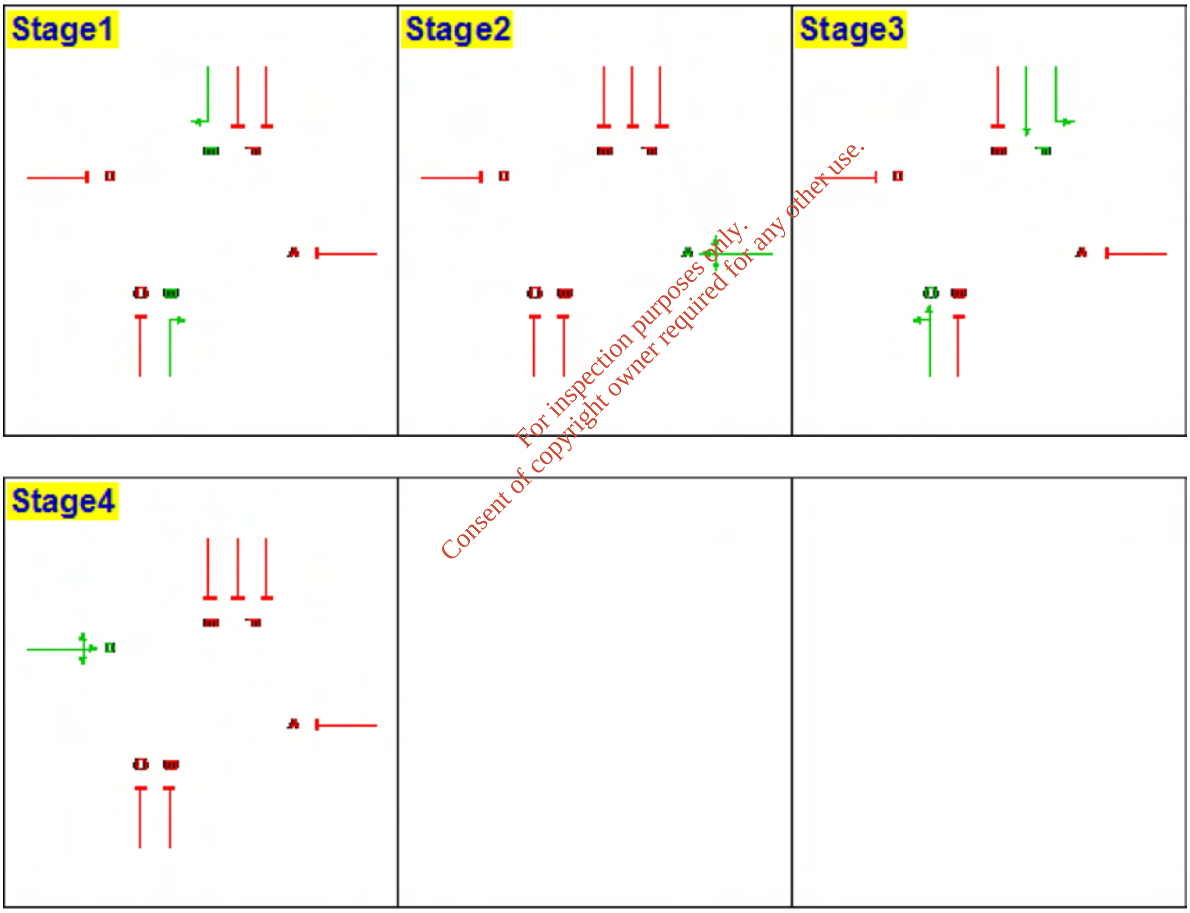
Intergreen Matrix

		To					
		A	B	C	D	E	F
From	A	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	Yes	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set2 - 2017 AM Peak No Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	102	333	94
	Arm 2	89	-	226	78
	Arm 3	164	112	-	11
	Arm 4	236	138	30	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - L3125 East	1	A	397	474	580	580	474	397
2 - R135 South	1	C	230	275	336	336	275	230
2 - R135 South	2	B	68	81	99	99	81	68
3 - L3125 West	1	D	215	257	315	315	257	215
4 - R135 North	1	F	279	333	408	408	333	279
4 - R135 North	2	E	21	25	31	31	25	21

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	19	63	18
2 - R135 South	58	20	23
3 - L3125 West	4	57	39
4 - R135 North	58	34	7

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	21.02	20.71	20.71	68.8

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	0.66	22.10	22.10	66.20

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

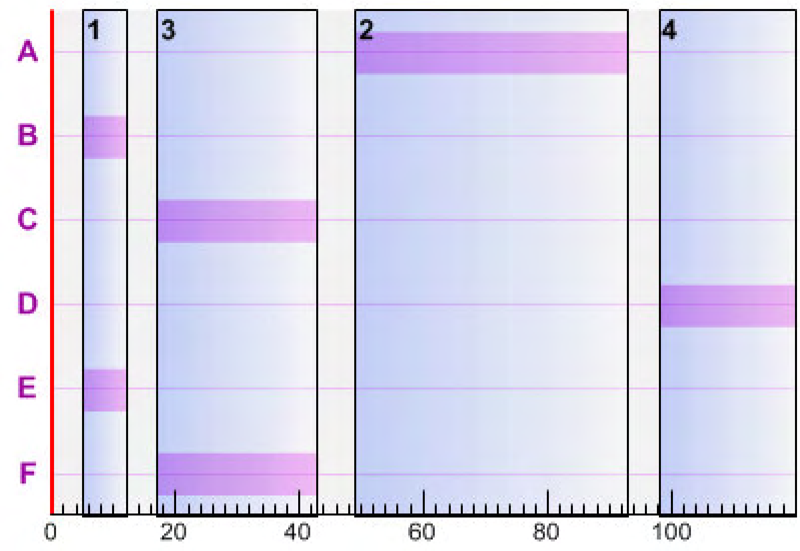
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	7.0	12.0
3	17.0	26.0	43.0
2	49.0	44.0	93.0
4	98.0	22.0	0.0

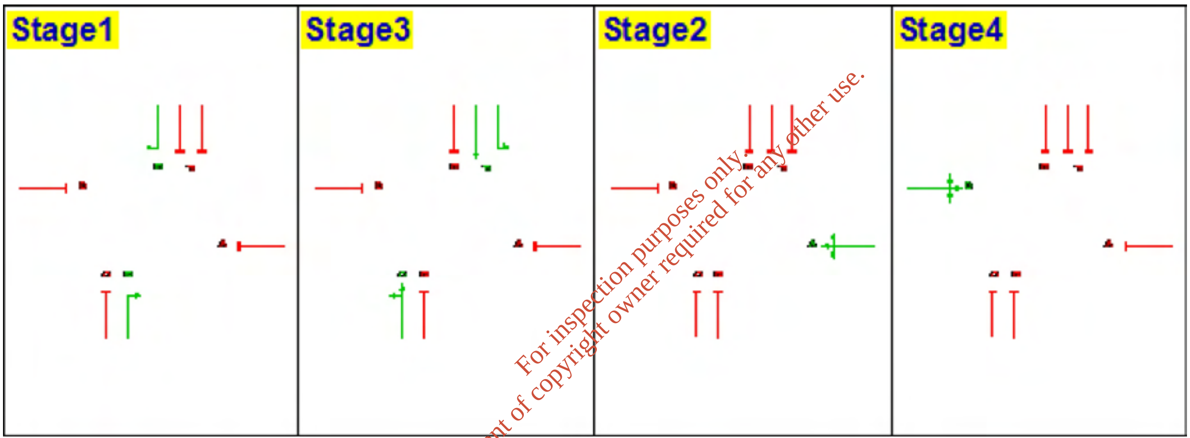
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	49	44.0	93						
B	5	7.0	12						
C	17	26.0	43						
D	98	22.0	0						
E	5	7.0	12						
F	17	26.0	43						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	484	A	45.50	40.25	5.41	71.27	26.28	1.28	12.37	11.09	28.00
2	**1**	280	C	27.50	56.86	4.42	70.87	26.99	1.19	8.81	7.62	10.30
2	**2**	83	B	8.50	83.26	1.92	62.73	43.48	0.69	3.31	2.61	1.70
3	**1**	262	D	23.50	64.32	4.68	74.37	21.02	1.48	8.89	7.41	8.00
4	**1**	340	F	27.50	40.93	3.87	39.20	129.60	0.18	9.55	9.37	20.00
4	**2**	26	E	8.50	56.91	0.41	19.65	358.02	0.03	0.84	0.81	0.80

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	397	1	45.50	34.46	3.80	58.46	53.95	0.58	9.50	8.92	4.90
2	**1**	230	3	27.50	49.03	3.13	58.22	54.60	0.54	6.74	6.19	1.80
2	**2**	68	2	8.50	70.67	1.33	51.39	75.12	0.34	2.48	2.14	0.30
3	**1**	215	4	23.50	53.84	3.22	61.03	47.48	0.63	6.66	6.02	1.40
4	**1**	279	6	27.50	39.78	3.08	32.17	179.81	0.11	7.70	7.59	2.90
4	**2**	21	5	8.50	55.72	0.33	15.87	467.07	0.02	0.67	0.65	0.10

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	474	1	45.50	39.22	5.16	69.80	28.94	1.13	11.97	10.84	4.70
2	**1**	275	3	27.50	55.33	4.23	69.61	29.30	1.05	8.53	7.48	1.70
2	**2**	81	2	8.50	79.92	1.80	61.22	47.02	0.59	3.14	2.55	0.30
3	**1**	257	4	23.50	61.86	4.42	72.95	23.37	1.26	8.52	7.26	1.30
4	**1**	333	6	27.50	40.79	3.77	38.39	134.43	0.17	9.34	9.17	3.30
4	**2**	25	5	8.50	56.66	0.39	18.89	376.34	0.03	0.81	0.78	0.10

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	580	1	45.50	51.19	8.25	85.41	5.38	3.23	16.81	13.58	3.60
2	**1**	336	3	27.50	70.51	6.58	85.05	5.83	2.77	12.02	9.26	1.40
2	**2**	99	2	8.50	96.58	2.66	74.82	20.29	1.21	4.34	3.13	0.30
3	**1**	315	4	23.50	82.71	7.24	89.41	0.66	3.64	12.65	9.01	1.10
4	**1**	408	6	27.50	42.37	4.80	47.04	91.34	0.30	11.71	11.41	3.70
4	**2**	31	5	8.50	58.11	0.50	23.43	284.15	0.05	1.01	0.97	0.20

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	580	1	45.50	53.57	8.63	85.41	5.38	3.37	16.95	13.58	3.60
2	**1**	336	3	27.50	75.27	7.03	85.05	5.83	2.95	12.21	9.26	1.40
2	**2**	99	2	8.50	103.04	2.83	74.82	20.29	1.29	4.42	3.13	0.30
3	**1**	315	4	23.50	92.68	8.11	89.41	0.66	4.07	13.09	9.01	1.10
4	**1**	408	6	27.50	42.39	4.80	47.04	91.34	0.30	11.71	11.41	3.70
4	**2**	31	5	8.50	58.15	0.50	23.43	284.15	0.05	1.01	0.97	0.20

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	474	1	45.50	40.49	5.33	69.80	28.94	1.22	12.06	10.84	4.70
2	**1**	275	3	27.50	58.58	4.48	69.61	29.30	1.18	8.66	7.48	1.70
2	**2**	81	2	8.50	86.95	1.96	61.22	47.02	0.71	3.26	2.55	0.30
3	**1**	257	4	23.50	69.05	4.93	72.95	23.37	1.49	8.75	7.26	1.30
4	**1**	333	6	27.50	40.81	3.77	38.39	134.43	0.17	9.34	9.17	3.30
4	**2**	25	5	8.50	56.72	0.39	18.89	376.34	0.03	0.81	0.78	0.10

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	397	1	45.50	34.79	3.84	58.46	53.95	0.60	9.52	8.92	4.90
2	**1**	230	3	27.50	49.97	3.19	58.22	54.60	0.58	6.77	6.19	1.80
2	**2**	68	2	8.50	74.51	1.41	51.39	75.12	0.38	2.52	2.14	0.30
3	**1**	215	4	23.50	55.50	3.31	61.03	47.48	0.68	6.71	6.02	1.40
4	**1**	279	6	27.50	39.79	3.08	32.17	179.81	0.11	7.70	7.59	2.90
4	**2**	21	5	8.50	55.81	0.33	15.87	467.07	0.02	0.67	0.65	0.10

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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The user of this computer program for the solution of an engineering problem is in no way relieved of their responsibility for the correctness of the solution

File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads.osc
Report generation date: 05/08/2016 16:06:20

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

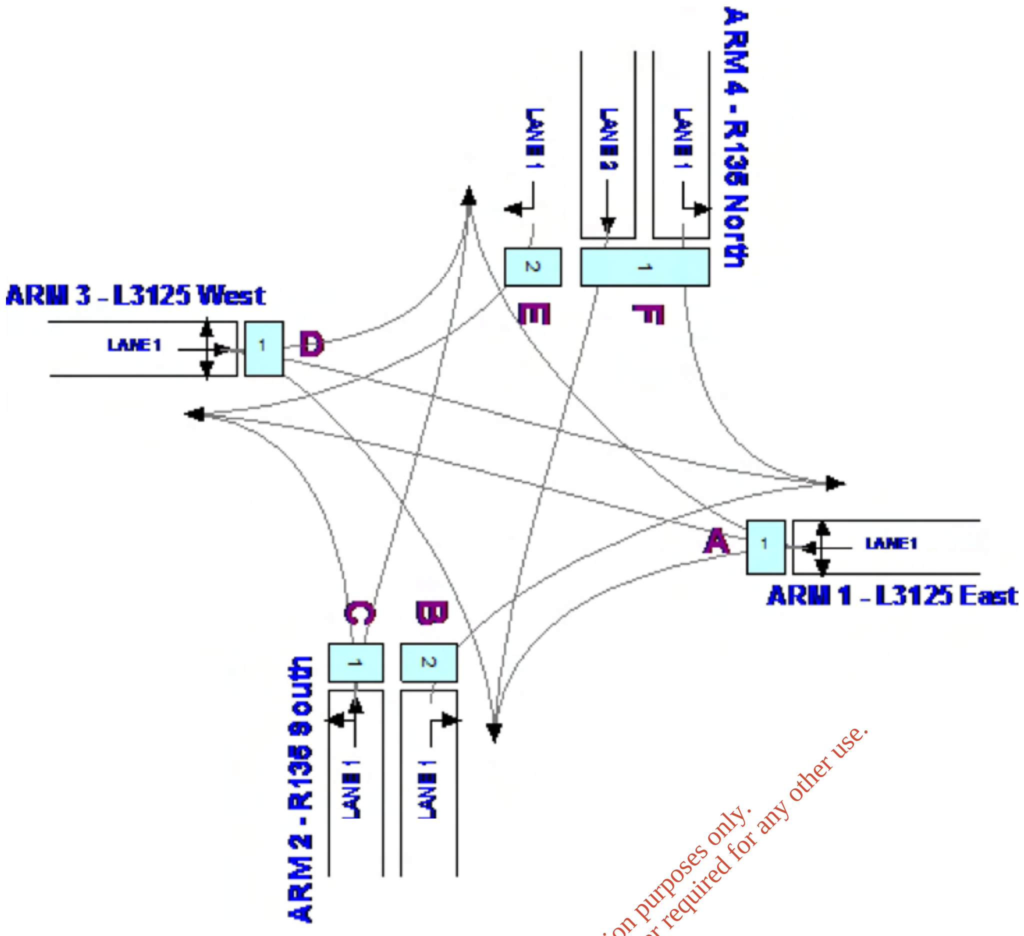
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

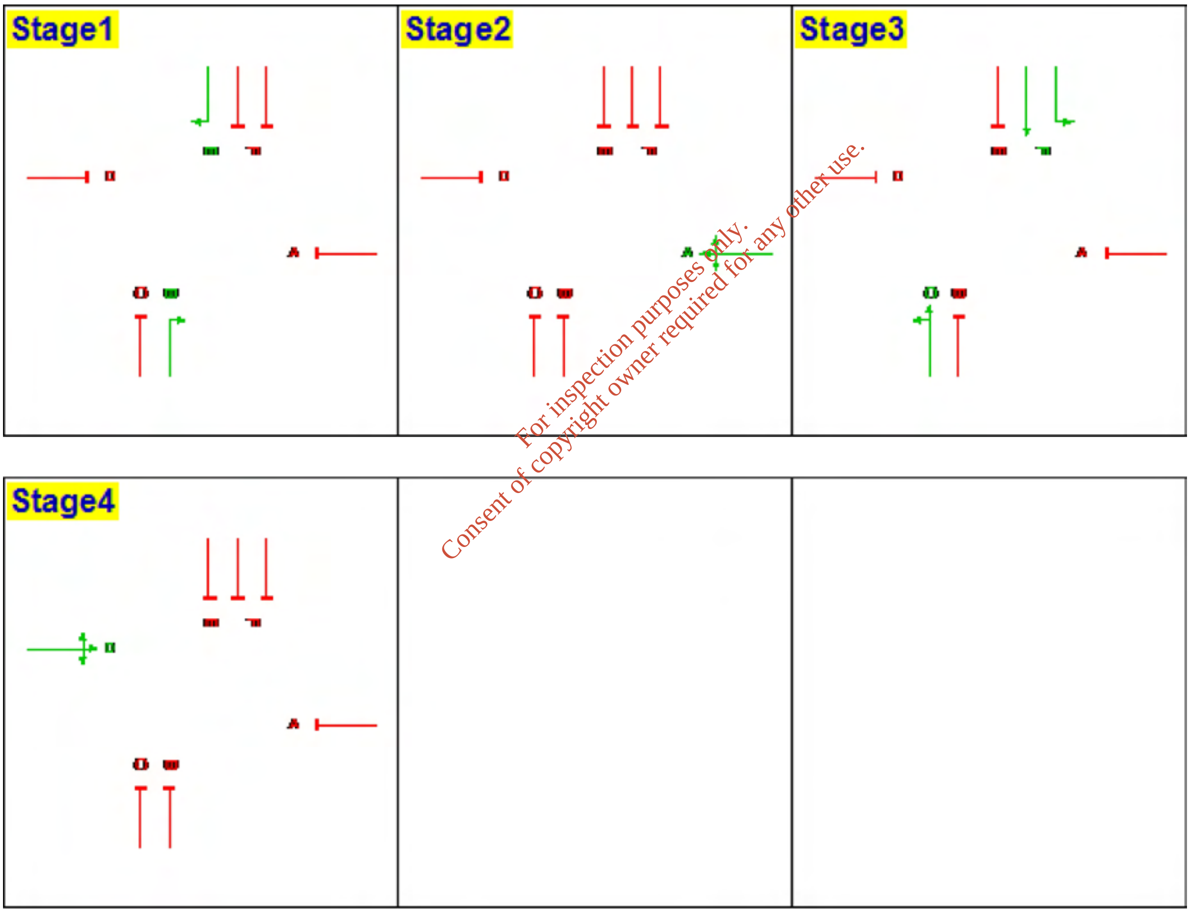
Intergreen Matrix

		To					
		A	B	C	D	E	F
From	A	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	Yes	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set3 - 2017 AM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	102	333	94
	Arm 2	89	-	226	84
	Arm 3	164	112	-	11
	Arm 4	236	144	30	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - L3125 East	1	A	397	474	580	580	474	397
2 - R135 South	1	C	233	279	341	341	279	233
2 - R135 South	2	B	66	79	96	96	79	66
3 - L3125 West	1	D	215	257	315	315	257	215
4 - R135 North	1	F	286	341	418	418	341	286
4 - R135 North	2	E	22	26	31	31	26	22

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	19	63	18
2 - R135 South	57	21	22
3 - L3125 West	4	57	39
4 - R135 North	58	35	7

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	23.50	20.75	20.75	68.1

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	3.06	22.16	22.16	65.60

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

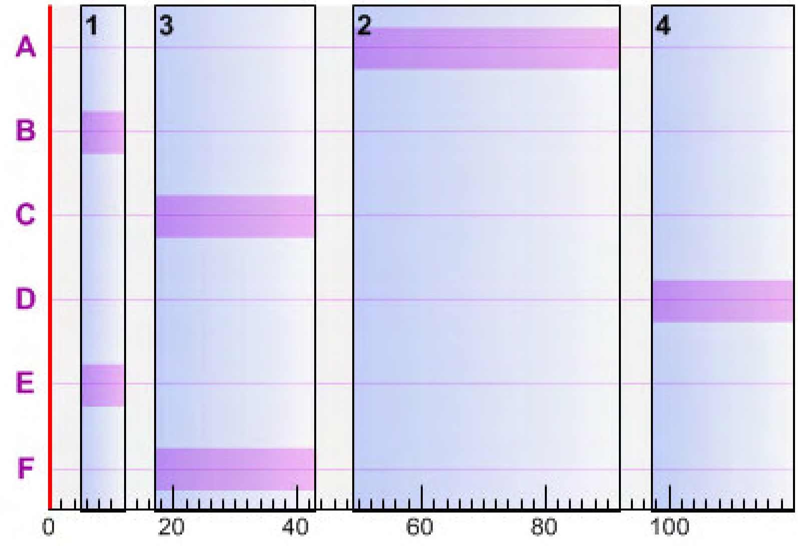
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	7.0	12.0
3	17.0	26.0	43.0
2	49.0	43.0	92.0
4	97.0	23.0	0.0

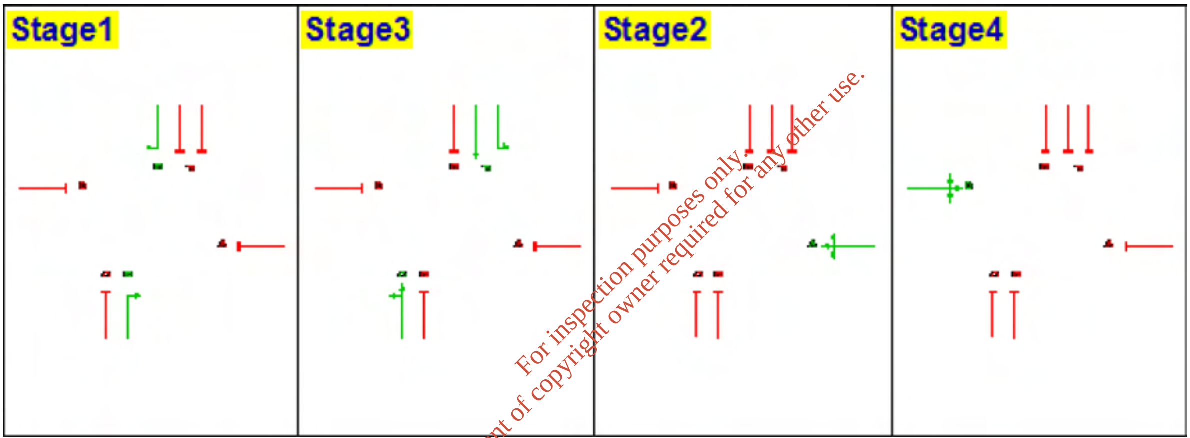
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	49	43.0	92						
B	5	7.0	12						
C	17	26.0	43						
D	97	23.0	0						
E	5	7.0	12						
F	17	26.0	43						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	484	A	44.50	42.00	5.65	72.87	23.50	1.42	12.66	11.24	26.30
2	**1**	284	C	27.50	57.67	4.55	71.88	25.20	1.27	9.01	7.74	10.20
2	**2**	80	B	8.50	80.64	1.79	60.46	48.86	0.61	3.13	2.52	1.70
3	**1**	262	D	24.50	60.16	4.38	71.33	26.17	1.22	8.55	7.33	8.80
4	**1**	348	F	27.50	41.09	3.97	40.12	124.33	0.19	9.80	9.61	20.30
4	**2**	26	E	8.50	56.91	0.41	19.65	358.02	0.03	0.84	0.81	0.80

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	397	1	44.50	35.62	3.93	59.77	50.57	0.62	9.67	9.04	4.70
2	**1**	233	3	27.50	49.35	3.19	58.97	52.61	0.57	6.85	6.28	1.80
2	**2**	66	2	8.50	69.75	1.28	49.88	80.43	0.31	2.39	2.07	0.30
3	**1**	215	4	24.50	51.72	3.09	58.54	53.75	0.55	6.51	5.96	1.50
4	**1**	286	6	27.50	39.90	3.17	32.97	172.96	0.11	7.91	7.79	3.00
4	**2**	22	5	8.50	55.94	0.34	16.63	441.30	0.02	0.71	0.68	0.10

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	474	1	44.50	40.82	5.37	71.37	26.11	1.24	12.23	10.98	4.40
2	**1**	279	3	27.50	56.02	4.34	70.62	27.45	1.11	8.71	7.59	1.70
2	**2**	79	2	8.50	78.42	1.72	59.71	50.74	0.54	3.03	2.49	0.30
3	**1**	257	4	24.50	58.39	4.17	69.97	28.62	1.06	8.25	7.19	1.50
4	**1**	341	6	27.50	40.95	3.88	39.31	128.93	0.18	9.58	9.40	3.30
4	**2**	26	5	8.50	56.89	0.41	19.65	358.02	0.03	0.84	0.81	0.10

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	580	1	44.50	54.50	8.78	87.33	3.06	3.73	17.49	13.76	3.30
2	**1**	341	3	27.50	72.42	6.86	86.31	4.27	3.02	12.42	9.40	1.40
2	**2**	96	2	8.50	93.28	2.49	72.55	24.05	1.07	4.11	3.03	0.30
3	**1**	315	4	24.50	74.87	6.55	85.76	4.94	2.85	11.77	8.92	1.20
4	**1**	418	6	27.50	42.60	4.95	48.19	86.76	0.32	12.04	11.72	3.70
4	**2**	31	5	8.50	58.11	0.50	23.43	284.15	0.05	1.01	0.97	0.20

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	580	1	44.50	57.89	9.33	87.33	3.06	3.95	17.71	13.76	3.30
2	**1**	341	3	27.50	78.11	7.40	86.31	4.27	3.26	12.66	9.40	1.40
2	**2**	96	2	8.50	98.43	2.62	72.55	24.05	1.13	4.17	3.03	0.30
3	**1**	315	4	24.50	80.68	7.06	85.76	4.94	3.08	11.99	8.92	1.20
4	**1**	418	6	27.50	42.62	4.95	48.19	86.76	0.32	12.04	11.72	3.70
4	**2**	31	5	8.50	58.15	0.50	23.43	284.15	0.05	1.01	0.97	0.20

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	474	1	44.50	42.56	5.60	71.37	26.11	1.35	12.33	10.98	4.40
2	**1**	279	3	27.50	59.88	4.64	70.62	27.45	1.26	8.86	7.59	1.70
2	**2**	79	2	8.50	84.19	1.85	59.71	50.74	0.65	3.13	2.49	0.30
3	**1**	257	4	24.50	62.42	4.46	69.97	28.62	1.21	8.40	7.19	1.50
4	**1**	341	6	27.50	40.97	3.88	39.31	128.93	0.18	9.58	9.40	3.30
4	**2**	26	5	8.50	56.95	0.41	19.65	358.02	0.03	0.84	0.81	0.10

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	397	1	44.50	36.02	3.97	59.77	50.57	0.65	9.69	9.04	4.70
2	**1**	233	3	27.50	50.38	3.26	58.97	52.61	0.61	6.88	6.28	1.80
2	**2**	66	2	8.50	73.08	1.34	49.88	80.43	0.35	2.42	2.07	0.30
3	**1**	215	4	24.50	52.84	3.16	58.54	53.75	0.59	6.55	5.96	1.50
4	**1**	286	6	27.50	39.92	3.17	32.97	172.96	0.11	7.91	7.79	3.00
4	**2**	22	5	8.50	56.02	0.34	16.63	441.30	0.02	0.71	0.68	0.10

OSCADY PRO

GUI Version: 1.3.1 [05/05/11] Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads.osc
Report generation date: 05/08/2016 16:07:00

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

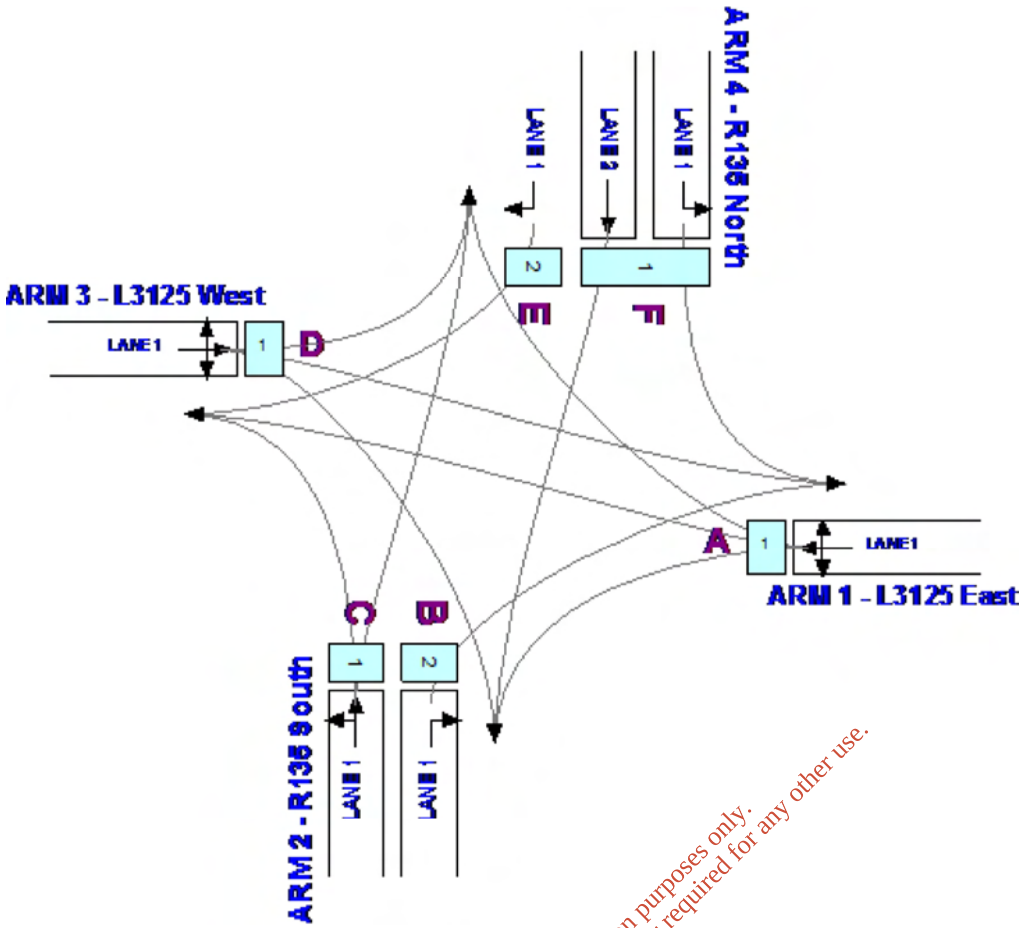
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

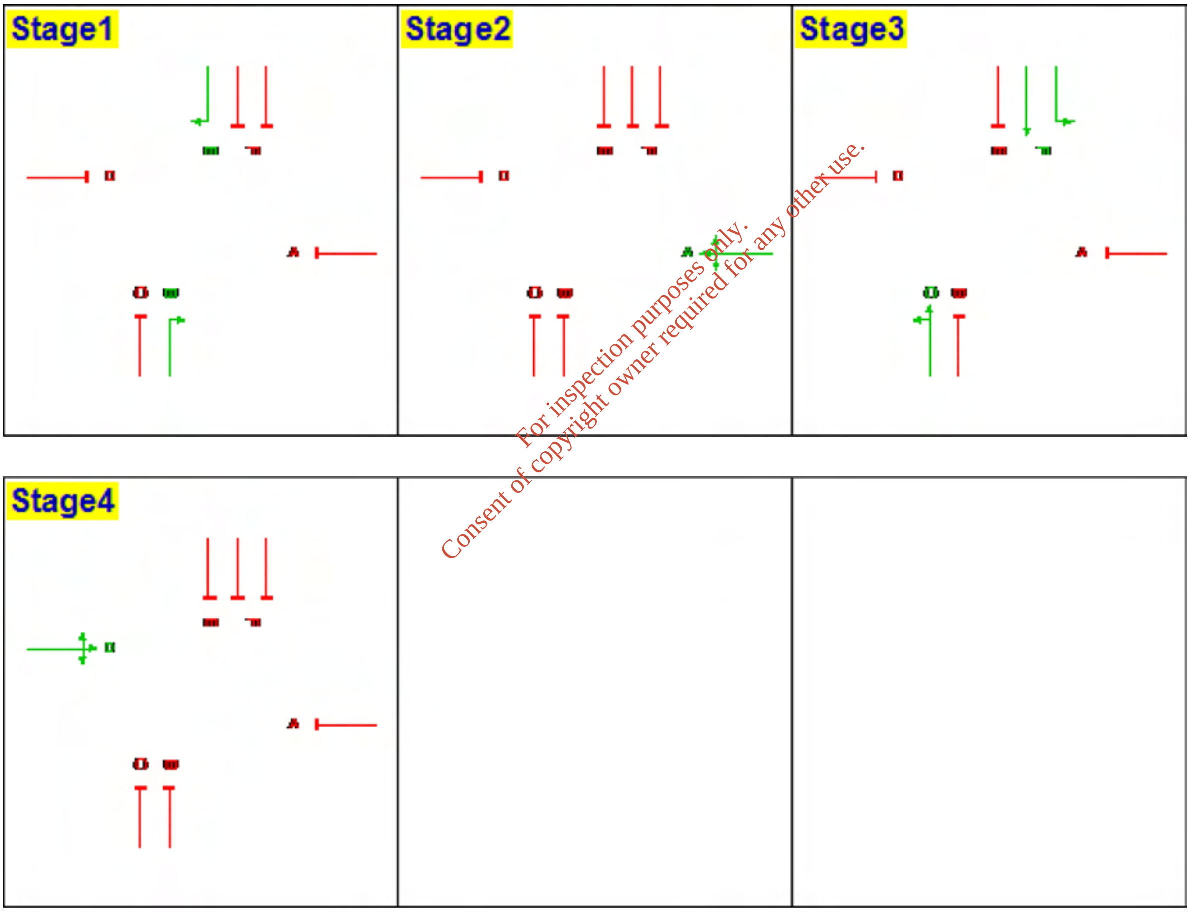
Intergreen Matrix

		To					
		A	B	C	D	E	F
From	A	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	Yes	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set4 - 2023 AM Peak No Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	106	348	98
	Arm 2	92	-	235	81
	Arm 3	171	117	-	12
	Arm 4	246	144	32	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - L3125 East	1	A	414	494	605	605	494	414
2 - R135 South	1	C	239	285	349	349	285	239
2 - R135 South	2	B	70	84	103	103	84	70
3 - L3125 West	1	D	225	269	329	329	269	225
4 - R135 North	1	F	291	348	426	426	348	291
4 - R135 North	2	E	25	30	37	37	30	25

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	19	63	18
2 - R135 South	58	20	23
3 - L3125 West	4	57	39
4 - R135 North	58	34	8

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:** Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	15.72	22.50	22.50	68.2

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	-3.62	24.54	24.54	65.20

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

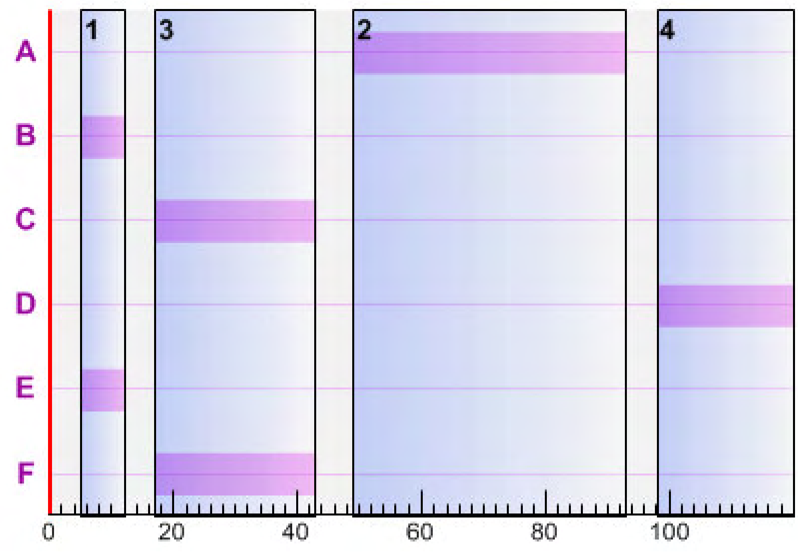
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	7.0	12.0
3	17.0	26.0	43.0
2	49.0	44.0	93.0
4	98.0	22.0	0.0

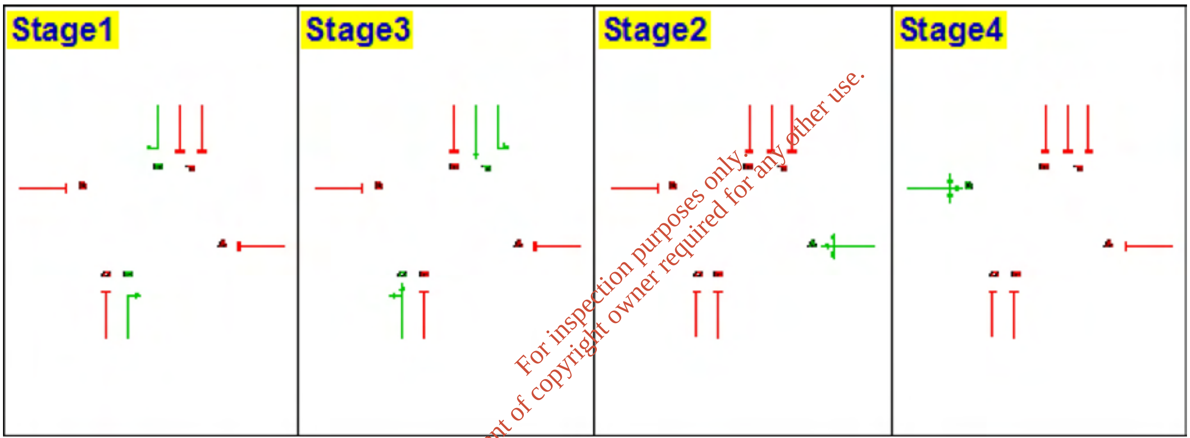
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	49	44.0	93						
B	5	7.0	12						
C	17	26.0	43						
D	98	22.0	0						
E	5	7.0	12						
F	17	26.0	43						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	504	A	45.50	42.08	5.89	74.22	21.27	1.55	13.15	11.60	27.10
2	**1**	291	C	27.50	59.23	4.79	73.66	22.19	1.42	9.36	7.94	10.10
2	**2**	86	B	8.50	86.16	2.06	65.00	38.47	0.79	3.50	2.71	1.80
3	**1**	274	D	23.50	68.32	5.20	77.77	15.72	1.86	9.63	7.77	7.80
4	**1**	355	F	27.50	41.24	4.07	40.93	119.90	0.20	10.02	9.82	20.50
4	**2**	31	E	8.50	58.14	0.50	23.43	284.15	0.05	1.01	0.97	0.90

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	414	1	45.50	35.32	4.06	60.96	47.63	0.67	10.01	9.34	4.90
2	1	239	3	27.50	50.00	3.32	60.49	48.78	0.62	7.07	6.45	1.80
2	2	70	2	8.50	71.63	1.39	52.90	70.12	0.37	2.57	2.20	0.30
3	1	225	4	23.50	55.23	3.45	63.87	40.92	0.74	7.06	6.32	1.40
4	1	291	6	27.50	39.99	3.23	33.55	168.27	0.12	8.06	7.94	3.00
4	2	25	5	8.50	56.60	0.39	18.89	376.34	0.03	0.81	0.78	0.10

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	494	1	45.50	40.82	5.60	72.74	23.72	1.36	12.70	11.34	4.60
2	1	285	3	27.50	57.13	4.52	72.14	24.76	1.22	8.98	7.77	1.70
2	2	84	2	8.50	82.11	1.92	63.48	41.77	0.67	3.31	2.65	0.30
3	1	269	4	23.50	64.92	4.85	76.35	17.87	1.55	9.17	7.62	1.30
4	1	348	6	27.50	41.09	3.97	40.12	124.33	0.19	9.80	9.61	3.40
4	2	30	5	8.50	57.87	0.48	22.67	296.95	0.04	0.98	0.93	0.10

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	605	1	45.50	56.09	9.43	89.09	1.02	4.34	18.58	14.24	3.20
2	1	349	3	27.50	75.68	7.34	88.34	1.88	3.49	13.13	9.64	1.30
2	2	103	2	8.50	101.40	2.90	77.84	15.62	1.42	4.68	3.26	0.30
3	1	329	4	23.50	91.08	8.32	93.39	-3.62	4.86	14.30	9.44	1.00
4	1	426	6	27.50	42.79	5.06	49.11	83.25	0.34	12.30	11.97	3.70
4	2	37	5	8.50	59.71	0.61	27.96	221.85	0.07	1.23	1.15	0.20

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	605	1	45.50	60.55	10.18	89.09	1.02	4.66	18.90	14.24	3.20
2	1	349	3	27.50	83.30	8.08	88.34	1.88	3.83	13.47	9.64	1.30
2	2	103	2	8.50	110.15	3.15	77.84	15.62	1.54	4.80	3.26	0.30
3	1	329	4	23.50	107.80	9.85	93.39	-3.62	5.75	15.19	9.44	1.00
4	1	426	6	27.50	42.81	5.07	49.11	83.25	0.34	12.30	11.97	3.70
4	2	37	5	8.50	59.78	0.61	27.96	221.85	0.07	1.23	1.15	0.20

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	494	1	45.50	43.00	5.90	72.74	23.72	1.49	12.83	11.34	4.60
2	**1**	285	3	27.50	62.20	4.92	72.14	24.76	1.40	9.17	7.77	1.70
2	**2**	84	2	8.50	91.58	2.14	63.48	41.77	0.82	3.47	2.65	0.30
3	**1**	269	4	23.50	78.36	5.86	76.35	17.87	1.91	9.53	7.62	1.30
4	**1**	348	6	27.50	41.11	3.97	40.12	124.33	0.19	9.80	9.61	3.40
4	**2**	30	5	8.50	57.96	0.48	22.67	296.95	0.04	0.98	0.93	0.10

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	414	1	45.50	35.76	4.11	60.96	47.63	0.70	10.04	9.34	4.90
2	**1**	239	3	27.50	51.21	3.40	60.49	48.78	0.66	7.11	6.45	1.80
2	**2**	70	2	8.50	76.22	1.48	52.90	70.12	0.42	2.62	2.20	0.30
3	**1**	225	4	23.50	57.66	3.60	63.87	40.92	0.82	7.13	6.32	1.40
4	**1**	291	6	27.50	40.01	3.23	33.55	168.27	0.12	8.06	7.94	3.00
4	**2**	25	5	8.50	56.72	0.39	18.89	376.34	0.03	0.81	0.78	0.10

File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads.osc
Report generation date: 05/08/2016 16:07:38

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

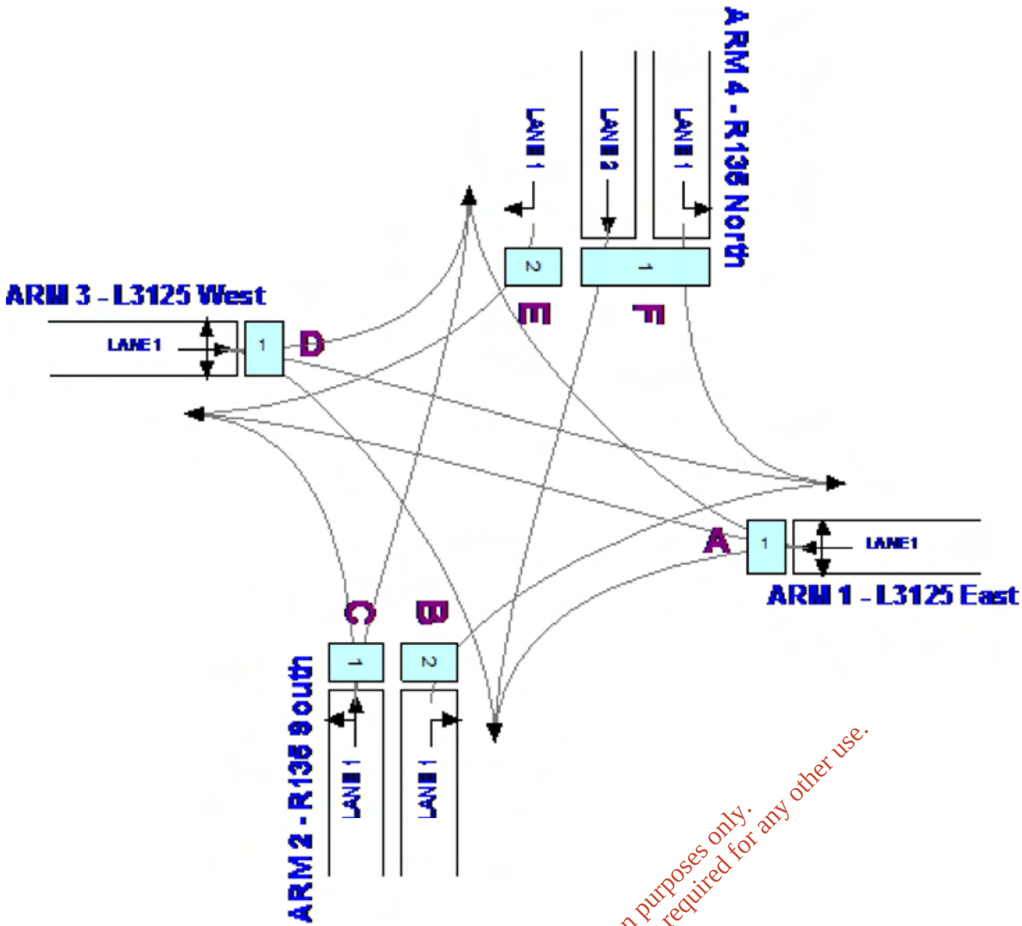
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

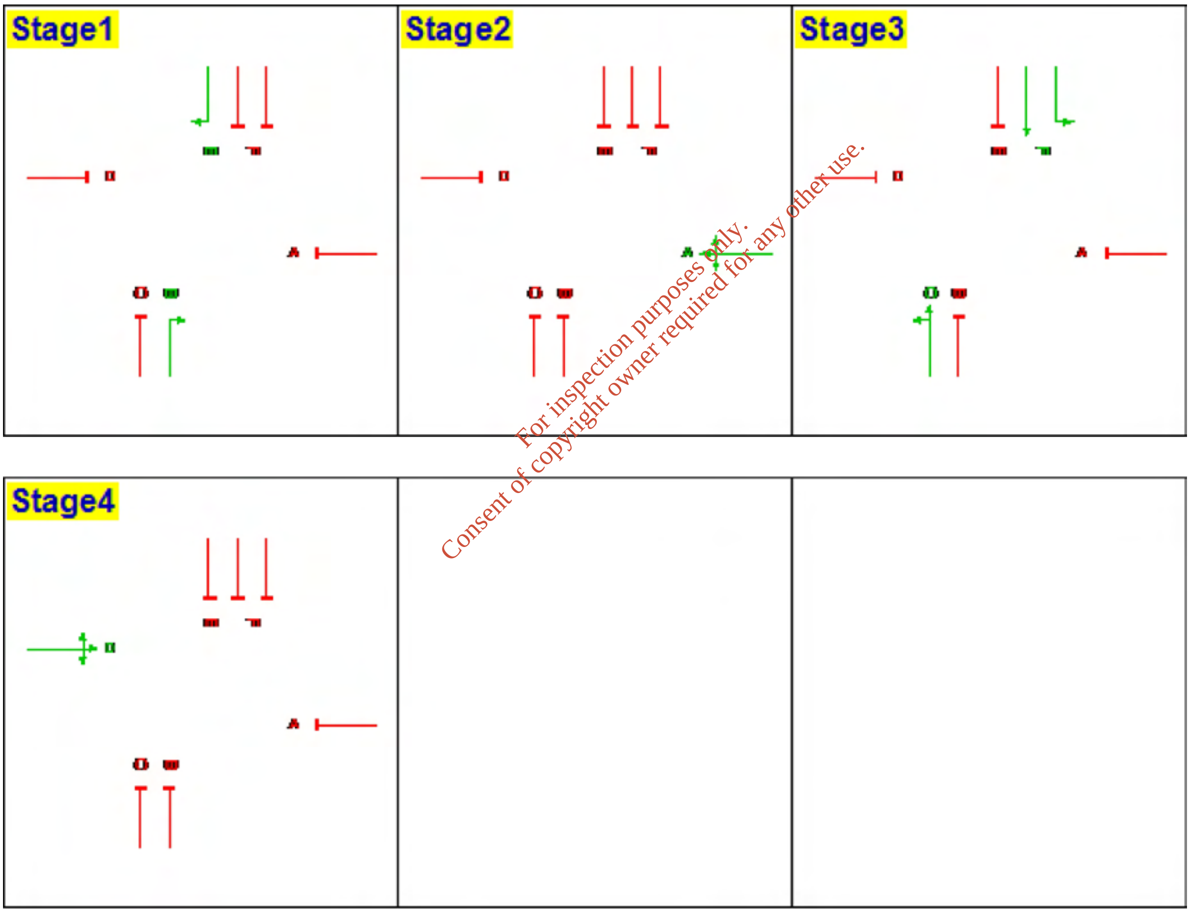
Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	Yes	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set5 - 2023 AM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	106	348	98
	Arm 2	92	-	235	87
	Arm 3	171	117	-	12
	Arm 4	246	150	32	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - L3125 East	1	A	414	494	605	605	494	414
2 - R135 South	1	C	242	289	354	354	289	242
2 - R135 South	2	B	68	82	100	100	82	68
3 - L3125 West	1	D	225	269	329	329	269	225
4 - R135 North	1	F	295	353	432	432	353	295
4 - R135 North	2	E	22	27	33	33	27	22

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	19	63	18
2 - R135 South	57	21	22
3 - L3125 West	4	57	39
4 - R135 North	57	35	7

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	18.60	22.40	22.40	67.1

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	-1.20	24.45	24.45	64.30

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

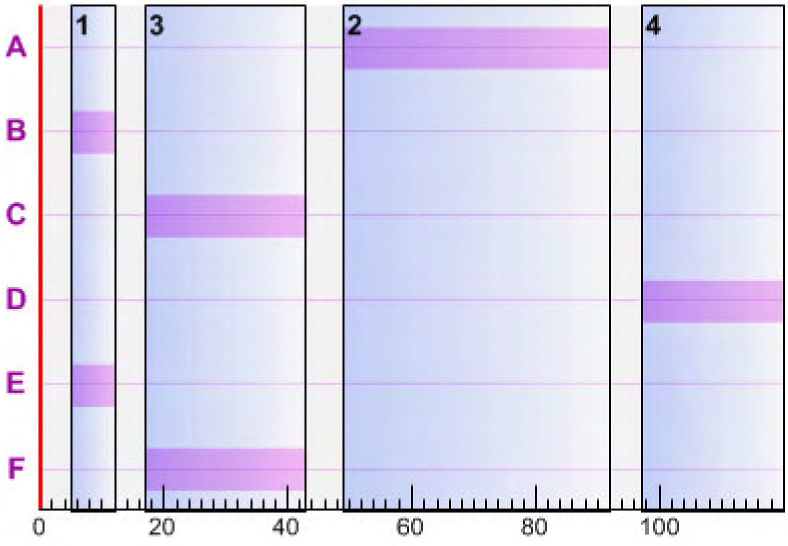
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	7.0	12.0
3	17.0	26.0	43.0
2	49.0	43.0	92.0
4	97.0	23.0	0.0

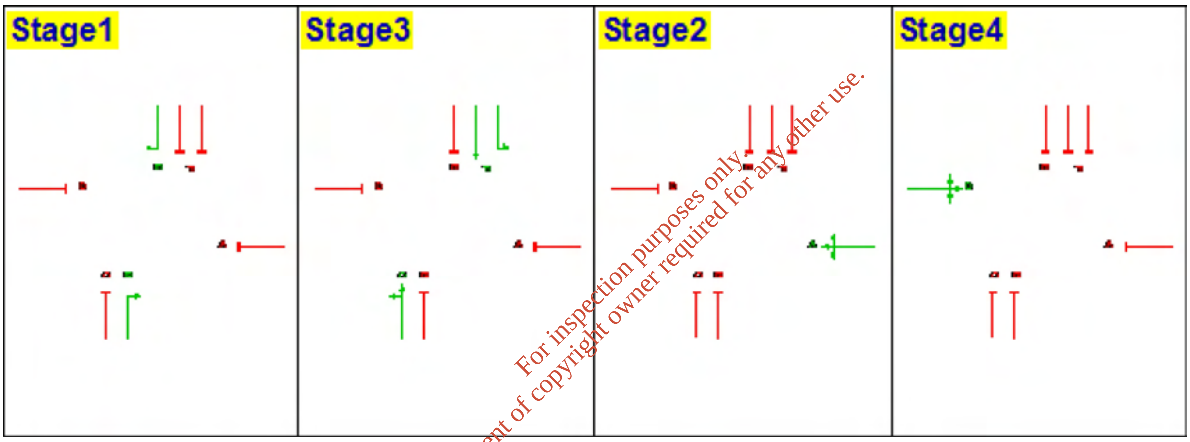
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	49	43.0	92						
B	5	7.0	12						
C	17	26.0	43						
D	97	23.0	0						
E	5	7.0	12						
F	17	26.0	43						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	504	A	44.50	44.08	6.17	75.89	18.60	1.73	13.49	11.75	25.40
2	**1**	295	C	27.50	60.19	4.93	74.67	20.53	1.52	9.57	8.06	10.00
2	**2**	83	B	8.50	83.26	1.92	62.73	43.48	0.69	3.31	2.61	1.70
3	**1**	274	D	24.50	63.20	4.81	74.60	20.64	1.50	9.19	7.69	8.60
4	**1**	360	F	27.50	41.34	4.13	41.50	116.85	0.21	10.18	9.97	20.60
4	**2**	27	E	8.50	57.15	0.43	20.41	341.06	0.03	0.88	0.84	0.80

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	414	1	44.50	36.55	4.20	62.33	44.38	0.73	10.19	9.47	4.70
2	**1**	242	3	27.50	50.33	3.38	61.25	46.93	0.65	7.18	6.53	1.80
2	**2**	68	2	8.50	70.67	1.33	51.39	75.12	0.34	2.48	2.14	0.30
3	**1**	225	4	24.50	52.92	3.31	61.26	46.92	0.64	6.89	6.25	1.50
4	**1**	295	6	27.50	40.07	3.28	34.01	164.63	0.12	8.18	8.06	3.10
4	**2**	22	5	8.50	55.94	0.34	16.63	441.30	0.02	0.71	0.68	0.10

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	494	1	44.50	42.59	5.84	74.38	21.00	1.50	13.00	11.50	4.30
2	**1**	289	3	27.50	57.89	4.65	73.15	23.04	1.29	9.18	7.88	1.70
2	**2**	82	2	8.50	80.58	1.84	61.97	45.23	0.61	3.20	2.58	0.30
3	**1**	269	4	24.50	60.86	4.55	73.24	22.89	1.29	8.83	7.54	1.40
4	**1**	353	6	27.50	41.19	4.04	40.70	121.15	0.20	9.96	9.76	3.40
4	**2**	27	5	8.50	57.12	0.43	20.41	341.06	0.03	0.88	0.84	0.10

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	605	1	44.50	60.26	10.13	91.09	-1.20	5.11	19.54	14.43	2.90
2	**1**	354	3	27.50	77.96	7.67	89.60	0.44	3.83	13.61	9.79	1.30
2	**2**	100	2	8.50	97.80	2.72	75.58	19.09	1.26	4.42	3.16	0.30
3	**1**	329	4	24.50	81.42	7.44	89.57	0.48	3.73	13.08	9.34	1.10
4	**1**	432	6	27.50	42.94	5.15	49.80	80.71	0.35	12.50	12.15	3.70
4	**2**	33	5	8.50	58.62	0.54	24.94	260.86	0.05	1.08	1.03	0.20

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	605	1	44.50	66.75	11.22	91.09	-1.20	5.62	20.06	14.43	2.80
2	**1**	354	3	27.50	87.03	8.56	89.60	0.44	4.26	14.05	9.79	1.30
2	**2**	100	2	8.50	104.65	2.91	75.58	19.09	1.35	4.51	3.16	0.30
3	**1**	329	4	24.50	91.16	8.33	89.57	0.48	4.17	13.52	9.34	1.10
4	**1**	432	6	27.50	42.96	5.15	49.80	80.71	0.35	12.50	12.15	3.70
4	**2**	33	5	8.50	58.68	0.54	24.94	260.86	0.05	1.08	1.03	0.20

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	494	1	44.50	45.77	6.28	74.38	21.00	1.67	13.16	11.50	4.30
2	**1**	289	3	27.50	64.02	5.14	73.15	23.04	1.51	9.39	7.88	1.70
2	**2**	82	2	8.50	88.22	2.01	61.97	45.23	0.74	3.33	2.58	0.30
3	**1**	269	4	24.50	67.79	5.07	73.24	22.89	1.52	9.06	7.54	1.40
4	**1**	353	6	27.50	41.21	4.04	40.70	121.15	0.20	9.96	9.76	3.40
4	**2**	27	5	8.50	57.21	0.43	20.41	341.06	0.04	0.88	0.84	0.10

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	414	1	44.50	37.09	4.27	62.33	44.38	0.76	10.23	9.47	4.70
2	**1**	242	3	27.50	51.68	3.47	61.25	46.93	0.70	7.23	6.53	1.80
2	**2**	68	2	8.50	74.70	1.41	51.39	75.12	0.38	2.52	2.14	0.30
3	**1**	225	4	24.50	54.49	3.41	61.26	46.92	0.70	6.95	6.25	1.50
4	**1**	295	6	27.50	40.08	3.28	34.01	164.63	0.12	8.18	8.06	3.10
4	**2**	22	5	8.50	56.02	0.34	16.63	441.30	0.02	0.71	0.68	0.10

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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The user of this computer program for the solution of an engineering problem is in no way relieved of their responsibility for the correctness of the solution

File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads With Link Rd.osc
Report generation date: 05/08/2016 16:25:07

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

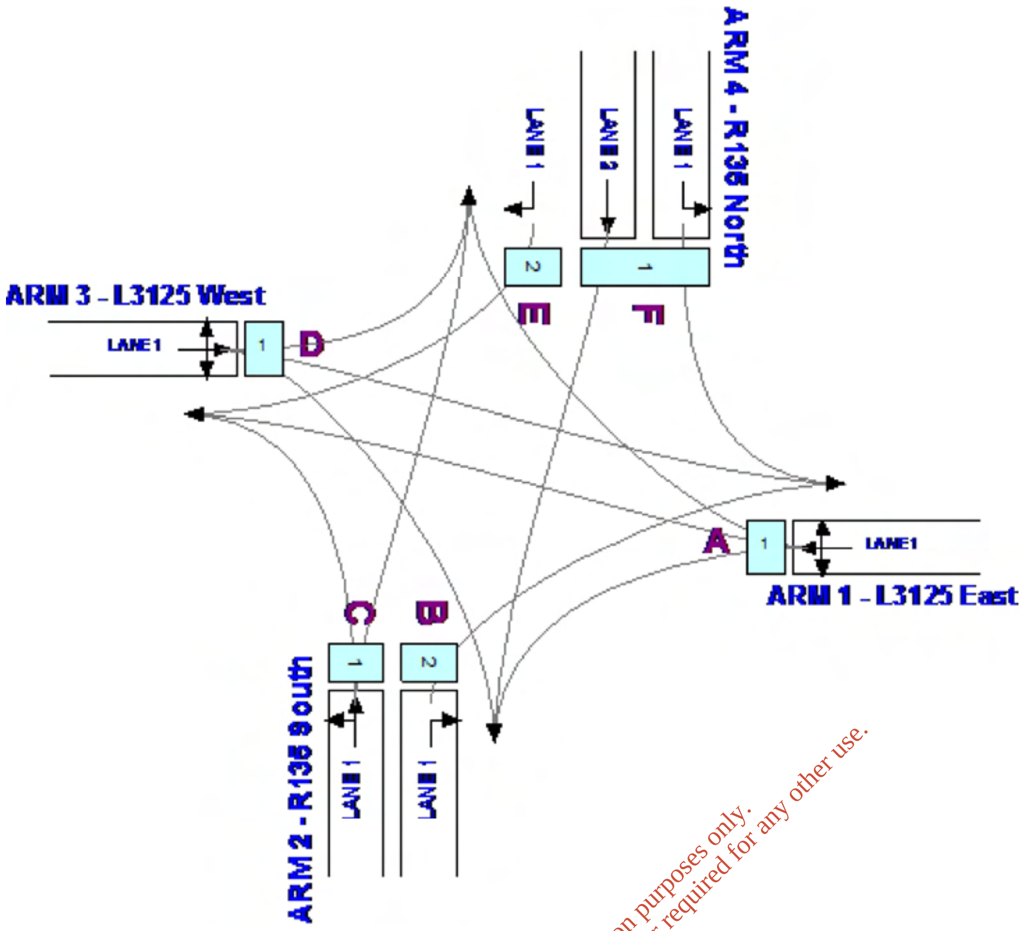
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

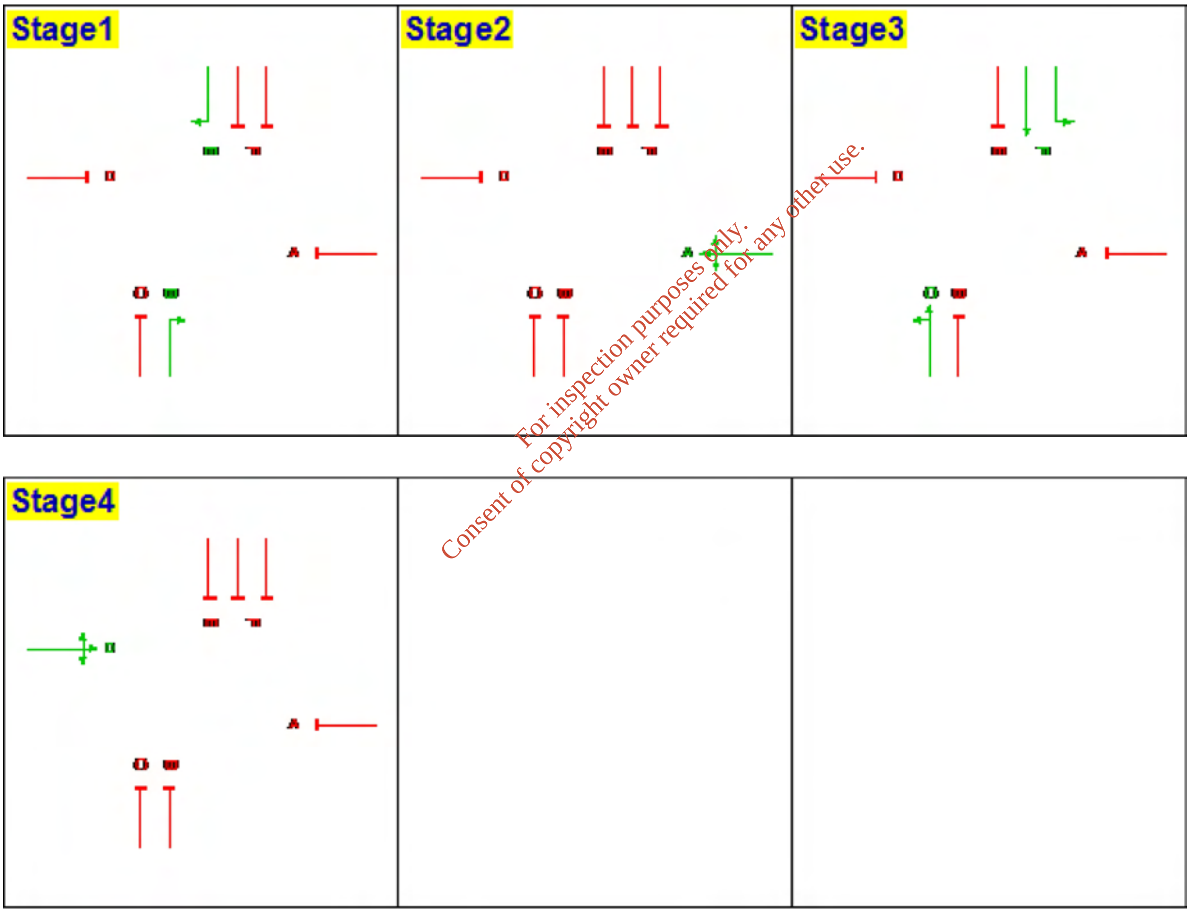
Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	Yes	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set5 - 2023 AM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	106	348	48
	Arm 2	92	-	235	87
	Arm 3	171	117	-	12
	Arm 4	123	150	32	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - L3125 East	1	A	377	450	551	551	450	377
2 - R135 South	1	C	242	289	354	354	289	242
2 - R135 South	2	B	68	82	100	100	82	68
3 - L3125 West	1	D	225	269	329	329	269	225
4 - R135 North	1	F	204	243	298	298	243	204
4 - R135 North	2	E	23	27	33	33	27	23

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	21	69	10
2 - R135 South	57	21	22
3 - L3125 West	4	57	39
4 - R135 North	40	49	10

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	24.37	19.68	19.68	63.8

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	3.61	21.08	21.08	61.40

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

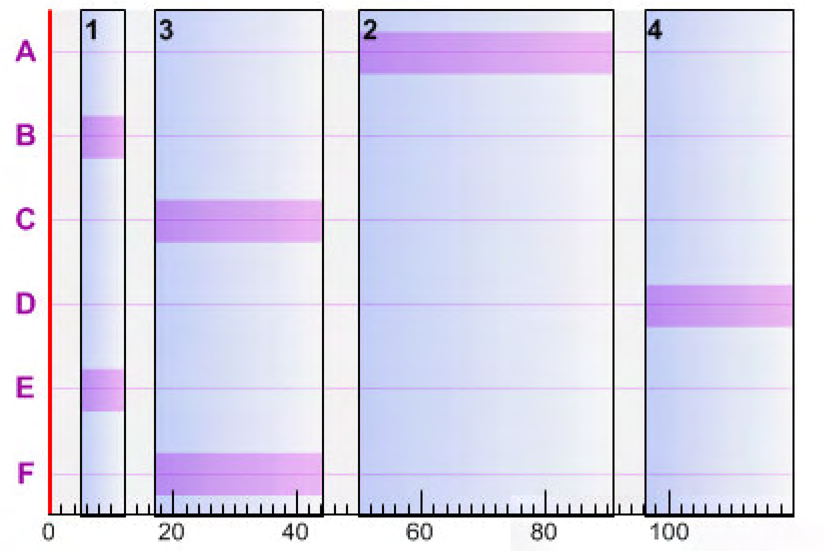
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	7.0	12.0
3	17.0	27.0	44.0
2	50.0	41.0	91.0
4	96.0	24.0	0.0

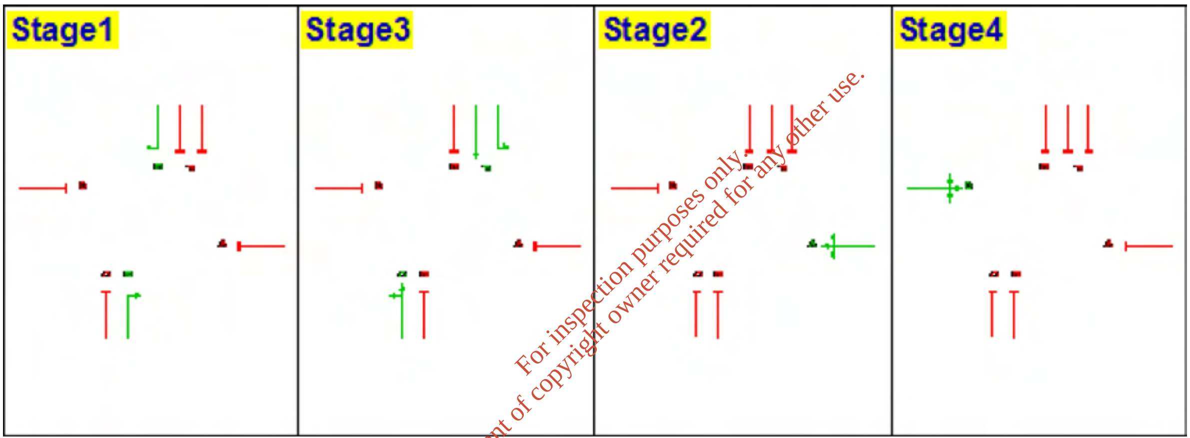
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	50	41.0	91						
B	5	7.0	12						
C	17	27.0	44						
D	96	24.0	0						
E	5	7.0	12						
F	17	27.0	44						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	459	A	42.50	43.30	5.52	72.36	24.37	1.37	12.25	10.88	24.10
2	**1**	295	C	28.50	56.68	4.64	72.05	24.92	1.29	9.25	7.97	10.90
2	**2**	83	B	8.50	83.26	1.92	62.73	43.48	0.69	3.31	2.61	1.70
3	**1**	274	D	25.50	59.22	4.51	71.67	25.57	1.25	8.86	7.61	9.40
4	**1**	248	F	28.50	38.34	2.64	27.59	226.23	0.07	6.71	6.63	16.90
4	**2**	28	E	8.50	57.39	0.45	21.16	325.30	0.04	0.91	0.87	0.80

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	377	1	42.50	36.97	3.87	59.43	51.43	0.61	9.39	8.78	4.20
2	**1**	242	3	28.50	48.48	3.26	59.10	52.27	0.57	7.04	6.46	1.90
2	**2**	68	2	8.50	70.67	1.33	51.39	75.12	0.34	2.48	2.14	0.30
3	**1**	225	4	25.50	50.87	3.18	58.86	52.91	0.56	6.75	6.18	1.60
4	**1**	204	6	28.50	37.64	2.13	22.69	296.59	0.05	5.45	5.41	2.40
4	**2**	23	5	8.50	56.16	0.36	17.38	417.76	0.02	0.74	0.72	0.10

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	450	1	42.50	42.16	5.27	70.94	26.86	1.20	11.85	10.65	4.10
2	**1**	289	3	28.50	54.94	4.41	70.58	27.51	1.12	8.91	7.80	1.80
2	**2**	82	2	8.50	80.58	1.84	61.97	45.23	0.61	3.20	2.58	0.30
3	**1**	269	4	25.50	57.52	4.30	70.37	27.90	1.09	8.56	7.46	1.60
4	**1**	243	6	28.50	38.25	2.58	27.03	232.94	0.07	6.56	6.49	2.80
4	**2**	27	5	8.50	57.12	0.43	20.41	341.06	0.03	0.88	0.84	0.10

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	551	1	42.50	55.74	8.53	86.87	3.61	3.55	16.88	13.33	3.10
2	**1**	354	3	28.50	71.27	7.01	86.46	4.10	3.08	12.76	9.68	1.50
2	**2**	100	2	8.50	97.80	2.72	75.58	19.09	1.26	4.42	3.16	0.30
3	**1**	329	4	25.50	73.87	6.75	86.06	4.58	2.94	12.19	9.24	1.30
4	**1**	298	6	28.50	39.17	3.24	33.15	171.49	0.11	8.17	8.05	3.20
4	**2**	33	5	8.50	58.62	0.54	24.94	260.86	0.05	1.08	1.03	0.20

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	551	1	42.50	59.06	9.04	86.87	3.61	3.76	17.09	13.33	3.00
2	**1**	354	3	28.50	76.84	7.56	86.46	4.10	3.32	13.00	9.68	1.50
2	**2**	100	2	8.50	104.65	2.91	75.58	19.09	1.35	4.51	3.16	0.30
3	**1**	329	4	25.50	79.62	7.28	86.06	4.58	3.17	12.42	9.24	1.30
4	**1**	298	6	28.50	39.18	3.24	33.15	171.49	0.11	8.17	8.05	3.20
4	**2**	33	5	8.50	58.68	0.54	24.94	260.86	0.05	1.08	1.03	0.20

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	450	1	42.50	43.93	5.49	70.94	26.86	1.31	11.96	10.65	4.00
2	**1**	289	3	28.50	58.60	4.70	70.58	27.51	1.26	9.06	7.80	1.80
2	**2**	82	2	8.50	88.22	2.01	61.97	45.23	0.74	3.33	2.58	0.30
3	**1**	269	4	25.50	61.44	4.59	70.37	27.90	1.24	8.70	7.46	1.60
4	**1**	243	6	28.50	38.26	2.58	27.03	232.94	0.07	6.56	6.49	2.80
4	**2**	27	5	8.50	57.21	0.43	20.41	341.06	0.04	0.88	0.84	0.10

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	377	1	42.50	37.39	3.92	59.43	51.43	0.63	9.41	8.78	4.20
2	**1**	242	3	28.50	49.44	3.32	59.10	52.27	0.61	7.07	6.46	1.90
2	**2**	68	2	8.50	74.70	1.41	51.39	75.12	0.38	2.52	2.14	0.30
3	**1**	225	4	25.50	51.96	3.25	58.86	52.91	0.60	6.79	6.18	1.60
4	**1**	204	6	28.50	37.65	2.13	22.69	296.59	0.05	5.45	5.41	2.40
4	**2**	23	5	8.50	56.24	0.36	17.38	417.76	0.02	0.74	0.72	0.10

File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads With Link Rd.osc
Report generation date: 04/08/2016 10:32:48

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

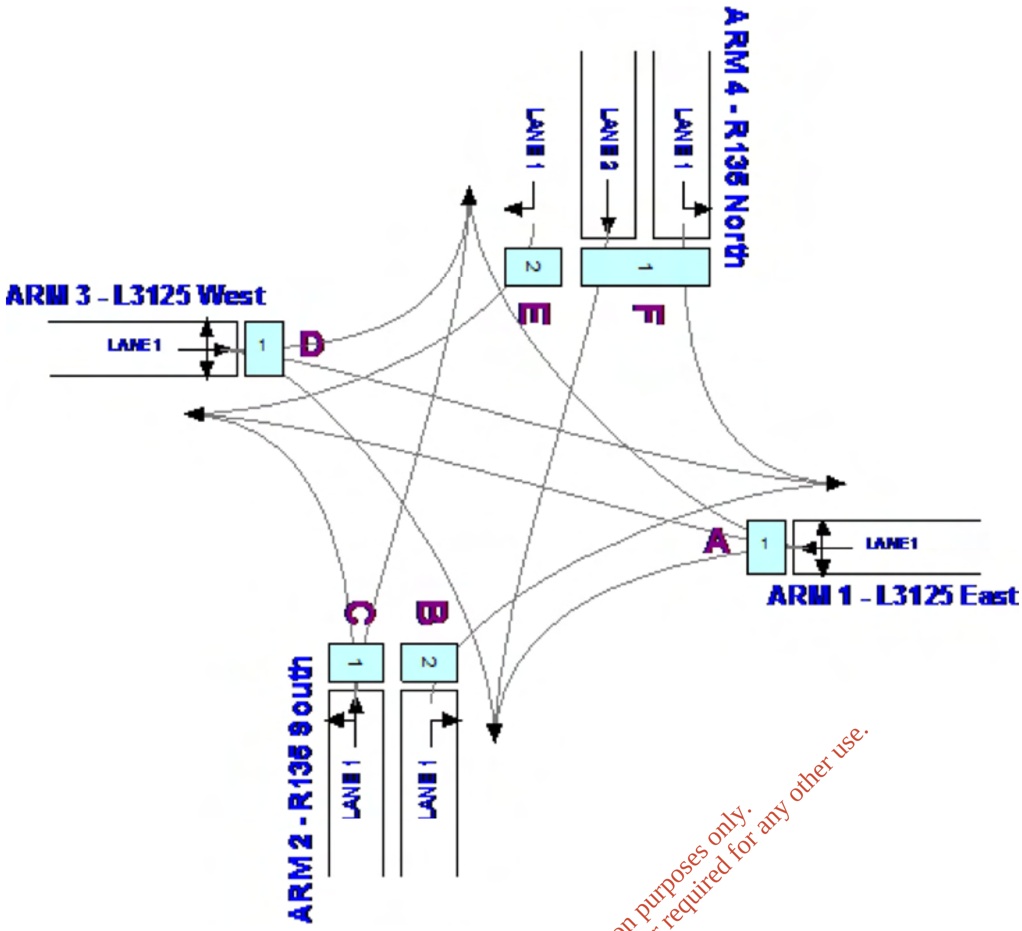
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

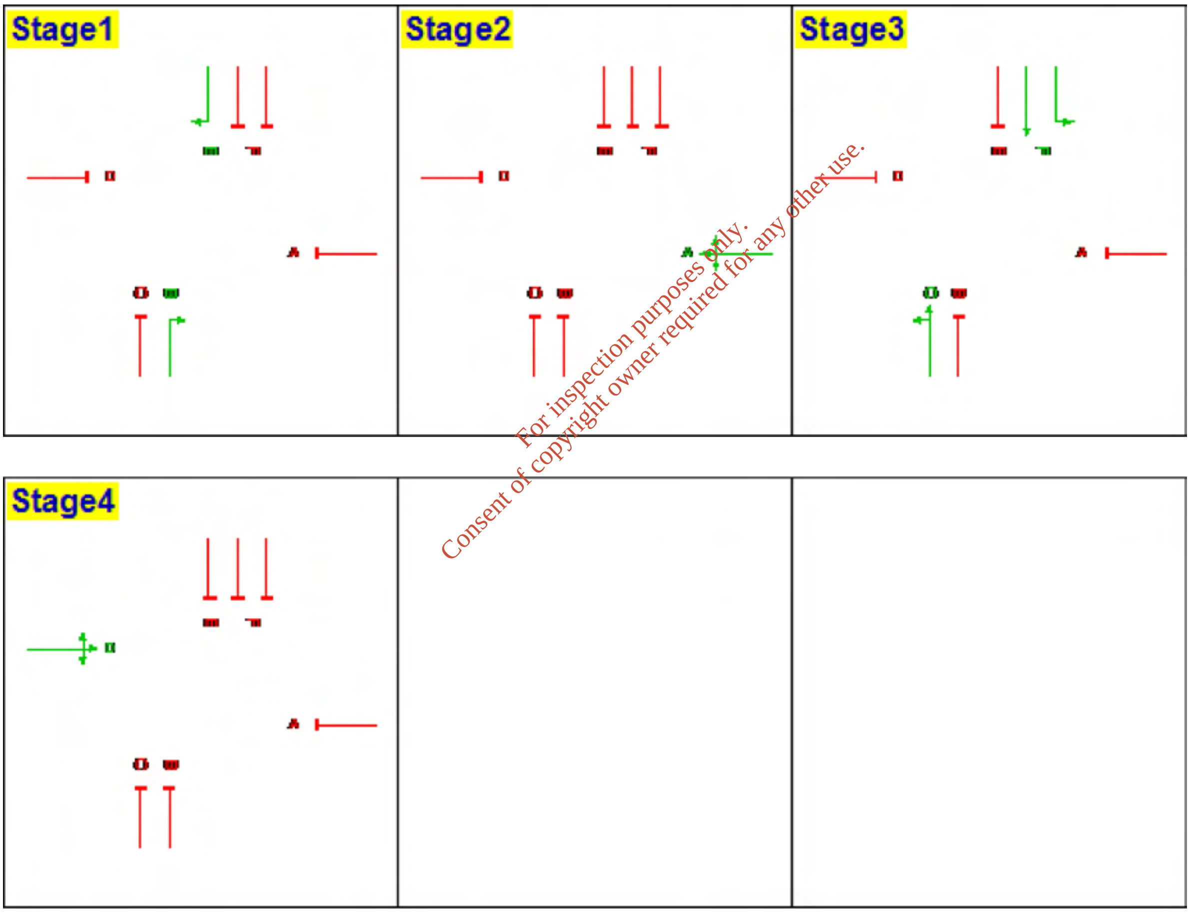
Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	Yes	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set5 - 2023 AM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	106	348	48
	Arm 2	92	-	235	103
	Arm 3	171	117	-	12
	Arm 4	123	166	32	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - L3125 East	1	A	377	450	551	551	450	377
2 - R135 South	1	C	255	304	373	373	304	255
2 - R135 South	2	B	68	81	99	99	81	68
3 - L3125 West	1	D	225	269	329	329	269	225
4 - R135 North	1	F	217	259	317	317	259	217
4 - R135 North	2	E	24	29	35	35	29	24

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	21	69	10
2 - R135 South	55	24	21
3 - L3125 West	4	57	39
4 - R135 North	38	52	10

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	21.45	20.33	20.33	64.4

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	1.17	21.90	21.90	61.60

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

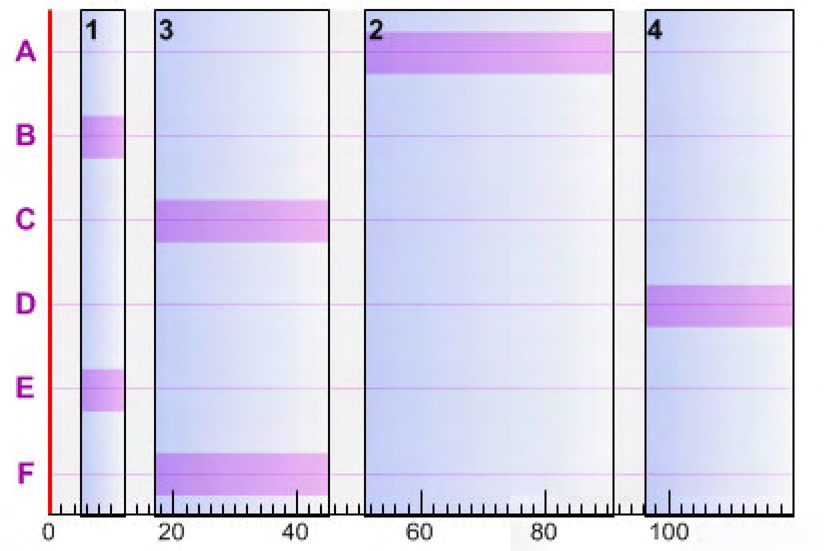
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	7.0	12.0
3	17.0	28.0	45.0
2	51.0	40.0	91.0
4	96.0	24.0	0.0

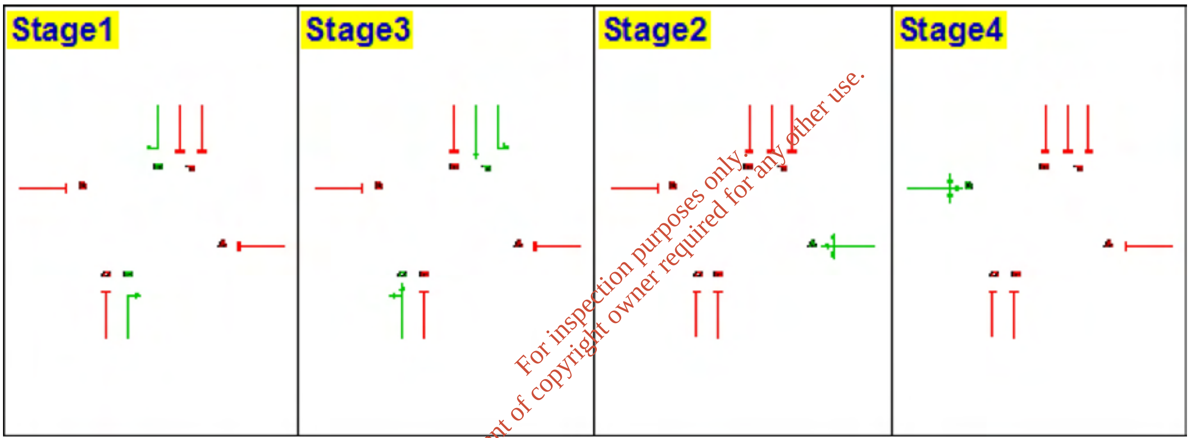
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	51	40.0	91						
B	5	7.0	12						
C	17	28.0	45						
D	96	24.0	0						
E	5	7.0	12						
F	17	28.0	45						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	459	A	41.50	45.29	5.77	74.11	21.45	1.53	12.55	11.02	22.50
2	1	311	C	29.50	56.69	4.90	73.38	22.65	1.40	9.74	8.34	11.50
2	2	83	B	8.50	83.26	1.92	62.73	43.48	0.69	3.31	2.61	1.70
3	1	274	D	25.50	59.22	4.51	71.67	25.57	1.25	8.86	7.61	9.40
4	1	264	F	29.50	37.70	2.76	28.37	217.21	0.08	7.08	7.01	18.40
4	2	29	E	8.50	57.64	0.46	21.92	310.64	0.04	0.94	0.90	0.90

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	377	1	41.50	38.23	4.00	60.87	47.86	0.66	9.55	8.89	4.00
2	**1**	255	3	29.50	48.01	3.40	60.17	49.58	0.61	7.37	6.75	2.00
2	**2**	68	2	8.50	70.67	1.33	51.39	75.12	0.34	2.48	2.14	0.30
3	**1**	225	4	25.50	50.87	3.18	58.86	52.91	0.56	6.75	6.18	1.60
4	**1**	217	6	29.50	36.98	2.23	23.32	285.91	0.05	5.75	5.70	2.60
4	**2**	24	5	8.50	56.38	0.38	18.14	396.19	0.03	0.77	0.75	0.10

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	450	1	41.50	43.95	5.49	72.65	23.88	1.33	12.12	10.78	3.80
2	**1**	304	3	29.50	54.70	4.62	71.73	25.47	1.20	9.34	8.14	1.90
2	**2**	81	2	8.50	79.92	1.80	61.22	47.02	0.59	3.14	2.55	0.30
3	**1**	269	4	25.50	57.52	4.30	70.37	27.90	1.09	8.56	7.46	1.60
4	**1**	259	6	29.50	37.62	2.71	27.84	223.33	0.07	6.94	6.87	3.00
4	**2**	29	5	8.50	57.59	0.46	21.92	310.64	0.04	0.94	0.90	0.10

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	551	1	41.50	59.68	9.13	88.96	1.17	4.17	17.67	13.50	2.70
2	**1**	373	3	29.50	72.37	7.50	88.01	2.26	3.47	13.61	10.13	1.50
2	**2**	99	2	8.50	96.58	2.66	74.82	20.29	1.21	4.34	3.13	0.30
3	**1**	329	4	25.50	73.87	6.75	86.06	4.58	2.94	12.19	9.24	1.30
4	**1**	317	6	29.50	38.56	3.40	34.07	164.17	0.12	8.63	8.51	3.50
4	**2**	35	5	8.50	59.17	0.58	26.45	240.24	0.06	1.15	1.09	0.20

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	551	1	41.50	64.56	9.88	88.96	1.17	4.50	18.00	13.50	2.70
2	**1**	373	3	29.50	79.09	8.19	88.01	2.26	3.79	13.92	10.13	1.50
2	**2**	99	2	8.50	103.04	2.83	74.82	20.29	1.29	4.42	3.13	0.30
3	**1**	329	4	25.50	79.62	7.28	86.06	4.58	3.17	12.42	9.24	1.30
4	**1**	317	6	29.50	38.56	3.40	34.07	164.17	0.12	8.63	8.51	3.50
4	**2**	35	5	8.50	59.24	0.58	26.45	240.24	0.06	1.15	1.09	0.20

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	450	1	41.50	46.48	5.81	72.65	23.88	1.47	12.25	10.78	3.80
2	**1**	304	3	29.50	58.97	4.98	71.73	25.47	1.36	9.50	8.14	1.90
2	**2**	81	2	8.50	86.95	1.96	61.22	47.02	0.71	3.26	2.55	0.30
3	**1**	269	4	25.50	61.44	4.59	70.37	27.90	1.24	8.70	7.46	1.60
4	**1**	259	6	29.50	37.62	2.71	27.84	223.33	0.07	6.94	6.87	3.00
4	**2**	29	5	8.50	57.72	0.46	21.92	310.64	0.04	0.94	0.90	0.10

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	377	1	41.50	38.75	4.06	60.87	47.86	0.69	9.58	8.89	4.00
2	**1**	255	3	29.50	49.02	3.47	60.17	49.58	0.65	7.41	6.75	2.00
2	**2**	68	2	8.50	74.51	1.41	51.39	75.12	0.38	2.52	2.14	0.30
3	**1**	225	4	25.50	51.96	3.25	58.86	52.91	0.60	6.79	6.18	1.60
4	**1**	217	6	29.50	36.98	2.23	23.32	285.91	0.05	5.75	5.70	2.60
4	**2**	24	5	8.50	56.49	0.38	18.14	396.19	0.03	0.77	0.75	0.10

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads.osc
Report generation date: 05/08/2016 16:08:33

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

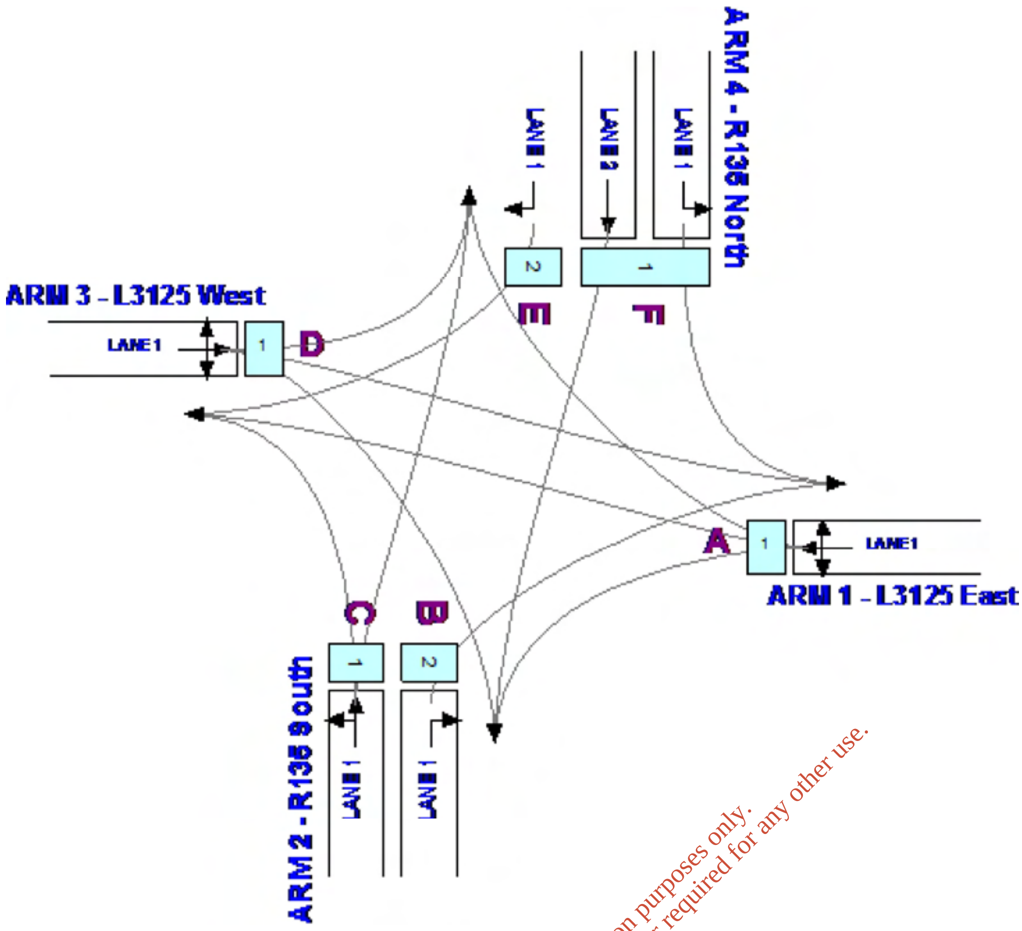
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

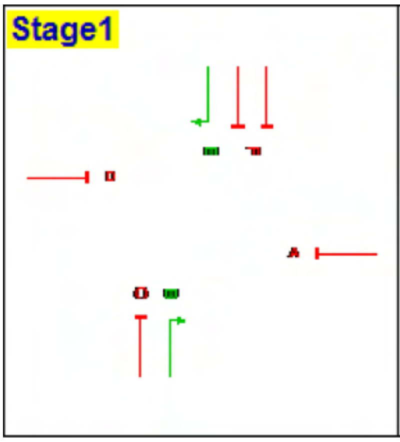
Intergreen Matrix

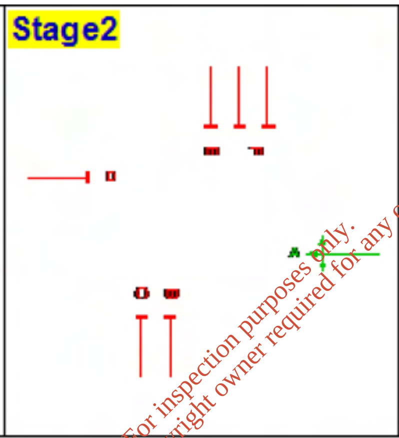
		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

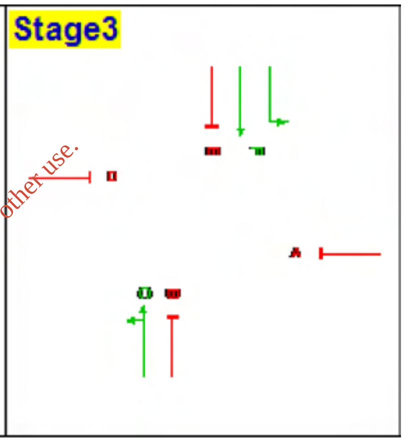
Stages

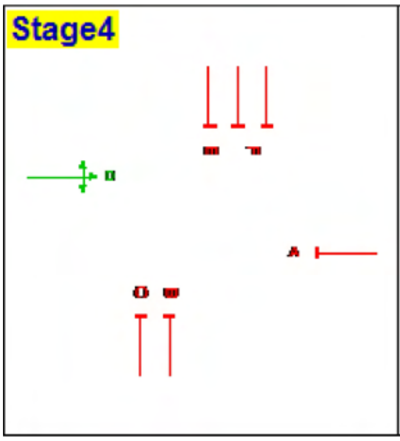
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams









Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	Yes	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set6 - 2016 PM Peak Existing

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	91	221	216
	Arm 2	136	-	135	127
	Arm 3	179	175	-	24
	Arm 4	177	97	18	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - L3125 East	1	A	396	473	579	579	473	396
2 - R135 South	1	C	197	235	288	288	235	197
2 - R135 South	2	B	101	121	148	148	121	101
3 - L3125 West	1	D	281	335	410	410	335	281
4 - R135 North	1	F	206	246	301	301	246	206
4 - R135 North	2	E	13	16	19	19	16	13

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	17	42	41
2 - R135 South	34	32	34
3 - L3125 West	6	47	46
4 - R135 North	61	33	6

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	15.83	22.96	22.96	57.3

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	-3.47	25.46	25.46	54.40

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

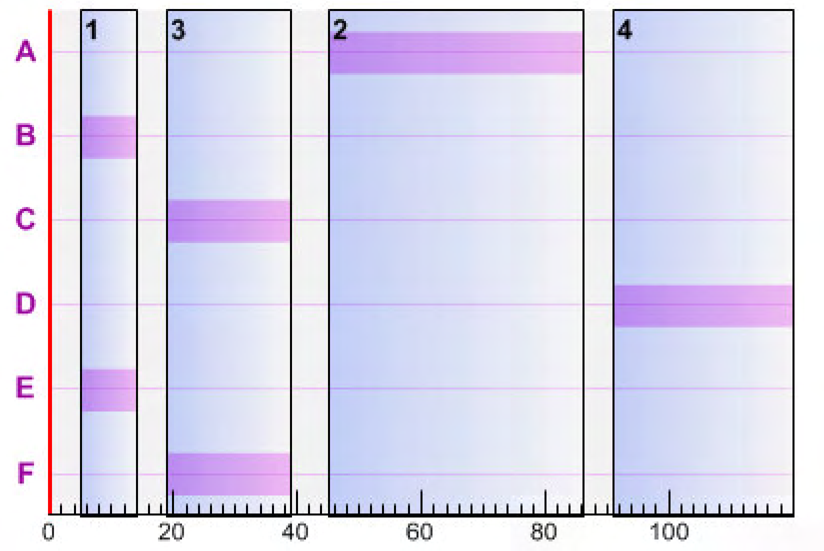
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	9.0	14.0
3	19.0	20.0	39.0
2	45.0	41.0	86.0
4	91.0	29.0	0.0

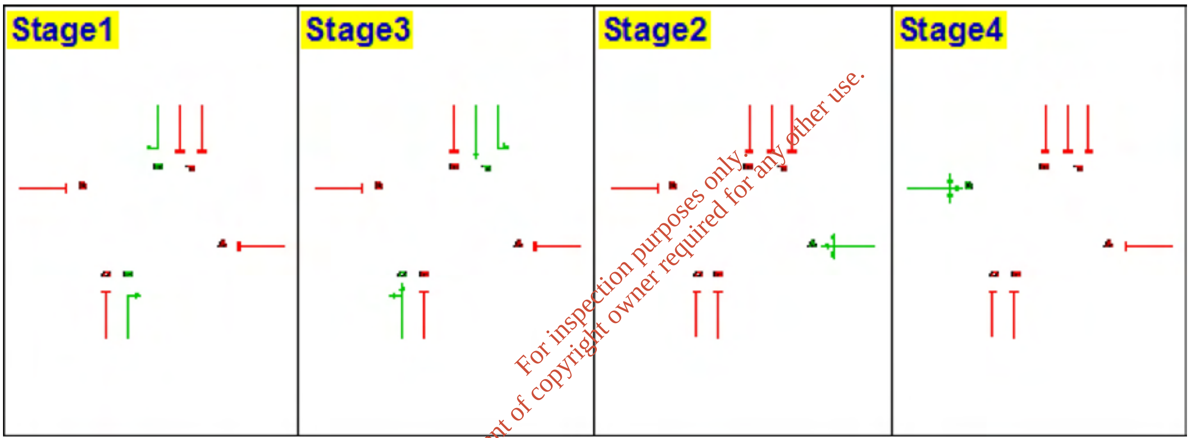
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	45	41.0	86						
B	5	9.0	14						
C	19	20.0	39						
D	91	29.0	0						
E	5	9.0	14						
F	19	20.0	39						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	483	A	42.50	45.96	6.17	76.15	18.19	1.76	13.27	11.51	23.10
2	**1**	240	C	21.50	72.43	4.83	77.70	15.83	1.83	8.73	6.90	6.40
2	**2**	123	B	10.50	94.46	3.23	75.25	19.60	1.49	5.32	3.84	2.40
3	**1**	342	D	30.50	56.21	5.34	74.80	20.33	1.55	10.68	9.13	12.50
4	**1**	251	F	21.50	45.35	3.16	37.01	143.16	0.15	7.38	7.23	12.30
4	**2**	16	E	10.50	51.97	0.23	9.79	819.41	0.01	0.50	0.49	0.60

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	396	1	42.50	38.06	4.19	62.43	44.16	0.73	9.98	9.26	4.20
2	1	197	3	21.50	57.87	3.17	63.78	41.11	0.73	6.34	5.61	1.10
2	2	101	2	10.50	72.84	2.04	61.79	45.65	0.62	3.75	3.14	0.40
3	1	281	4	30.50	47.34	3.70	61.45	46.45	0.66	8.07	7.40	2.20
4	1	206	6	21.50	44.27	2.53	30.38	196.28	0.09	5.97	5.88	1.80
4	2	13	5	10.50	51.56	0.19	7.95	9999.00	0.00	0.40	0.40	0.10

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	473	1	42.50	44.33	5.82	74.57	20.69	1.51	12.76	11.25	3.90
2	1	235	3	21.50	68.26	4.46	76.08	18.30	1.49	8.24	6.75	1.10
2	2	121	2	10.50	87.72	2.95	74.03	21.57	1.20	4.98	3.77	0.40
3	1	335	4	30.50	54.24	5.05	73.26	22.84	1.33	10.25	8.93	2.10
4	1	246	6	21.50	45.22	3.09	36.28	148.10	0.14	7.22	7.08	2.00
4	2	16	5	10.50	51.96	0.23	9.79	819.41	0.01	0.50	0.49	0.10

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	579	1	42.50	62.54	10.06	91.28	-1.40	5.11	19.21	14.10	2.60
2	1	288	3	21.50	95.68	7.65	93.24	-3.47	4.56	12.93	8.36	0.80
2	2	148	2	10.50	118.53	4.87	90.55	-0.60	3.04	7.68	4.64	0.40
3	1	410	4	30.50	73.02	8.32	89.67	0.37	4.02	15.13	11.10	1.60
4	1	301	6	21.50	46.69	3.90	44.39	102.77	0.25	9.01	8.76	2.30
4	2	19	5	10.50	52.38	0.28	11.62	674.24	0.01	0.59	0.58	0.10

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	579	1	42.50	69.60	11.19	91.28	-1.40	5.66	19.75	14.10	2.60
2	1	288	3	21.50	113.91	9.11	93.24	-3.47	5.43	13.79	8.36	0.80
2	2	148	2	10.50	140.92	5.79	90.55	-0.60	3.59	8.23	4.64	0.40
3	1	410	4	30.50	80.83	9.21	89.67	0.37	4.45	15.55	11.10	1.60
4	1	301	6	21.50	46.71	3.91	44.39	102.77	0.25	9.01	8.76	2.30
4	2	19	5	10.50	52.38	0.28	11.62	674.24	0.01	0.59	0.58	0.10

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	473	1	42.50	47.90	6.29	74.57	20.69	1.68	12.93	11.25	3.90
2	**1**	235	3	21.50	84.06	5.49	76.08	18.30	1.88	8.63	6.75	1.10
2	**2**	121	2	10.50	114.18	3.84	74.03	21.57	1.67	5.44	3.77	0.40
3	**1**	335	4	30.50	59.07	5.50	73.26	22.84	1.52	10.45	8.93	2.10
4	**1**	246	6	21.50	45.24	3.09	36.28	148.10	0.14	7.22	7.08	2.00
4	**2**	16	5	10.50	51.97	0.23	9.79	819.41	0.01	0.50	0.49	0.10

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	396	1	42.50	38.67	4.25	62.43	44.16	0.76	10.02	9.26	4.20
2	**1**	197	3	21.50	60.94	3.33	63.78	41.11	0.81	6.42	5.61	1.10
2	**2**	101	2	10.50	81.40	2.28	61.79	45.65	0.73	3.86	3.14	0.40
3	**1**	281	4	30.50	48.37	3.78	61.45	46.45	0.71	8.11	7.40	2.20
4	**1**	206	6	21.50	44.29	2.53	30.38	196.28	0.09	5.97	5.88	1.80
4	**2**	13	5	10.50	51.57	0.19	7.95	9999.00	0.00	0.40	0.40	0.10

OSCADY PRO

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads.osc
Report generation date: 05/08/2016 16:09:07

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

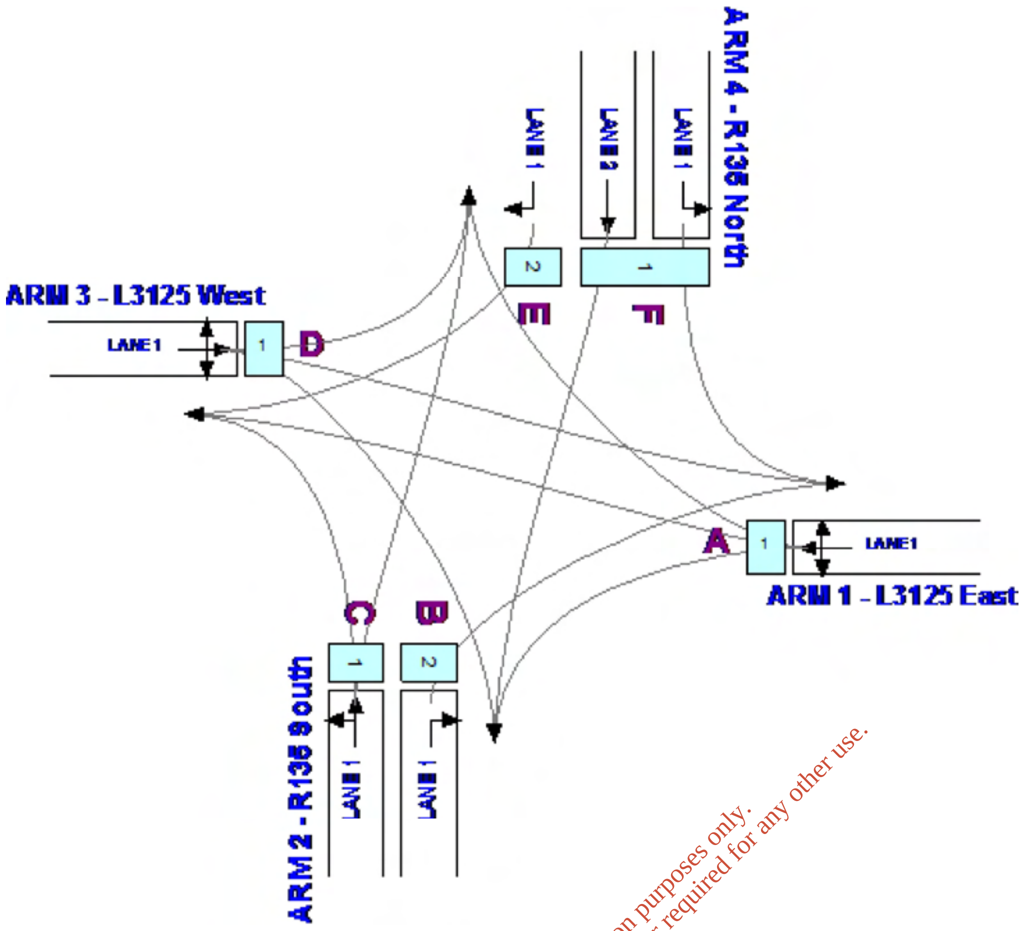
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

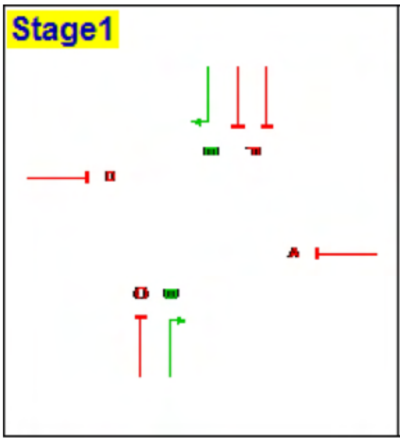
Intergreen Matrix

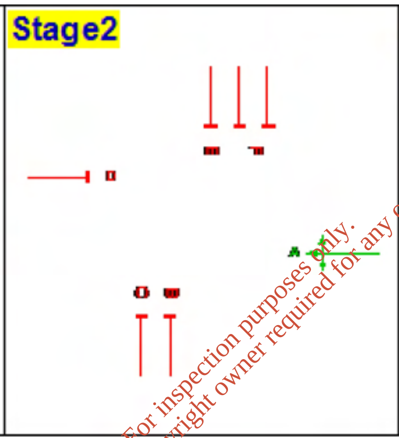
		To					
		A	B	C	D	E	F
From	A	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

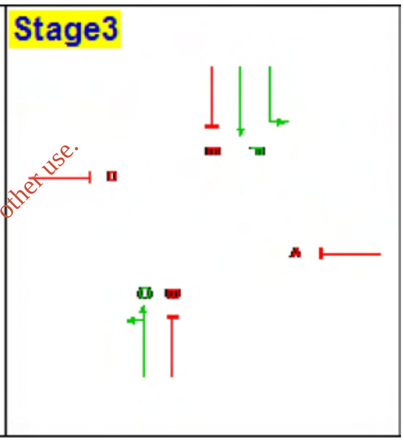
Stages

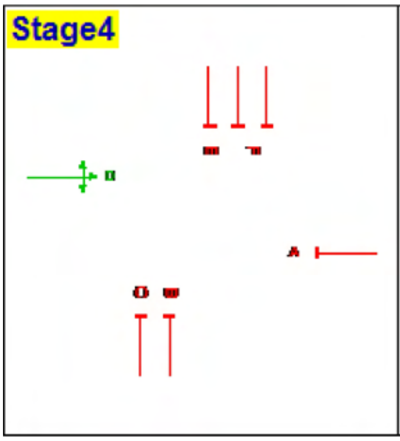
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams









Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	Yes	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set7 - 2017 PM Peak No Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	92	223	218
	Arm 2	137	-	136	128
	Arm 3	180	176	-	24
	Arm 4	178	98	18	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - L3125 East	1	A	400	477	585	585	477	400
2 - R135 South	1	C	198	237	290	290	237	198
2 - R135 South	2	B	102	122	150	150	122	102
3 - L3125 West	1	D	282	337	413	413	337	282
4 - R135 North	1	F	207	248	303	303	248	207
4 - R135 North	2	E	13	16	19	19	16	13

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	17	42	41
2 - R135 South	34	32	34
3 - L3125 West	6	47	46
4 - R135 North	61	33	6

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	14.87	23.42	23.42	57.2

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	-4.14	26.12	26.12	54.00

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

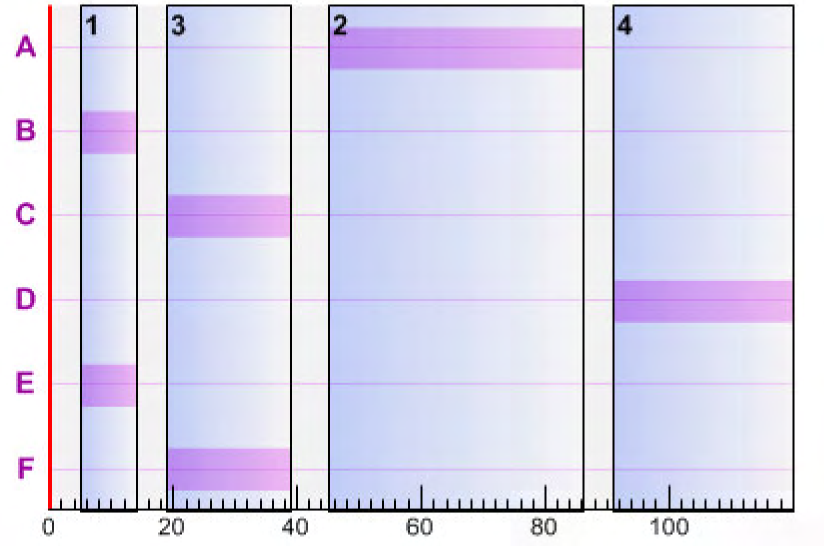
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	9.0	14.0
3	19.0	20.0	39.0
2	45.0	41.0	86.0
4	91.0	29.0	0.0

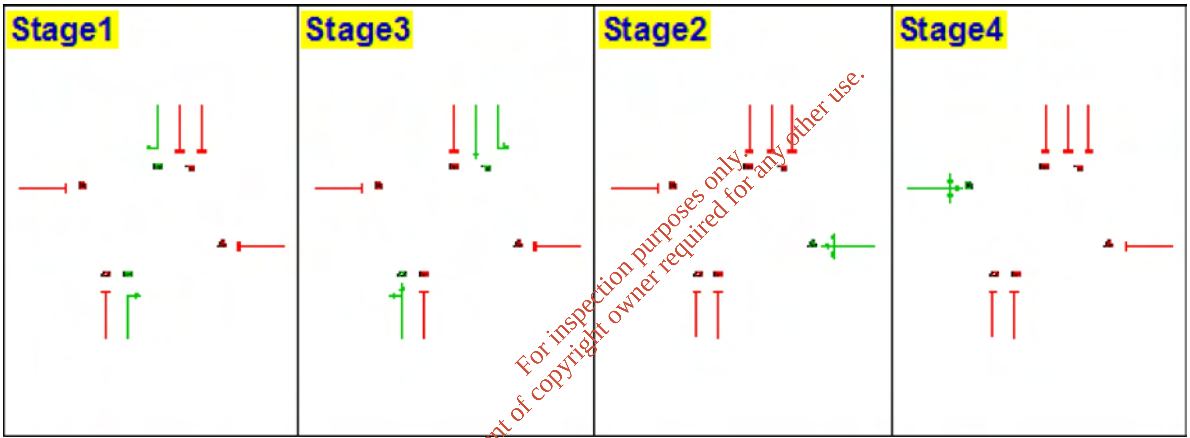
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	45	41.0	86						
B	5	9.0	14						
C	19	20.0	39						
D	91	29.0	0						
E	5	9.0	14						
F	19	20.0	39						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	487	A	42.50	46.47	6.29	76.78	17.22	1.83	13.45	11.62	22.90
2	**1**	242	C	21.50	73.39	4.93	78.35	14.87	1.91	8.87	6.96	6.40
2	**2**	125	B	10.50	97.02	3.37	76.48	17.68	1.61	5.51	3.90	2.40
3	**1**	344	D	30.50	56.61	5.41	75.23	19.63	1.60	10.78	9.18	12.50
4	**1**	253	F	21.50	45.40	3.19	37.31	141.24	0.15	7.45	7.29	12.40
4	**2**	16	E	10.50	51.97	0.23	9.79	819.41	0.01	0.50	0.49	0.60

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	400	1	42.50	38.31	4.26	63.06	42.72	0.75	10.11	9.36	4.20
2	**1**	198	3	21.50	58.05	3.19	64.10	40.40	0.74	6.39	5.64	1.10
2	**2**	102	2	10.50	73.29	2.08	62.40	44.22	0.64	3.81	3.17	0.40
3	**1**	282	4	30.50	47.43	3.72	61.67	45.93	0.67	8.10	7.43	2.20
4	**1**	207	6	21.50	44.29	2.55	30.52	194.85	0.09	6.00	5.91	1.80
4	**2**	13	5	10.50	51.56	0.19	7.95	9999.00	0.00	0.40	0.40	0.10

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	477	1	42.50	44.75	5.93	75.20	19.68	1.57	12.92	11.35	3.90
2	**1**	237	3	21.50	68.91	4.54	76.73	17.30	1.55	8.36	6.81	1.10
2	**2**	122	2	10.50	88.60	3.00	74.64	20.58	1.25	5.05	3.80	0.40
3	**1**	337	4	30.50	54.55	5.11	73.70	22.11	1.36	10.35	8.98	2.10
4	**1**	248	6	21.50	45.27	3.12	36.57	146.10	0.15	7.29	7.14	2.00
4	**2**	16	5	10.50	51.96	0.23	9.79	819.41	0.01	0.50	0.49	0.10

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	585	1	42.50	64.24	10.44	92.23	-2.41	5.55	19.81	14.26	2.50
2	**1**	290	3	21.50	97.28	7.84	93.89	-4.14	4.78	13.20	8.42	0.80
2	**2**	150	2	10.50	121.27	5.05	91.77	-1.93	3.25	7.96	4.70	0.40
3	**1**	413	4	30.50	74.18	8.51	90.32	-0.36	4.23	15.42	11.19	1.60
4	**1**	303	6	21.50	46.75	3.93	44.68	101.43	0.25	9.08	8.83	2.30
4	**2**	19	5	10.50	52.38	0.28	11.62	674.24	0.01	0.59	0.58	0.10

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	585	1	42.50	72.56	11.79	92.23	-2.41	6.23	20.49	14.26	2.50
2	**1**	290	3	21.50	116.89	9.42	93.89	-4.14	5.74	14.16	8.42	0.80
2	**2**	150	2	10.50	146.58	6.11	91.77	-1.93	3.90	8.61	4.70	0.40
3	**1**	413	4	30.50	82.82	9.50	90.32	-0.36	4.71	15.91	11.19	1.50
4	**1**	303	6	21.50	46.77	3.94	44.68	101.43	0.25	9.08	8.83	2.30
4	**2**	19	5	10.50	52.38	0.28	11.62	674.24	0.01	0.59	0.58	0.10

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	477	1	42.50	48.94	6.48	75.20	19.68	1.76	13.12	11.35	3.80
2	**1**	237	3	21.50	86.48	5.69	76.73	17.30	1.98	8.79	6.81	1.10
2	**2**	122	2	10.50	118.83	4.03	74.64	20.58	1.75	5.56	3.80	0.40
3	**1**	337	4	30.50	59.89	5.61	73.70	22.11	1.57	10.55	8.98	2.10
4	**1**	248	6	21.50	45.29	3.12	36.57	146.10	0.15	7.29	7.14	2.00
4	**2**	16	5	10.50	51.97	0.23	9.79	819.41	0.01	0.50	0.49	0.10

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	400	1	42.50	38.96	4.33	63.06	42.72	0.79	10.15	9.36	4.20
2	**1**	198	3	21.50	61.35	3.37	64.10	40.40	0.83	6.47	5.64	1.10
2	**2**	102	2	10.50	82.55	2.34	62.40	44.22	0.76	3.93	3.17	0.40
3	**1**	282	4	30.50	48.50	3.80	61.67	45.93	0.72	8.15	7.43	2.20
4	**1**	207	6	21.50	44.31	2.55	30.52	194.85	0.09	6.00	5.91	1.80
4	**2**	13	5	10.50	51.57	0.19	7.95	9999.00	0.00	0.40	0.40	0.10

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads.osc
Report generation date: 05/08/2016 16:09:54

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

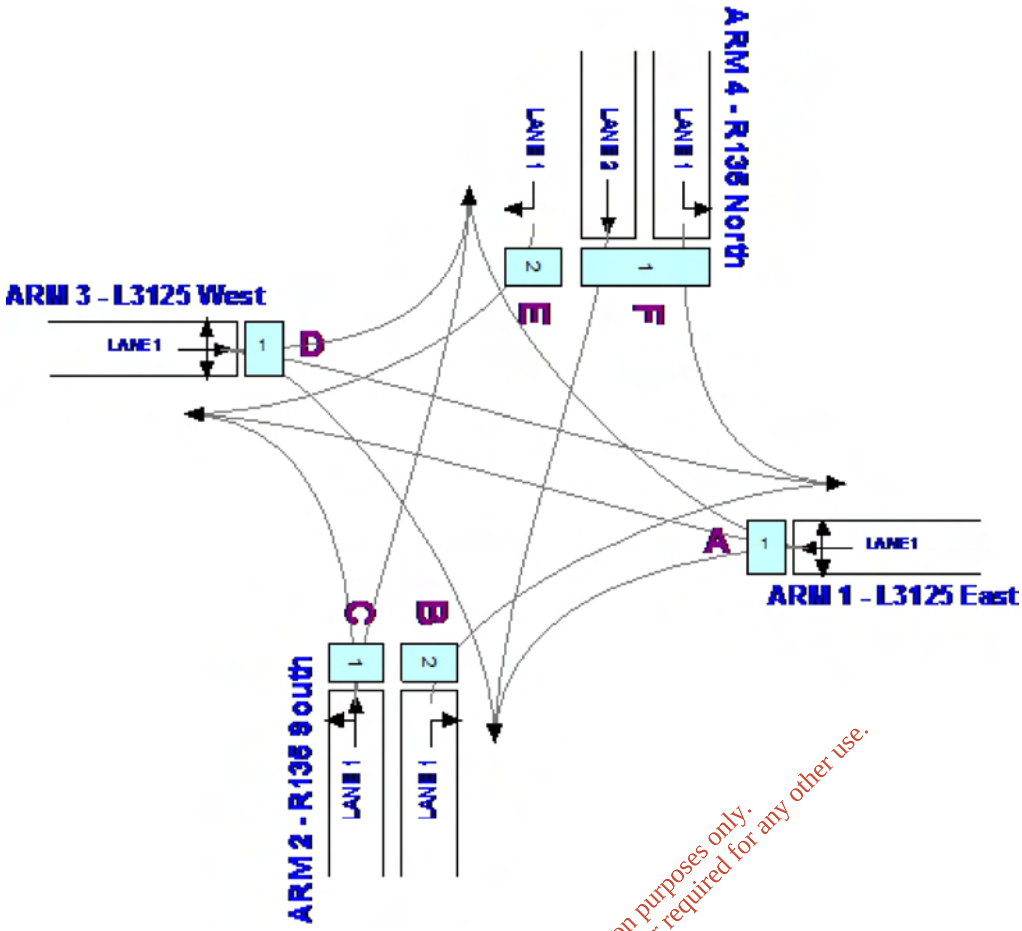
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

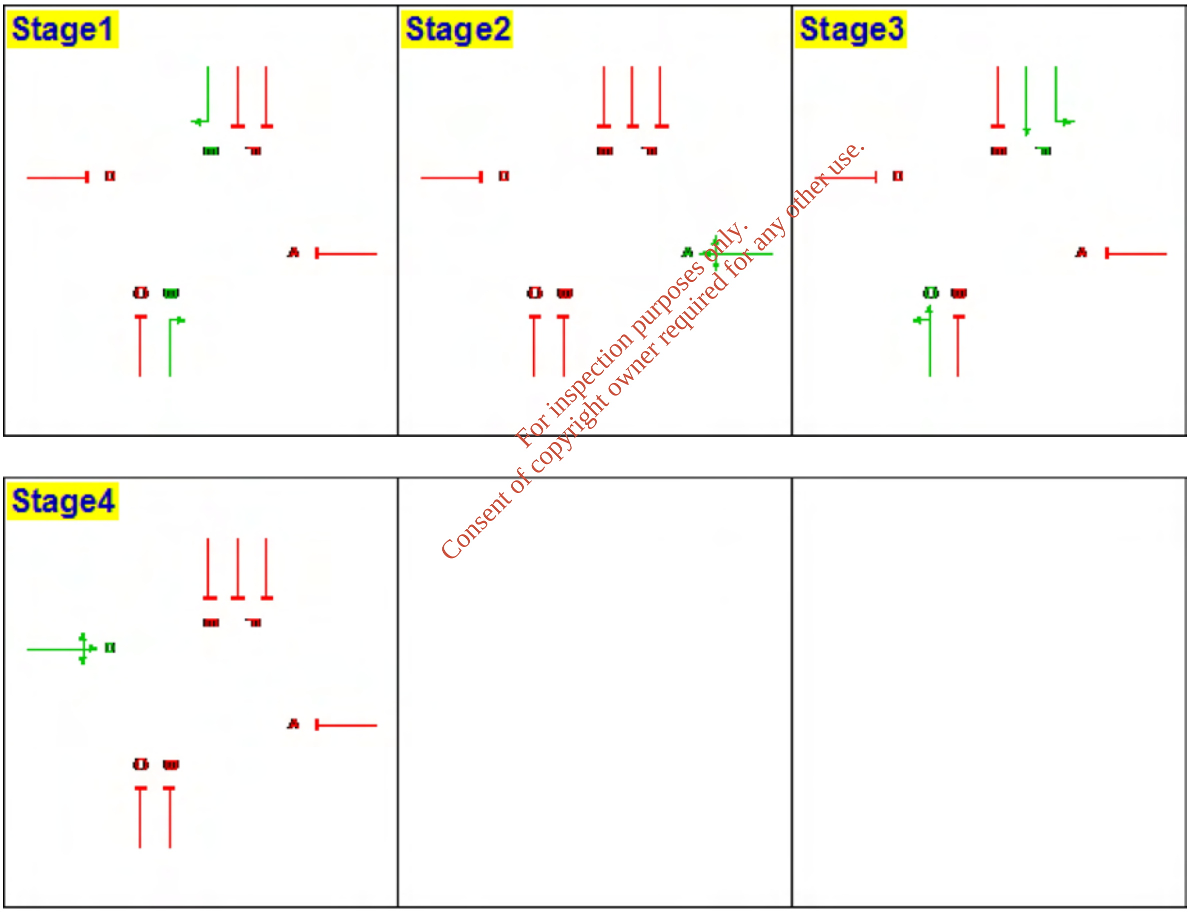
Intergreen Matrix

		To					
		A	B	C	D	E	F
	A	-	5	5	5	5	5
	B	6	-	5	6		5
From	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	Yes	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set8 - 2017 PM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	92	223	218
	Arm 2	137	-	136	134
	Arm 3	180	176	-	24
	Arm 4	178	104	18	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - L3125 East	1	A	400	477	585	585	477	400
2 - R135 South	1	C	201	241	295	295	241	201
2 - R135 South	2	B	104	124	152	152	124	104
3 - L3125 West	1	D	282	337	413	413	337	282
4 - R135 North	1	F	211	253	309	309	253	211
4 - R135 North	2	E	14	16	20	20	16	14

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	17	42	41
2 - R135 South	33	33	34
3 - L3125 West	6	47	46
4 - R135 North	59	35	6

Results

Note: *Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	15.71	23.69	23.69	57.5

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	-3.63	26.50	26.50	54.40

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

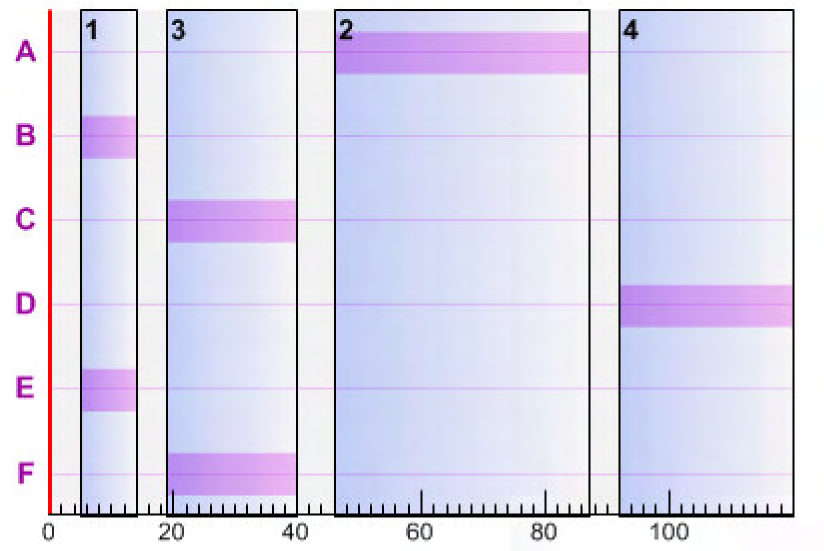
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	9.0	14.0
3	19.0	21.0	40.0
2	46.0	41.0	87.0
4	92.0	28.0	0.0

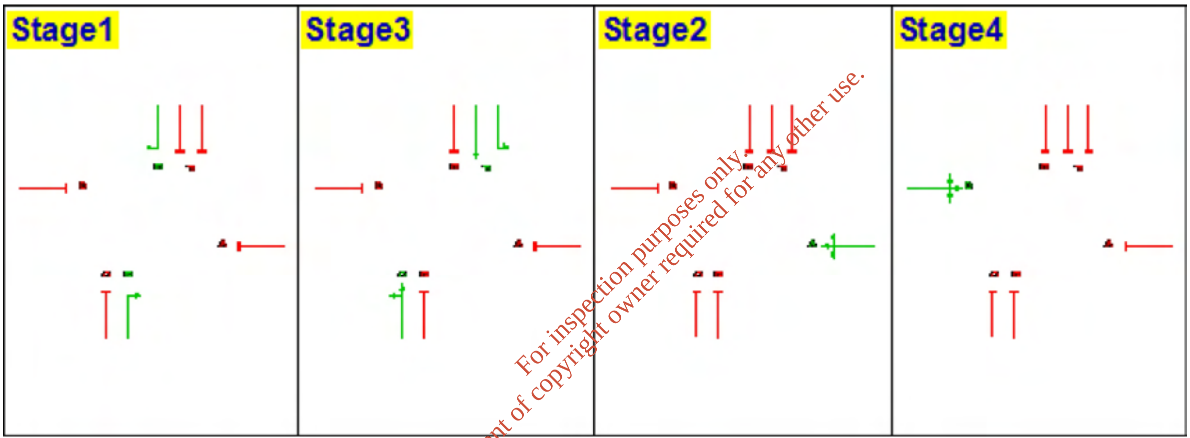
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	46	41.0	87						
B	5	9.0	14						
C	19	21.0	40						
D	92	28.0	0						
E	5	9.0	14						
F	19	21.0	40						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	487	A	42.50	46.47	6.29	76.78	17.22	1.83	13.45	11.62	22.90
2	1	246	C	22.50	68.63	4.69	76.10	18.26	1.65	8.65	7.01	7.00
2	2	127	B	10.50	99.78	3.52	77.70	15.83	1.75	5.71	3.96	2.40
3	1	344	D	29.50	60.33	5.76	77.78	15.71	1.89	11.18	9.29	11.40
4	1	258	F	22.50	44.42	3.18	36.35	147.57	0.14	7.51	7.37	13.20
4	2	17	E	10.50	52.10	0.25	10.40	765.32	0.01	0.53	0.52	0.60

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	400	1	42.50	38.31	4.26	63.06	42.72	0.75	10.11	9.36	4.20
2	**1**	201	3	22.50	55.89	3.12	62.18	44.74	0.67	6.34	5.67	1.20
2	**2**	104	2	10.50	74.22	2.14	63.63	41.45	0.68	3.91	3.23	0.40
3	**1**	282	4	29.50	49.26	3.86	63.76	41.14	0.76	8.27	7.51	2.10
4	**1**	211	6	22.50	43.35	2.54	29.73	202.71	0.09	6.05	5.97	1.90
4	**2**	14	5	10.50	51.69	0.20	8.57	950.75	0.01	0.43	0.43	0.10

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	477	1	42.50	44.75	5.93	75.20	19.68	1.57	12.92	11.35	3.90
2	**1**	241	3	22.50	65.29	4.37	74.56	20.72	1.37	8.23	6.86	1.20
2	**2**	124	2	10.50	90.43	3.11	75.86	18.63	1.33	5.20	3.87	0.40
3	**1**	337	4	29.50	57.58	5.39	76.20	18.11	1.58	10.67	9.08	1.90
4	**1**	253	6	22.50	44.29	3.11	35.65	152.46	0.14	7.35	7.22	2.20
4	**2**	16	5	10.50	51.96	0.23	9.79	819.41	0.01	0.50	0.49	0.10

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	585	1	42.50	64.24	10.44	92.23	-2.41	5.55	19.81	14.26	2.50
2	**1**	295	3	22.50	89.41	7.33	91.26	-1.38	4.04	12.53	8.49	0.90
2	**2**	152	2	10.50	124.73	5.27	92.99	-3.22	3.49	8.26	4.77	0.40
3	**1**	413	4	29.50	81.65	9.37	93.39	-3.63	5.32	16.63	11.32	1.40
4	**1**	309	6	22.50	45.69	3.92	43.54	106.71	0.23	9.15	8.92	2.40
4	**2**	20	5	10.50	52.52	0.29	12.24	635.52	0.01	0.62	0.61	0.10

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	585	1	42.50	72.56	11.79	92.23	-2.41	6.23	20.49	14.26	2.50
2	**1**	295	3	22.50	103.11	8.45	91.26	-1.38	4.65	13.14	8.49	0.90
2	**2**	152	2	10.50	152.69	6.45	92.99	-3.22	4.25	9.02	4.77	0.40
3	**1**	413	4	29.50	95.57	10.96	93.39	-3.63	6.22	17.53	11.32	1.30
4	**1**	309	6	22.50	45.71	3.92	43.54	106.71	0.23	9.15	8.92	2.40
4	**2**	20	5	10.50	52.52	0.29	12.24	635.52	0.01	0.62	0.61	0.10

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	477	1	42.50	48.94	6.48	75.20	19.68	1.76	13.12	11.35	3.80
2	**1**	241	3	22.50	76.23	5.10	74.56	20.72	1.67	8.53	6.86	1.20
2	**2**	124	2	10.50	125.53	4.32	75.86	18.63	1.93	5.80	3.87	0.40
3	**1**	337	4	29.50	66.99	6.27	76.20	18.11	1.88	10.97	9.08	1.90
4	**1**	253	6	22.50	44.31	3.11	35.65	152.46	0.14	7.36	7.22	2.20
4	**2**	16	5	10.50	51.97	0.23	9.79	819.41	0.01	0.50	0.49	0.10

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	400	1	42.50	38.96	4.33	63.06	42.72	0.79	10.15	9.36	4.20
2	**1**	201	3	22.50	58.22	3.25	62.18	44.74	0.74	6.41	5.67	1.20
2	**2**	104	2	10.50	84.89	2.45	63.63	41.45	0.82	4.05	3.23	0.40
3	**1**	282	4	29.50	50.76	3.98	63.76	41.14	0.81	8.33	7.51	2.10
4	**1**	211	6	22.50	43.37	2.54	29.73	202.71	0.09	6.05	5.97	1.90
4	**2**	14	5	10.50	51.71	0.20	8.57	950.75	0.01	0.43	0.43	0.10

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads.osc
Report generation date: 05/08/2016 16:10:36

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

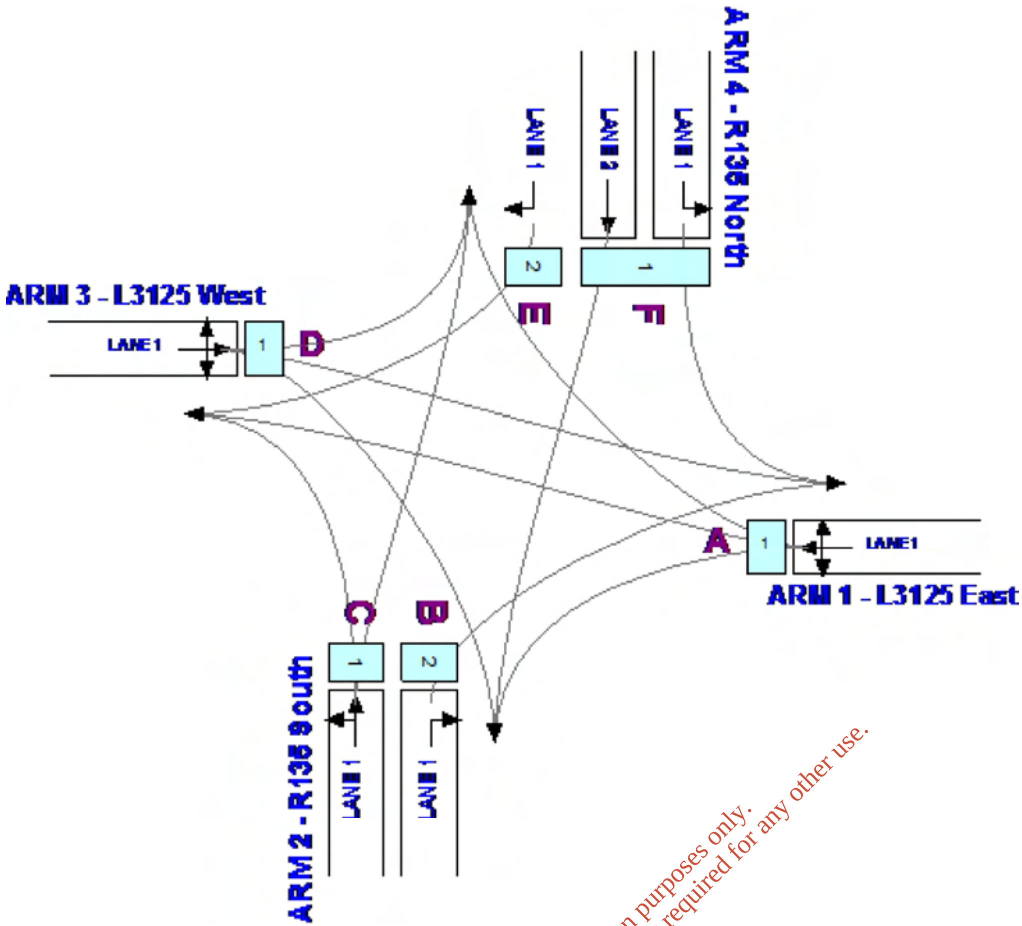
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

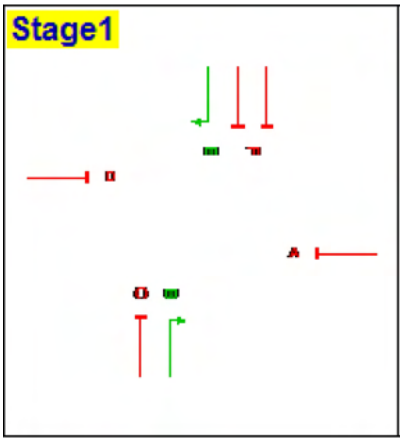
Intergreen Matrix

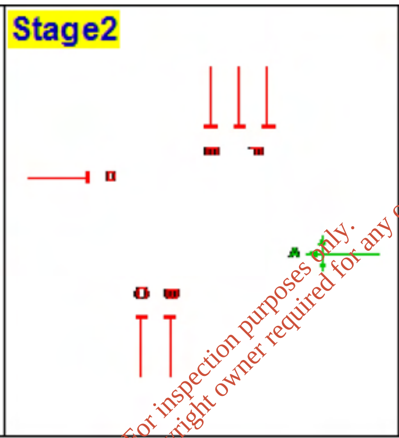
		To					
		A	B	C	D	E	F
From	A	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

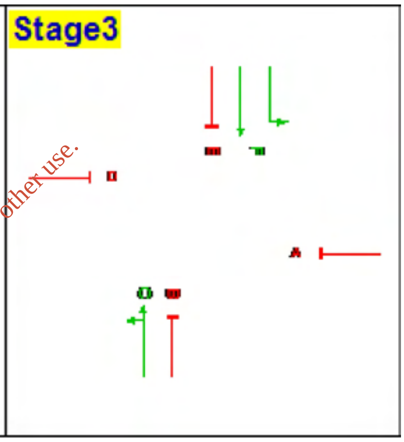
Stages

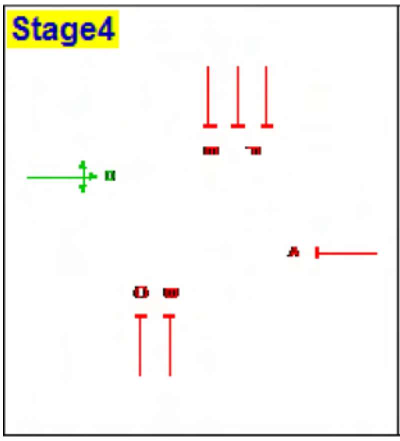
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams









Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	Yes	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set9 - 2023 PM Peak No Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	96	232	227
	Arm 2	143	-	142	133
	Arm 3	188	184	-	25
	Arm 4	186	102	19	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - L3125 East	1	A	416	497	609	609	497	416
2 - R135 South	1	C	207	247	303	303	247	207
2 - R135 South	2	B	107	127	156	156	127	107
3 - L3125 West	1	D	295	352	431	431	352	295
4 - R135 North	1	F	216	258	317	317	258	216
4 - R135 North	2	E	14	16	20	20	16	14

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	17	42	41
2 - R135 South	34	32	34
3 - L3125 West	6	47	46
4 - R135 North	61	33	6

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	10.32	25.83	25.83	55.6

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	-8.25	30.07	30.07	52.10

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

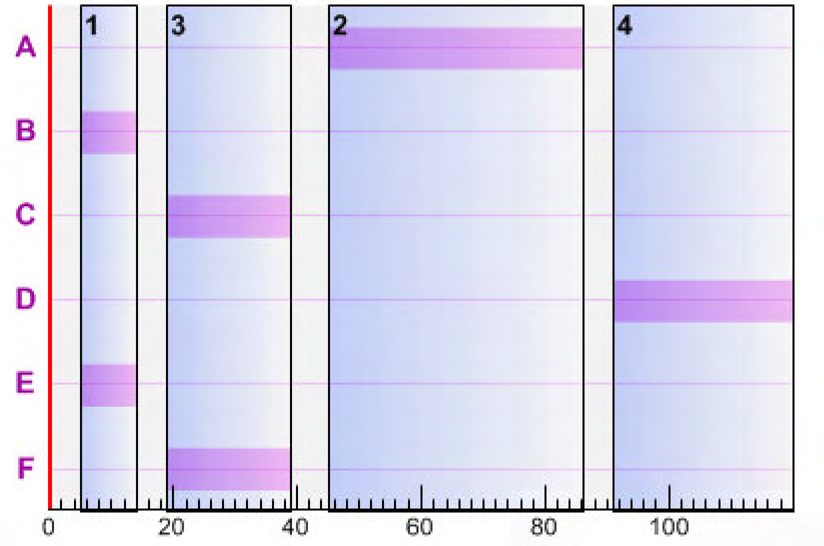
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	9.0	14.0
3	19.0	20.0	39.0
2	45.0	41.0	86.0
4	91.0	29.0	0.0

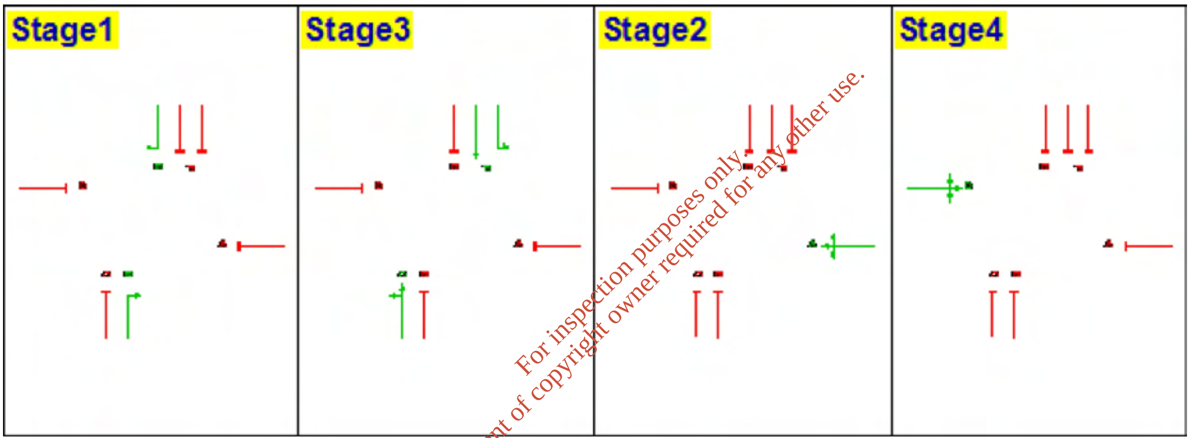
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	45	41.0	86						
B	5	9.0	14						
C	19	20.0	39						
D	91	29.0	0						
E	5	9.0	14						
F	19	20.0	39						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	507	A	42.50	49.36	6.95	79.93	12.60	2.30	14.45	12.15	21.70
2	**1**	252	C	21.50	78.99	5.53	81.58	10.32	2.42	9.68	7.26	6.20
2	**2**	130	B	10.50	104.39	3.77	79.54	13.16	1.98	6.04	4.06	2.40
3	**1**	359	D	30.50	59.98	5.98	78.51	14.63	2.00	11.62	9.62	12.00
4	**1**	264	F	21.50	45.69	3.35	38.93	131.19	0.17	7.80	7.63	12.70
4	**2**	17	E	10.50	52.10	0.25	10.40	765.32	0.01	0.53	0.52	0.60

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	416	1	42.50	39.33	4.54	65.58	37.23	0.87	10.64	9.77	4.20
2	**1**	207	3	21.50	59.76	3.44	67.02	34.30	0.88	6.79	5.91	1.10
2	**2**	107	2	10.50	75.67	2.25	65.46	37.48	0.75	4.08	3.33	0.40
3	**1**	295	4	30.50	48.69	3.99	64.52	39.50	0.79	8.59	7.79	2.20
4	**1**	216	6	21.50	44.50	2.67	31.85	182.56	0.10	6.28	6.18	1.90
4	**2**	14	5	10.50	51.69	0.20	8.57	950.75	0.01	0.43	0.43	0.10

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	497	1	42.50	47.06	6.50	78.35	14.87	1.93	13.81	11.88	3.70
2	**1**	247	3	21.50	72.72	4.99	79.97	12.55	1.89	9.00	7.11	1.00
2	**2**	127	2	10.50	93.32	3.29	77.70	15.83	1.48	5.44	3.96	0.40
3	**1**	352	4	30.50	57.19	5.59	76.98	16.91	1.67	11.09	9.41	2.00
4	**1**	258	6	21.50	45.52	3.26	38.04	136.56	0.16	7.60	7.44	2.10
4	**2**	16	5	10.50	51.96	0.23	9.79	819.41	0.01	0.50	0.49	0.10

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	609	1	42.50	72.29	12.23	96.01	-6.26	7.82	22.75	14.93	2.10
2	**1**	303	3	21.50	108.25	9.11	98.10	-8.25	6.43	15.26	8.83	0.70
2	**2**	156	2	10.50	131.49	5.70	95.44	-5.70	4.01	8.91	4.90	0.40
3	**1**	431	4	30.50	82.25	9.85	94.26	-4.52	5.78	17.51	11.73	1.40
4	**1**	317	6	21.50	47.17	4.15	46.75	92.53	0.29	9.55	9.26	2.30
4	**2**	20	5	10.50	52.52	0.29	12.24	635.52	0.01	0.62	0.61	0.10

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	609	1	42.50	87.90	14.87	96.01	-6.26	9.48	24.41	14.93	2.00
2	**1**	303	3	21.50	139.59	11.75	98.10	-8.25	8.35	17.17	8.83	0.70
2	**2**	156	2	10.50	165.93	7.19	95.44	-5.70	5.05	9.95	4.90	0.40
3	**1**	431	4	30.50	97.56	11.68	94.26	-4.52	6.86	18.58	11.73	1.30
4	**1**	317	6	21.50	47.19	4.16	46.75	92.53	0.29	9.55	9.26	2.30
4	**2**	20	5	10.50	52.52	0.29	12.24	635.52	0.01	0.62	0.61	0.10

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	497	1	42.50	56.04	7.74	78.35	14.87	2.25	14.13	11.88	3.60
2	**1**	247	3	21.50	107.47	7.37	79.97	12.55	2.62	9.73	7.11	1.00
2	**2**	127	2	10.50	140.11	4.94	77.70	15.83	2.25	6.21	3.96	0.40
3	**1**	352	4	30.50	67.69	6.62	76.98	16.91	2.00	11.42	9.41	2.00
4	**1**	258	6	21.50	45.55	3.26	38.04	136.56	0.16	7.61	7.44	2.10
4	**2**	16	5	10.50	51.97	0.23	9.79	819.41	0.01	0.50	0.49	0.10

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	416	1	42.50	40.27	4.65	65.58	37.23	0.93	10.69	9.77	4.20
2	**1**	207	3	21.50	64.77	3.72	67.02	34.30	1.00	6.91	5.91	1.10
2	**2**	107	2	10.50	89.14	2.65	65.46	37.48	0.92	4.25	3.33	0.40
3	**1**	295	4	30.50	50.24	4.12	64.52	39.50	0.85	8.65	7.79	2.20
4	**1**	216	6	21.50	44.52	2.67	31.85	182.56	0.10	6.28	6.18	1.90
4	**2**	14	5	10.50	51.71	0.20	8.57	950.75	0.01	0.43	0.43	0.10

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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The user of this computer program for the solution of an engineering problem is in no way relieved of their responsibility for the correctness of the solution

File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads.osc
Report generation date: 05/08/2016 16:11:12

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

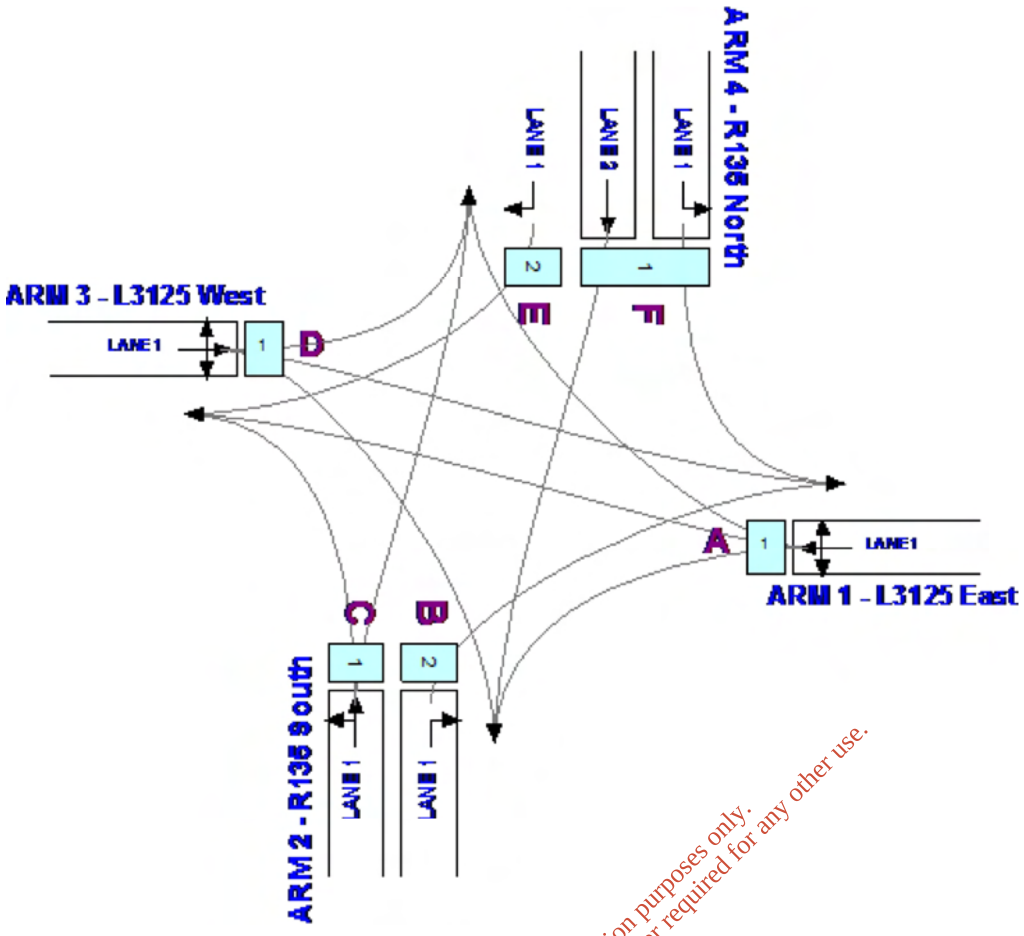
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

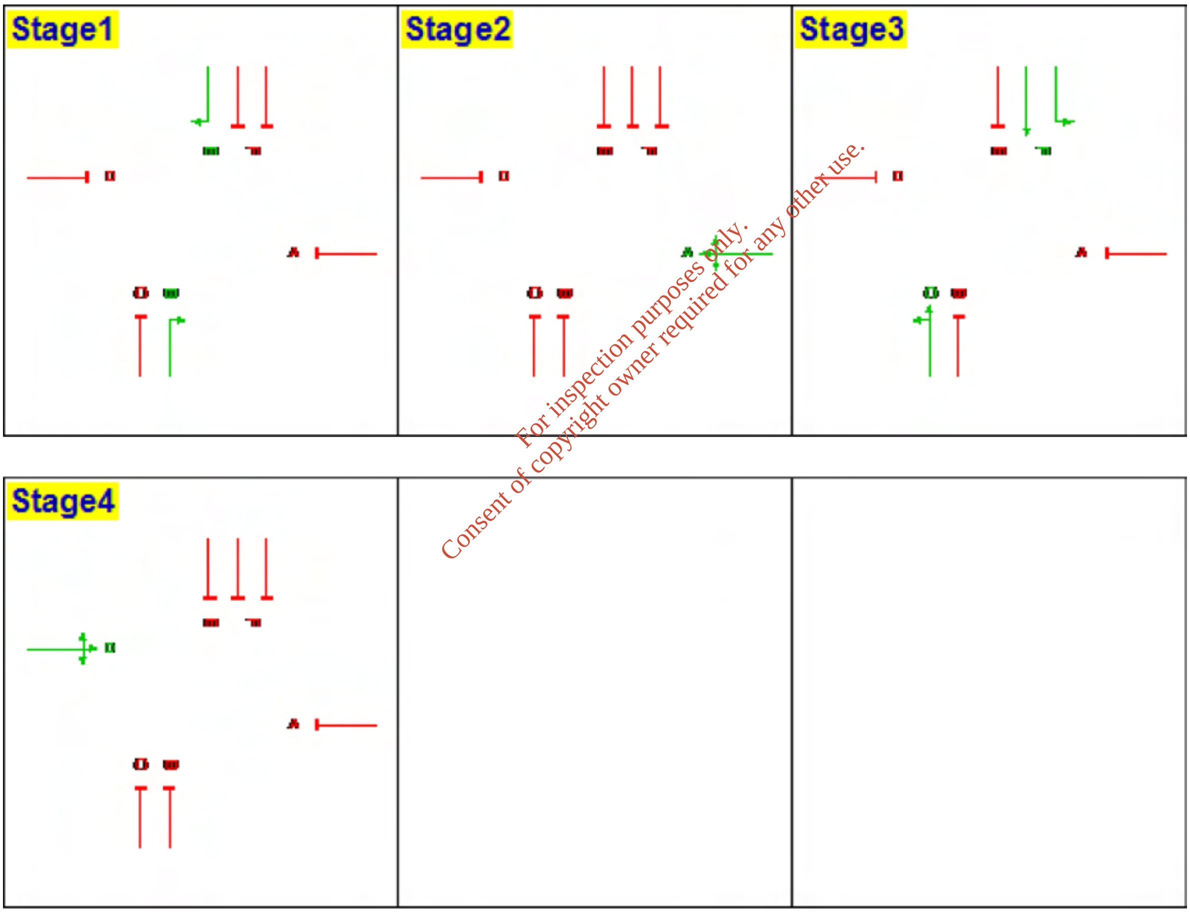
Intergreen Matrix

		To					
		A	B	C	D	E	F
From	A	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	Yes	16:30	18:00	ODTAB	No	D1

Demand Set10 - 2023 PM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	96	232	227
	Arm 2	143	-	142	139
	Arm 3	188	184	-	25
	Arm 4	186	108	19	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - L3125 East	1	A	416	497	609	609	497	416
2 - R135 South	1	C	210	251	307	307	251	210
2 - R135 South	2	B	108	129	158	158	129	108
3 - L3125 West	1	D	295	352	431	431	352	295
4 - R135 North	1	F	221	263	323	323	263	221
4 - R135 North	2	E	14	17	21	21	17	14

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	17	42	41
2 - R135 South	33	33	34
3 - L3125 West	6	47	46
4 - R135 North	59	35	6

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	10.87	26.12	26.12	56.0

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	-7.65	30.51	30.51	52.70

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

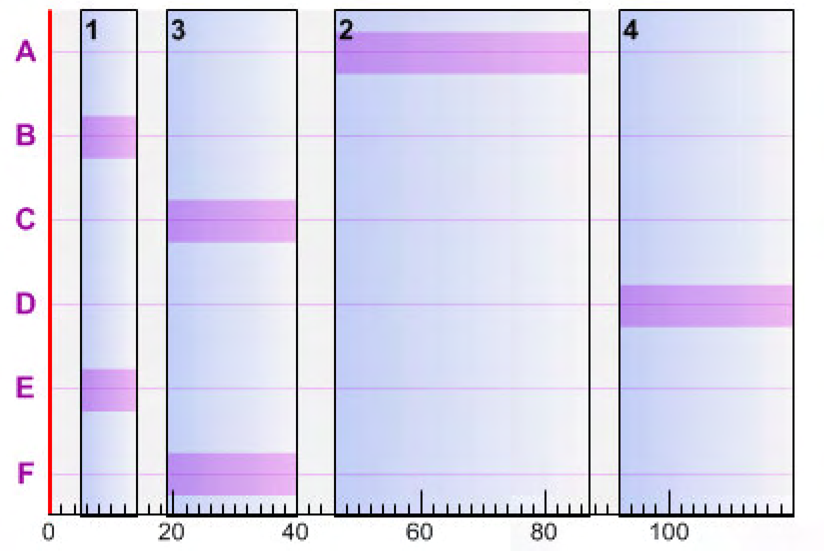
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	9.0	14.0
3	19.0	21.0	40.0
2	46.0	41.0	87.0
4	92.0	28.0	0.0

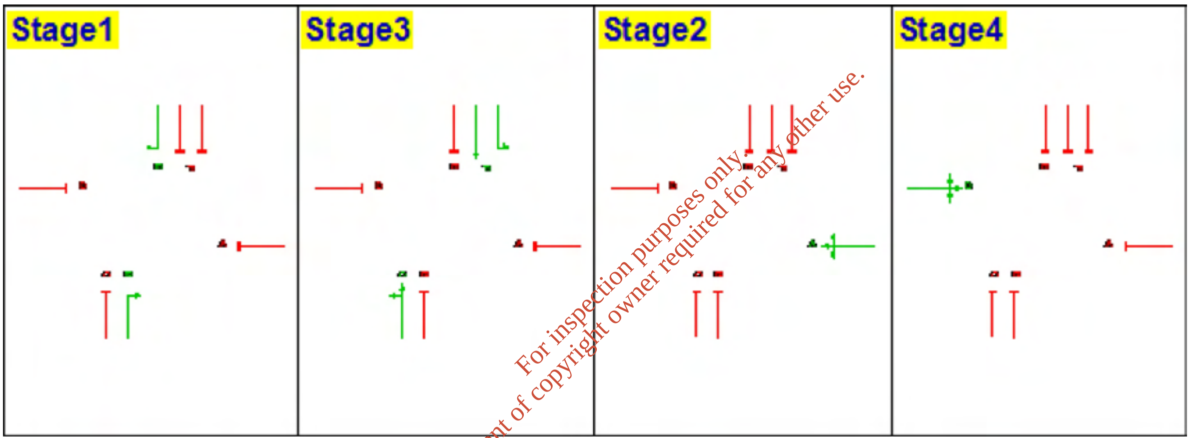
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	46	41.0	87						
B	5	9.0	14						
C	19	21.0	40						
D	92	28.0	0						
E	5	9.0	14						
F	19	21.0	40						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	507	A	42.50	49.36	6.95	79.93	12.60	2.30	14.45	12.15	21.70
2	**1**	256	C	22.50	72.97	5.19	79.20	13.64	2.04	9.34	7.31	6.80
2	**2**	132	B	10.50	107.81	3.95	80.76	11.44	2.15	6.28	4.12	2.40
3	**1**	359	D	29.50	64.65	6.45	81.18	10.87	2.42	12.15	9.72	10.90
4	**1**	269	F	22.50	44.68	3.34	37.90	137.44	0.16	7.86	7.70	13.60
4	**2**	17	E	10.50	52.10	0.25	10.40	765.32	0.01	0.53	0.52	0.60

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	416	1	42.50	39.33	4.54	65.58	37.23	0.87	10.64	9.77	4.20
2	**1**	210	3	22.50	57.38	3.35	64.97	38.54	0.79	6.72	5.94	1.20
2	**2**	108	2	10.50	76.18	2.29	66.08	36.21	0.78	4.13	3.36	0.40
3	**1**	295	4	29.50	50.68	4.15	66.70	34.92	0.90	8.78	7.88	2.10
4	**1**	221	6	22.50	43.57	2.67	31.14	189.01	0.10	6.36	6.26	2.00
4	**2**	14	5	10.50	51.69	0.20	8.57	950.75	0.01	0.43	0.43	0.10

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	497	1	42.50	47.06	6.50	78.35	14.87	1.93	13.81	11.88	3.70
2	**1**	251	3	22.50	68.42	4.77	77.65	15.91	1.65	8.81	7.16	1.20
2	**2**	129	2	10.50	95.17	3.41	78.92	14.03	1.58	5.61	4.03	0.40
3	**1**	352	4	29.50	60.76	5.94	79.59	13.08	1.97	11.48	9.52	1.90
4	**1**	263	6	22.50	44.53	3.25	37.06	142.86	0.15	7.67	7.52	2.20
4	**2**	17	5	10.50	52.09	0.25	10.40	765.32	0.01	0.53	0.52	0.10

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	609	1	42.50	72.29	12.23	96.01	-6.26	7.82	22.75	14.93	2.10
2	**1**	307	3	22.50	98.06	8.36	94.97	-5.24	5.27	14.12	8.86	0.80
2	**2**	158	2	10.50	135.33	5.94	96.67	-6.90	4.31	9.27	4.96	0.40
3	**1**	431	4	29.50	91.53	10.96	97.46	-7.65	7.38	19.24	11.86	1.20
4	**1**	323	6	22.50	46.08	4.13	45.51	97.75	0.27	9.62	9.35	2.50
4	**2**	21	5	10.50	52.67	0.31	12.85	600.50	0.01	0.65	0.64	0.10

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	609	1	42.50	87.90	14.87	96.01	-6.26	9.48	24.41	14.93	2.00
2	**1**	307	3	22.50	119.58	10.20	94.97	-5.24	6.43	15.29	8.86	0.80
2	**2**	158	2	10.50	173.03	7.59	96.67	-6.90	5.50	10.46	4.96	0.40
3	**1**	431	4	29.50	115.61	13.84	97.46	-7.65	9.39	21.24	11.86	1.10
4	**1**	323	6	22.50	46.10	4.14	45.51	97.75	0.27	9.62	9.35	2.50
4	**2**	21	5	10.50	52.67	0.31	12.85	600.50	0.01	0.65	0.64	0.10

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	497	1	42.50	56.04	7.74	78.35	14.87	2.25	14.13	11.88	3.60
2	**1**	251	3	22.50	88.18	6.15	77.65	15.91	2.13	9.29	7.16	1.10
2	**2**	129	2	10.50	149.38	5.35	78.92	14.03	2.49	6.52	4.03	0.40
3	**1**	352	4	29.50	81.15	7.94	79.59	13.08	2.49	12.01	9.52	1.80
4	**1**	263	6	22.50	44.55	3.25	37.06	142.86	0.15	7.67	7.52	2.20
4	**2**	17	5	10.50	52.11	0.25	10.40	765.32	0.01	0.53	0.52	0.10

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	416	1	42.50	40.27	4.65	65.58	37.23	0.93	10.69	9.77	4.20
2	**1**	210	3	22.50	60.74	3.54	64.97	38.54	0.87	6.81	5.94	1.20
2	**2**	108	2	10.50	91.76	2.75	66.08	36.21	0.96	4.32	3.36	0.40
3	**1**	295	4	29.50	52.97	4.34	66.70	34.92	0.98	8.86	7.88	2.10
4	**1**	221	6	22.50	43.58	2.68	31.14	189.01	0.10	6.36	6.26	2.00
4	**2**	14	5	10.50	51.71	0.20	8.57	950.75	0.01	0.43	0.43	0.10

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads With Link Rd.osc
Report generation date: 05/08/2016 16:27:44

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

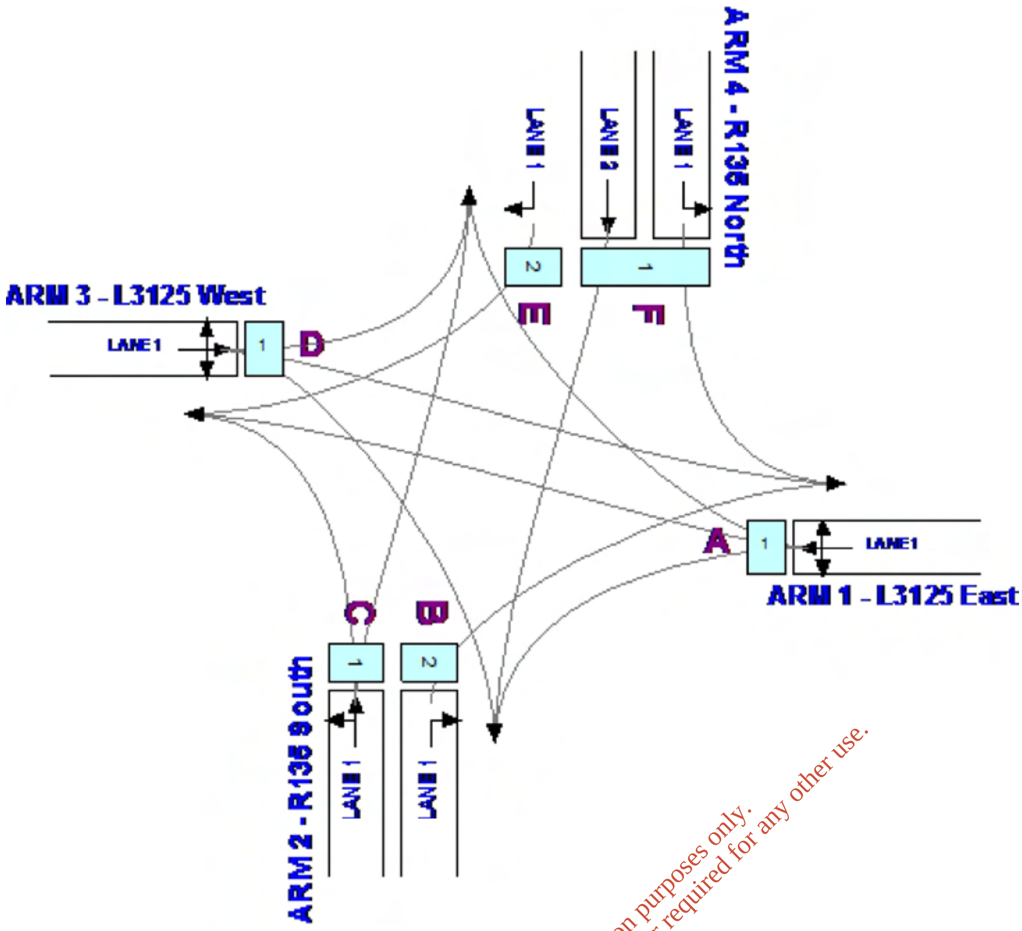
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

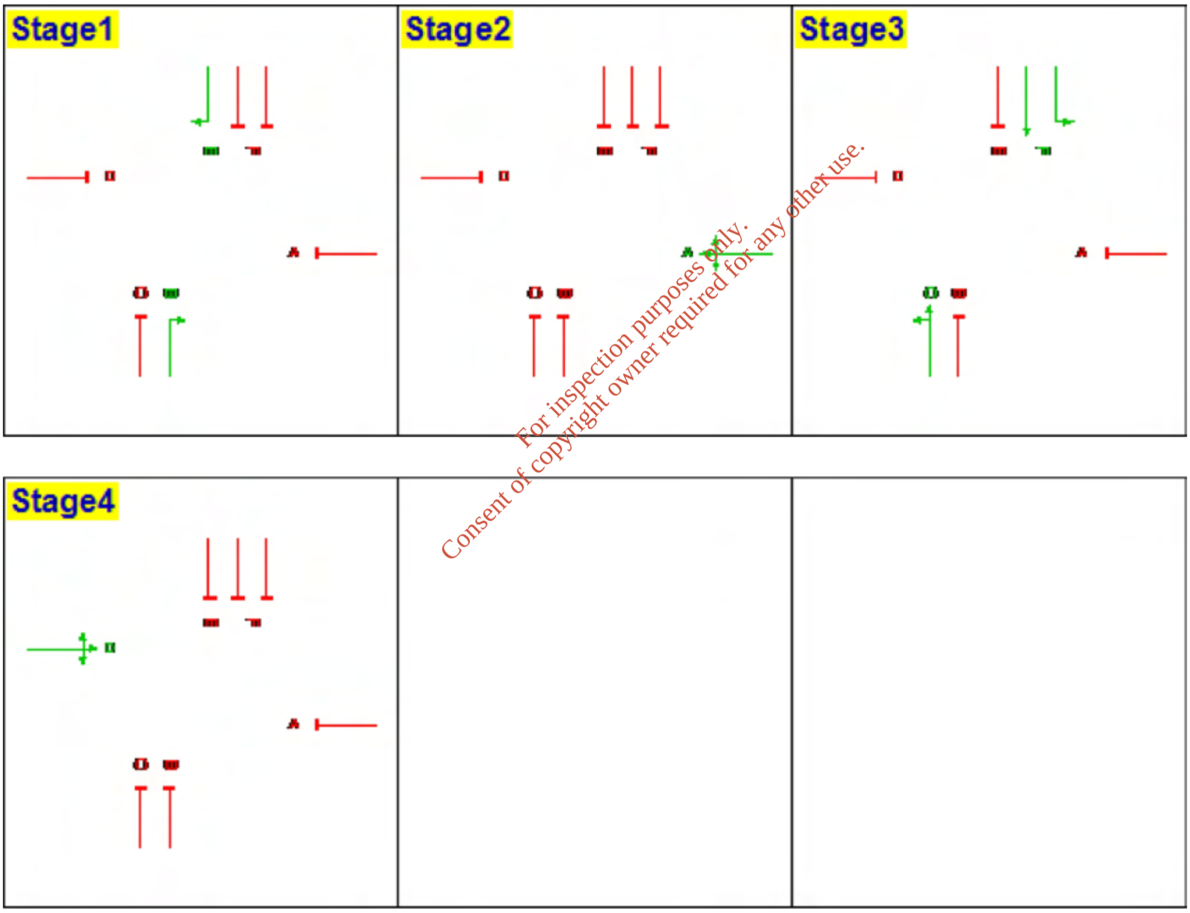
Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	Yes	16:30	18:00	ODTAB	No	D1

Demand Set10 - 2023 PM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	96	232	114
	Arm 2	143	-	142	139
	Arm 3	188	184	-	25
	Arm 4	92	108	19	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - L3125 East	1	A	332	396	485	485	396	332
2 - R135 South	1	C	210	251	307	307	251	210
2 - R135 South	2	B	108	129	158	158	129	108
3 - L3125 West	1	D	295	352	431	431	352	295
4 - R135 North	1	F	149	178	219	219	178	149
4 - R135 North	2	E	15	18	22	22	18	15

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	22	52	26
2 - R135 South	33	33	34
3 - L3125 West	6	47	46
4 - R135 North	42	49	9

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	21.36	20.84	20.84	54.8

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	1.09	22.70	22.70	52.20

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

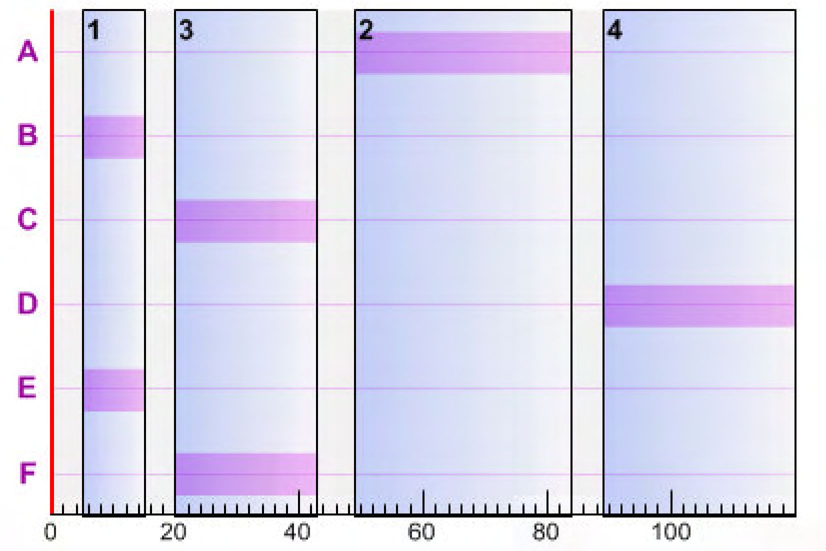
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	10.0	15.0
3	20.0	23.0	43.0
2	49.0	35.0	84.0
4	89.0	31.0	0.0

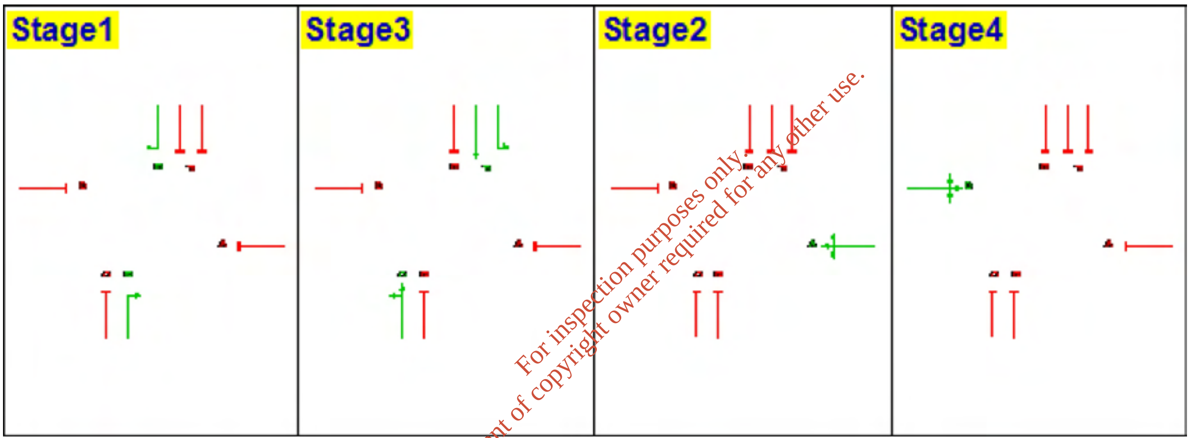
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	49	35.0	84						
B	5	10.0	15						
C	20	23.0	43						
D	89	31.0	0						
E	5	10.0	15						
F	20	23.0	43						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	404	A	36.50	49.76	5.58	74.16	21.36	1.51	11.71	10.19	17.50
2	**1**	256	C	24.50	62.10	4.42	72.73	23.74	1.33	8.49	7.16	8.30
2	**2**	132	B	11.50	87.81	3.22	73.74	22.06	1.36	5.45	4.09	2.80
3	**1**	359	D	32.50	53.19	5.30	73.68	22.15	1.45	10.85	9.40	14.20
4	**1**	182	F	24.50	40.87	2.07	23.55	282.14	0.05	5.06	5.01	11.30
4	**2**	18	E	11.50	51.01	0.26	10.05	795.08	0.01	0.55	0.54	0.70

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	332	1	36.50	42.13	3.89	60.94	47.68	0.65	8.90	8.25	3.10
2	**1**	210	3	24.50	52.56	3.07	59.66	50.85	0.59	6.40	5.82	1.40
2	**2**	108	2	11.50	69.65	2.09	60.33	49.18	0.58	3.90	3.33	0.40
3	**1**	295	4	32.50	45.24	3.71	60.55	48.65	0.63	8.25	7.62	2.50
4	**1**	149	6	24.50	40.29	1.67	19.28	366.77	0.03	4.11	4.07	1.60
4	**2**	15	5	11.50	50.66	0.21	8.38	974.10	0.01	0.46	0.45	0.10

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	396	1	36.50	48.23	5.31	72.69	23.81	1.31	11.29	9.98	3.00
2	**1**	251	3	24.50	59.95	4.18	71.31	26.21	1.14	8.15	7.01	1.40
2	**2**	129	2	11.50	82.09	2.94	72.06	24.90	1.10	5.09	3.99	0.50
3	**1**	352	4	32.50	51.56	5.04	72.25	24.58	1.26	10.46	9.20	2.40
4	**1**	178	6	24.50	40.80	2.02	23.03	290.73	0.05	4.94	4.90	1.90
4	**2**	18	5	11.50	51.00	0.26	10.05	795.08	0.01	0.55	0.54	0.10

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	485	1	36.50	64.95	8.75	89.03	1.09	4.04	16.49	12.46	2.20
2	**1**	307	3	24.50	78.28	6.68	87.22	3.19	3.12	11.80	8.68	1.10
2	**2**	158	2	11.50	108.76	4.77	88.26	1.97	2.74	7.66	4.92	0.40
3	**1**	431	4	32.50	68.47	8.20	88.46	1.74	3.74	15.20	11.46	1.80
4	**1**	219	6	24.50	41.55	2.53	28.34	217.58	0.08	6.15	6.08	2.20
4	**2**	22	5	11.50	51.49	0.31	12.29	632.34	0.01	0.68	0.67	0.10

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	485	1	36.50	70.73	9.53	89.03	1.09	4.38	16.84	12.46	2.10
2	**1**	307	3	24.50	85.69	7.31	87.22	3.19	3.41	12.09	8.68	1.10
2	**2**	158	2	11.50	125.51	5.51	88.26	1.97	3.15	8.06	4.92	0.40
3	**1**	431	4	32.50	74.52	8.92	88.46	1.74	4.06	15.52	11.46	1.80
4	**1**	219	6	24.50	41.55	2.53	28.34	217.58	0.08	6.15	6.08	2.20
4	**2**	22	5	11.50	51.49	0.31	12.29	632.34	0.01	0.68	0.67	0.10

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	396	1	36.50	51.44	5.66	72.69	23.81	1.47	11.44	9.98	2.90
2	**1**	251	3	24.50	65.26	4.55	71.31	26.21	1.32	8.34	7.01	1.40
2	**2**	129	2	11.50	99.82	3.58	72.06	24.90	1.44	5.43	3.99	0.50
3	**1**	352	4	32.50	55.15	5.39	72.25	24.58	1.42	10.62	9.20	2.40
4	**1**	178	6	24.50	40.80	2.02	23.03	290.73	0.05	4.94	4.90	1.90
4	**2**	18	5	11.50	51.02	0.26	10.05	795.08	0.01	0.55	0.54	0.10

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	332	1	36.50	42.81	3.95	60.94	47.68	0.69	8.94	8.25	3.10
2	**1**	210	3	24.50	53.96	3.15	59.66	50.85	0.63	6.45	5.82	1.40
2	**2**	108	2	11.50	75.48	2.26	60.33	49.18	0.66	3.99	3.33	0.40
3	**1**	295	4	32.50	46.05	3.77	60.55	48.65	0.67	8.29	7.62	2.50
4	**1**	149	6	24.50	40.29	1.67	19.28	366.77	0.03	4.11	4.07	1.60
4	**2**	15	5	11.50	50.67	0.21	8.38	974.10	0.01	0.46	0.45	0.10

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\Crossroads With Link Rd.osc
Report generation date: 04/08/2016 10:34:21

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	L3125 East	50.0	10	10	80	0
2	R135 South	50.0	10	10	80	0
3	L3125 West	50.0	10	10	80	0
4	R135 North	50.0	10	10	80	0

Traffic Streams

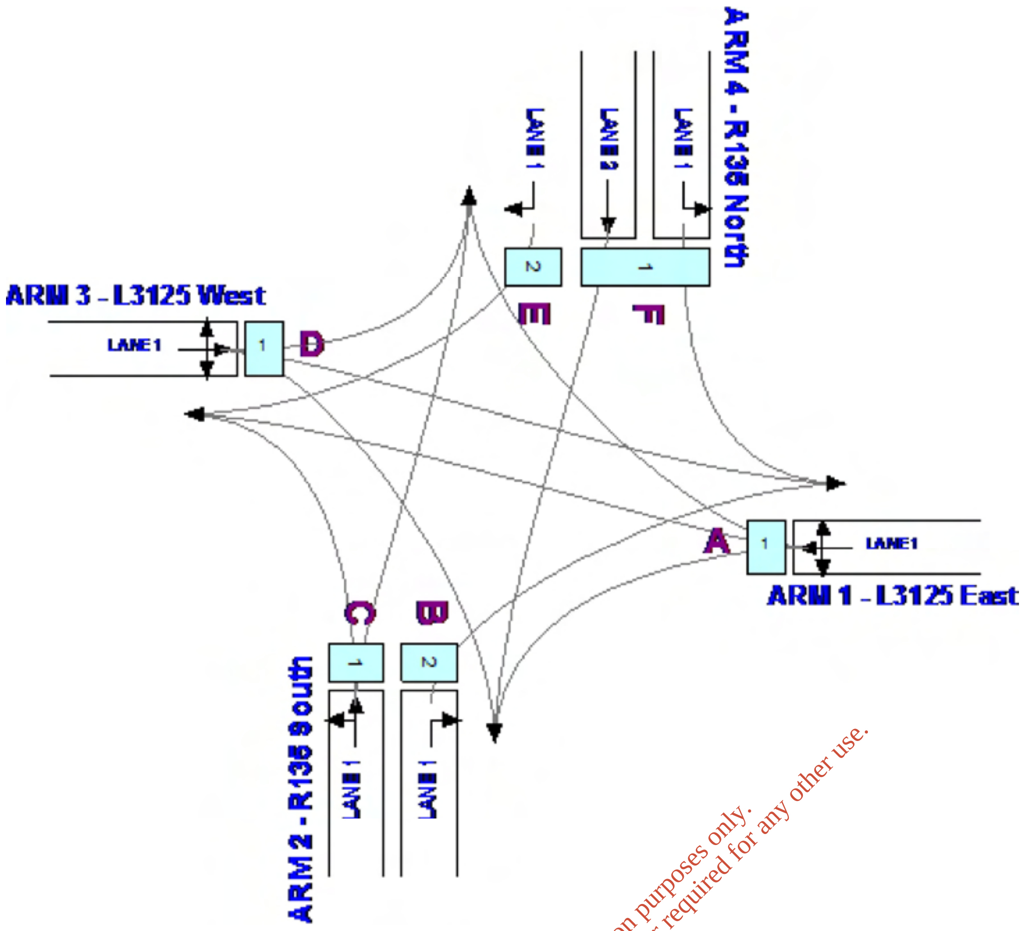
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1791	Yes	0	A	-
2	**1**	Traffic		1724	Yes	0	C	-
2	**2**	Traffic		1868	Yes	0	B	-
3	**1**	Traffic		1799	Yes	0	D	-
4	**1**	Traffic		3785	Yes	0	F	-
4	**2**	Traffic		1868	Yes	0	E	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**1**	0.0	0.0	90	100	0	0.0	1.10	0
4	**2**	0.0	0.0	90	100	0	0.0	1.10	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3	4	0.37	8	Yes	3.00	0.0	0
2	**1**	**1**		3	4		0.74	10	Yes	3.00	0.0	0
2	**2**	**1**				1	1.00	15	No	3.00	0.0	0
3	**1**	**1**		4	1	2	0.43	10	Yes	3.00	0.0	0
4	**1**	**1**		1			1.00	14	Yes	3.00	0.0	0
4	**1**	**2**			2		0.00	10	No	3.00	0.0	0
4	**2**	**1**				3	1.00	15	No	3.00	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No

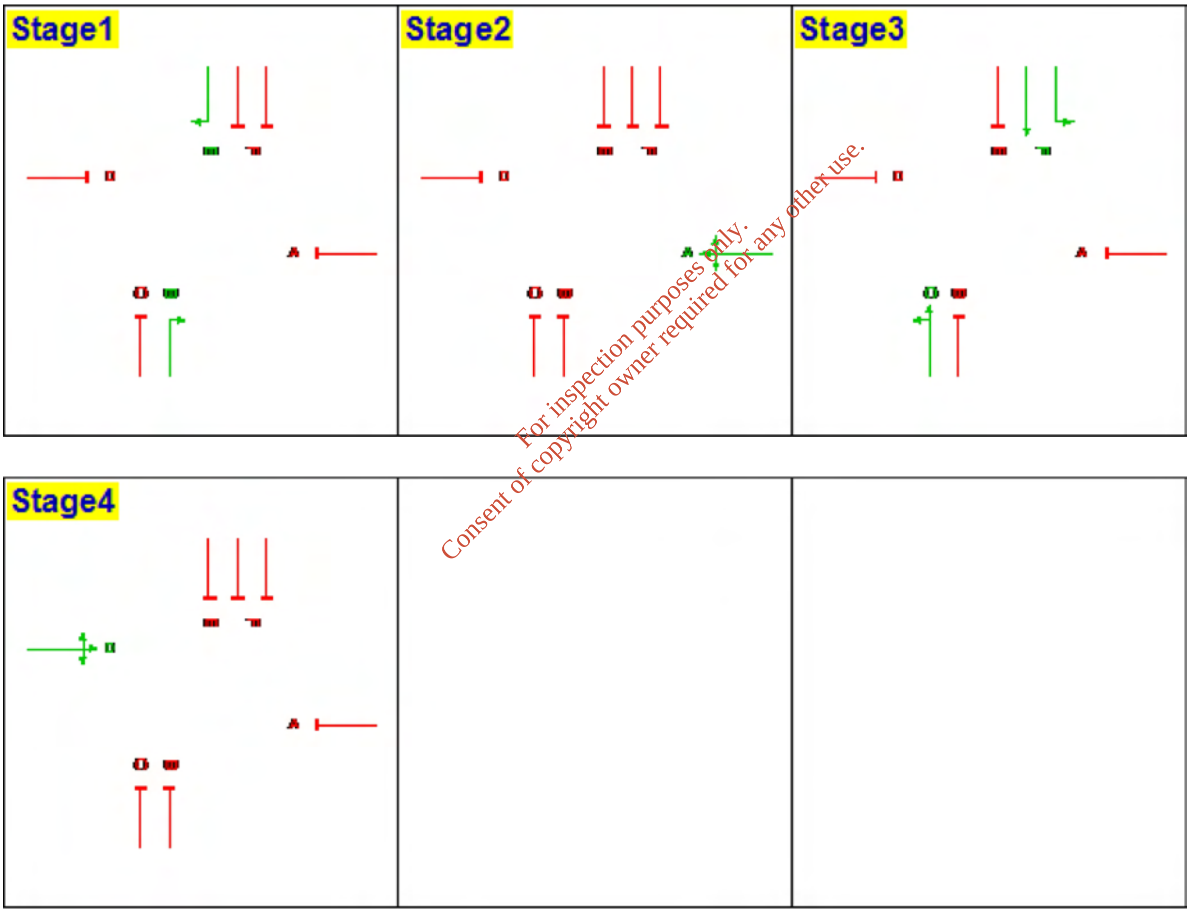
Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	5	5	5	5	5
	B	6	-	5	6		5
	C	6	5	-	6	5	
	D	5	5	5	-	5	5
	E	6		5	6	-	5
	F	6	5		6	5	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	B,E	Yes
2	-1	A	Yes
3	-1	C,F	Yes
4	-1	D	Yes

Stage Diagrams



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,3,4
2		1,4,3,2
3		1,3,2,4
4		1,4,2,3
5		1,2,4,3
6		1,3,4,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	Yes	16:30	18:00	ODTAB	No	D1

Demand Set10 - 2023 PM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To			
		Arm 1	**Arm 2**	**Arm 3**	**Arm 4**
From	**Arm 1**	-	96	232	114
	Arm 2	143	-	142	155
	Arm 3	188	184	-	25
	Arm 4	92	124	19	-

Average pedestrian flow on each pedestrian stream (if applicable): 0 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - L3125 East	1	A	332	396	485	485	396	332
2 - R135 South	1	C	221	264	323	323	264	221
2 - R135 South	2	B	109	130	159	159	130	109
3 - L3125 West	1	D	295	352	431	431	352	295
4 - R135 North	1	F	162	194	237	237	194	162
4 - R135 North	2	E	14	17	21	21	17	14

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - L3125 East	22	52	26
2 - R135 South	32	35	33
3 - L3125 West	6	47	46
4 - R135 North	39	53	8

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	18.39	21.52	21.52	55.6

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	-1.39	23.63	23.63	53.00

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

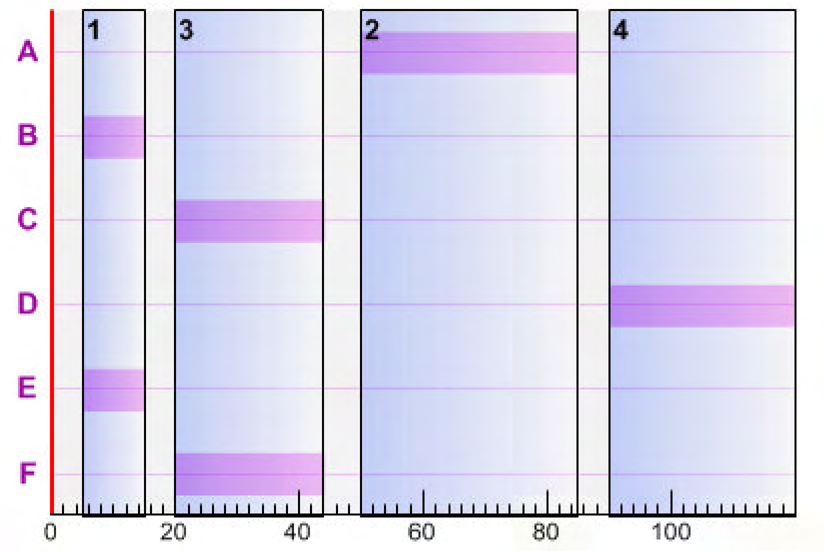
Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	5.0	10.0	15.0
3	20.0	24.0	44.0
2	50.0	35.0	85.0
4	90.0	30.0	0.0

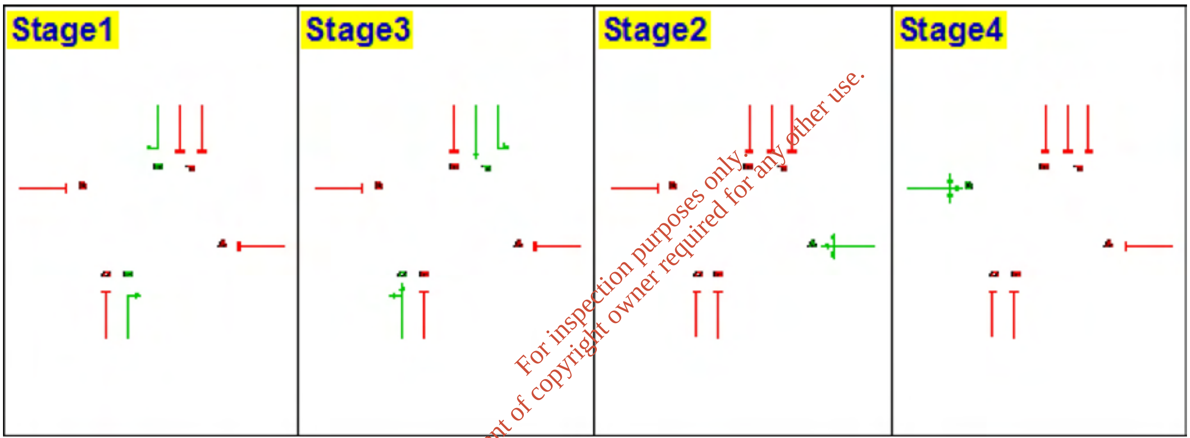
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	50	35.0	85						
B	5	10.0	15						
C	20	24.0	44						
D	90	30.0	0						
E	5	10.0	15						
F	20	24.0	44						

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	404	A	36.50	49.76	5.58	74.16	21.36	1.51	11.71	10.19	17.50
2	**1**	269	C	25.50	61.47	4.59	73.43	22.57	1.39	8.86	7.46	8.90
2	**2**	133	B	11.50	88.77	3.28	74.29	21.14	1.41	5.53	4.12	2.80
3	**1**	359	D	31.50	56.26	5.61	76.02	18.39	1.69	11.20	9.51	13.10
4	**1**	198	F	25.50	40.23	2.21	24.62	265.60	0.06	5.47	5.41	12.60
4	**2**	17	E	11.50	50.89	0.24	9.50	847.74	0.01	0.52	0.51	0.70

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	332	1	36.50	42.13	3.89	60.94	47.68	0.65	8.90	8.25	3.10
2	**1**	221	3	25.50	51.86	3.18	60.32	49.19	0.61	6.68	6.07	1.50
2	**2**	109	2	11.50	70.03	2.12	60.89	47.81	0.59	3.95	3.36	0.40
3	**1**	295	4	31.50	46.89	3.84	62.47	44.07	0.71	8.41	7.71	2.40
4	**1**	162	6	25.50	39.62	1.78	20.14	346.84	0.03	4.43	4.39	1.80
4	**2**	14	5	11.50	50.54	0.20	7.82	9999.00	0.00	0.43	0.42	0.10

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	396	1	36.50	48.23	5.31	72.69	23.81	1.31	11.29	9.98	3.00
2	**1**	264	3	25.50	59.34	4.35	72.06	24.89	1.20	8.52	7.32	1.50
2	**2**	130	2	11.50	82.82	2.99	72.62	23.93	1.13	5.15	4.02	0.50
3	**1**	352	4	31.50	54.16	5.30	74.54	20.74	1.44	10.75	9.31	2.20
4	**1**	194	6	25.50	40.16	2.16	24.12	273.13	0.05	5.35	5.30	2.10
4	**2**	17	5	11.50	50.89	0.24	9.50	847.74	0.01	0.52	0.51	0.10

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	485	1	36.50	64.95	8.75	89.03	1.09	4.04	16.49	12.46	2.20
2	**1**	323	3	25.50	78.34	7.03	88.17	2.08	3.37	12.44	9.06	1.20
2	**2**	159	2	11.50	110.08	4.86	88.82	1.33	2.83	7.78	4.95	0.40
3	**1**	431	4	31.50	74.67	8.94	91.27	-1.39	4.60	16.20	11.59	1.60
4	**1**	237	6	25.50	40.93	2.69	29.47	205.44	0.09	6.62	6.53	2.40
4	**2**	21	5	11.50	51.37	0.30	11.73	667.21	0.01	0.65	0.64	0.10

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	485	1	36.50	70.73	9.53	89.03	1.09	4.38	16.84	12.46	2.10
2	**1**	323	3	25.50	86.44	7.76	88.17	2.08	3.72	12.78	9.06	1.20
2	**2**	159	2	11.50	127.72	5.64	88.82	1.33	3.27	8.22	4.95	0.40
3	**1**	431	4	31.50	84.30	10.09	91.27	-1.39	5.19	16.78	11.59	1.60
4	**1**	237	6	25.50	40.93	2.69	29.47	205.44	0.09	6.62	6.53	2.40
4	**2**	21	5	11.50	51.37	0.30	11.73	667.21	0.01	0.65	0.64	0.10

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	396	1	36.50	51.44	5.66	72.69	23.81	1.47	11.44	9.98	2.90
2	**1**	264	3	25.50	65.00	4.77	72.06	24.89	1.39	8.71	7.32	1.50
2	**2**	130	2	11.50	101.77	3.67	72.62	23.93	1.49	5.52	4.02	0.50
3	**1**	352	4	31.50	60.07	5.87	74.54	20.74	1.66	10.97	9.31	2.20
4	**1**	194	6	25.50	40.16	2.16	24.12	273.13	0.05	5.35	5.30	2.10
4	**2**	17	5	11.50	50.90	0.24	9.50	847.74	0.01	0.52	0.51	0.10

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	332	1	36.50	42.81	3.95	60.94	47.68	0.69	8.94	8.25	3.10
2	**1**	221	3	25.50	53.26	3.27	60.32	49.19	0.66	6.73	6.07	1.50
2	**2**	109	2	11.50	76.21	2.31	60.89	47.81	0.69	4.04	3.36	0.40
3	**1**	295	4	31.50	47.99	3.93	62.47	44.07	0.75	8.46	7.71	2.40
4	**1**	162	6	25.50	39.62	1.78	20.14	346.84	0.03	4.43	4.39	1.80
4	**2**	14	5	11.50	50.55	0.20	7.82	9999.00	0.00	0.43	0.42	0.10

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 05/08/2016 16:45:41

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

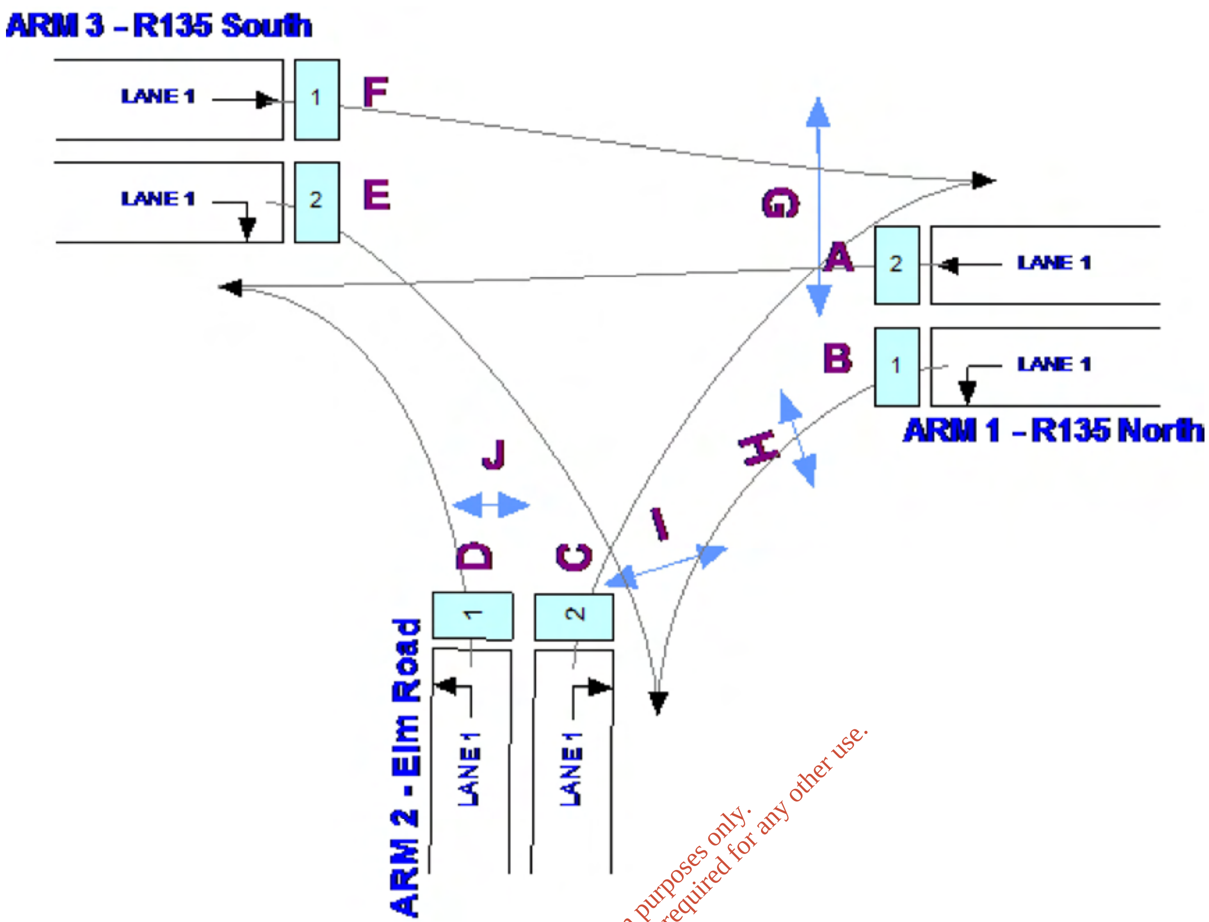
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

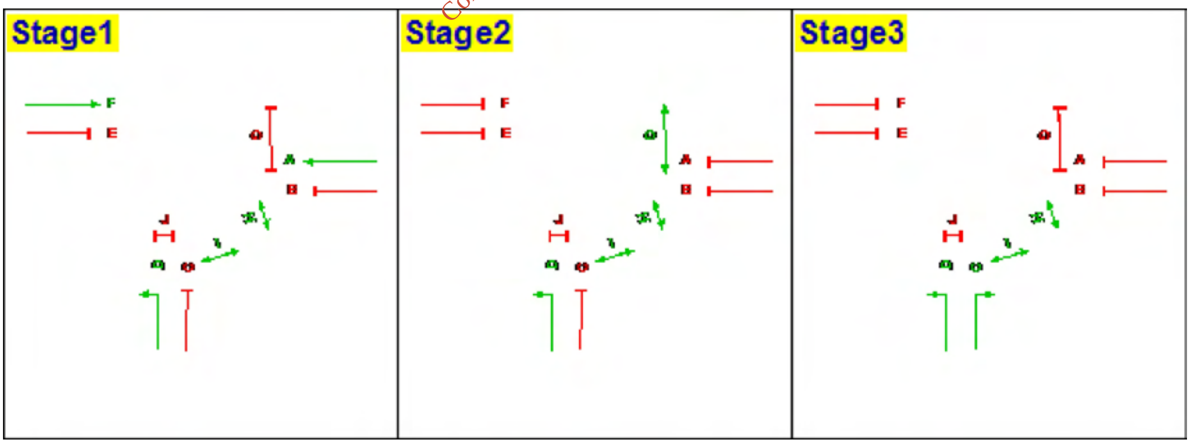
Intergreen Matrix

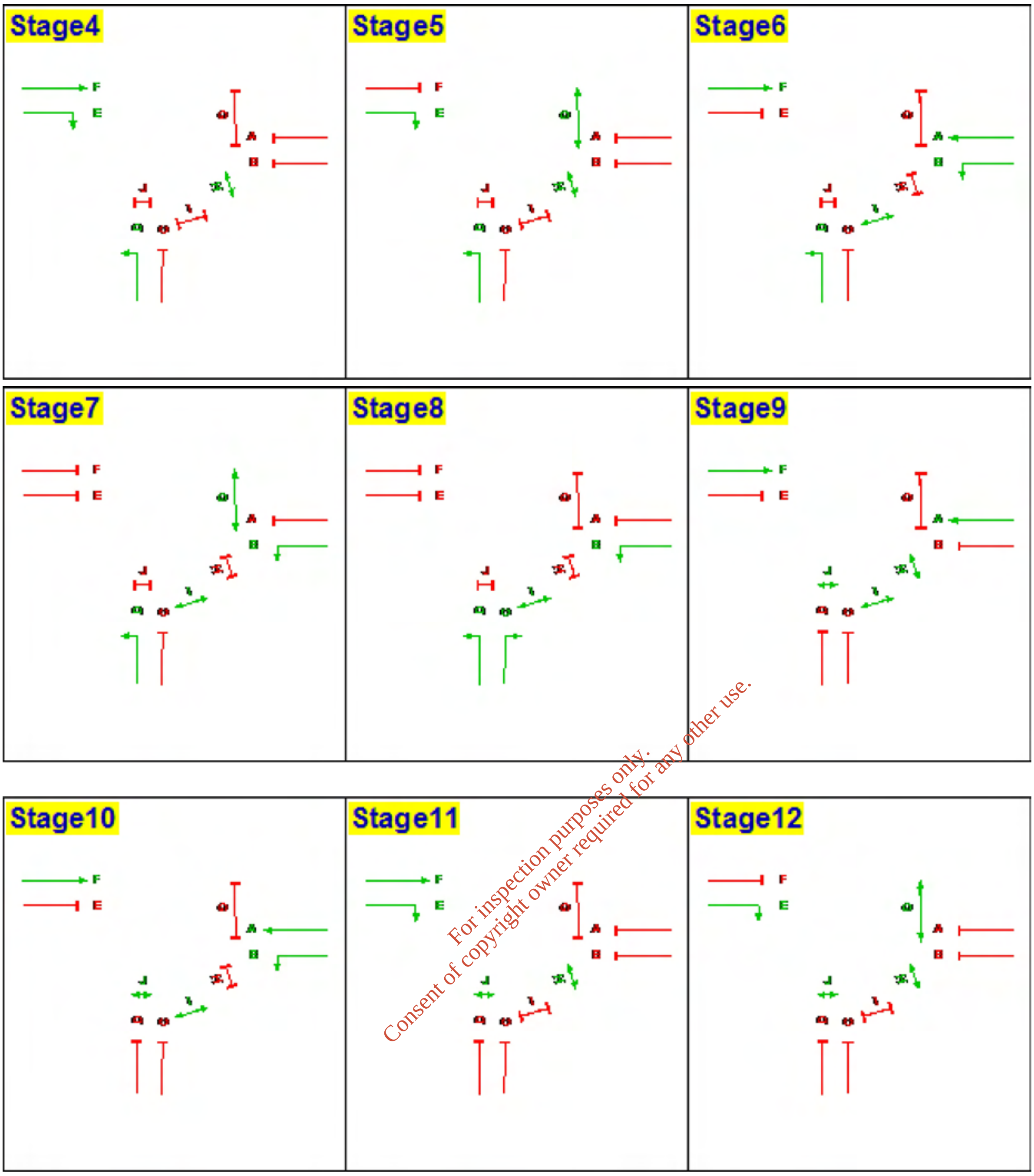
		To									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
From	**A**	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

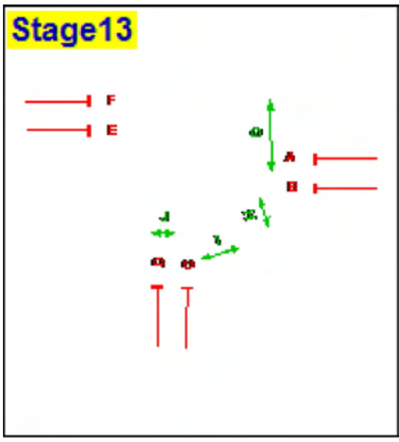
Stages

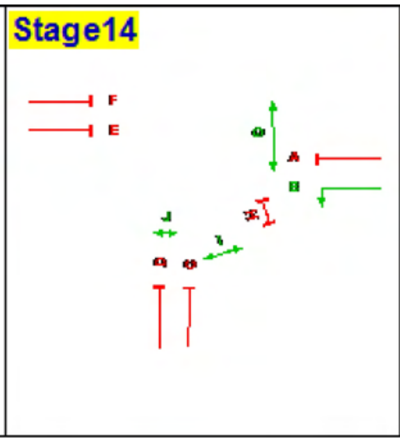
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

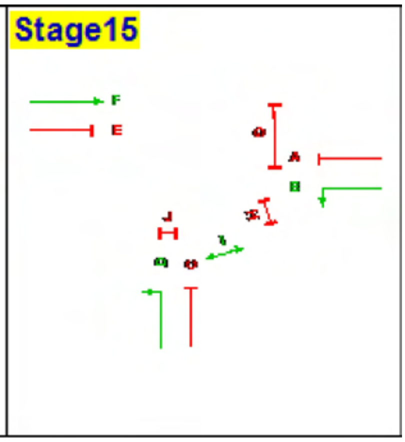
Stage Diagrams

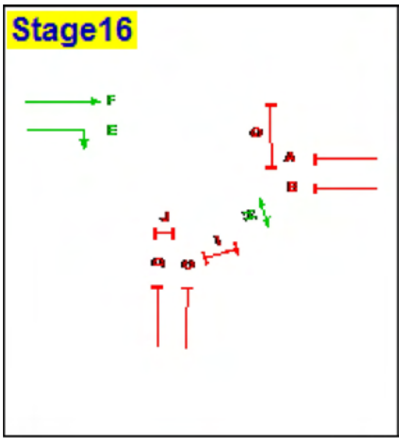


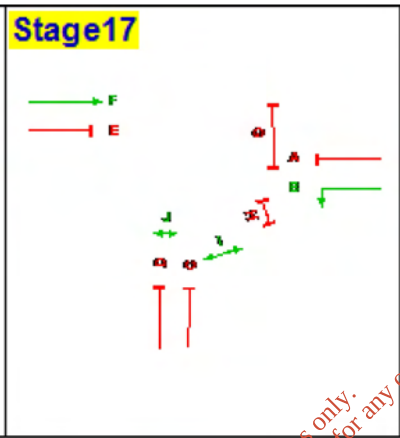

Stage4
Stage5
Stage6
Stage7
Stage8
Stage9
Stage10
Stage11
Stage12











Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	Yes	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set1 - 2016 AM Peak Existing

ODTAB Data (PCU/hr during central 60 min peak period)

		To		
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	283	71
	Arm 2	22	-	4
	Arm 3	371	173	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - R135 North	1	B	212	254	311	311	254	212
1 - R135 North	2	A	53	63	78	78	63	53
2 - Elm Road	1	D	3	3	4	4	3	3
2 - Elm Road	2	C	17	20	24	24	20	17
3 - R135 South	1	F	277	331	406	406	331	277
3 - R135 South	2	E	131	156	191	191	156	131
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	80	20	-
2 - Elm Road	15	-	85
3 - R135 South	-	68	32

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	275.50	3.46	3.46	143.4

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	212.59	3.48	3.48	143.20

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
4	5.0	42.0	47.0
6	54.0	39.0	93.0
14	101.0	7.0	108.0
8	115.0	5.0	0.0

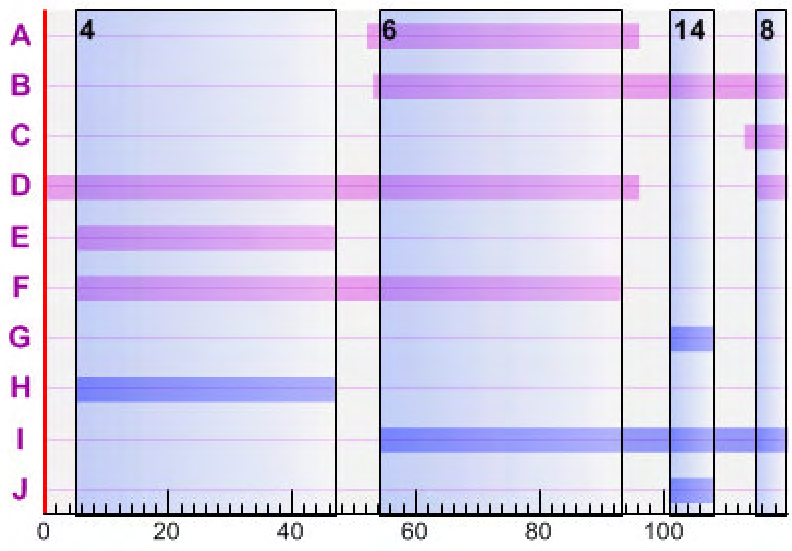
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	52	44.0	96						
B	53	67.0	0						
C	113	7.0	0						
D	115	101.0	96						
E	5	42.0	47						
F	5	88.0	93						
G	101	7.0	108						
H	5	42.0	47						
I	54	66.0	0						
J	101	7.0	108						

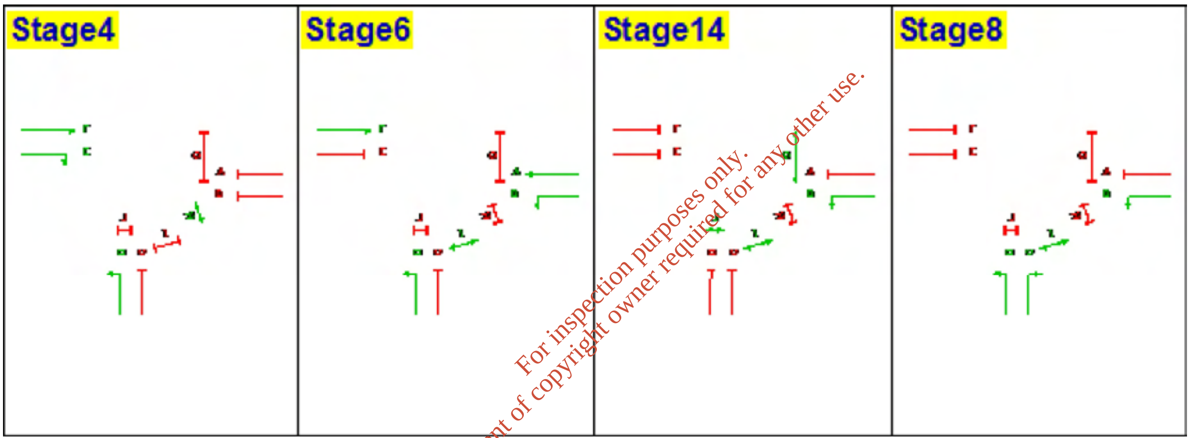
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	6	14	3.00	
Losing	D	6	14	3.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	259	B	68.50	13.42	0.97	23.44	284.02	0.05	3.96	3.91	42.70
1	**2**	65	A	45.50	24.13	0.44	8.14	9999.00	0.00	1.37	1.36	7.80
2	**1**	3	D	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.90
2	**2**	20	C	8.50	55.54	0.31	15.09	496.38	0.02	0.64	0.62	0.60
3	**1**	338	F	89.50	5.17	0.49	23.06	290.24	0.05	3.12	3.07	74.90
3	**2**	159	E	43.50	27.83	1.23	23.97	275.50	0.05	3.54	3.49	16.50
Ped	**1**	1	J	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	I	67.50	11.49	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	43.50	24.39	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	212	2	68.50	12.92	0.76	19.18	369.16	0.03	3.20	3.17	6.00
1	**2**	53	1	45.50	23.93	0.35	6.64	9999.00	0.00	1.11	1.11	1.10
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	17	3	8.50	54.88	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	277	6	89.50	4.89	0.38	18.90	376.18	0.03	2.52	2.48	10.40
3	**2**	131	5	43.50	27.14	0.99	19.75	355.75	0.03	2.89	2.86	2.30
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	67.50	11.49	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	43.50	24.39	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	254	2	68.50	13.36	0.94	22.98	291.58	0.05	3.88	3.83	7.00
1	**2**	63	1	45.50	24.09	0.42	7.89	9999.00	0.00	1.32	1.32	1.30
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	20	3	8.50	55.53	0.31	15.09	496.38	0.02	0.64	0.62	0.10
3	**1**	331	6	89.50	5.13	0.47	22.59	298.49	0.05	3.05	3.00	12.30
3	**2**	156	5	43.50	27.76	1.20	23.52	282.72	0.05	3.47	3.42	2.70
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	67.50	11.49	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	43.50	24.39	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	311	2	68.50	14.01	1.21	28.14	219.81	0.08	4.82	4.74	8.30
1	**2**	78	1	45.50	24.34	0.53	9.77	820.94	0.01	1.65	1.64	1.60
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	24	3	8.50	56.42	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	406	6	89.50	5.51	0.62	27.70	224.88	0.08	3.82	3.74	14.70
3	**2**	191	5	43.50	28.67	1.52	28.79	212.59	0.08	4.30	4.22	3.20
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	67.50	11.49	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	43.50	24.39	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	311	2	68.50	14.01	1.21	28.14	219.81	0.08	4.82	4.74	8.30
1	**2**	78	1	45.50	24.34	0.53	9.77	820.94	0.01	1.65	1.64	1.60
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	24	3	8.50	56.42	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	406	6	89.50	5.51	0.62	27.70	224.88	0.08	3.82	3.74	14.70
3	**2**	191	5	43.50	28.67	1.52	28.79	212.59	0.08	4.30	4.22	3.20
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	67.50	11.49	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	43.50	24.39	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	254	2	68.50	13.36	0.94	22.98	291.58	0.05	3.88	3.83	7.00
1	**2**	63	1	45.50	24.10	0.42	7.89	9999.00	0.00	1.32	1.32	1.30
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	20	3	8.50	55.55	0.31	15.09	496.38	0.02	0.64	0.62	0.10
3	**1**	331	6	89.50	5.13	0.47	22.59	298.49	0.05	3.05	3.00	12.30
3	**2**	156	5	43.50	27.76	1.20	23.52	282.72	0.05	3.47	3.42	2.70
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	67.50	11.49	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	43.50	24.39	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	212	2	68.50	12.92	0.76	19.18	369.16	0.03	3.20	3.17	6.00
1	**2**	53	1	45.50	23.93	0.35	6.64	9999.00	0.00	1.11	1.11	1.10
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	17	3	8.50	54.93	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	277	6	89.50	4.89	0.38	18.90	376.18	0.03	2.52	2.48	10.40
3	**2**	131	5	43.50	27.15	0.99	19.75	355.75	0.03	2.89	2.86	2.30
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	67.50	11.49	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	43.50	24.39	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 05/08/2016 16:46:24

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

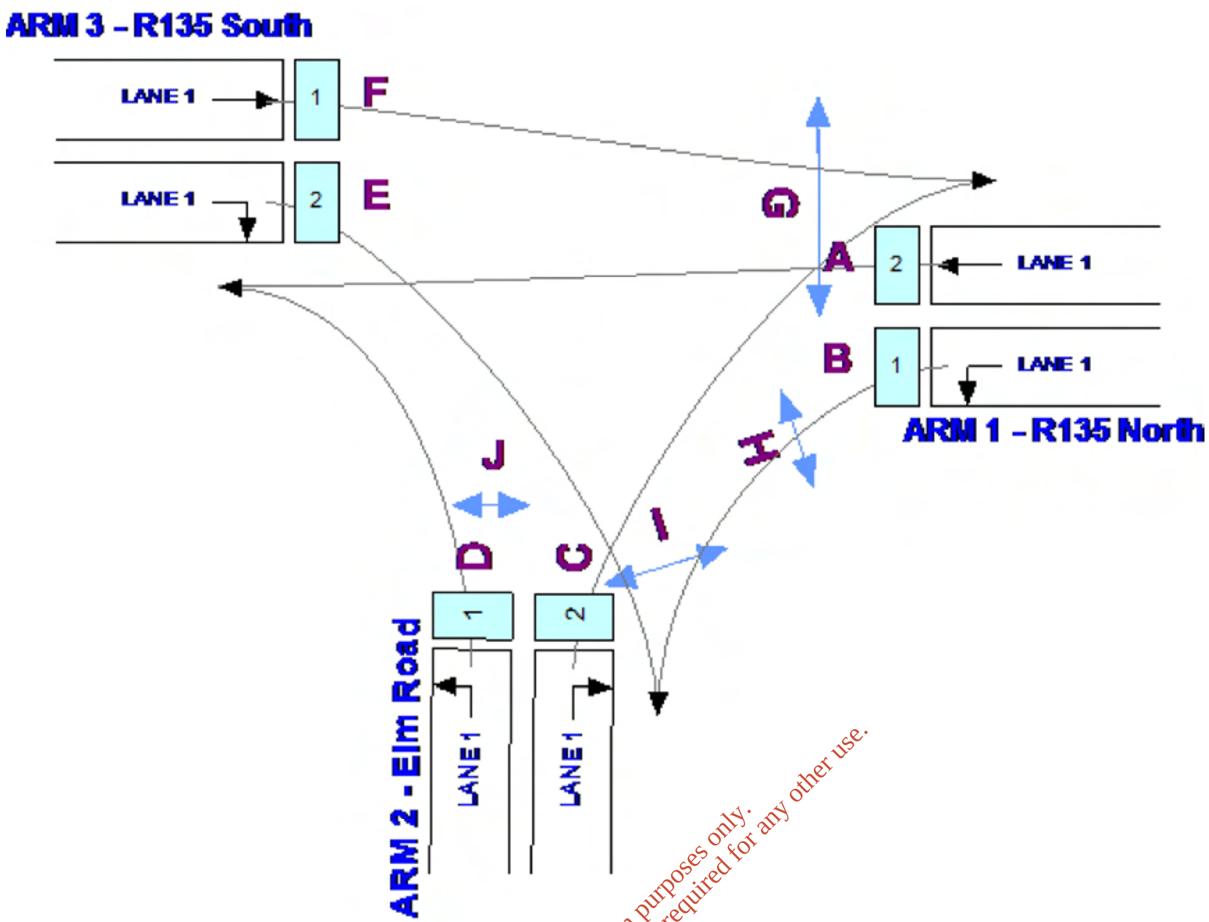
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

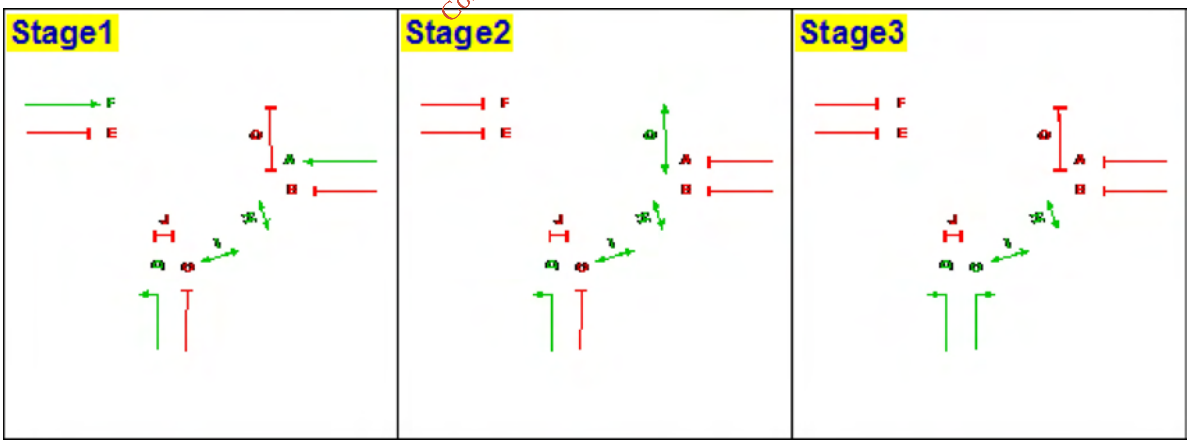
Intergreen Matrix

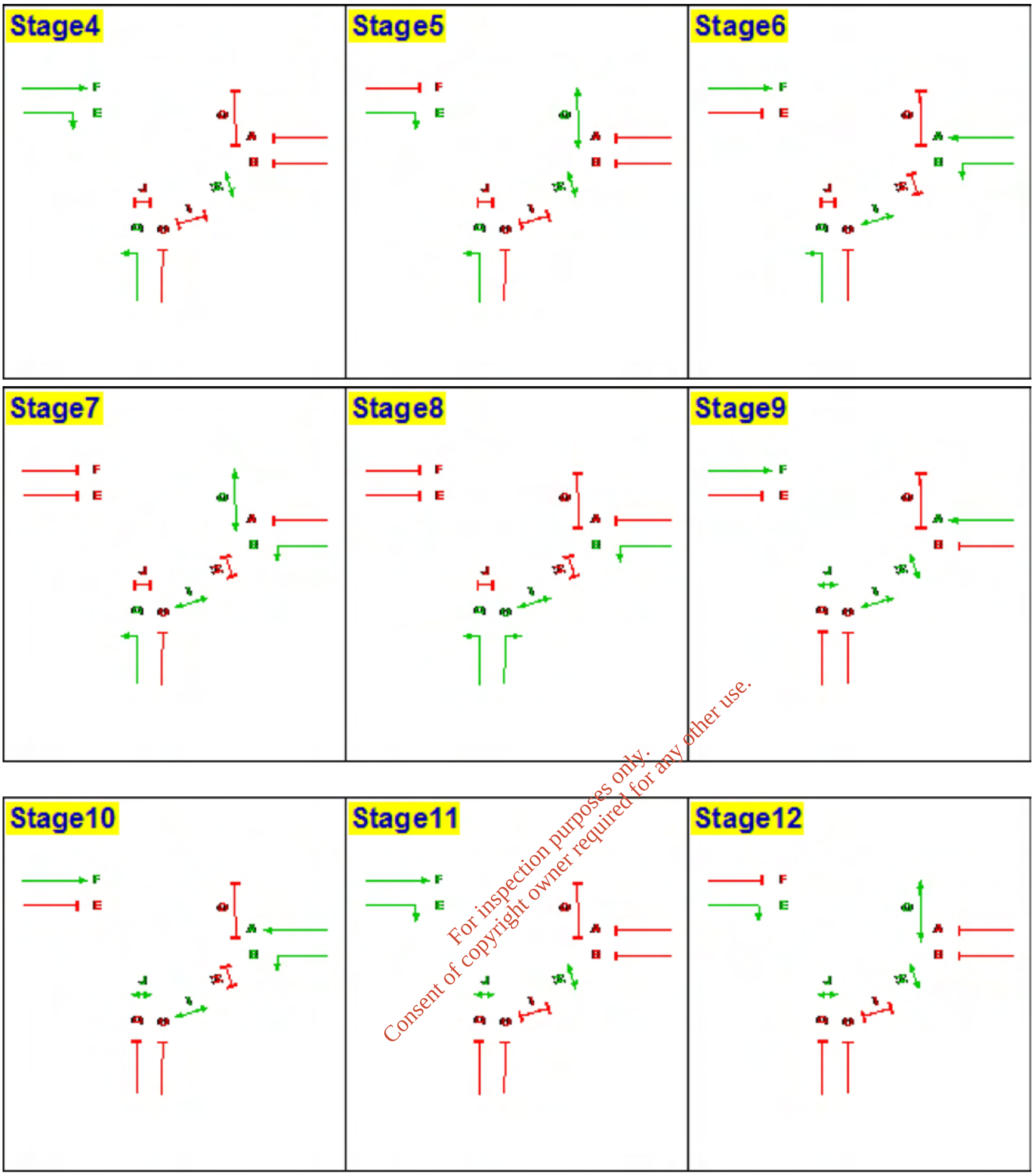
		To									
		A	B	C	D	E	F	G	H	I	J
From	A	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

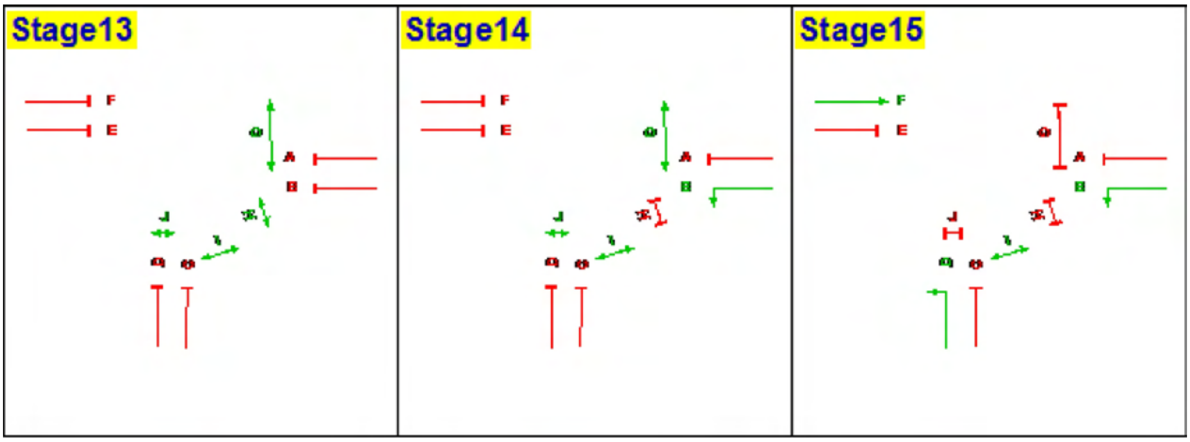
Stages

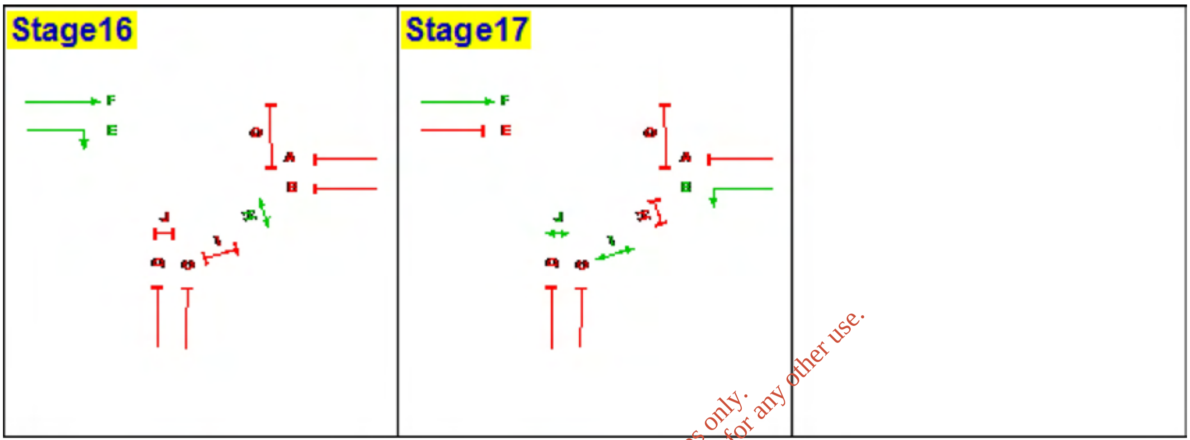
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

Stage Diagrams




Stage4
Stage5
Stage6
Stage7
Stage8
Stage9
Stage10
Stage11
Stage12





Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

Note: *Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	Yes	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set2 - 2017 AM Peak No Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To		
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	285	72
	Arm 2	22	-	4
	Arm 3	374	174	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - R135 North	1	B	214	256	313	313	256	214
1 - R135 North	2	A	54	64	78	78	64	54
2 - Elm Road	1	D	3	3	4	4	3	3
2 - Elm Road	2	C	17	20	24	24	20	17
3 - R135 South	1	F	279	334	409	409	334	279
3 - R135 South	2	E	132	157	192	192	157	132
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	80	20	-
2 - Elm Road	15	-	85
3 - R135 South	-	68	32

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:** Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	275.52	3.50	3.50	143.9

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	213.13	3.53	3.53	143.60

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
4	5.0	43.0	48.0
10	55.0	5.0	60.0
6	67.0	26.0	93.0
7	101.0	7.0	108.0
8	113.0	7.0	0.0

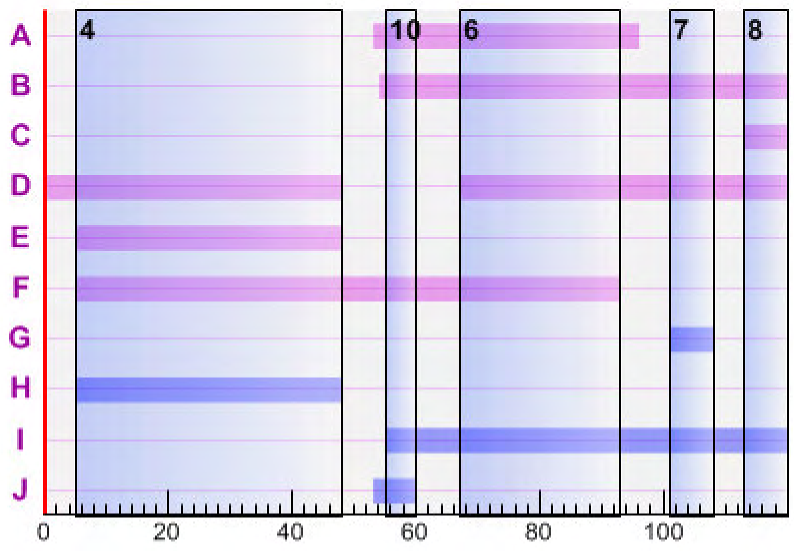
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	53	43.0	96						
B	54	66.0	0						
C	113	7.0	0						
D	67	101.0	48						
E	5	43.0	48						
F	5	88.0	93						
G	101	7.0	108						
H	5	43.0	48						
I	55	65.0	0						
J	53	7.0	60						

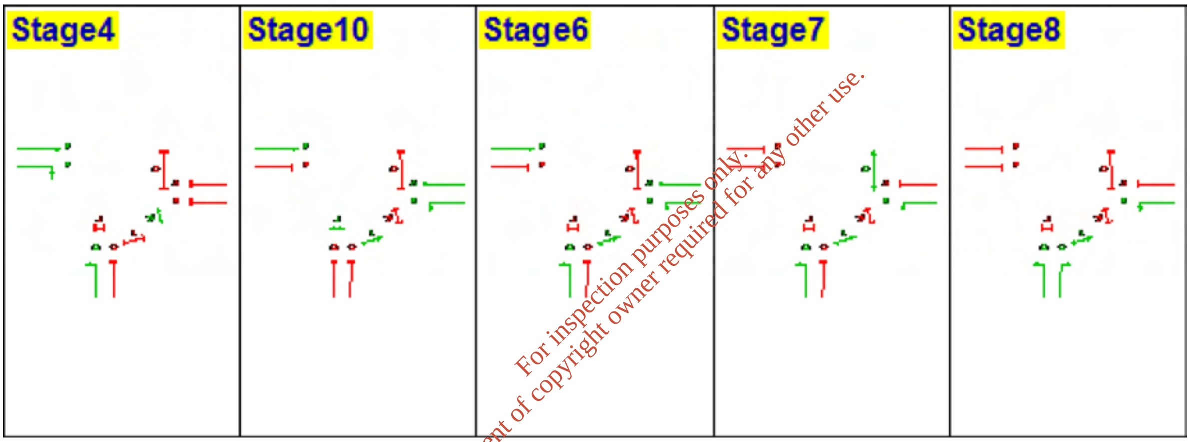
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	6	7	3.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	261	B	67.50	13.96	1.01	23.97	275.52	0.05	4.07	4.02	42.20
1	**2**	65	A	44.50	24.78	0.45	8.33	980.84	0.01	1.39	1.38	7.70
2	**1**	3	D	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.90
2	**2**	20	C	8.50	55.54	0.31	15.09	496.38	0.02	0.64	0.62	0.60
3	**1**	341	F	89.50	5.18	0.49	23.27	286.81	0.05	3.15	3.10	75.50
3	**2**	160	E	44.50	27.11	1.20	23.58	281.73	0.05	3.52	3.47	17.00
Ped	**1**	1	J	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	I	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	214	2	67.50	13.44	0.80	19.65	357.99	0.03	3.29	3.26	5.90
1	2	54	1	44.50	24.60	0.37	6.92	9999.00	0.00	1.15	1.14	1.10
2	1	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	2	17	3	8.50	54.88	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	1	279	6	89.50	4.90	0.38	19.04	372.76	0.03	2.53	2.50	10.50
3	2	132	5	44.50	26.44	0.97	19.45	362.70	0.03	2.88	2.84	2.40
Ped	1	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	2	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	3	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	4	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	256	2	67.50	13.90	0.99	23.51	282.85	0.05	3.98	3.93	6.90
1	2	64	1	44.50	24.77	0.44	8.20	997.72	0.00	1.36	1.36	1.30
2	1	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	2	20	3	8.50	55.53	0.31	15.09	496.38	0.02	0.64	0.62	0.10
3	1	334	6	89.50	5.15	0.48	22.79	294.91	0.05	3.08	3.03	12.40
3	2	157	5	44.50	27.03	1.18	23.14	289.02	0.05	3.45	3.40	2.80
Ped	1	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	2	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	3	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	4	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	1	313	2	67.50	14.58	1.27	28.74	213.13	0.08	4.95	4.87	8.20
1	2	78	1	44.50	25.00	0.54	9.99	800.70	0.01	1.67	1.66	1.50
2	1	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	2	24	3	8.50	56.42	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	1	409	6	89.50	5.52	0.63	27.91	222.50	0.08	3.85	3.77	14.80
3	2	192	5	44.50	27.91	1.49	28.29	218.11	0.08	4.26	4.19	3.30
Ped	1	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	2	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	3	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	4	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	313	2	67.50	14.58	1.27	28.74	213.13	0.08	4.95	4.87	8.20
1	**2**	78	1	44.50	25.00	0.54	9.99	800.70	0.01	1.67	1.66	1.50
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	24	3	8.50	56.42	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	409	6	89.50	5.52	0.63	27.91	222.50	0.08	3.85	3.77	14.80
3	**2**	192	5	44.50	27.92	1.49	28.29	218.11	0.08	4.26	4.19	3.30
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	256	2	67.50	13.91	0.99	23.51	282.85	0.05	3.99	3.93	6.90
1	**2**	64	1	44.50	24.77	0.44	8.20	997.72	0.00	1.36	1.36	1.30
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	20	3	8.50	55.55	0.31	15.09	496.38	0.02	0.64	0.62	0.10
3	**1**	334	6	89.50	5.15	0.48	22.79	294.91	0.05	3.08	3.03	12.40
3	**2**	157	5	44.50	27.04	1.18	23.14	289.02	0.05	3.45	3.40	2.80
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	214	2	67.50	13.45	0.80	19.65	357.99	0.03	3.29	3.26	5.90
1	**2**	54	1	44.50	24.60	0.37	6.92	9999.00	0.00	1.15	1.14	1.10
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	17	3	8.50	54.93	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	279	6	89.50	4.90	0.38	19.04	372.76	0.03	2.53	2.50	10.50
3	**2**	132	5	44.50	26.44	0.97	19.45	362.70	0.03	2.88	2.84	2.40
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

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Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 05/08/2016 16:47:04

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

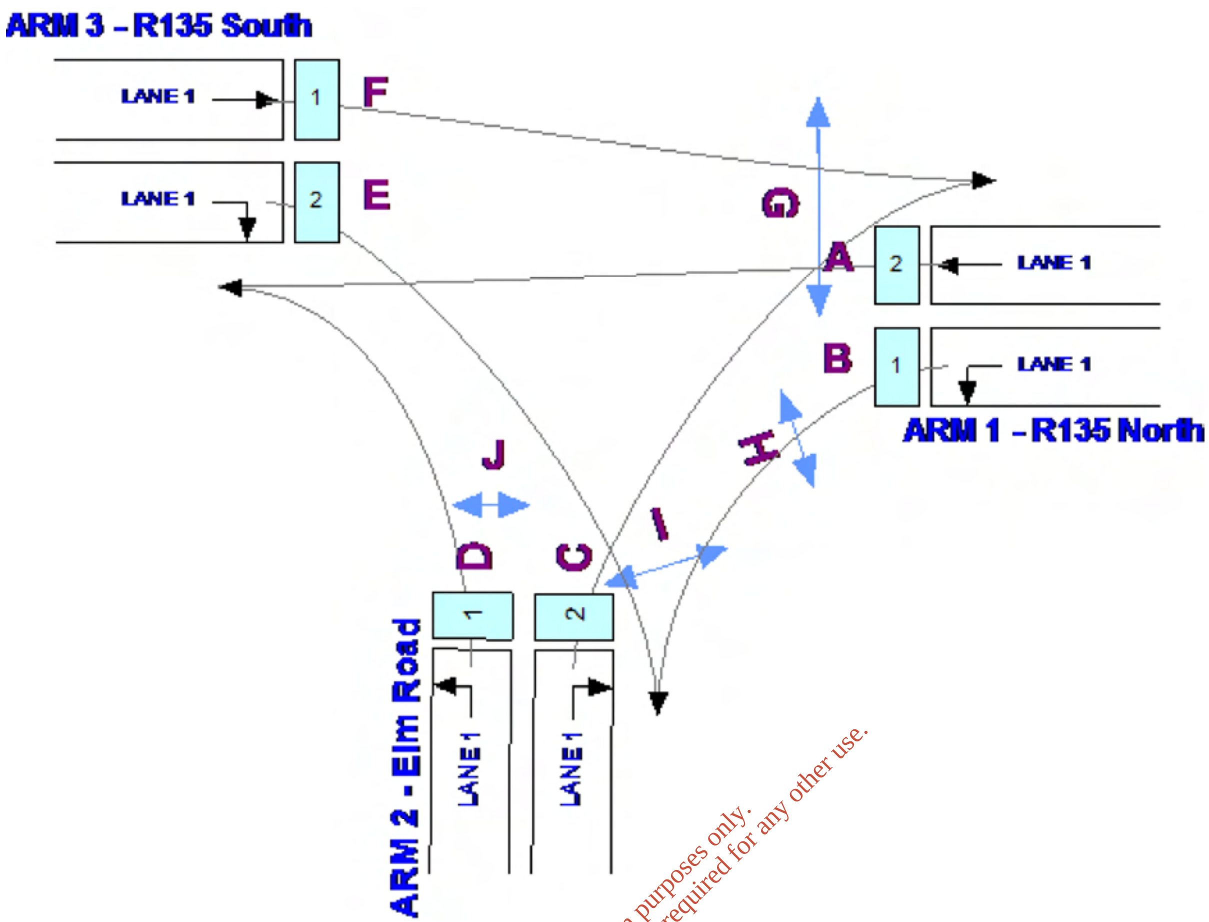
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

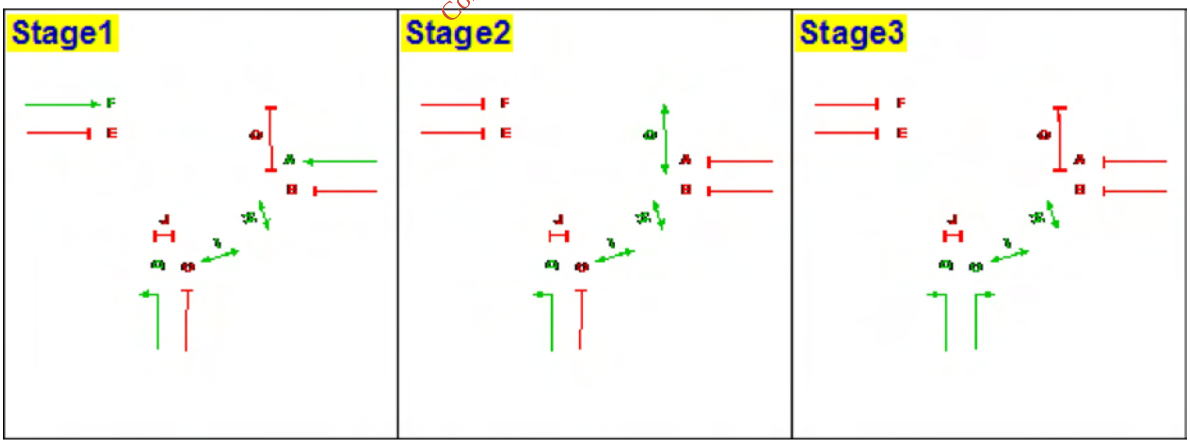
Intergreen Matrix

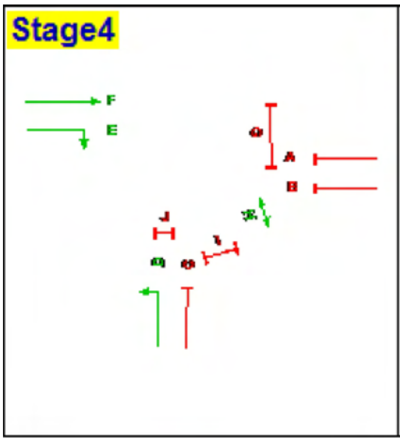
		To									
		A	B	C	D	E	F	G	H	I	J
From	A	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

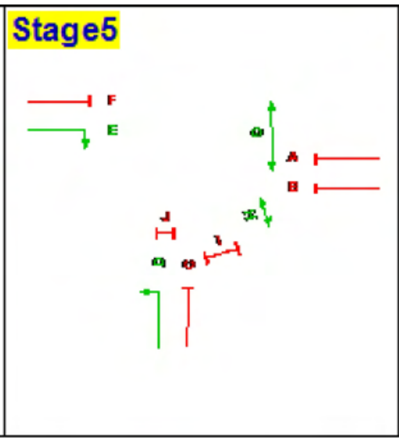
Stages

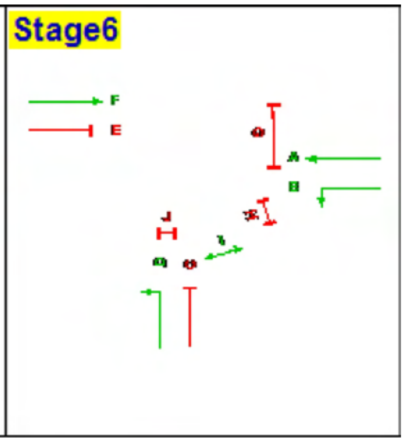
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

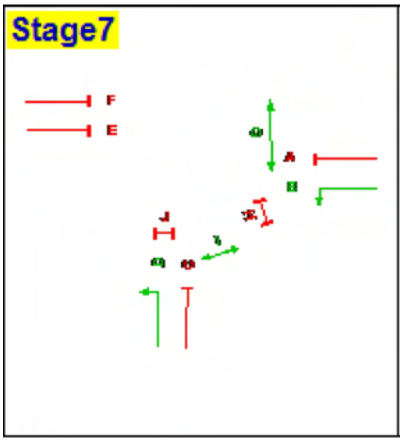
Stage Diagrams

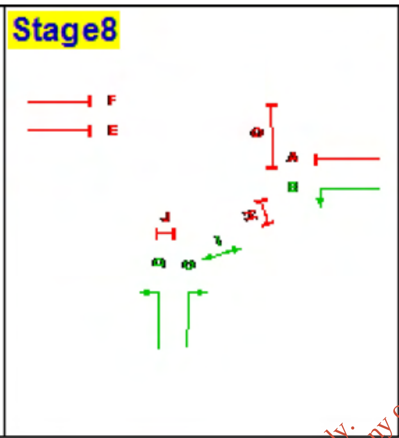


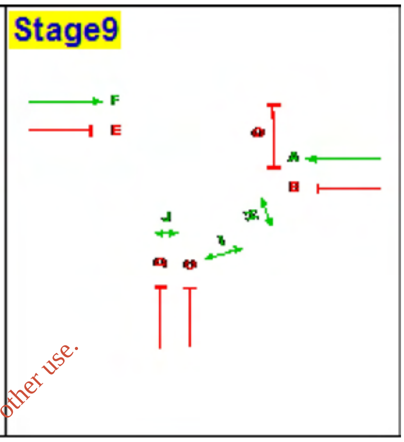

Stage4
F
E
A
B

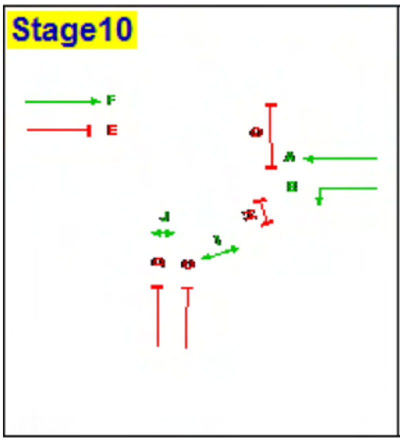

Stage5
F
E
A
B

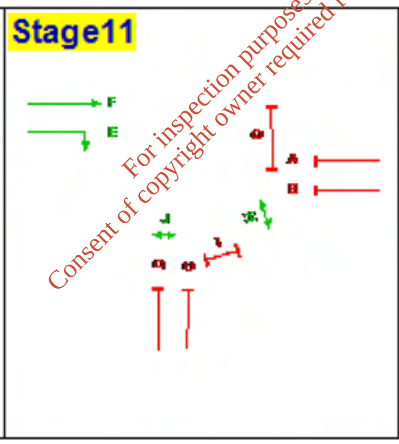

Stage6
F
E
A
B

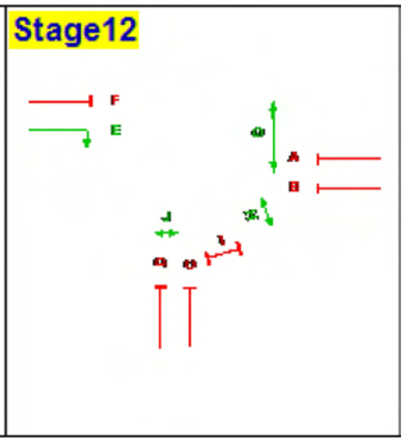

Stage7
F
E
A
B

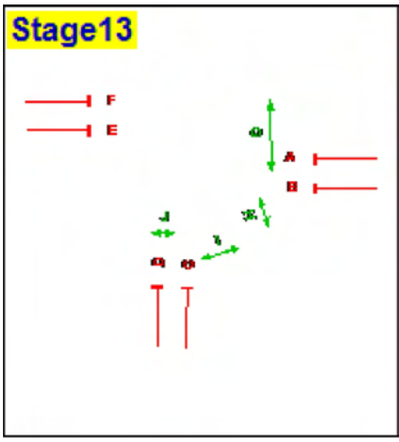

Stage8
F
E
A
B

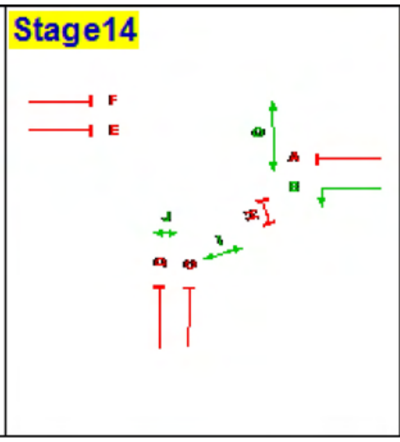

Stage9
F
E
A
B

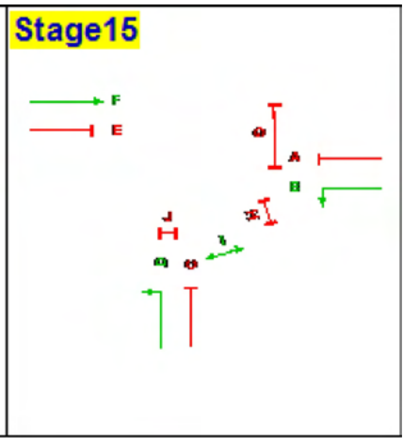

Stage10
F
E
A
B

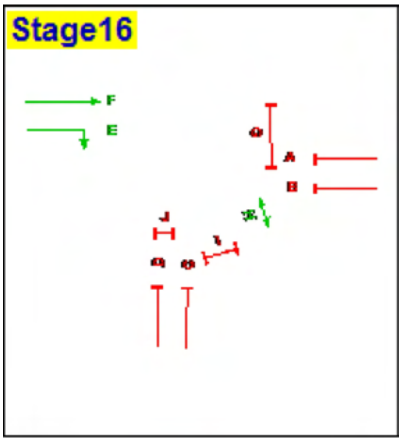

Stage11
F
E
A
B

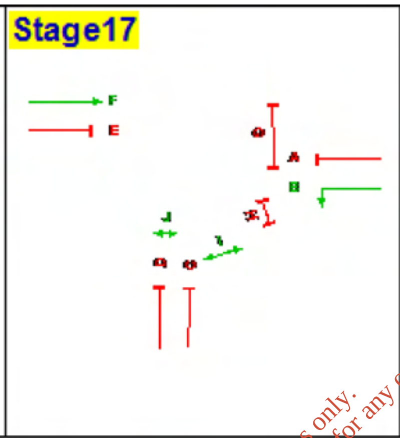

Stage12
F
E
A
B











Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

***Note:** Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	Yes	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set3 - 2017 AM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To		
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	285	78
	Arm 2	22	-	4
	Arm 3	380	180	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - R135 North	1	B	215	257	315	315	257	215
1 - R135 North	2	A	57	68	84	84	68	57
2 - Elm Road	1	D	3	3	4	4	3	3
2 - Elm Road	2	C	17	20	24	24	20	17
3 - R135 South	1	F	286	341	418	418	341	286
3 - R135 South	2	E	134	160	197	197	160	134
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	79	21	-
2 - Elm Road	15	-	85
3 - R135 South	-	68	32

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	272.42	3.59	3.59	146.4

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	210.03	3.60	3.60	145.20

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
4	7.0	29.0	36.0
6	43.0	38.0	81.0
7	89.0	7.0	96.0
8	101.0	7.0	108.0
11	113.0	7.0	0.0

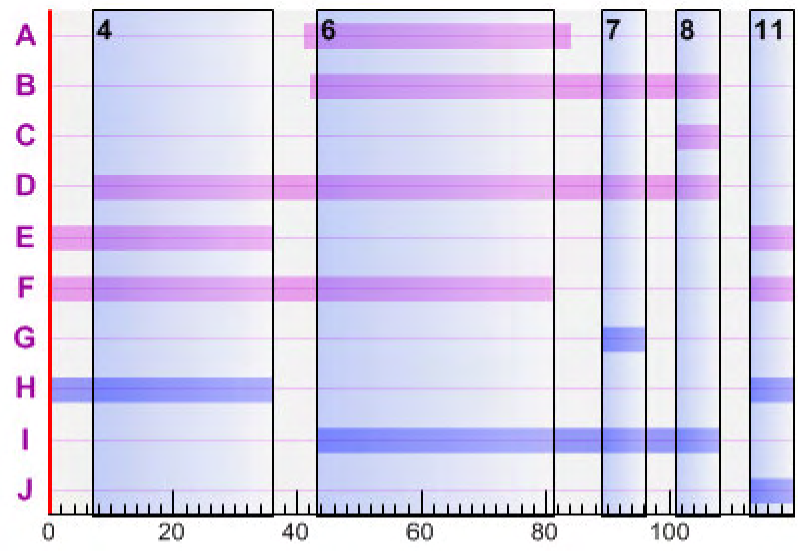
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	41	43.0	84						
B	42	66.0	108						
C	101	7.0	108						
D	7	101.0	108						
E	113	43.0	36						
F	113	88.0	81						
G	89	7.0	96						
H	113	43.0	36						
I	43	65.0	108						
J	113	7.0	0						

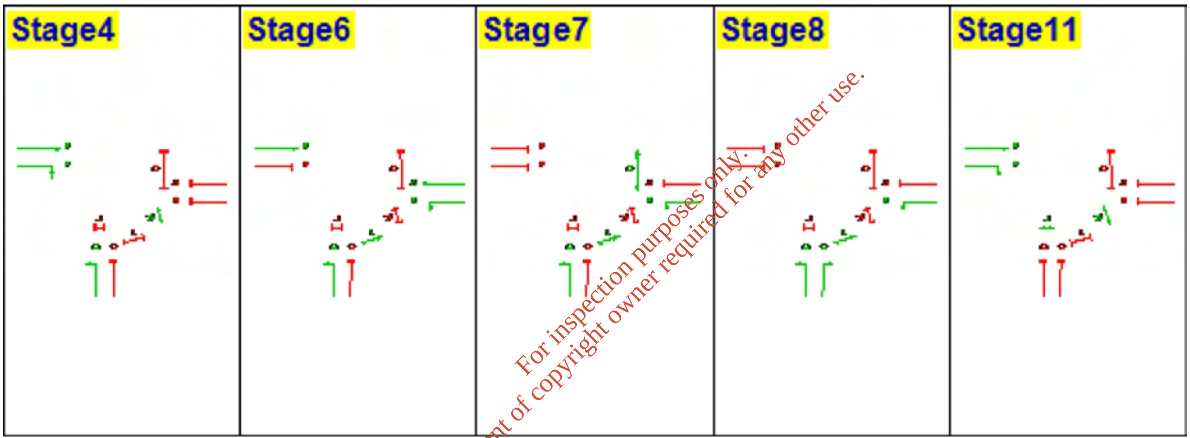
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	6	7	3.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	262	B	67.50	13.97	1.02	24.06	274.08	0.05	4.09	4.03	42.40
1	**2**	70	A	44.50	24.87	0.48	8.97	903.63	0.01	1.49	1.49	8.20
2	**1**	3	D	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.90
2	**2**	20	C	8.50	55.54	0.31	15.09	496.38	0.02	0.64	0.62	0.60
3	**1**	348	F	89.50	5.21	0.50	23.75	279.02	0.05	3.22	3.17	77.00
3	**2**	164	E	44.50	27.20	1.24	24.17	272.42	0.05	3.61	3.56	17.30
Ped	**1**	1	J	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	I	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	215	2	67.50	13.45	0.80	19.74	355.86	0.03	3.31	3.28	5.90
1	**2**	57	1	44.50	24.65	0.39	7.30	9999.00	0.00	1.21	1.21	1.10
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	17	3	8.50	54.88	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	286	6	89.50	4.93	0.39	19.51	361.19	0.03	2.60	2.57	10.70
3	**2**	134	5	44.50	26.49	0.99	19.75	355.79	0.03	2.92	2.89	2.40
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	257	2	67.50	13.92	0.99	23.60	281.36	0.05	4.00	3.95	6.90
1	**2**	68	1	44.50	24.83	0.47	8.71	933.15	0.01	1.45	1.45	1.30
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	20	3	8.50	55.53	0.31	15.09	496.38	0.02	0.64	0.62	0.10
3	**1**	341	6	89.50	5.18	0.49	23.27	286.81	0.05	3.15	3.10	12.60
3	**2**	160	5	44.50	27.10	1.20	23.58	281.73	0.05	3.52	3.47	2.80
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	315	2	67.50	14.60	1.28	28.93	211.14	0.08	4.99	4.90	8.20
1	**2**	84	1	44.50	25.10	0.59	10.76	736.36	0.01	1.80	1.79	1.60
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	24	3	8.50	56.42	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	418	6	89.50	5.57	0.65	28.52	215.55	0.08	3.95	3.86	15.10
3	**2**	197	5	44.50	28.04	1.53	29.03	210.03	0.08	4.38	4.30	3.30
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	315	2	67.50	14.60	1.28	28.93	211.14	0.08	4.99	4.90	8.20
1	**2**	84	1	44.50	25.11	0.59	10.76	736.36	0.01	1.80	1.79	1.60
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	24	3	8.50	56.42	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	418	6	89.50	5.57	0.65	28.52	215.55	0.08	3.95	3.86	15.10
3	**2**	197	5	44.50	28.05	1.53	29.03	210.03	0.08	4.38	4.30	3.30
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	257	2	67.50	13.92	0.99	23.60	281.36	0.05	4.00	3.95	6.90
1	**2**	68	1	44.50	24.83	0.47	8.71	933.15	0.01	1.45	1.45	1.30
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	20	3	8.50	55.55	0.31	15.09	496.38	0.02	0.64	0.62	0.10
3	**1**	341	6	89.50	5.18	0.49	23.27	286.81	0.05	3.15	3.10	12.60
3	**2**	160	5	44.50	27.11	1.20	23.58	281.73	0.05	3.52	3.47	2.80
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	215	2	67.50	13.46	0.80	19.74	355.86	0.03	3.31	3.28	5.90
1	**2**	57	1	44.50	24.65	0.39	7.30	9999.00	0.00	1.21	1.21	1.10
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	17	3	8.50	54.93	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	286	6	89.50	4.93	0.39	19.51	361.19	0.03	2.60	2.57	10.70
3	**2**	134	5	44.50	26.49	0.99	19.75	355.79	0.03	2.92	2.89	2.40
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 05/08/2016 16:47:44

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

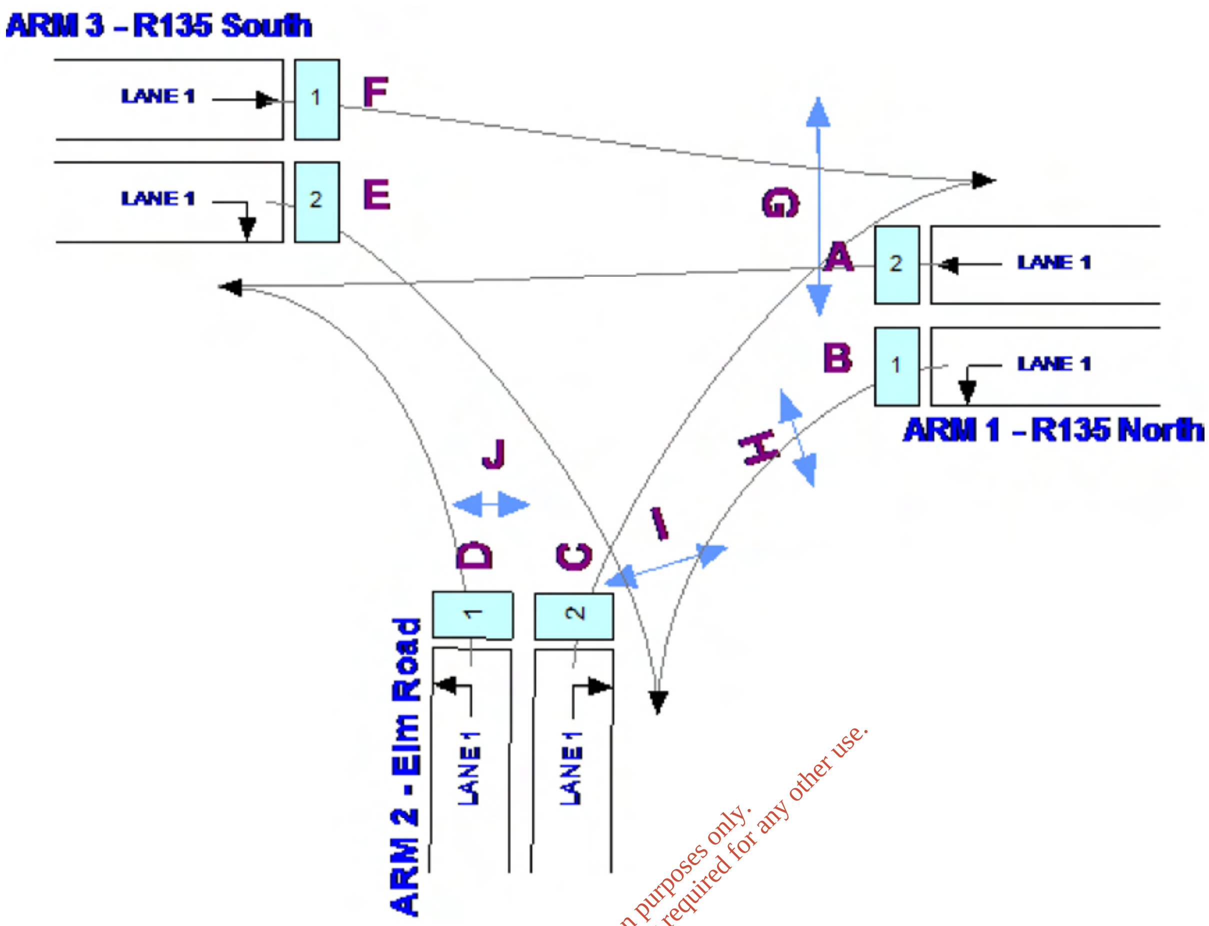
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

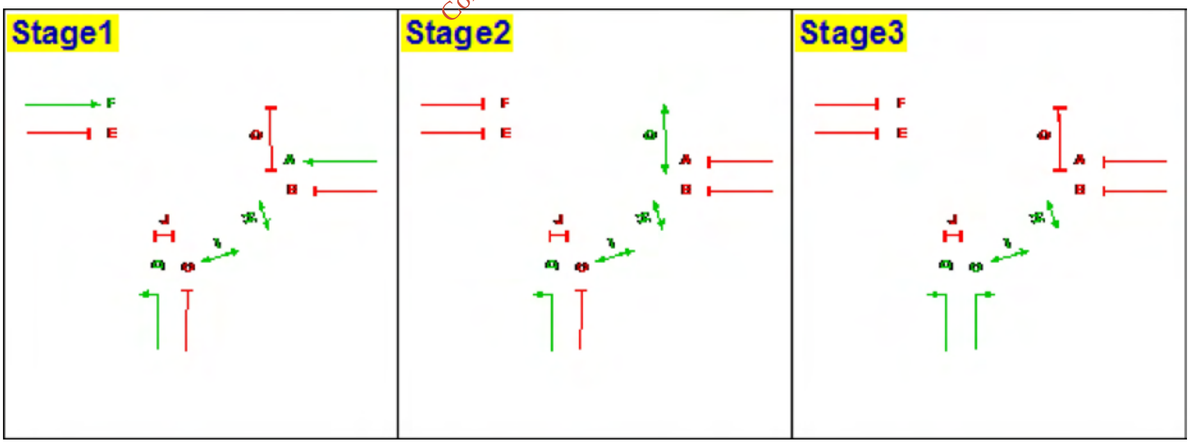
Intergreen Matrix

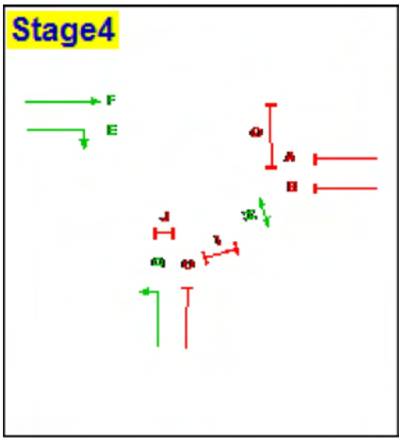
		To									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
From	**A**	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

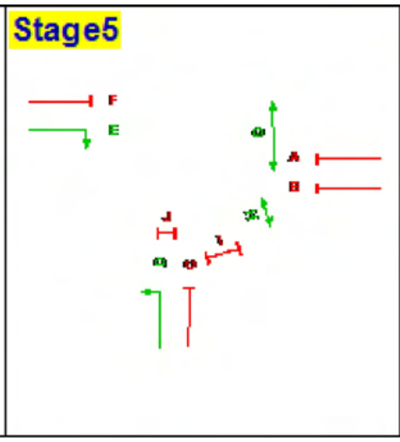
Stages

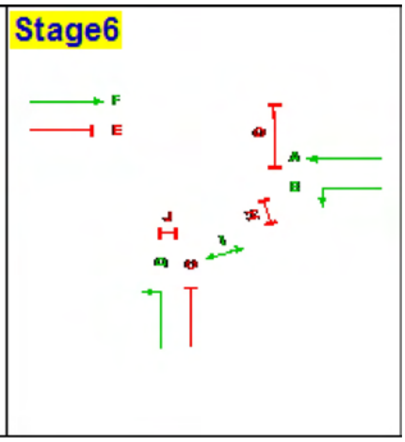
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

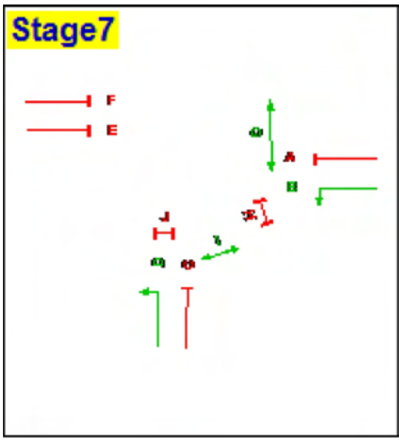
Stage Diagrams

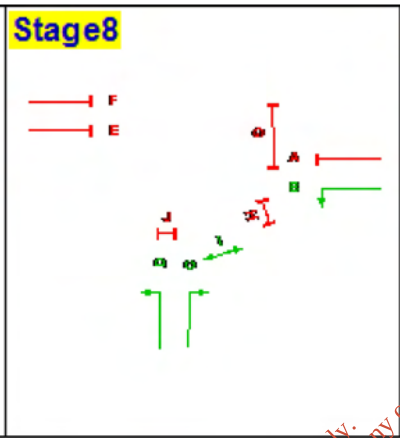


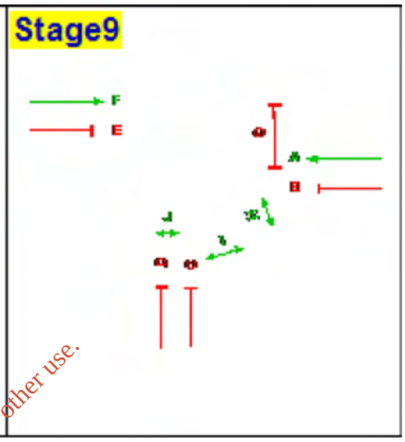

Stage4

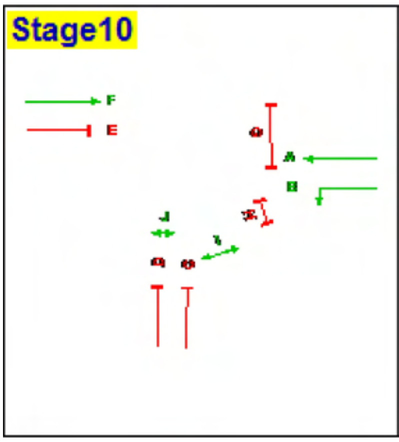

Stage5

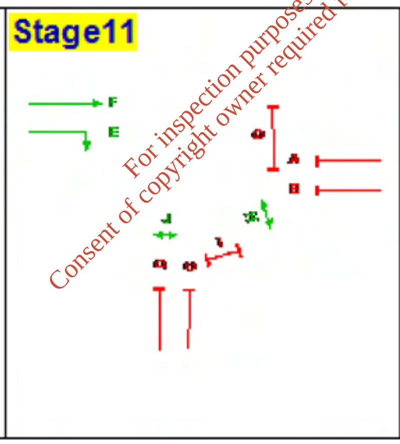

Stage6

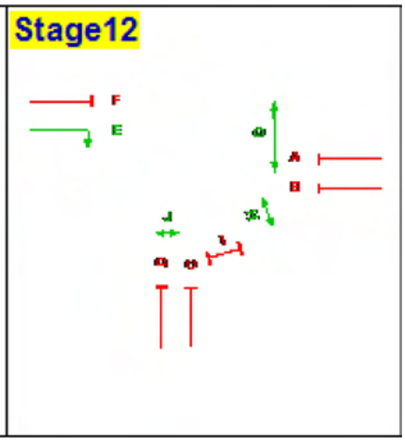

Stage7

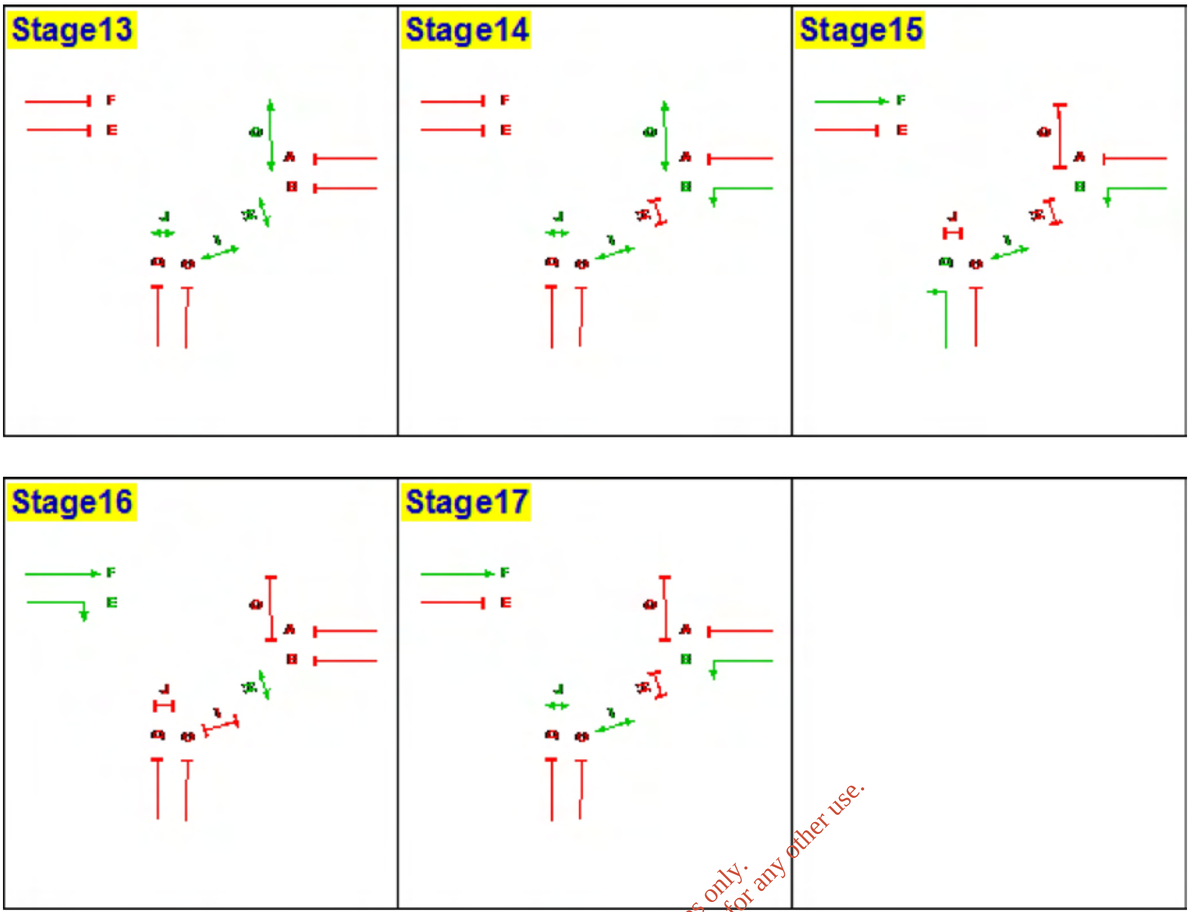

Stage8


Stage9


Stage10


Stage11


Stage12



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

***Note:**Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	Yes	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set4 - 2023 AM Peak No Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To		
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	297	75
	Arm 2	23	-	4
	Arm 3	390	182	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - R135 North	1	B	223	267	326	326	267	223
1 - R135 North	2	A	56	67	82	82	67	56
2 - Elm Road	1	D	3	4	4	4	4	3
2 - Elm Road	2	C	17	21	25	25	21	17
3 - R135 South	1	F	292	348	427	427	348	292
3 - R135 South	2	E	137	164	201	201	164	137
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	80	20	-
2 - Elm Road	15	-	85
3 - R135 South	-	68	32

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	260.33	3.73	3.73	148.6

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	200.64	3.74	3.74	148.00

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
8	7.0	7.0	14.0
11	19.0	43.0	62.0
10	69.0	38.0	107.0
14	115.0	5.0	0.0

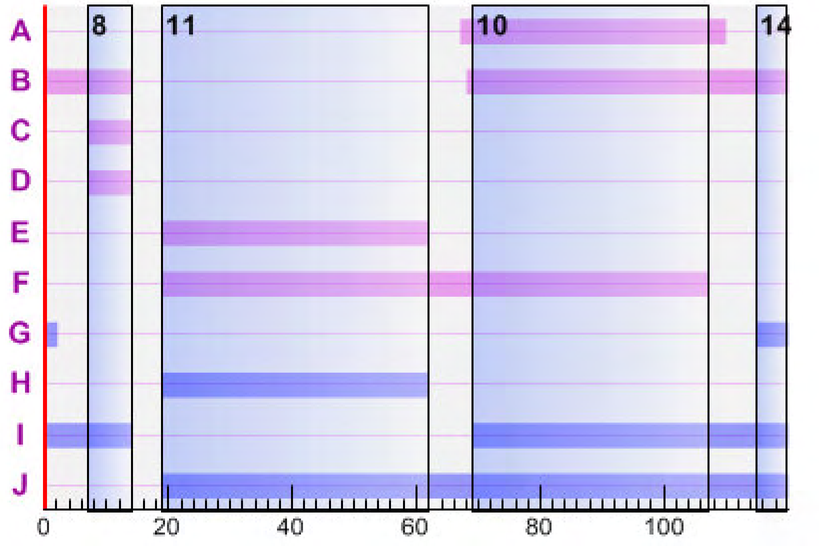
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	67	43.0	110						
B	68	66.0	14						
C	7	7.0	14						
D	7	7.0	14						
E	19	43.0	62						
F	19	88.0	107						
G	115	7.0	2						
H	19	43.0	62						
I	69	65.0	14						
J	19	101.0	0						

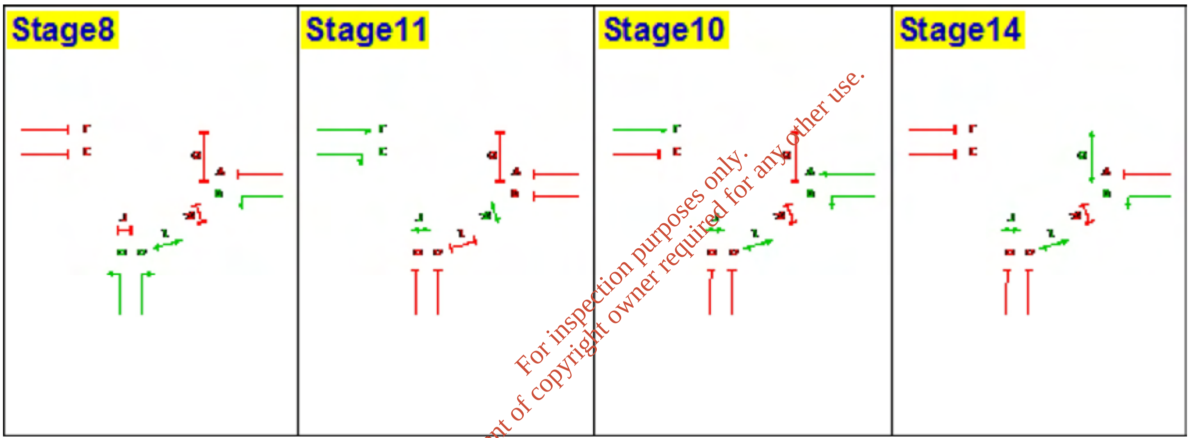
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	10	14	3.00	
Losing	G	14	8	2.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	272	B	67.50	14.09	1.06	24.98	260.33	0.06	4.25	4.19	43.70
1	**2**	68	A	44.50	24.83	0.47	8.71	933.15	0.01	1.45	1.45	8.10
2	**1**	4	D	8.50	52.56	0.06	3.23	9999.00	0.00	0.12	0.12	0.10
2	**2**	21	C	8.50	55.76	0.33	15.85	467.98	0.02	0.67	0.65	0.60
3	**1**	356	F	89.50	5.25	0.52	24.29	270.51	0.06	3.30	3.25	78.50
3	**2**	167	E	44.50	27.28	1.27	24.61	265.73	0.05	3.68	3.62	17.60
Ped	**1**	1	J	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	I	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	223	2	67.50	13.54	0.84	20.48	339.51	0.04	3.44	3.40	6.10
1	**2**	56	1	44.50	24.64	0.38	7.17	9999.00	0.00	1.19	1.19	1.10
2	**1**	3	4	8.50	52.37	0.04	2.42	9999.00	0.00	0.09	0.09	0.00
2	**2**	17	3	8.50	54.88	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	292	6	89.50	4.96	0.40	19.92	351.71	0.03	2.66	2.63	10.90
3	**2**	137	5	44.50	26.55	1.01	20.19	345.81	0.03	2.99	2.95	2.50
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	267	2	67.50	14.03	1.04	24.52	267.08	0.06	4.17	4.11	7.20
1	**2**	67	1	44.50	24.82	0.46	8.58	948.57	0.01	1.43	1.42	1.30
2	**1**	4	4	8.50	52.56	0.06	3.23	9999.00	0.00	0.12	0.12	0.00
2	**2**	21	3	8.50	55.74	0.33	15.85	467.98	0.02	0.67	0.65	0.10
3	**1**	348	6	89.50	5.21	0.50	23.75	279.02	0.05	3.22	3.17	12.80
3	**2**	164	5	44.50	27.20	1.24	24.17	272.42	0.05	3.61	3.56	2.90
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	326	2	67.50	14.74	1.33	29.94	200.64	0.09	5.18	5.09	8.50
1	**2**	82	1	44.50	25.07	0.57	10.50	756.76	0.01	1.76	1.75	1.60
2	**1**	4	4	8.50	52.56	0.06	3.23	9999.00	0.00	0.12	0.12	0.00
2	**2**	25	3	8.50	56.64	0.39	18.86	377.11	0.03	0.81	0.78	0.10
3	**1**	427	6	89.50	5.62	0.67	29.14	208.90	0.09	4.04	3.96	15.40
3	**2**	201	5	44.50	28.15	1.57	29.62	203.86	0.09	4.48	4.39	3.40
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	326	2	67.50	14.74	1.33	29.94	200.64	0.09	5.18	5.09	8.50
1	**2**	82	1	44.50	25.07	0.57	10.50	756.76	0.01	1.76	1.75	1.60
2	**1**	4	4	8.50	52.56	0.06	3.23	9999.00	0.00	0.12	0.12	0.00
2	**2**	25	3	8.50	56.67	0.39	18.86	377.11	0.03	0.81	0.78	0.10
3	**1**	427	6	89.50	5.62	0.67	29.14	208.90	0.09	4.04	3.96	15.40
3	**2**	201	5	44.50	28.15	1.57	29.62	203.86	0.09	4.48	4.39	3.40
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	267	2	67.50	14.03	1.04	24.52	267.08	0.06	4.17	4.11	7.20
1	**2**	67	1	44.50	24.82	0.46	8.58	948.57	0.01	1.43	1.42	1.30
2	**1**	4	4	8.50	52.56	0.06	3.23	9999.00	0.00	0.12	0.12	0.00
2	**2**	21	3	8.50	55.79	0.33	15.85	467.98	0.02	0.67	0.65	0.10
3	**1**	348	6	89.50	5.22	0.50	23.75	279.02	0.05	3.22	3.17	12.80
3	**2**	164	5	44.50	27.21	1.24	24.17	272.42	0.05	3.61	3.56	2.90
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	223	2	67.50	13.54	0.84	20.48	339.51	0.04	3.44	3.40	6.10
1	**2**	56	1	44.50	24.64	0.38	7.17	9999.00	0.00	1.19	1.19	1.10
2	**1**	3	4	8.50	52.37	0.04	2.42	9999.00	0.00	0.09	0.09	0.00
2	**2**	17	3	8.50	54.93	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	292	6	89.50	4.96	0.40	19.92	351.71	0.03	2.66	2.63	10.90
3	**2**	137	5	44.50	26.56	1.01	20.19	345.81	0.03	2.99	2.95	2.50
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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Web: www.trlsoftware.co.uk

The user of this computer program for the solution of an engineering problem is in no way relieved of their responsibility for the correctness of the solution

File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 05/08/2016 17:02:10

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

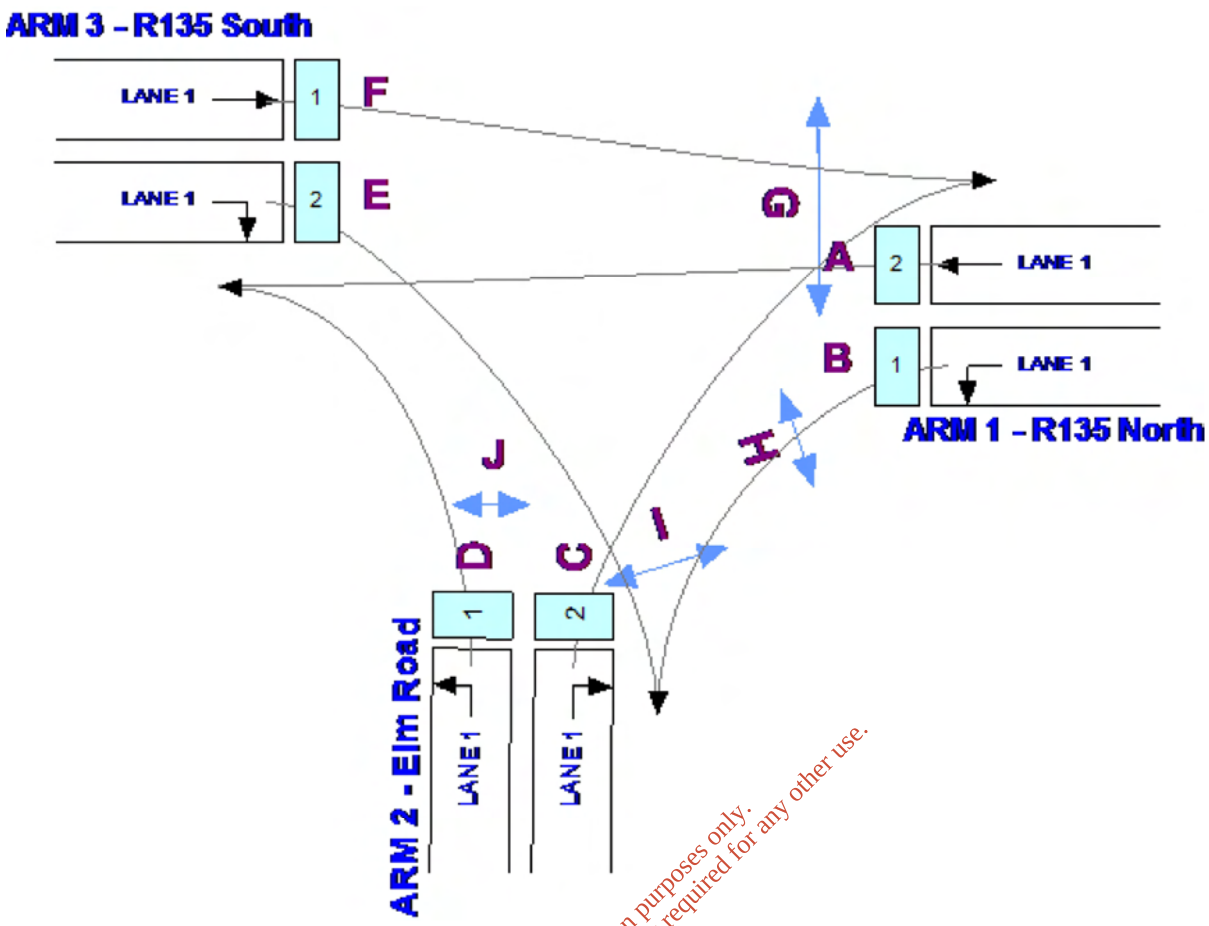
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

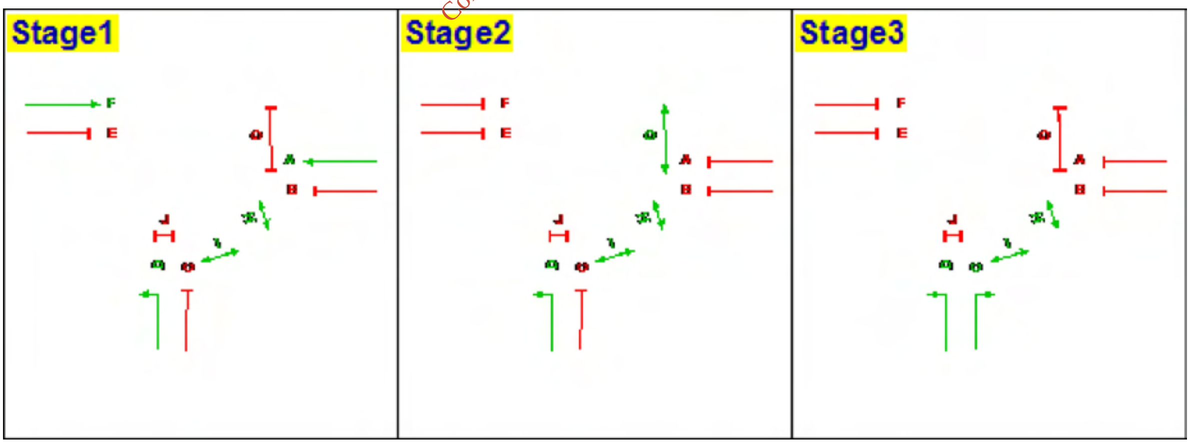
Intergreen Matrix

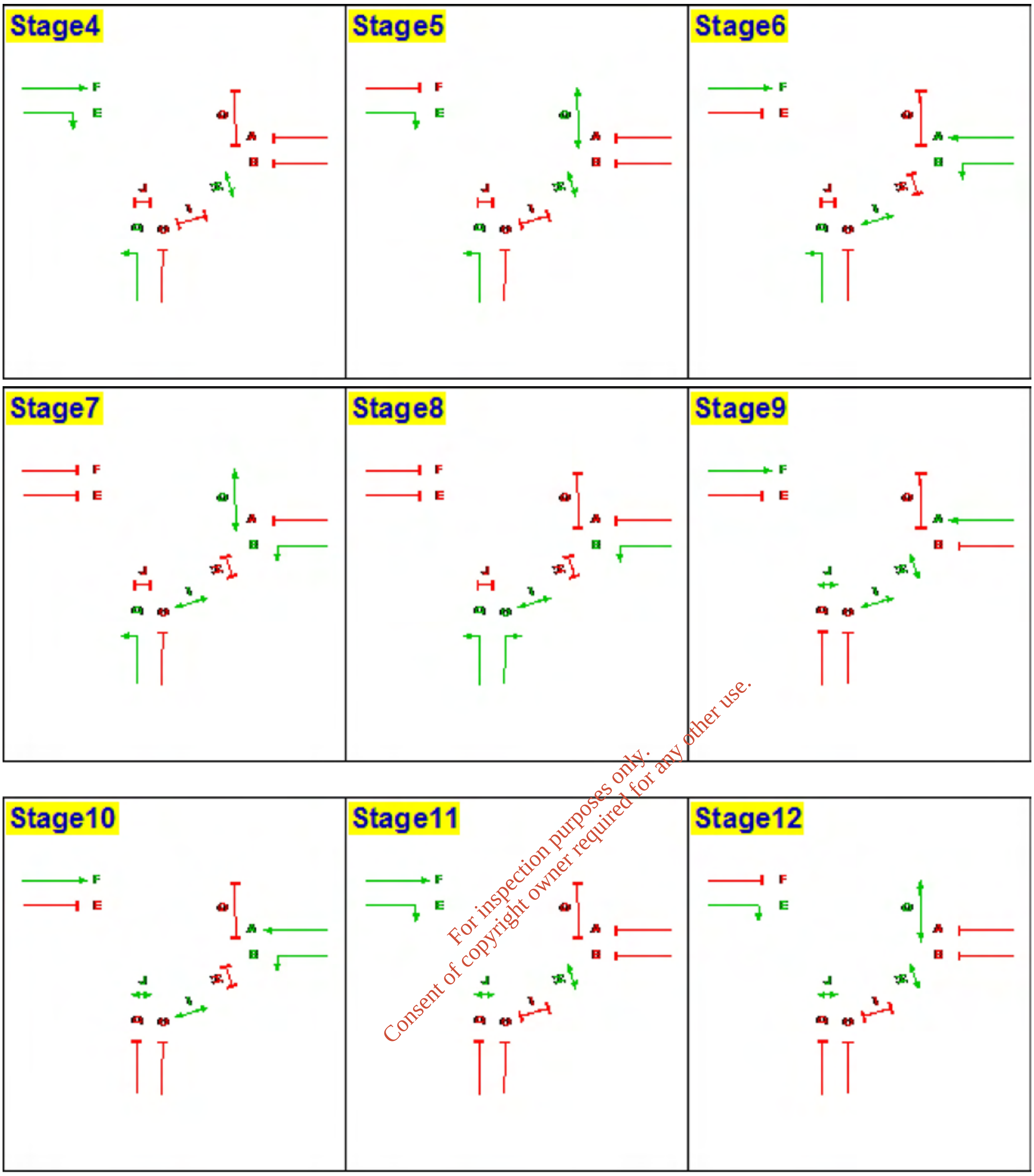
		To									
		A	B	C	D	E	F	G	H	I	J
From	A	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

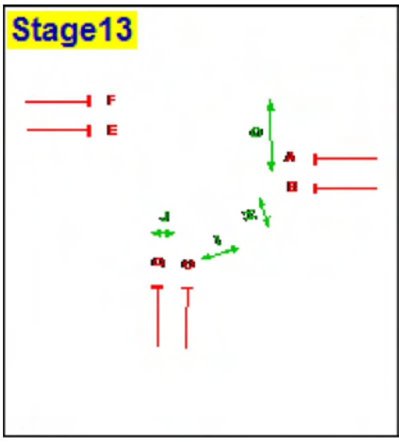
Stages

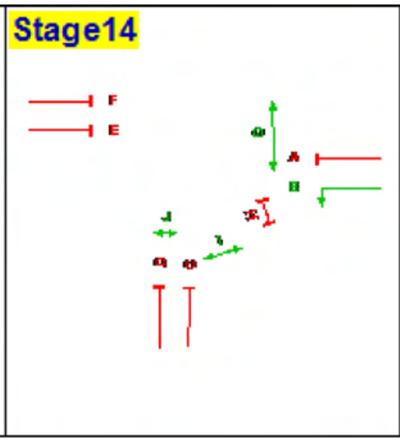
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

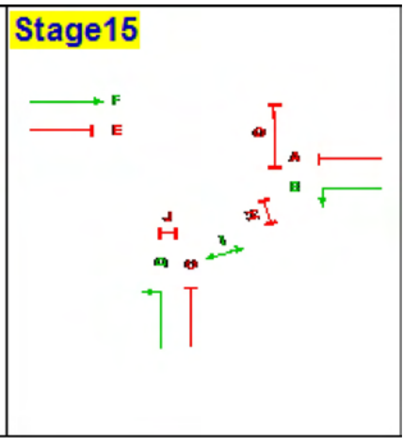
Stage Diagrams

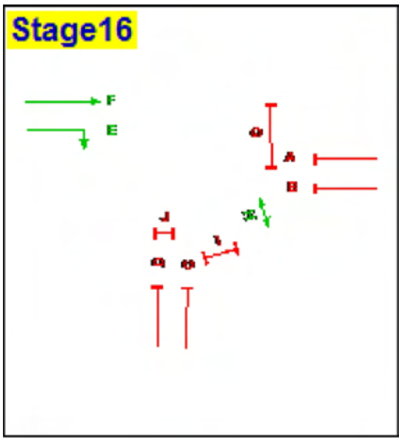


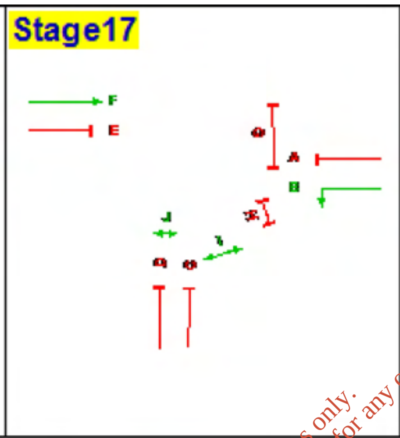

Stage4
Stage5
Stage6
Stage7
Stage8
Stage9
Stage10
Stage11
Stage12











Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

***Note:** Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	Yes	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set5 - 2023 AM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To		
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	297	81
	Arm 2	23	-	4
	Arm 3	396	188	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - R135 North	1	B	224	267	328	328	267	224
1 - R135 North	2	A	60	71	87	87	71	60
2 - Elm Road	1	D	3	4	4	4	4	3
2 - Elm Road	2	C	17	21	25	25	21	17
3 - R135 South	1	F	298	356	436	436	356	298
3 - R135 South	2	E	140	167	205	205	167	140
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	79	21	-
2 - Elm Road	15	-	85
3 - R135 South	-	68	32

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	257.17	3.77	3.77	152.0

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	197.93	3.78	3.78	151.40

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
4	5.0	43.0	48.0
6	55.0	38.0	93.0
14	101.0	7.0	108.0
8	115.0	5.0	0.0

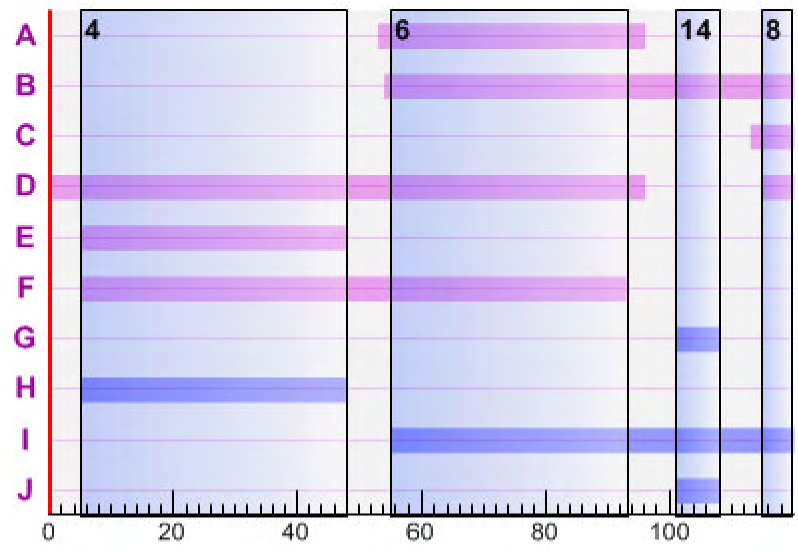
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	53	43.0	96						
B	54	66.0	0						
C	113	7.0	0						
D	115	101.0	96						
E	5	43.0	48						
F	5	88.0	93						
G	101	7.0	108						
H	5	43.0	48						
I	55	65.0	0						
J	101	7.0	108						

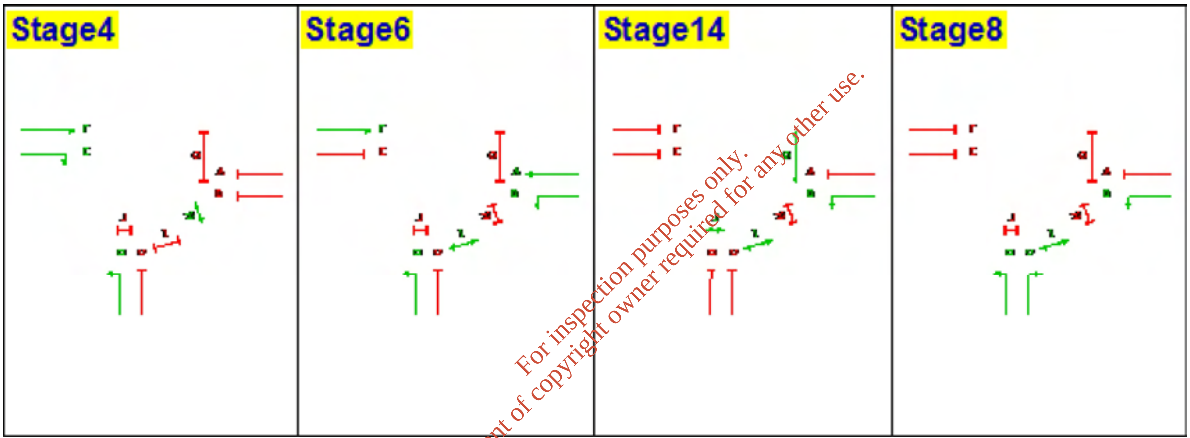
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	6	14	3.00	
Losing	D	6	14	3.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	273	B	67.50	14.10	1.07	25.07	259.01	0.06	4.27	4.21	43.90
1	**2**	73	A	44.50	24.92	0.51	9.35	862.39	0.01	1.56	1.55	8.60
2	**1**	4	D	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	1.00
2	**2**	21	C	8.50	55.76	0.33	15.85	467.98	0.02	0.67	0.65	0.60
3	**1**	363	F	89.50	5.29	0.53	24.77	263.36	0.06	3.37	3.32	80.00
3	**2**	171	E	44.50	27.38	1.30	25.20	257.17	0.06	3.77	3.71	17.90
Ped	**1**	1	J	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	I	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	224	2	67.50	13.55	0.84	20.57	337.54	0.04	3.46	3.42	6.20
1	**2**	60	1	44.50	24.70	0.41	7.69	9999.00	0.00	1.28	1.27	1.20
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	17	3	8.50	54.88	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	298	6	89.50	4.98	0.41	20.33	342.62	0.04	2.72	2.68	11.10
3	**2**	140	5	44.50	26.62	1.04	20.63	336.26	0.04	3.06	3.02	2.50
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	267	2	67.50	14.03	1.04	24.52	267.08	0.06	4.17	4.11	7.20
1	**2**	71	1	44.50	24.88	0.49	9.10	889.50	0.01	1.52	1.51	1.40
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	21	3	8.50	55.74	0.33	15.85	462.98	0.02	0.67	0.65	0.10
3	**1**	356	6	89.50	5.25	0.52	24.29	270.51	0.06	3.30	3.25	13.10
3	**2**	167	5	44.50	27.28	1.27	24.61	265.73	0.05	3.68	3.62	2.90
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	328	2	67.50	14.77	1.35	30.12	198.81	0.09	5.21	5.12	8.50
1	**2**	87	1	44.50	25.16	0.61	11.15	707.52	0.01	1.87	1.86	1.70
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	25	3	8.50	56.64	0.39	18.86	377.11	0.03	0.81	0.78	0.10
3	**1**	436	6	89.50	5.67	0.69	29.75	202.52	0.09	4.14	4.05	15.70
3	**2**	205	5	44.50	28.26	1.61	30.21	197.93	0.09	4.57	4.48	3.40
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	328	2	67.50	14.77	1.35	30.12	198.81	0.09	5.21	5.12	8.50
1	**2**	87	1	44.50	25.16	0.61	11.15	707.52	0.01	1.87	1.86	1.70
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	25	3	8.50	56.67	0.39	18.86	377.11	0.03	0.81	0.78	0.10
3	**1**	436	6	89.50	5.67	0.69	29.75	202.52	0.09	4.14	4.05	15.70
3	**2**	205	5	44.50	28.26	1.61	30.21	197.93	0.09	4.57	4.48	3.40
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	267	2	67.50	14.03	1.04	24.52	267.08	0.06	4.17	4.11	7.20
1	**2**	71	1	44.50	24.88	0.49	9.10	889.50	0.01	1.52	1.51	1.40
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	21	3	8.50	55.79	0.33	15.85	467.98	0.02	0.67	0.65	0.10
3	**1**	356	6	89.50	5.25	0.52	24.29	270.51	0.06	3.30	3.25	13.10
3	**2**	167	5	44.50	27.28	1.27	24.61	265.73	0.06	3.68	3.62	2.90
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	224	2	67.50	13.55	0.84	20.57	337.54	0.04	3.46	3.42	6.20
1	**2**	60	1	44.50	24.70	0.41	7.69	9999.00	0.00	1.28	1.27	1.20
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	17	3	8.50	54.93	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	298	6	89.50	4.98	0.41	20.33	342.62	0.04	2.72	2.68	11.10
3	**2**	140	5	44.50	26.63	1.04	20.63	336.26	0.04	3.06	3.02	2.50
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	66.50	11.93	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	44.50	23.75	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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E-mail: software@trl.co.uk
Web: www.trlsoftware.co.uk

The user of this computer program for the solution of an engineering problem is in no way relieved of their responsibility for the correctness of the solution

File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 04/08/2016 10:38:26

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

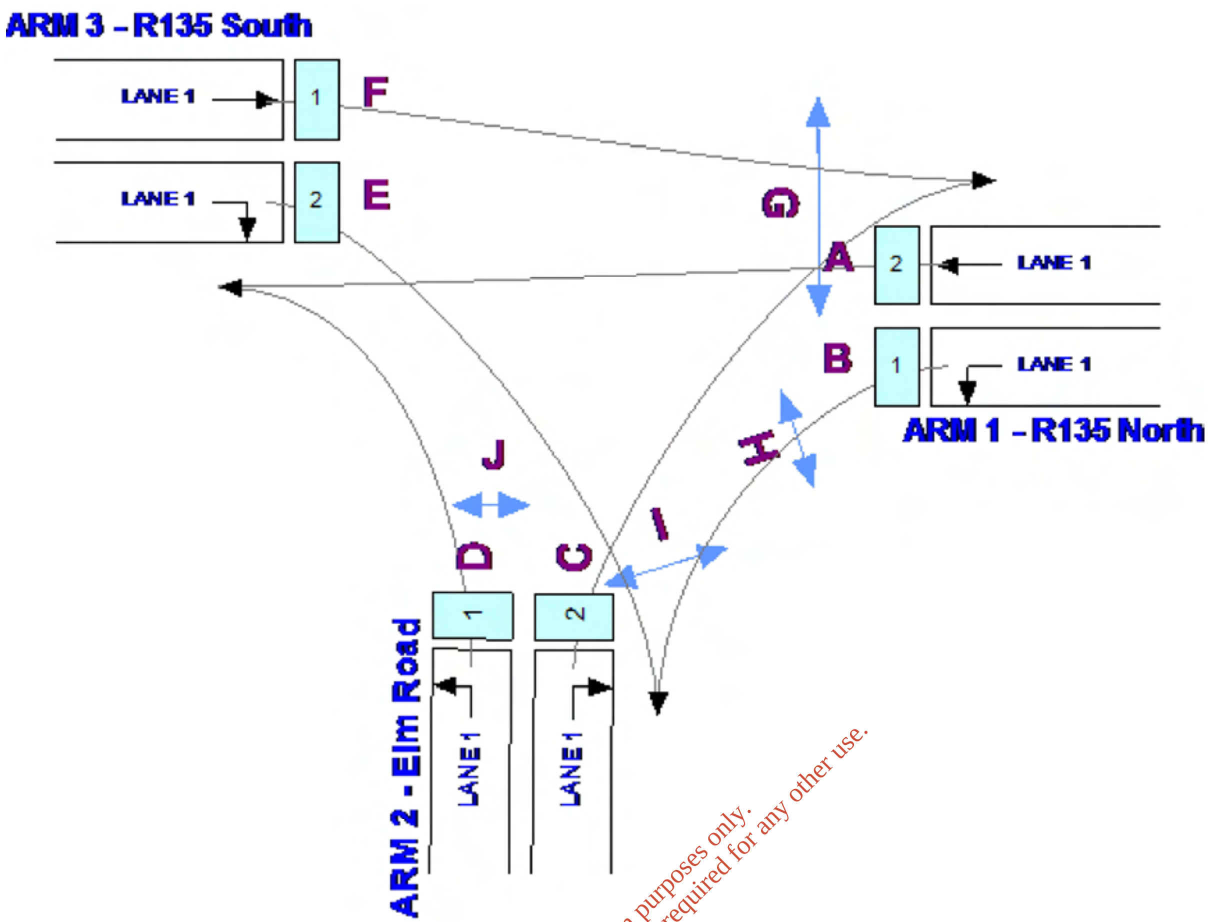
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

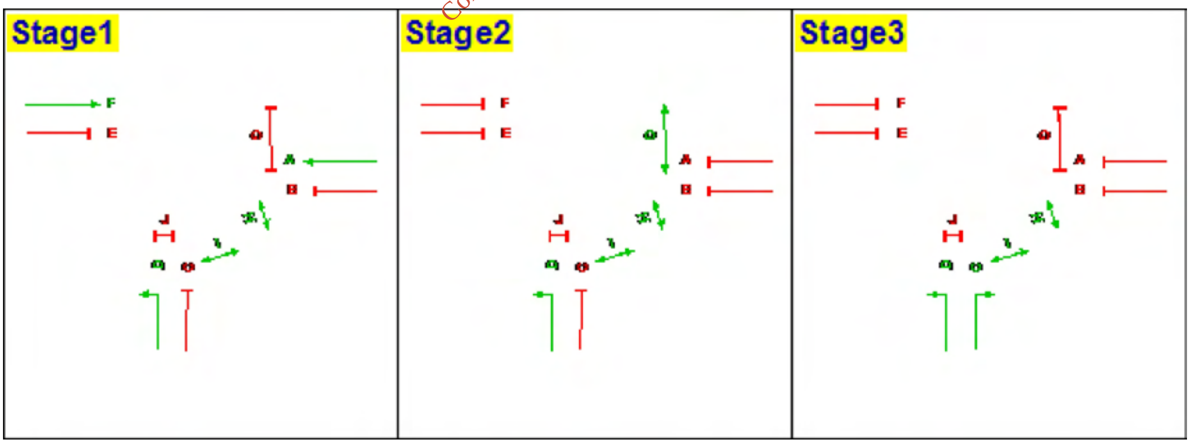
Intergreen Matrix

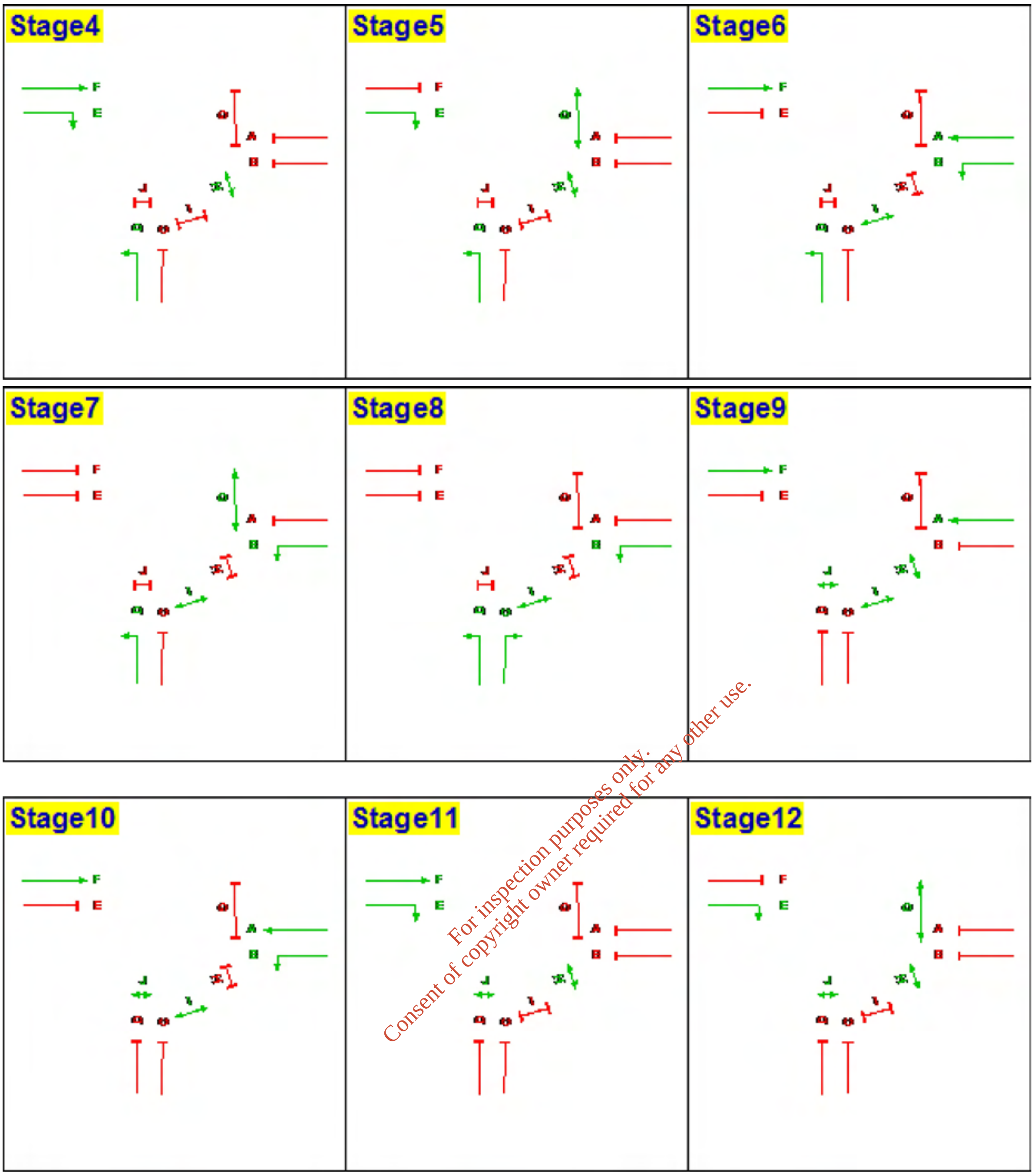
		To									
		A	B	C	D	E	F	G	H	I	J
From	A	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

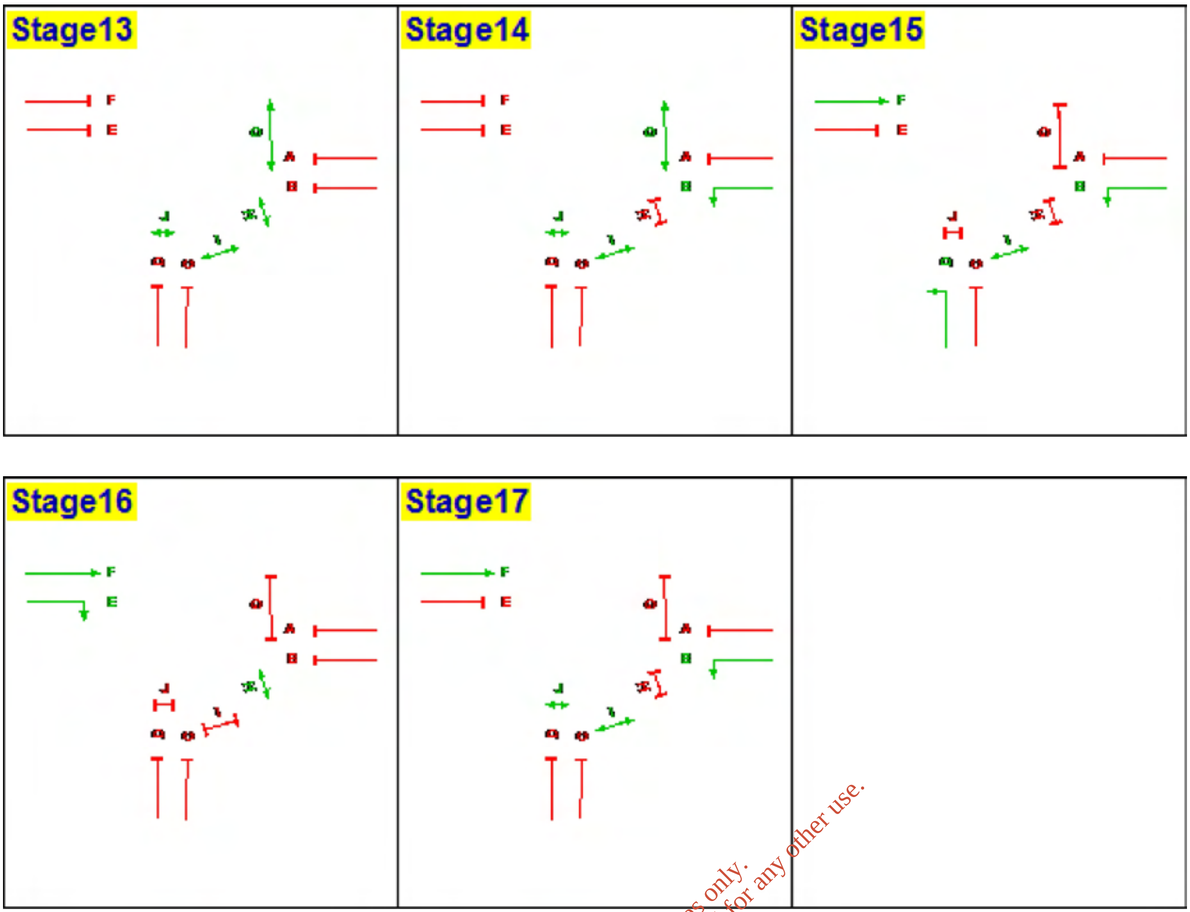
Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

Stage Diagrams




Stage4
Stage5
Stage6
Stage7
Stage8
Stage9
Stage10
Stage11
Stage12



Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	Yes	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set5 - 2023 AM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To		
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	297	97
	Arm 2	23	-	4
	Arm 3	412	204	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	07:15-07:30	07:30-07:45	07:45-08:00	08:00-08:15	08:15-08:30	08:30-08:45
1 - R135 North	1	B	222	265	324	324	265	222
1 - R135 North	2	A	74	88	108	108	88	74
2 - Elm Road	1	D	3	4	4	4	4	3
2 - Elm Road	2	C	17	21	25	25	21	17
3 - R135 South	1	F	310	370	453	453	370	310
3 - R135 South	2	E	152	182	223	223	182	152
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	75	25	-
2 - Elm Road	15	-	85
3 - R135 South	-	67	33

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	246.87	4.11	4.11	156.0

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	189.06	4.12	4.12	155.40

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
4	7.0	32.0	39.0
6	46.0	35.0	81.0
7	89.0	7.0	96.0
8	101.0	7.0	108.0
11	113.0	7.0	0.0

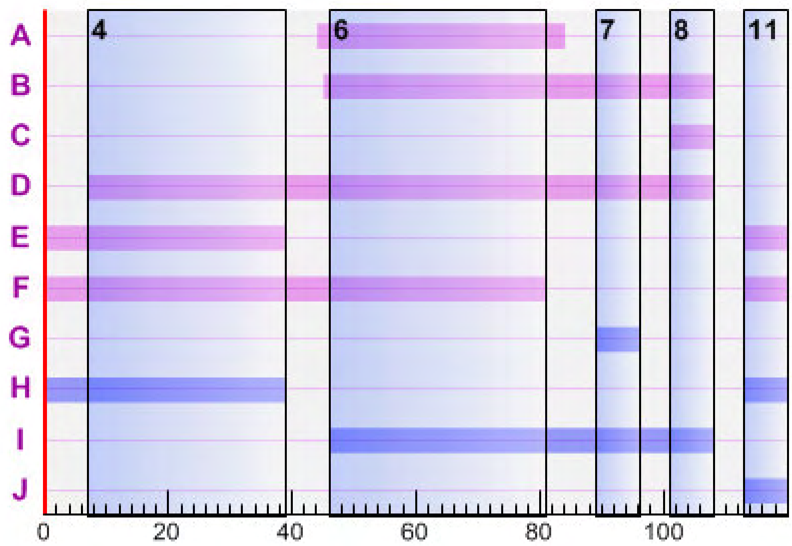
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	44	40.0	84						
B	45	63.0	108						
C	101	7.0	108						
D	7	101.0	108						
E	113	46.0	39						
F	113	88.0	81						
G	89	7.0	96						
H	113	46.0	39						
I	46	62.0	108						
J	113	7.0	0						

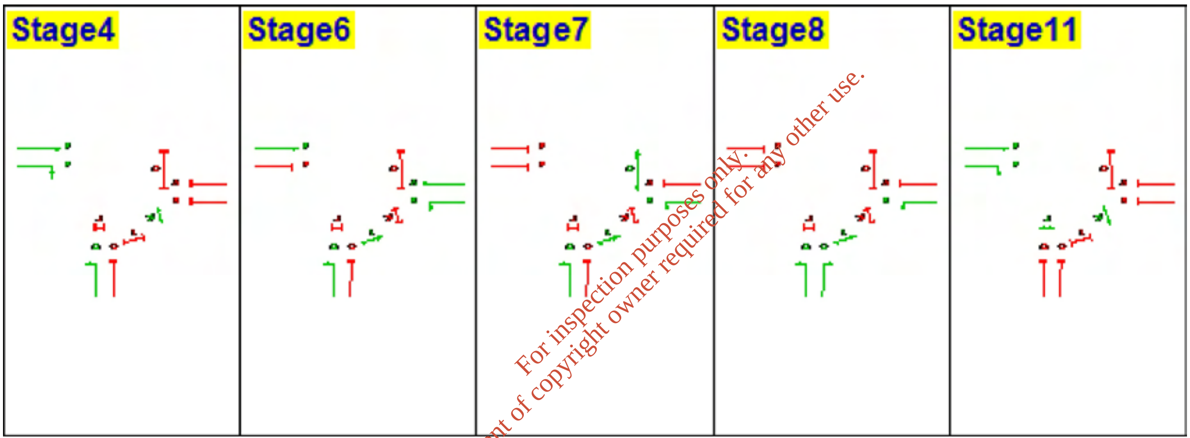
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	6	7	3.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	270	B	64.50	15.71	1.18	25.95	246.87	0.06	4.46	4.40	41.10
1	**2**	90	A	41.50	27.28	0.68	12.36	627.98	0.01	2.01	2.00	9.70
2	**1**	4	D	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	1.00
2	**2**	21	C	8.50	55.76	0.33	15.85	467.98	0.02	0.67	0.65	0.60
3	**1**	378	F	89.50	5.36	0.56	25.79	248.94	0.06	3.53	3.46	82.90
3	**2**	186	E	47.50	25.51	1.32	25.68	250.50	0.06	3.95	3.89	20.70
Ped	**1**	1	J	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	I	63.50	13.30	0.00	0.02	9999.00	0.00	0.02	0.02	0.00
Ped	**3**	1	H	47.50	21.90	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:15-07:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	222	2	64.50	15.11	0.93	21.33	321.86	0.04	3.62	3.58	5.80
1	**2**	74	1	41.50	26.98	0.55	10.17	785.38	0.01	1.65	1.64	1.40
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	17	3	8.50	54.88	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	310	6	89.50	5.04	0.43	21.15	325.49	0.04	2.84	2.80	11.50
3	**2**	152	5	47.50	24.75	1.05	20.98	328.91	0.04	3.19	3.16	2.90
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	63.50	13.30	0.00	0.02	9999.00	0.00	0.02	0.02	0.00
Ped	**3**	1	8	47.50	21.90	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:30-07:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	265	2	64.50	15.65	1.15	25.47	253.41	0.06	4.37	4.31	6.70
1	**2**	88	1	41.50	27.24	0.67	12.09	644.52	0.01	1.96	1.95	1.60
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	21	3	8.50	55.74	0.33	15.85	467.98	0.02	0.67	0.65	0.10
3	**1**	370	6	89.50	5.32	0.55	25.25	256.49	0.06	3.45	3.39	13.60
3	**2**	182	5	47.50	25.42	1.28	25.13	258.21	0.06	3.86	3.80	3.40
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	63.50	13.30	0.00	0.02	9999.00	0.00	0.02	0.02	0.00
Ped	**3**	1	8	47.50	21.90	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (07:45-08:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	324	2	64.50	16.44	1.48	31.14	189.06	0.10	5.44	5.34	7.90
1	**2**	108	1	41.50	27.63	0.83	14.84	506.65	0.02	2.42	2.41	1.90
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	25	3	8.50	56.64	0.39	18.86	377.11	0.03	0.81	0.78	0.10
3	**1**	453	6	89.50	5.76	0.72	30.91	191.17	0.10	4.32	4.22	16.20
3	**2**	223	5	47.50	26.39	1.63	30.79	192.35	0.09	4.79	4.70	4.00
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	63.50	13.30	0.00	0.02	9999.00	0.00	0.02	0.02	0.00
Ped	**3**	1	8	47.50	21.90	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:00-08:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	324	2	64.50	16.45	1.48	31.14	189.06	0.10	5.44	5.34	7.90
1	**2**	108	1	41.50	27.63	0.83	14.84	506.65	0.02	2.42	2.41	1.90
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	25	3	8.50	56.67	0.39	18.86	377.11	0.03	0.81	0.78	0.10
3	**1**	453	6	89.50	5.76	0.73	30.91	191.17	0.10	4.32	4.22	16.20
3	**2**	223	5	47.50	26.40	1.64	30.79	192.35	0.09	4.79	4.70	4.00
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	63.50	13.30	0.00	0.02	9999.00	0.00	0.02	0.02	0.00
Ped	**3**	1	8	47.50	21.90	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:15-08:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	265	2	64.50	15.65	1.15	25.47	253.41	0.06	4.37	4.31	6.70
1	**2**	88	1	41.50	27.25	0.67	12.09	644.52	0.01	1.96	1.95	1.60
2	**1**	4	4	102.50	1.28	0.00	0.27	9999.00	0.00	0.02	0.02	0.20
2	**2**	21	3	8.50	55.79	0.33	15.85	467.98	0.02	0.67	0.65	0.10
3	**1**	370	6	89.50	5.32	0.55	25.25	256.49	0.06	3.45	3.39	13.60
3	**2**	182	5	47.50	25.42	1.29	25.13	258.21	0.06	3.86	3.80	3.40
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	63.50	13.30	0.00	0.02	9999.00	0.00	0.02	0.02	0.00
Ped	**3**	1	8	47.50	21.90	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (08:30-08:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	222	2	64.50	15.12	0.93	21.33	321.86	0.04	3.62	3.58	5.80
1	**2**	74	1	41.50	26.98	0.55	10.17	785.38	0.01	1.65	1.64	1.40
2	**1**	3	4	102.50	1.28	0.00	0.20	9999.00	0.00	0.01	0.01	0.10
2	**2**	17	3	8.50	54.93	0.26	12.83	601.63	0.01	0.54	0.53	0.10
3	**1**	310	6	89.50	5.04	0.43	21.15	325.49	0.04	2.84	2.80	11.50
3	**2**	152	5	47.50	24.76	1.05	20.98	328.91	0.04	3.20	3.16	2.90
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	63.50	13.30	0.00	0.02	9999.00	0.00	0.02	0.02	0.00
Ped	**3**	1	8	47.50	21.90	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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Web: www.trlsoftware.co.uk

The user of this computer program for the solution of an engineering problem is in no way relieved of their responsibility for the correctness of the solution

File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 05/08/2016 16:51:25

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

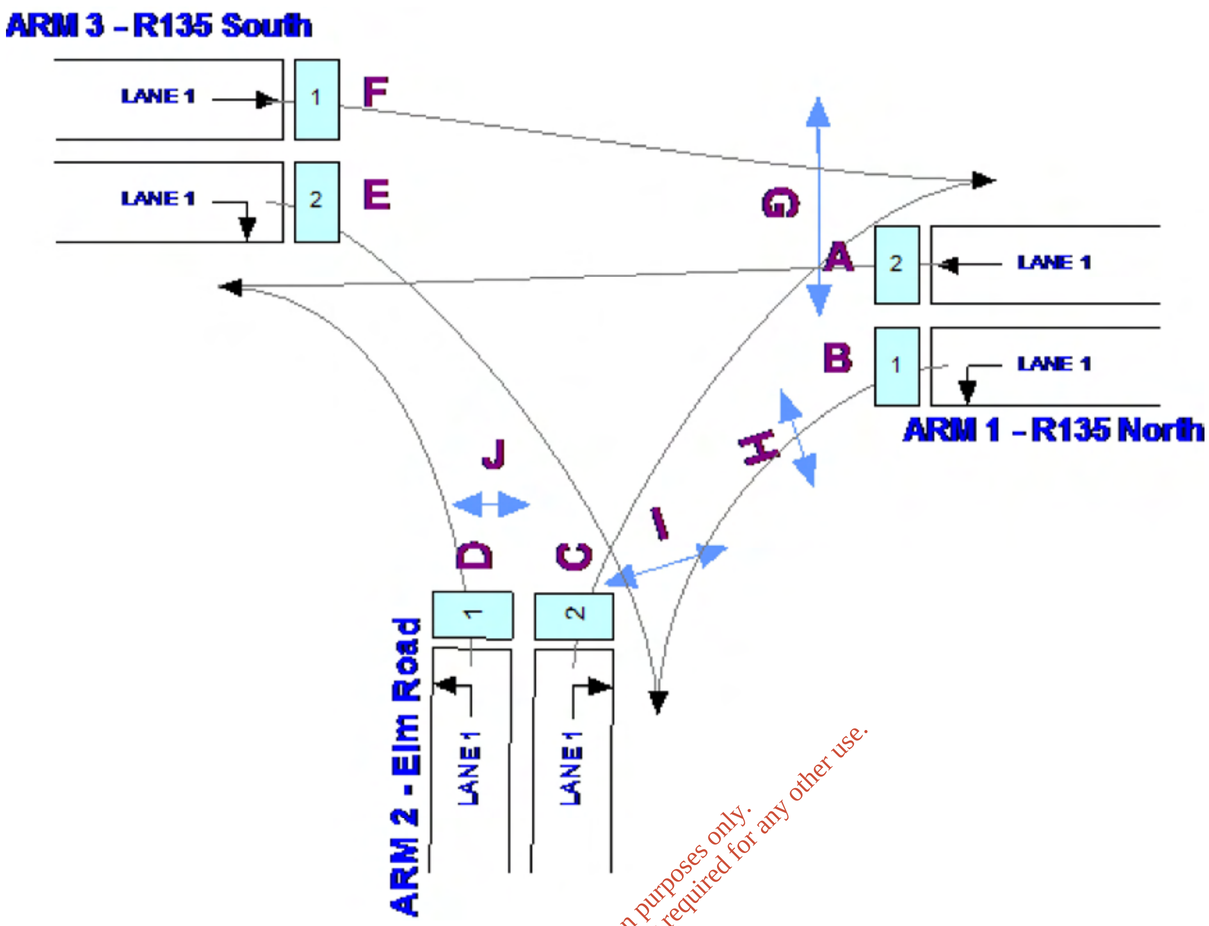
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

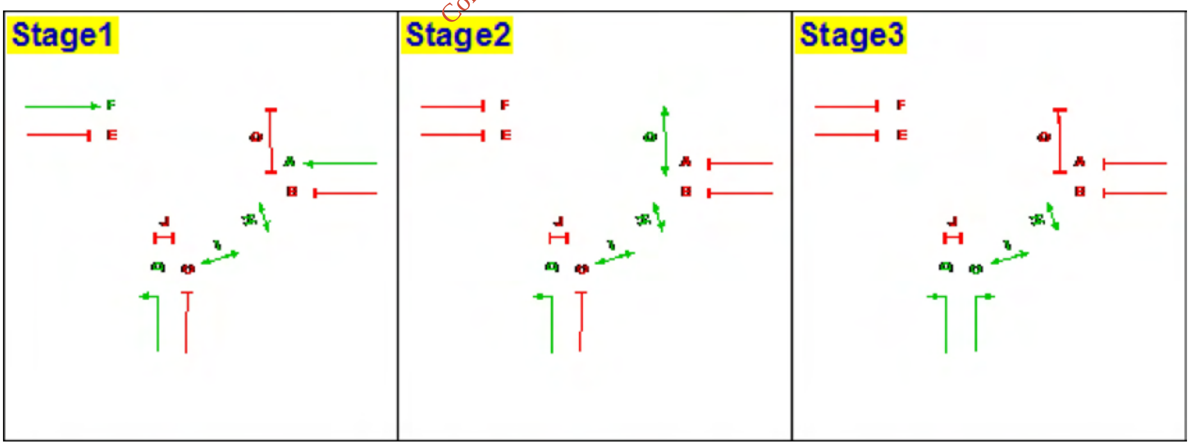
Intergreen Matrix

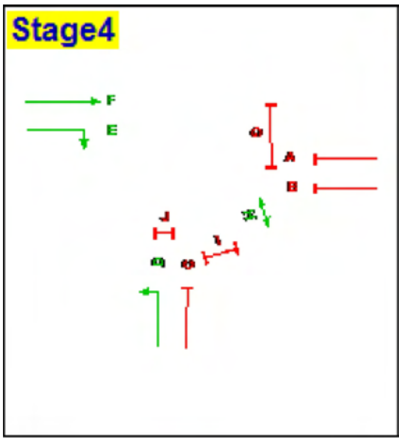
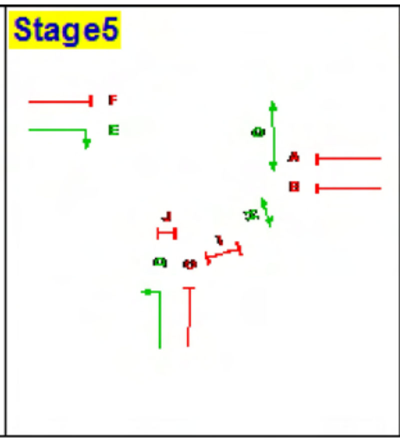
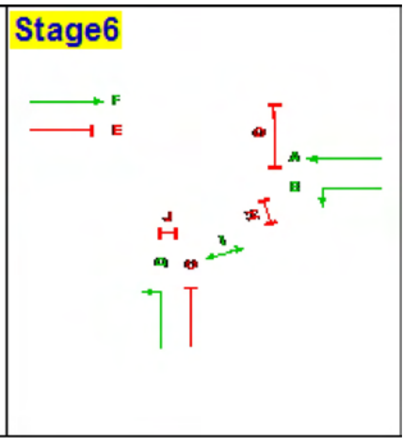
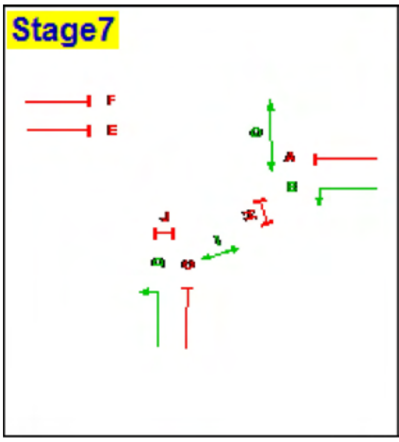
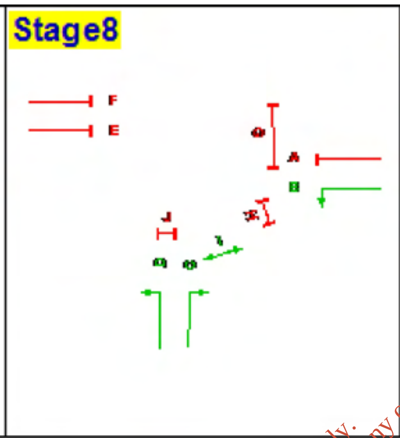
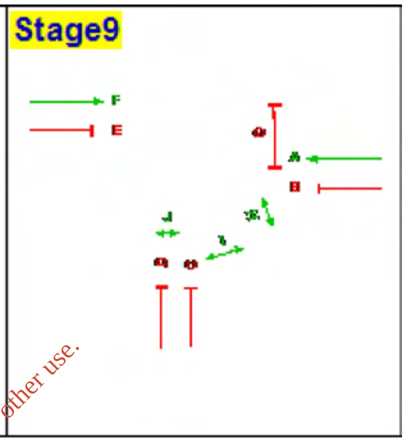
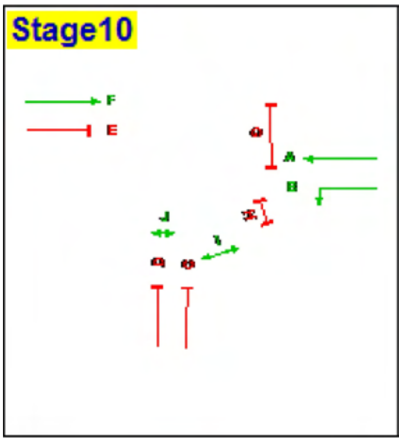
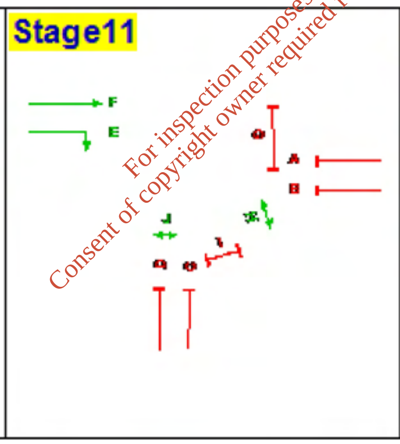
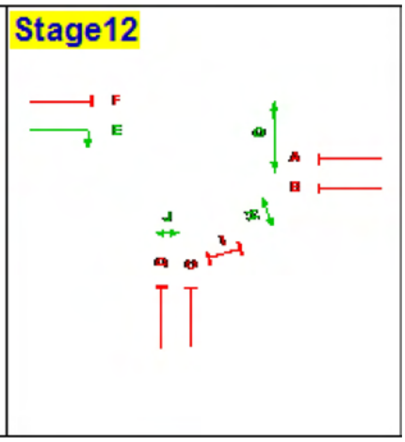
		To									
		A	B	C	D	E	F	G	H	I	J
	A	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
From	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

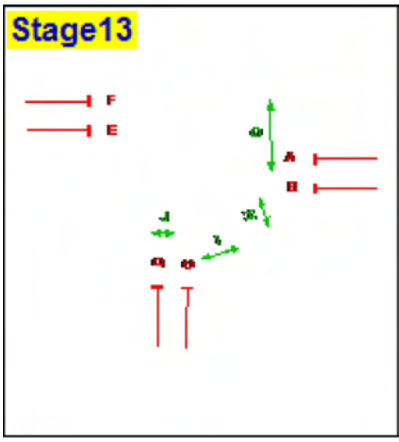
Stages

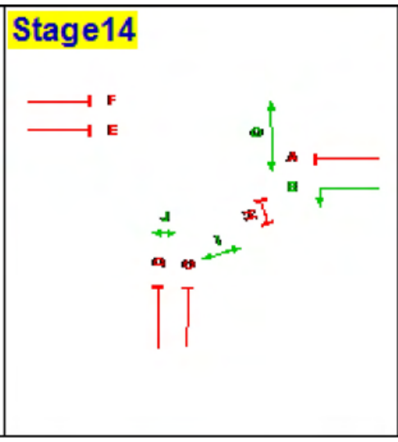
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

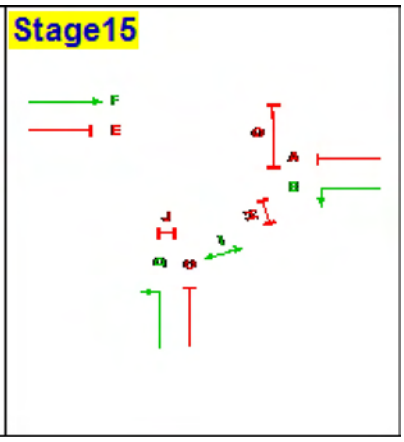
Stage Diagrams

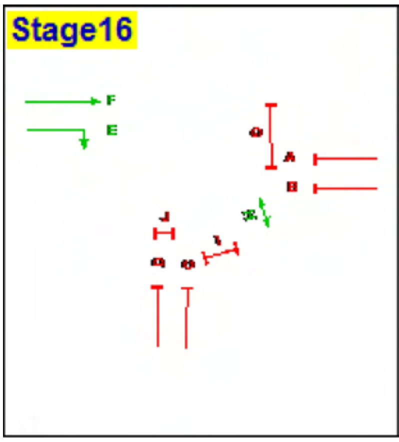


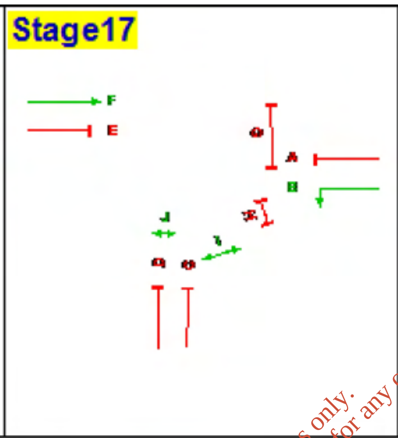

Stage4
F
E
A
B

Stage5
F
E
A
B

Stage6
F
E
A
B

Stage7
F
E
A
B

Stage8
F
E
A
B

Stage9
F
E
A
B

Stage10
F
E
A
B

Stage11
F
E
A
B

Stage12
F
E
A
B











Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	Yes	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set6 - 2016 PM Peak Existing

ODTAB Data (PCU/hr during central 60 min peak period)

		To		
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	337	28
	Arm 2	30	-	2
	Arm 3	378	164	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - R135 North	1	B	252	301	368	368	301	252
1 - R135 North	2	A	22	26	32	32	26	22
2 - Elm Road	1	D	1	2	2	2	2	1
2 - Elm Road	2	C	23	27	33	33	27	23
3 - R135 South	1	F	285	340	416	416	340	285
3 - R135 South	2	E	122	146	178	178	146	122
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	92	8	-
2 - Elm Road	6	-	94
3 - R135 South	-	70	30

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	245.43	3.41	3.41	149.8

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	189.15	3.41	3.41	149.40

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
4	7.0	22.0	29.0
6	36.0	45.0	81.0
7	89.0	7.0	96.0
8	101.0	7.0	108.0
11	113.0	7.0	0.0

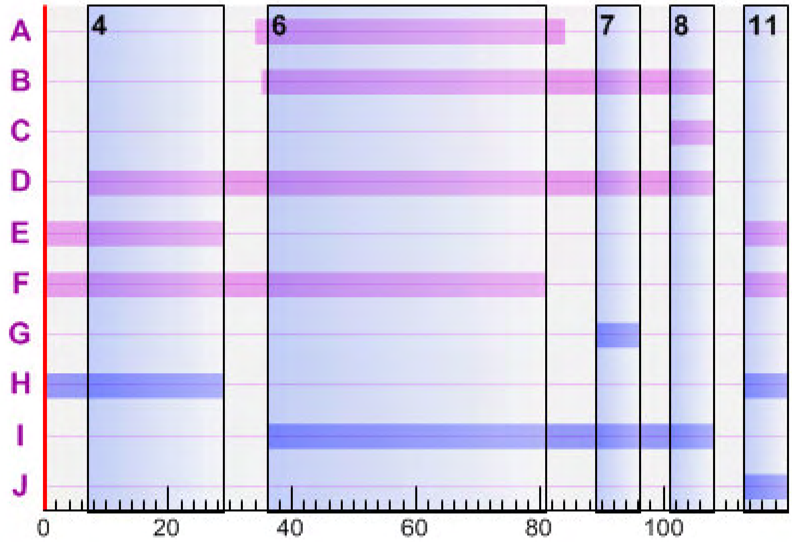
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	34	50.0	84						
B	35	73.0	108						
C	101	7.0	108						
D	7	101.0	108						
E	113	36.0	29						
F	113	88.0	81						
G	89	7.0	96						
H	113	36.0	29						
I	36	72.0	108						
J	113	7.0	0						

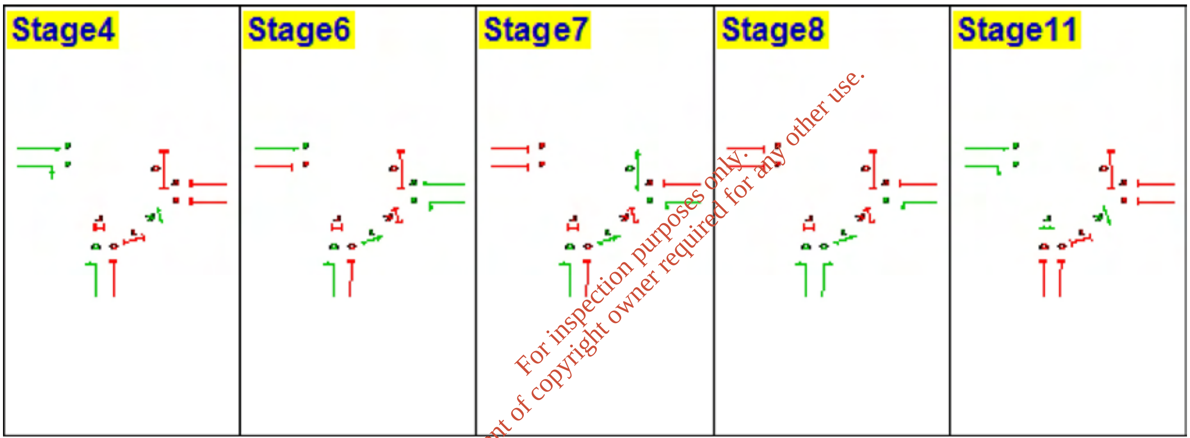
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	6	7	3.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	307	B	74.50	10.93	0.93	25.54	252.36	0.06	4.20	4.13	54.80
1	**2**	27	A	51.50	19.89	0.15	2.99	9999.00	0.00	0.52	0.52	3.70
2	**1**	2	D	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.50
2	**2**	28	C	8.50	57.37	0.45	21.13	325.99	0.04	0.91	0.87	0.80
3	**1**	347	F	89.50	5.21	0.50	23.68	280.12	0.05	3.21	3.16	76.80
3	**2**	149	E	37.50	32.34	1.34	26.05	245.43	0.06	3.58	3.52	13.20
Ped	**1**	1	J	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	I	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	252	2	74.50	10.44	0.73	20.97	329.26	0.04	3.39	3.35	7.70
1	**2**	22	1	51.50	19.82	0.12	2.44	9999.00	0.00	0.42	0.42	0.50
2	**1**	1	4	102.50	1.28	0.00	0.07	9999.00	0.00	0.00	0.00	0.00
2	**2**	23	3	8.50	56.14	0.36	17.35	418.59	0.02	0.74	0.72	0.10
3	**1**	285	6	89.50	4.92	0.39	19.45	362.81	0.03	2.59	2.56	10.70
3	**2**	122	5	37.50	31.51	1.07	21.33	321.87	0.04	2.90	2.87	1.90
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	301	2	74.50	10.87	0.91	25.04	259.38	0.06	4.11	4.05	9.00
1	**2**	26	1	51.50	19.87	0.14	2.88	9999.00	0.00	0.50	0.50	0.60
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	27	3	8.50	57.10	0.43	20.37	341.76	0.03	0.87	0.84	0.10
3	**1**	340	6	89.50	5.18	0.49	23.20	287.94	0.05	3.14	3.09	12.60
3	**2**	146	5	37.50	32.24	1.31	25.53	252.53	0.06	3.51	3.45	2.20
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	368	2	74.50	11.52	1.18	30.62	193.95	0.10	5.12	5.02	10.60
1	**2**	32	1	51.50	19.95	0.18	3.54	9999.00	0.00	0.61	0.61	0.70
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	33	3	8.50	58.60	0.54	24.90	261.44	0.05	1.08	1.03	0.20
3	**1**	416	6	89.50	5.56	0.64	28.39	217.07	0.08	3.93	3.84	15.10
3	**2**	178	5	37.50	33.28	1.65	31.13	189.15	0.10	4.33	4.23	2.50
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	368	2	74.50	11.52	1.18	30.62	193.95	0.10	5.12	5.02	10.60
1	**2**	32	1	51.50	19.95	0.18	3.54	9999.00	0.00	0.61	0.61	0.70
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	33	3	8.50	58.66	0.54	24.90	261.44	0.05	1.08	1.03	0.20
3	**1**	416	6	89.50	5.56	0.64	28.39	217.07	0.08	3.93	3.84	15.10
3	**2**	178	5	37.50	33.29	1.65	31.13	189.15	0.10	4.33	4.23	2.50
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	301	2	74.50	10.88	0.91	25.04	259.38	0.06	4.11	4.05	9.00
1	**2**	26	1	51.50	19.87	0.14	2.88	9999.00	0.00	0.50	0.50	0.60
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	27	3	8.50	57.19	0.43	20.37	341.76	0.03	0.88	0.84	0.10
3	**1**	340	6	89.50	5.18	0.49	23.20	287.94	0.05	3.14	3.09	12.60
3	**2**	146	5	37.50	32.25	1.31	25.53	252.53	0.06	3.51	3.45	2.20
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	252	2	74.50	10.44	0.73	20.97	329.26	0.04	3.39	3.35	7.70
1	**2**	22	1	51.50	19.82	0.12	2.44	9999.00	0.00	0.42	0.42	0.50
2	**1**	1	4	102.50	1.28	0.00	0.07	9999.00	0.00	0.00	0.00	0.00
2	**2**	23	3	8.50	56.23	0.36	17.35	418.59	0.02	0.74	0.72	0.10
3	**1**	285	6	89.50	4.93	0.39	19.45	362.81	0.03	2.59	2.56	10.70
3	**2**	122	5	37.50	31.51	1.07	21.33	321.87	0.04	2.91	2.87	1.90
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 05/08/2016 16:52:04

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

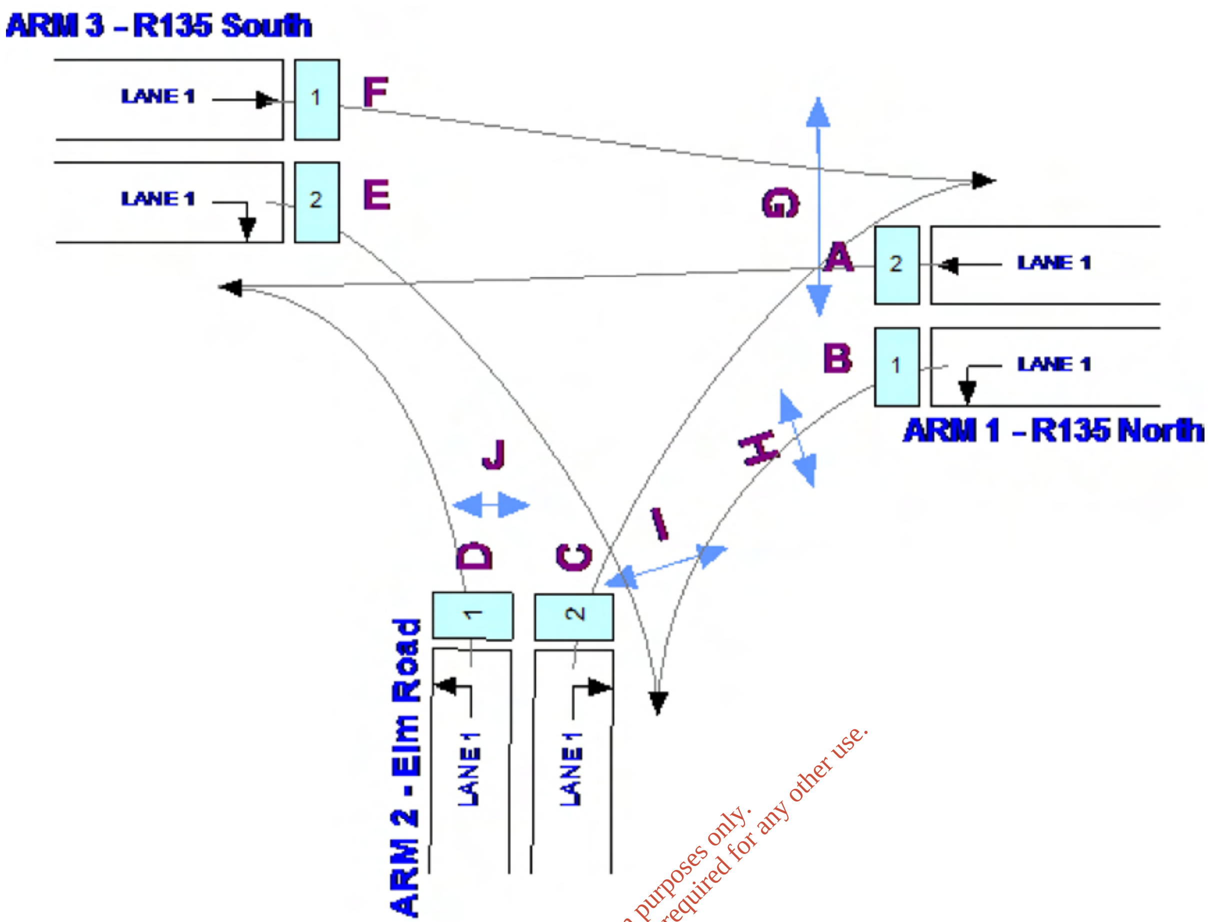
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

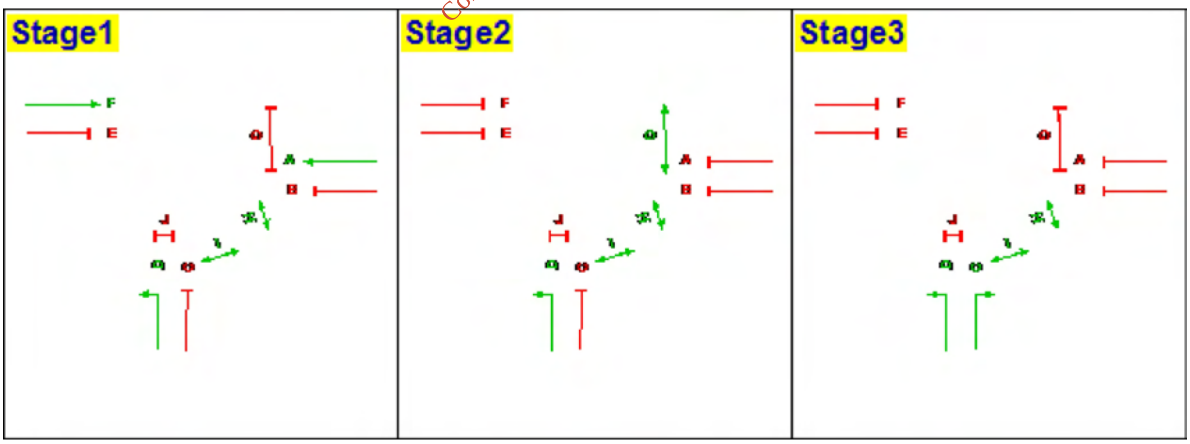
Intergreen Matrix

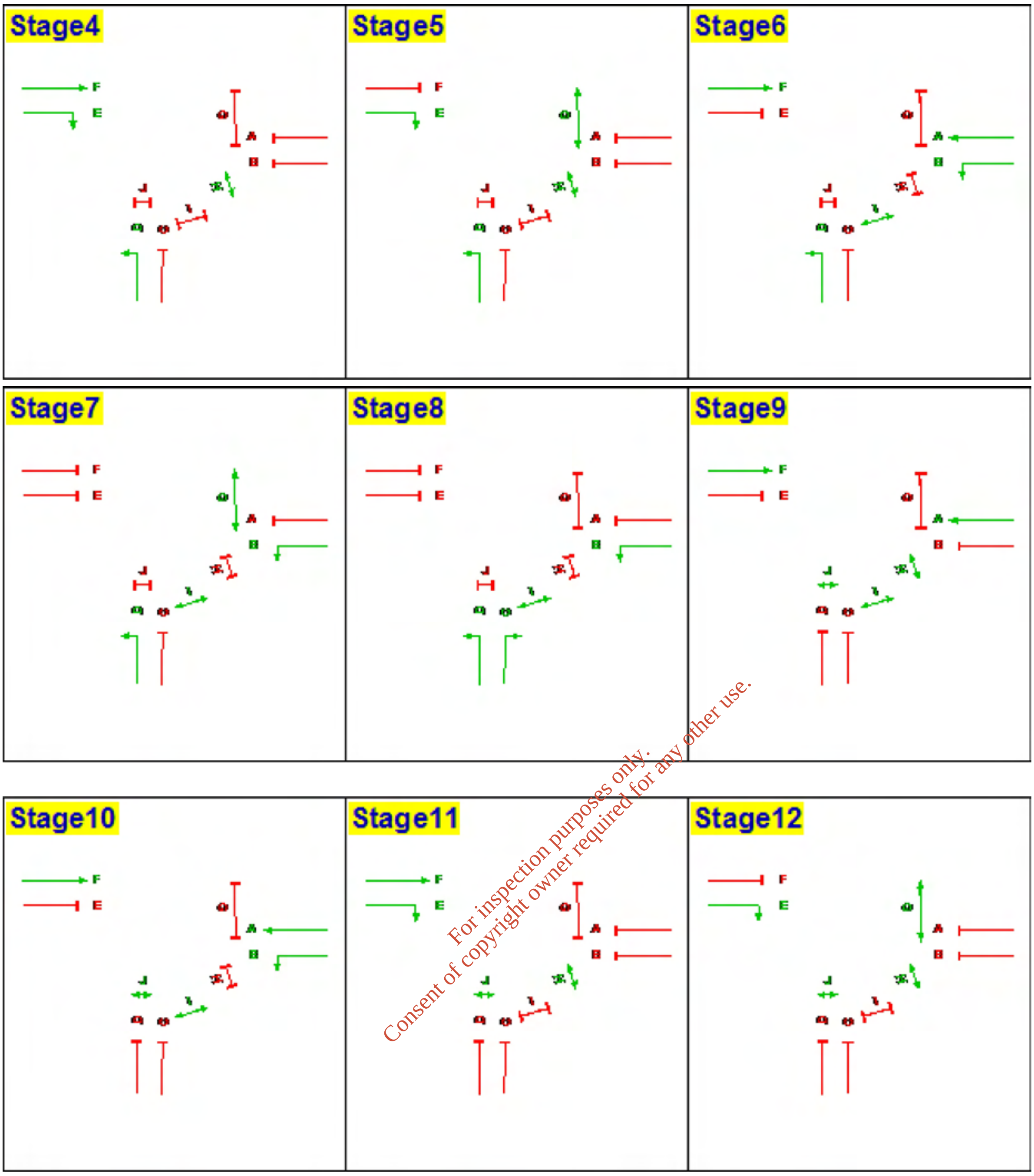
		To									
		A	B	C	D	E	F	G	H	I	J
From	A	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

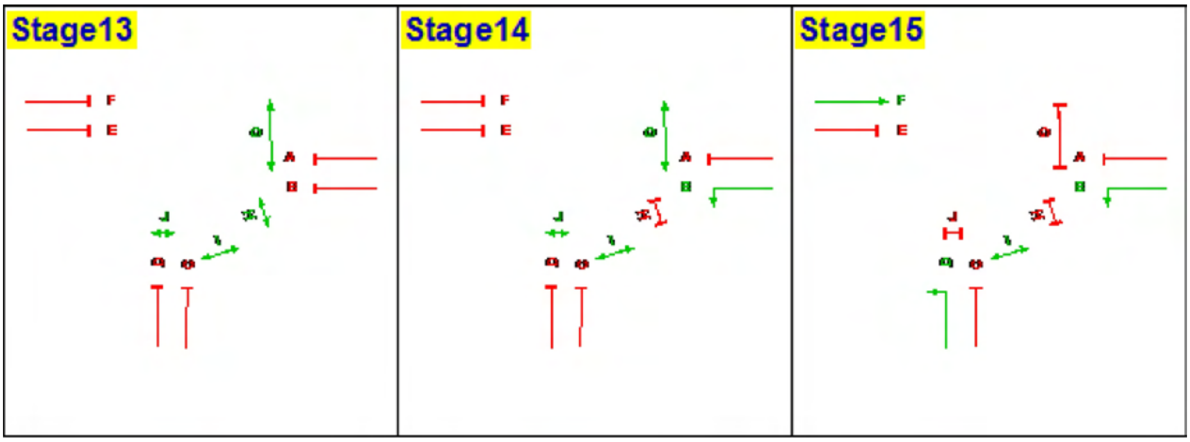
Stages

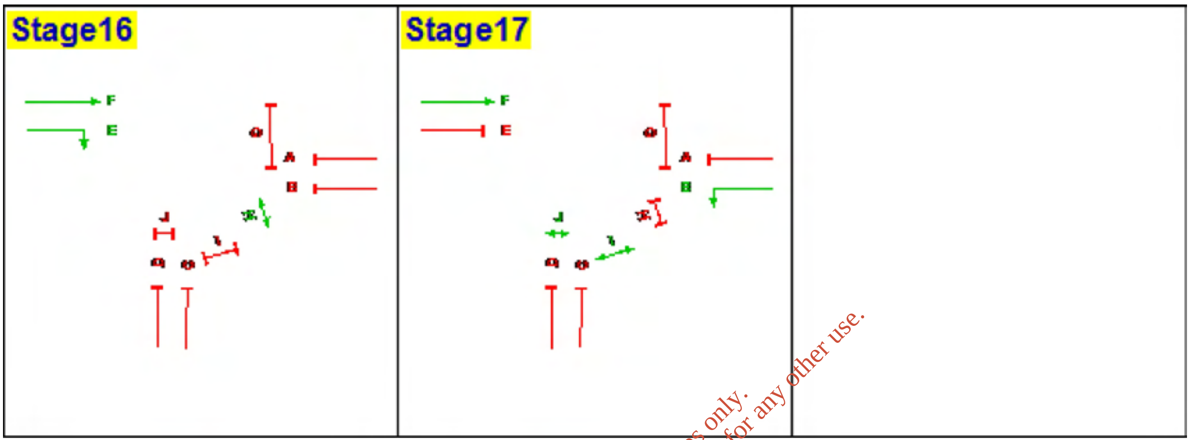
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

Stage Diagrams




Stage4
Stage5
Stage6
Stage7
Stage8
Stage9
Stage10
Stage11
Stage12





Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

Note: *Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	Yes	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set7 - 2017 PM Peak No Dev

ODTAB Data (PCU/hr during central 60 min peak period)

	To			
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	339	28
	Arm 2	30	-	2
	Arm 3	381	165	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - R135 North	1	B	253	302	370	370	302	253
1 - R135 North	2	A	22	26	32	32	26	22
2 - Elm Road	1	D	1	2	2	2	2	1
2 - Elm Road	2	C	23	27	33	33	27	23
3 - R135 South	1	F	287	342	419	419	342	287
3 - R135 South	2	E	123	147	180	180	147	123
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	92	8	-
2 - Elm Road	6	-	94
3 - R135 South	-	70	30

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	243.13	3.44	3.44	150.1

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	185.94	3.44	3.44	149.20

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
8	7.0	7.0	14.0
11	19.0	36.0	55.0
10	62.0	45.0	107.0
14	115.0	5.0	0.0

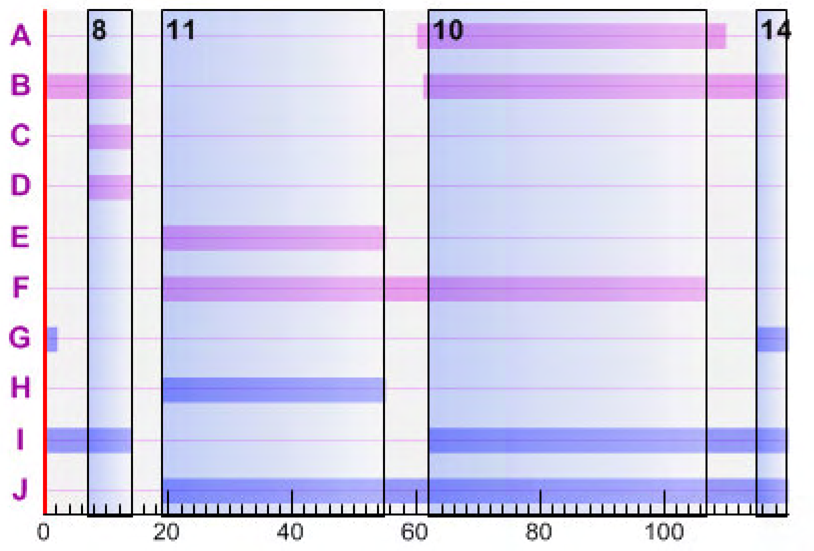
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	60	50.0	110						
B	61	73.0	14						
C	7	7.0	14						
D	7	7.0	14						
E	19	36.0	55						
F	19	88.0	107						
G	115	7.0	2						
H	19	36.0	55						
I	62	72.0	14						
J	19	101.0	0						

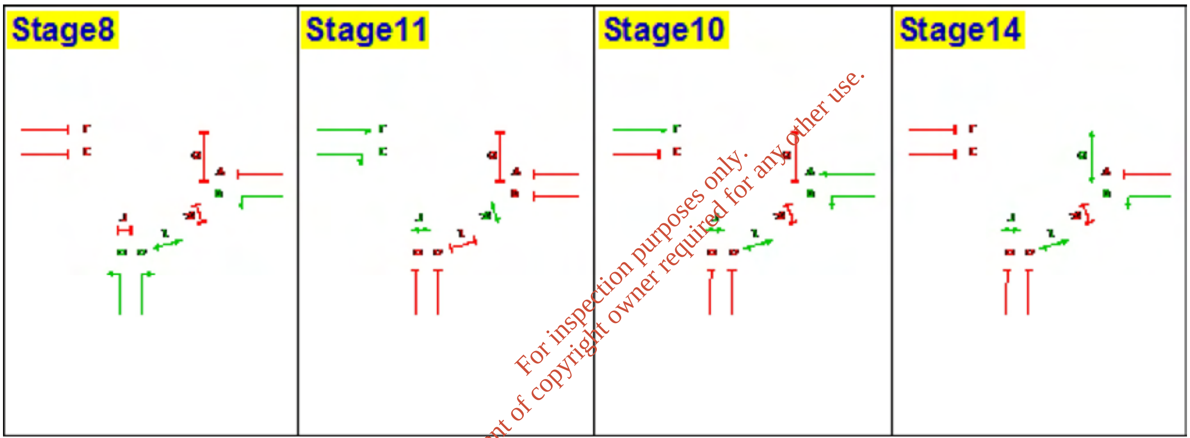
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	10	14	3.00	
Losing	G	14	8	2.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	308	B	74.50	10.94	0.94	25.63	251.21	0.06	4.21	4.15	55.00
1	**2**	27	A	51.50	19.89	0.15	2.99	9999.00	0.00	0.52	0.52	3.70
2	**1**	2	D	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.10
2	**2**	28	C	8.50	57.37	0.45	21.13	325.99	0.04	0.91	0.87	0.80
3	**1**	349	F	89.50	5.22	0.51	23.81	277.94	0.05	3.23	3.18	77.20
3	**2**	150	E	37.50	32.37	1.35	26.23	243.13	0.06	3.61	3.54	13.30
Ped	**1**	1	J	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	I	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	253	2	74.50	10.45	0.73	21.05	327.57	0.04	3.41	3.37	7.70
1	**2**	22	1	51.50	19.82	0.12	2.44	9999.00	0.00	0.42	0.42	0.50
2	**1**	1	4	8.50	51.99	0.01	0.81	9999.00	0.00	0.03	0.03	0.00
2	**2**	23	3	8.50	56.14	0.36	17.35	418.59	0.02	0.74	0.72	0.10
3	**1**	287	6	89.50	4.93	0.39	19.58	359.58	0.03	2.61	2.58	10.70
3	**2**	123	5	37.50	31.53	1.08	21.51	318.45	0.04	2.93	2.89	1.90
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	302	2	74.50	10.88	0.91	25.13	258.19	0.06	4.12	4.06	9.00
1	**2**	26	1	51.50	19.87	0.14	2.88	9999.00	0.00	0.50	0.50	0.60
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	27	3	8.50	57.10	0.43	20.37	341.76	0.03	0.87	0.84	0.10
3	**1**	342	6	89.50	5.19	0.49	23.34	285.67	0.05	3.16	3.11	12.60
3	**2**	147	5	37.50	32.27	1.32	25.70	250.13	0.06	3.53	3.47	2.20
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	370	2	74.50	11.54	1.19	30.78	192.36	0.10	5.15	5.05	10.70
1	**2**	32	1	51.50	19.95	0.18	3.54	9999.00	0.00	0.61	0.61	0.70
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	33	3	8.50	58.60	0.54	24.90	261.44	0.05	1.08	1.03	0.20
3	**1**	419	6	89.50	5.57	0.65	28.59	214.80	0.08	3.96	3.87	15.10
3	**2**	180	5	37.50	33.35	1.67	31.48	185.94	0.10	4.38	4.28	2.50
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	370	2	74.50	11.54	1.19	30.78	192.36	0.10	5.15	5.05	10.70
1	**2**	32	1	51.50	19.95	0.18	3.54	9999.00	0.00	0.61	0.61	0.70
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	33	3	8.50	58.66	0.54	24.90	261.44	0.05	1.08	1.03	0.20
3	**1**	419	6	89.50	5.58	0.65	28.59	214.80	0.08	3.96	3.87	15.10
3	**2**	180	5	37.50	33.36	1.67	31.48	185.94	0.10	4.38	4.28	2.50
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	302	2	74.50	10.88	0.91	25.13	258.19	0.06	4.12	4.06	9.00
1	**2**	26	1	51.50	19.87	0.14	2.88	9999.00	0.00	0.50	0.50	0.60
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	27	3	8.50	57.19	0.43	20.37	341.76	0.03	0.88	0.84	0.10
3	**1**	342	6	89.50	5.19	0.49	23.34	285.67	0.05	3.16	3.11	12.60
3	**2**	147	5	37.50	32.28	1.32	25.70	250.13	0.06	3.53	3.47	2.20
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	253	2	74.50	10.45	0.73	21.05	327.57	0.04	3.41	3.37	7.70
1	**2**	22	1	51.50	19.82	0.12	2.44	9999.00	0.00	0.42	0.42	0.50
2	**1**	1	4	8.50	51.99	0.01	0.81	9999.00	0.00	0.03	0.03	0.00
2	**2**	23	3	8.50	56.23	0.36	17.35	418.59	0.02	0.74	0.72	0.10
3	**1**	287	6	89.50	4.93	0.39	19.58	359.58	0.03	2.61	2.58	10.70
3	**2**	123	5	37.50	31.54	1.08	21.51	318.45	0.04	2.93	2.89	1.90
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 05/08/2016 16:52:56

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

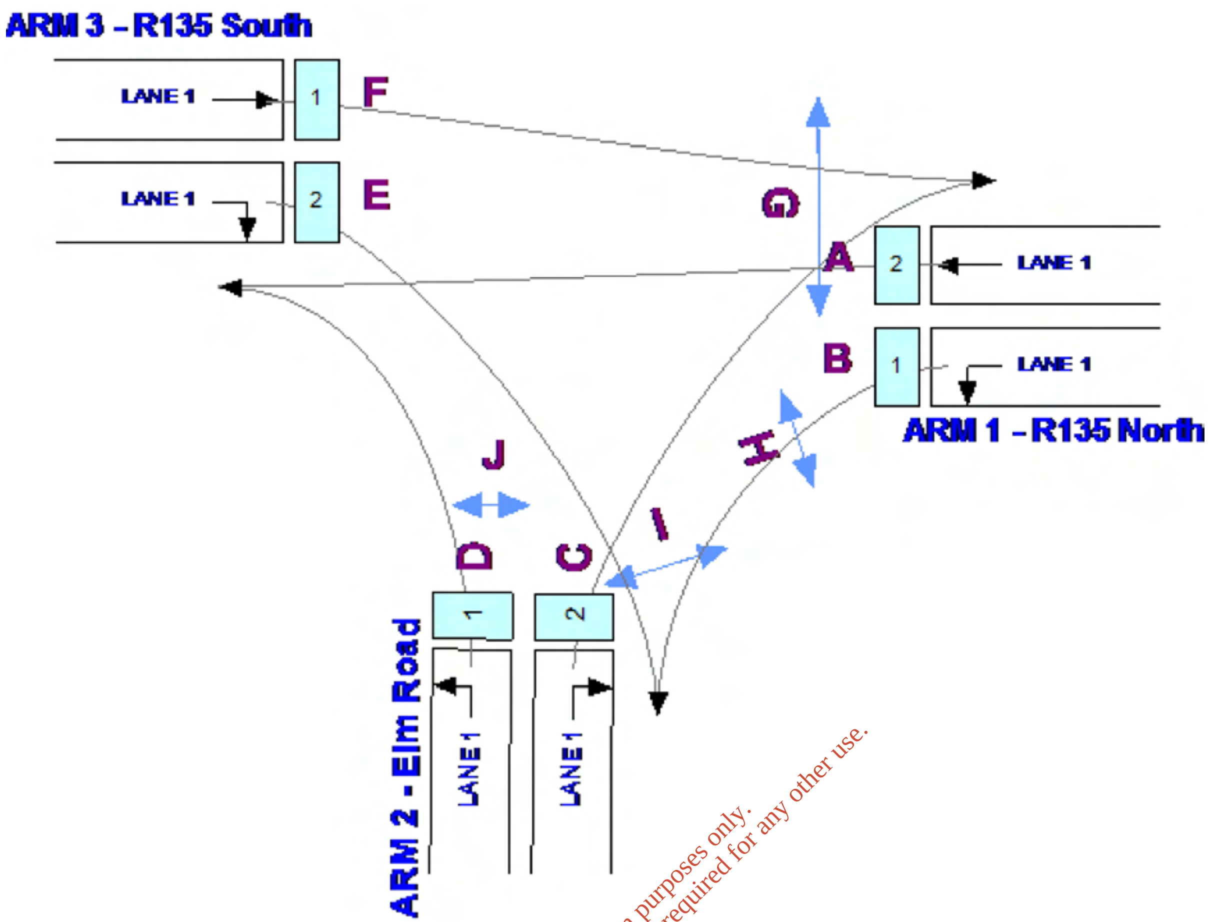
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

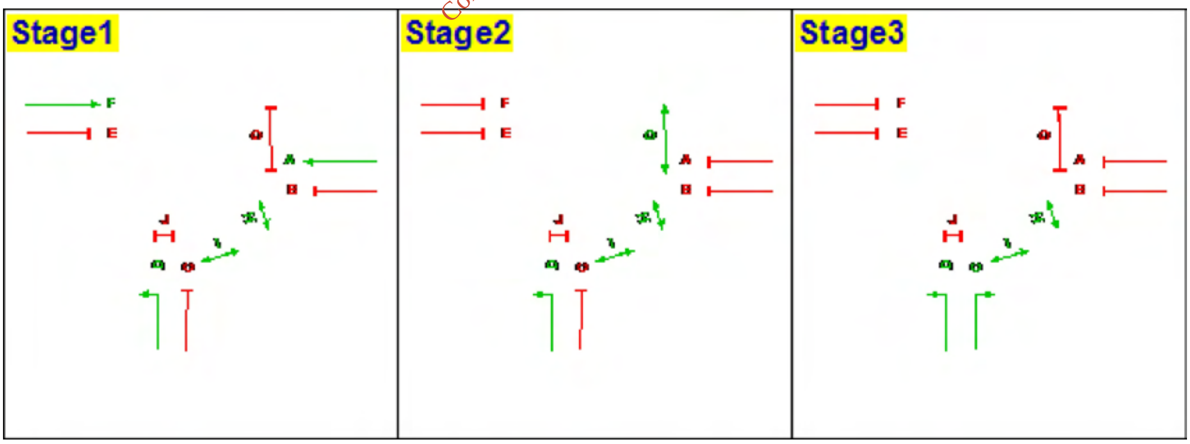
Intergreen Matrix

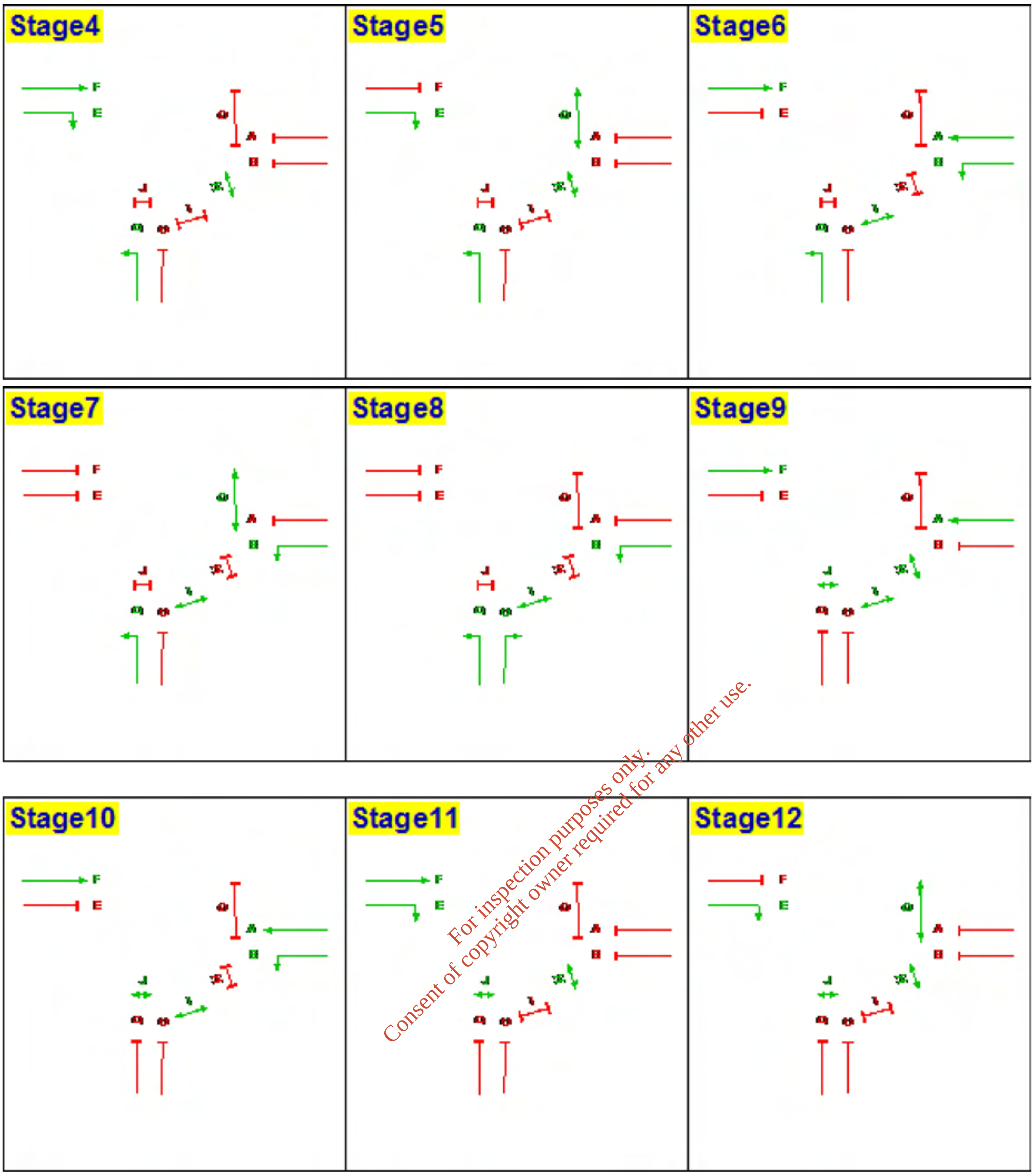
		To									
		A	B	C	D	E	F	G	H	I	J
From	A	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

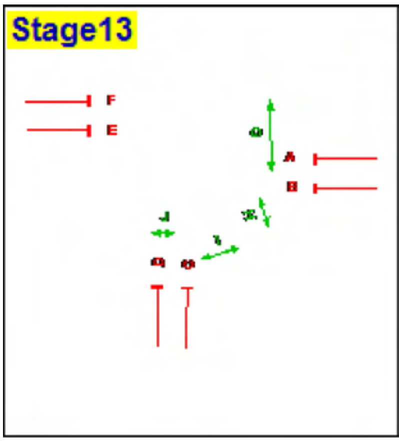
Stages

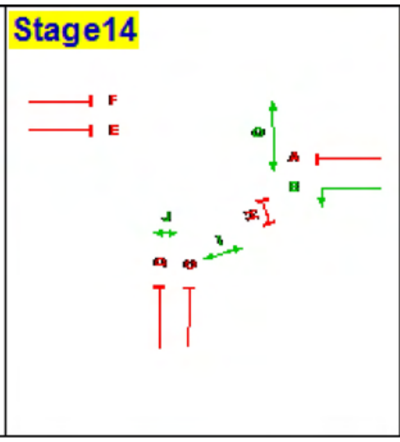
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

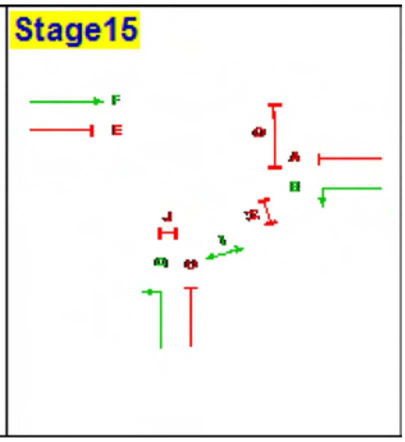
Stage Diagrams

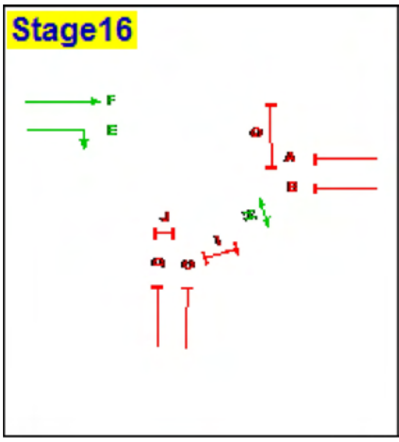


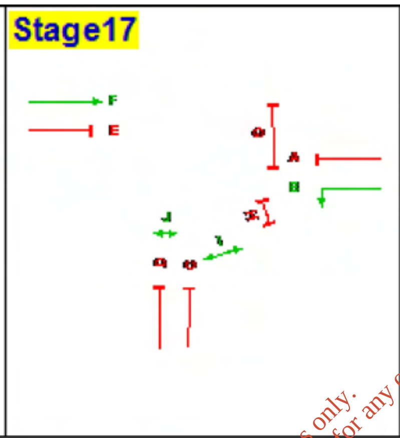

Stage4
Stage5
Stage6
Stage7
Stage8
Stage9
Stage10
Stage11
Stage12











Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

***Note:** Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	Yes	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set8 - 2017 PM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To		
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	339	34
	Arm 2	30	-	2
	Arm 3	387	171	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - R135 North	1	B	255	304	372	372	304	255
1 - R135 North	2	A	25	30	37	37	30	25
2 - Elm Road	1	D	1	2	2	2	2	1
2 - Elm Road	2	C	23	27	33	33	27	23
3 - R135 South	1	F	289	345	422	422	345	289
3 - R135 South	2	E	130	155	190	190	155	130
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	91	9	-
2 - Elm Road	6	-	94
3 - R135 South	-	69	31

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	239.58	3.57	3.57	151.3

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	182.98	3.58	3.58	150.50

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
4	7.0	24.0	31.0
6	38.0	43.0	81.0
7	89.0	7.0	96.0
8	101.0	7.0	108.0
11	113.0	7.0	0.0

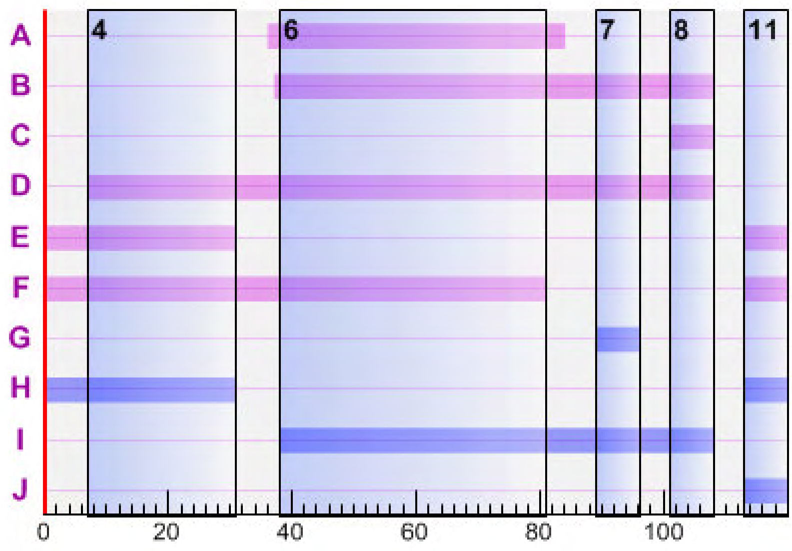
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	36	48.0	84						
B	37	71.0	108						
C	101	7.0	108						
D	7	101.0	108						
E	113	38.0	31						
F	113	88.0	81						
G	89	7.0	96						
H	113	38.0	31						
I	38	70.0	108						
J	113	7.0	0						

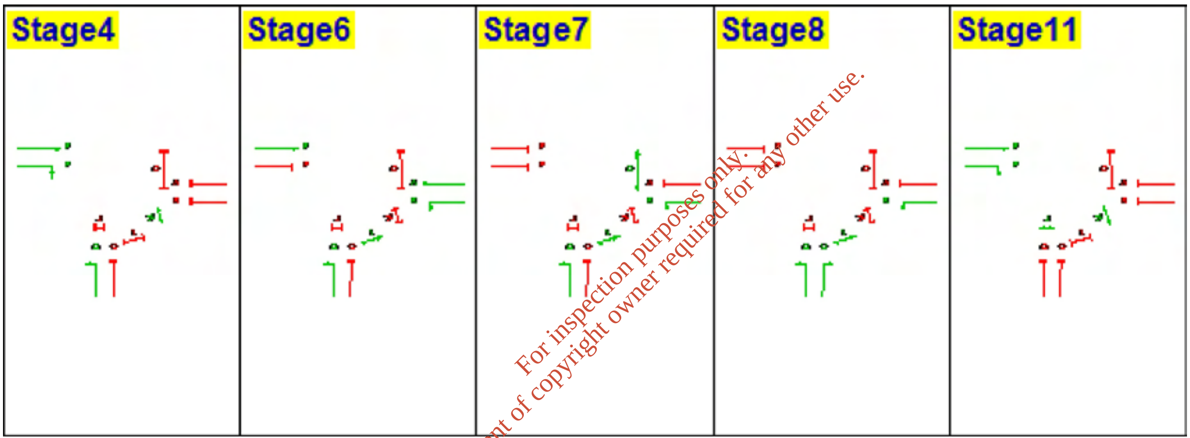
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	6	7	3.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	310	B	72.50	11.93	1.03	26.50	239.58	0.07	4.43	4.36	53.40
1	**2**	31	A	49.50	21.12	0.18	3.57	9999.00	0.00	0.61	0.61	4.10
2	**1**	2	D	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.50
2	**2**	28	C	8.50	57.37	0.45	21.13	325.99	0.04	0.91	0.87	0.80
3	**1**	352	F	89.50	5.23	0.51	24.02	274.72	0.05	3.26	3.21	77.80
3	**2**	158	E	39.50	30.95	1.36	26.23	243.13	0.06	3.71	3.65	14.70
Ped	**1**	1	J	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	I	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	255	2	72.50	11.39	0.81	21.80	312.82	0.04	3.59	3.55	7.50
1	**2**	25	1	49.50	21.04	0.15	2.88	9999.00	0.00	0.49	0.49	0.60
2	**1**	1	4	102.50	1.28	0.00	0.07	9999.00	0.00	0.00	0.00	0.00
2	**2**	23	3	8.50	56.14	0.36	17.35	418.59	0.02	0.74	0.72	0.10
3	**1**	289	6	89.50	4.94	0.40	19.72	356.40	0.03	2.63	2.60	10.80
3	**2**	130	5	39.50	30.15	1.09	21.58	317.03	0.04	3.02	2.98	2.10
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	304	2	72.50	11.86	1.00	25.99	246.28	0.06	4.33	4.27	8.70
1	**2**	30	1	49.50	21.11	0.18	3.45	9999.00	0.00	0.59	0.59	0.70
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	27	3	8.50	57.10	0.43	20.37	341.76	0.03	0.87	0.84	0.10
3	**1**	345	6	89.50	5.20	0.50	23.54	282.32	0.05	3.19	3.14	12.70
3	**2**	155	5	39.50	30.86	1.33	25.73	249.77	0.06	3.64	3.58	2.40
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	372	2	72.50	12.58	1.30	31.80	182.98	0.11	5.41	5.30	10.30
1	**2**	37	1	49.50	21.20	0.22	4.26	9999.00	0.00	0.73	0.73	0.80
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	33	3	8.50	58.60	0.54	24.90	261.44	0.05	1.08	1.03	0.20
3	**1**	422	6	89.50	5.59	0.66	28.79	212.56	0.08	3.99	3.90	15.20
3	**2**	190	5	39.50	31.94	1.69	31.54	185.34	0.10	4.52	4.42	2.80
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	372	2	72.50	12.58	1.30	31.80	182.98	0.11	5.41	5.30	10.30
1	**2**	37	1	49.50	21.20	0.22	4.26	9999.00	0.00	0.73	0.73	0.80
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	33	3	8.50	58.66	0.54	24.90	261.44	0.05	1.08	1.03	0.20
3	**1**	422	6	89.50	5.59	0.66	28.79	212.56	0.08	3.99	3.90	15.20
3	**2**	190	5	39.50	31.95	1.69	31.54	185.34	0.10	4.52	4.42	2.80
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	304	2	72.50	11.87	1.00	25.99	246.28	0.06	4.34	4.27	8.80
1	**2**	30	1	49.50	21.11	0.18	3.45	9999.00	0.00	0.59	0.59	0.70
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	27	3	8.50	57.19	0.43	20.37	341.76	0.03	0.88	0.84	0.10
3	**1**	345	6	89.50	5.20	0.50	23.54	282.32	0.05	3.19	3.14	12.70
3	**2**	155	5	39.50	30.87	1.33	25.73	249.77	0.06	3.64	3.58	2.40
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	255	2	72.50	11.39	0.81	21.80	312.82	0.04	3.59	3.55	7.50
1	**2**	25	1	49.50	21.04	0.15	2.88	9999.00	0.00	0.49	0.49	0.60
2	**1**	1	4	102.50	1.28	0.00	0.07	9999.00	0.00	0.00	0.00	0.00
2	**2**	23	3	8.50	56.23	0.36	17.35	418.59	0.02	0.74	0.72	0.10
3	**1**	289	6	89.50	4.94	0.40	19.72	356.40	0.03	2.63	2.60	10.80
3	**2**	130	5	39.50	30.15	1.09	21.58	317.03	0.04	3.02	2.98	2.10
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 05/08/2016 16:53:40

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

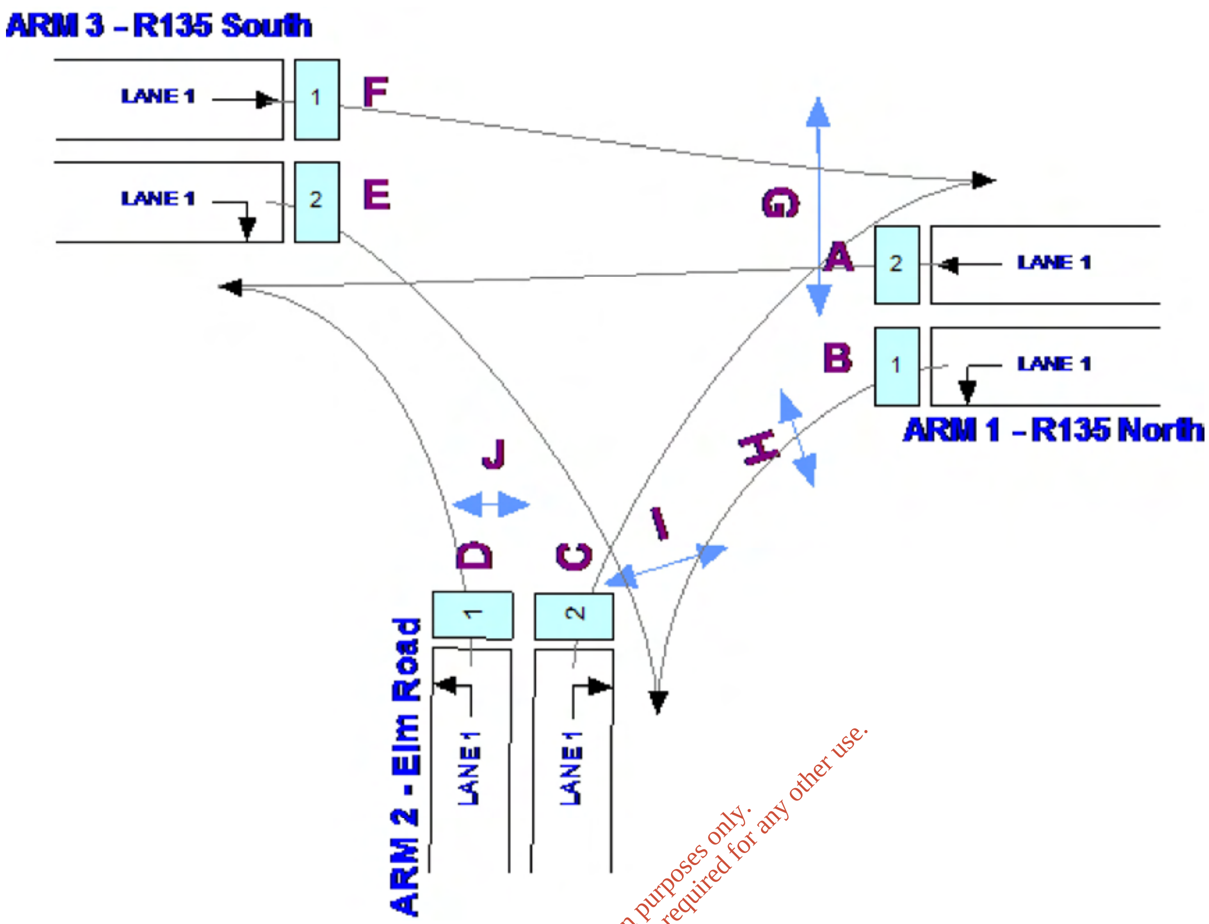
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

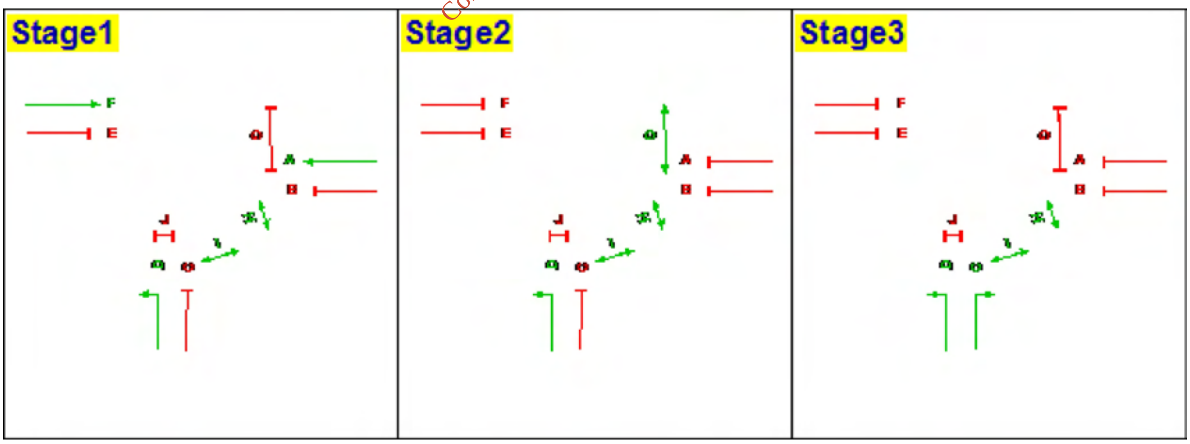
Intergreen Matrix

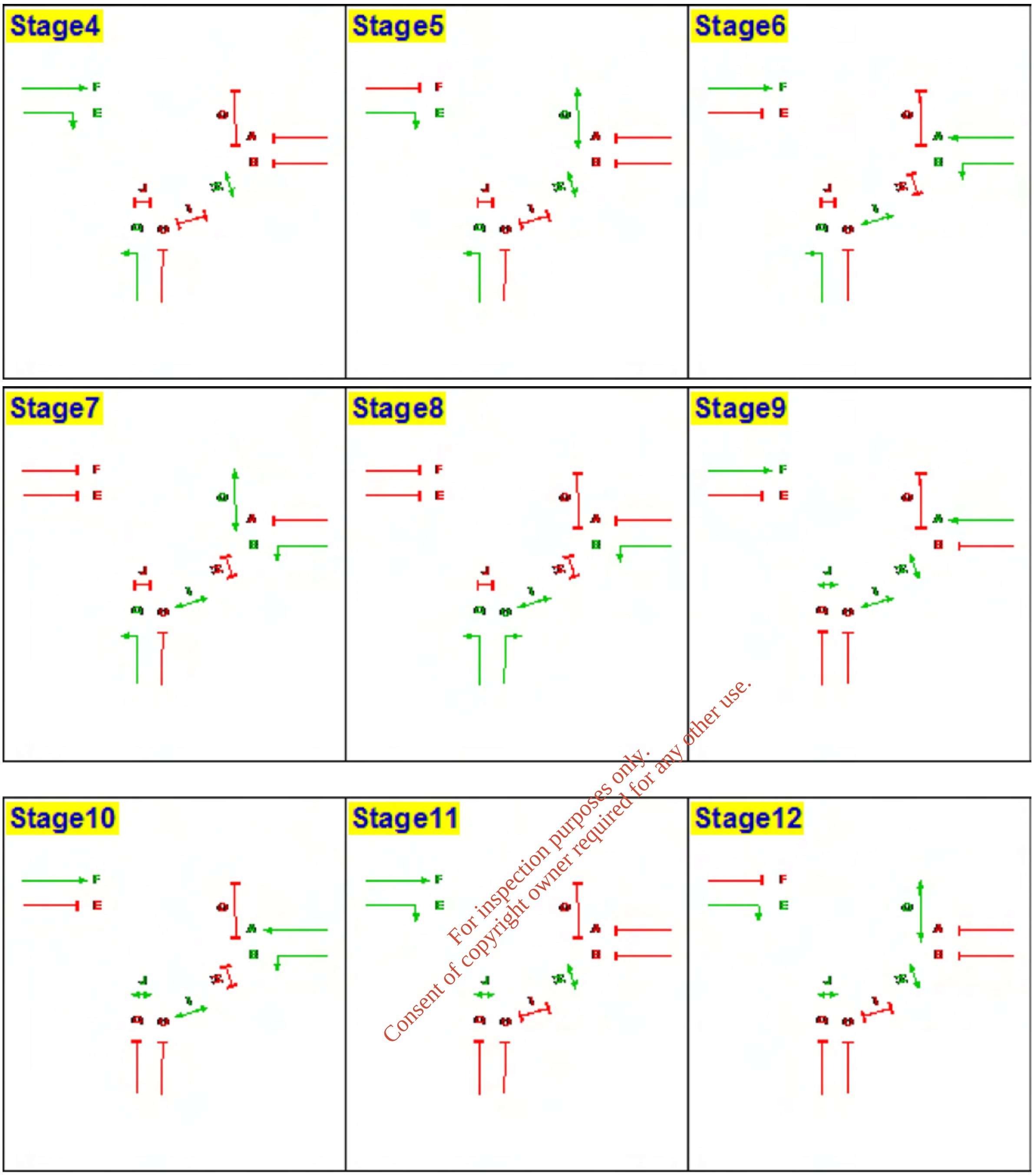
		To									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
From	**A**	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

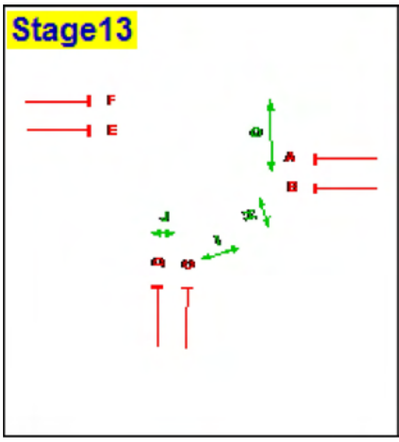
Stages

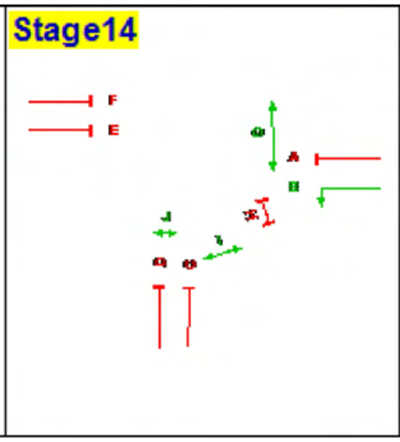
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

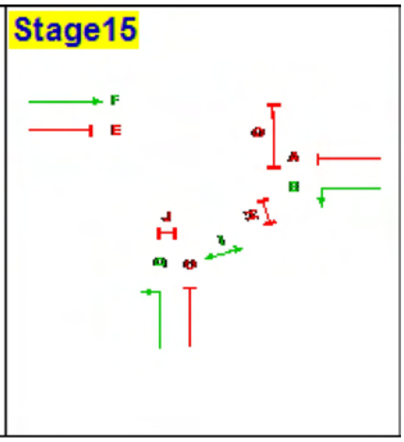
Stage Diagrams

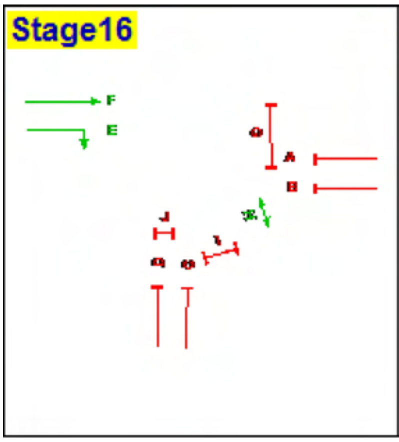


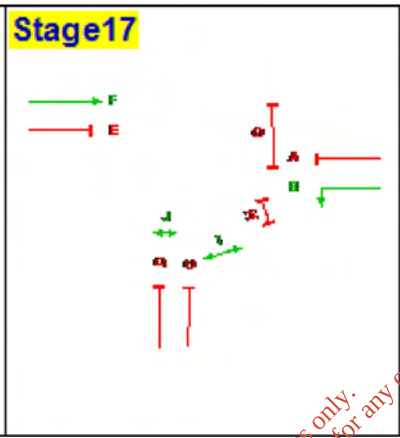

Stage4
Stage5
Stage6
Stage7
Stage8
Stage9
Stage10
Stage11
Stage12











Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	Yes	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1

Demand Set9 - 2023 PM Peak No Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To		
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	354	29
	Arm 2	32	-	2
	Arm 3	397	172	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - R135 North	1	B	264	316	386	386	316	264
1 - R135 North	2	A	23	27	34	34	27	23
2 - Elm Road	1	D	2	2	2	2	2	2
2 - Elm Road	2	C	24	29	35	35	29	24
3 - R135 South	1	F	299	357	437	437	357	299
3 - R135 South	2	E	128	153	187	187	153	128
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	92	8	-
2 - Elm Road	6	-	94
3 - R135 South	-	70	30

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	229.93	3.59	3.59	156.2

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	175.23	3.62	3.62	155.40

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
4	7.0	22.0	29.0
6	36.0	45.0	81.0
7	89.0	7.0	96.0
8	101.0	7.0	108.0
11	113.0	7.0	0.0

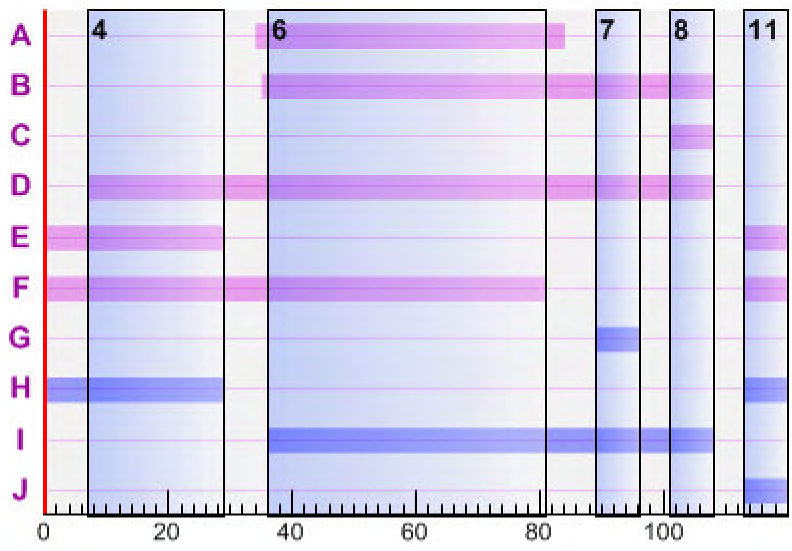
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	34	50.0	84						
B	35	73.0	108						
C	101	7.0	108						
D	7	101.0	108						
E	113	36.0	29						
F	113	88.0	81						
G	89	7.0	96						
H	113	36.0	29						
I	36	72.0	108						
J	113	7.0	0						

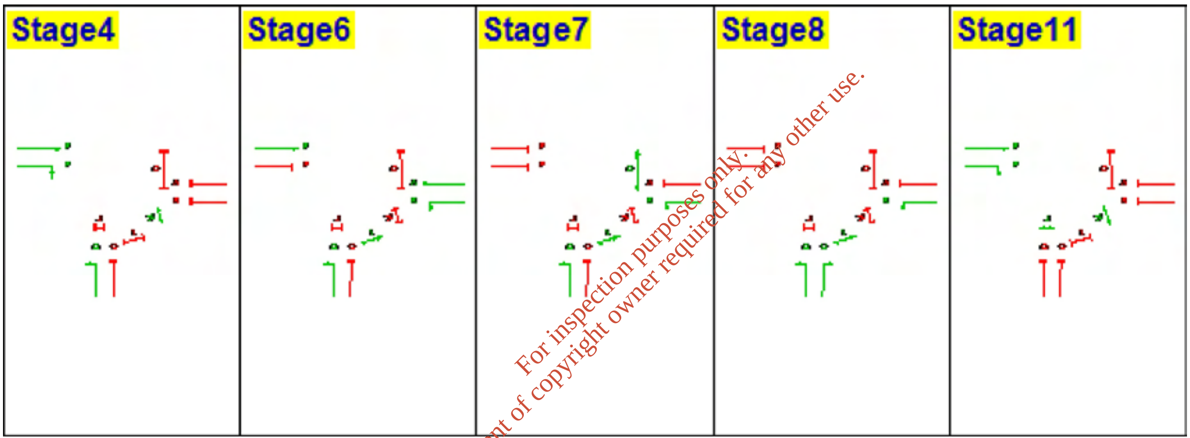
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	6	7	3.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	322	B	74.50	11.07	0.99	26.79	235.94	0.07	4.42	4.35	57.00
1	**2**	28	A	51.50	19.90	0.15	3.10	9999.00	0.00	0.54	0.54	3.90
2	**1**	2	D	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.50
2	**2**	29	C	8.50	57.62	0.46	21.88	311.30	0.04	0.94	0.90	0.90
3	**1**	364	F	89.50	5.29	0.54	24.84	262.36	0.06	3.38	3.33	80.20
3	**2**	156	E	37.50	32.56	1.41	27.28	229.93	0.07	3.76	3.69	13.70
Ped	**1**	1	J	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	I	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	264	2	74.50	10.54	0.77	21.96	309.75	0.04	3.57	3.52	8.00
1	**2**	23	1	51.50	19.84	0.13	2.55	9999.00	0.00	0.44	0.44	0.50
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	24	3	8.50	56.36	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	299	6	89.50	4.99	0.41	20.40	341.14	0.04	2.73	2.69	11.20
3	**2**	128	5	37.50	31.68	1.13	22.38	302.10	0.04	3.05	3.01	1.90
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	316	2	74.50	11.01	0.97	26.29	242.32	0.07	4.33	4.26	9.40
1	**2**	27	1	51.50	19.89	0.15	2.99	9999.00	0.00	0.52	0.52	0.60
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	29	3	8.50	57.58	0.46	21.88	311.30	0.04	0.94	0.90	0.10
3	**1**	357	6	89.50	5.26	0.52	24.36	269.47	0.06	3.31	3.26	13.10
3	**2**	153	5	37.50	32.46	1.38	26.75	236.40	0.07	3.68	3.62	2.20
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	386	2	74.50	11.71	1.26	32.11	180.24	0.11	5.40	5.29	11.00
1	**2**	34	1	51.50	19.97	0.19	3.76	9999.00	0.00	0.65	0.65	0.80
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	35	3	8.50	59.15	0.58	26.41	240.79	0.06	1.15	1.09	0.20
3	**1**	437	6	89.50	5.67	0.69	29.82	201.83	0.09	4.15	4.06	15.70
3	**2**	187	5	37.50	33.60	1.75	32.70	175.23	0.11	4.56	4.45	2.60
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	386	2	74.50	11.71	1.26	32.11	180.24	0.11	5.40	5.29	11.00
1	**2**	34	1	51.50	19.97	0.19	3.76	9999.00	0.00	0.65	0.65	0.80
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	35	3	8.50	59.21	0.58	26.41	240.79	0.06	1.15	1.09	0.20
3	**1**	437	6	89.50	5.67	0.69	29.82	201.83	0.09	4.15	4.06	15.70
3	**2**	187	5	37.50	33.60	1.75	32.70	175.23	0.11	4.56	4.45	2.60
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	316	2	74.50	11.01	0.97	26.29	242.32	0.07	4.33	4.26	9.40
1	**2**	27	1	51.50	19.89	0.15	2.99	9999.00	0.00	0.52	0.52	0.60
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	29	3	8.50	57.70	0.46	21.88	311.30	0.04	0.94	0.90	0.10
3	**1**	357	6	89.50	5.26	0.52	24.36	269.47	0.06	3.31	3.26	13.10
3	**2**	153	5	37.50	32.47	1.38	26.75	236.40	0.07	3.68	3.62	2.20
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	264	2	74.50	10.55	0.77	21.96	309.75	0.04	3.57	3.52	8.00
1	**2**	23	1	51.50	19.84	0.13	2.55	9999.00	0.00	0.44	0.44	0.50
2	**1**	2	4	102.50	1.28	0.00	0.13	9999.00	0.00	0.01	0.01	0.10
2	**2**	24	3	8.50	56.48	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	299	6	89.50	4.99	0.41	20.40	341.14	0.04	2.73	2.69	11.20
3	**2**	128	5	37.50	31.69	1.13	22.38	302.10	0.04	3.05	3.01	1.90
Ped	**1**	1	10	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00
Ped	**2**	1	9	73.50	9.01	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	37.50	28.36	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 05/08/2016 16:55:19

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

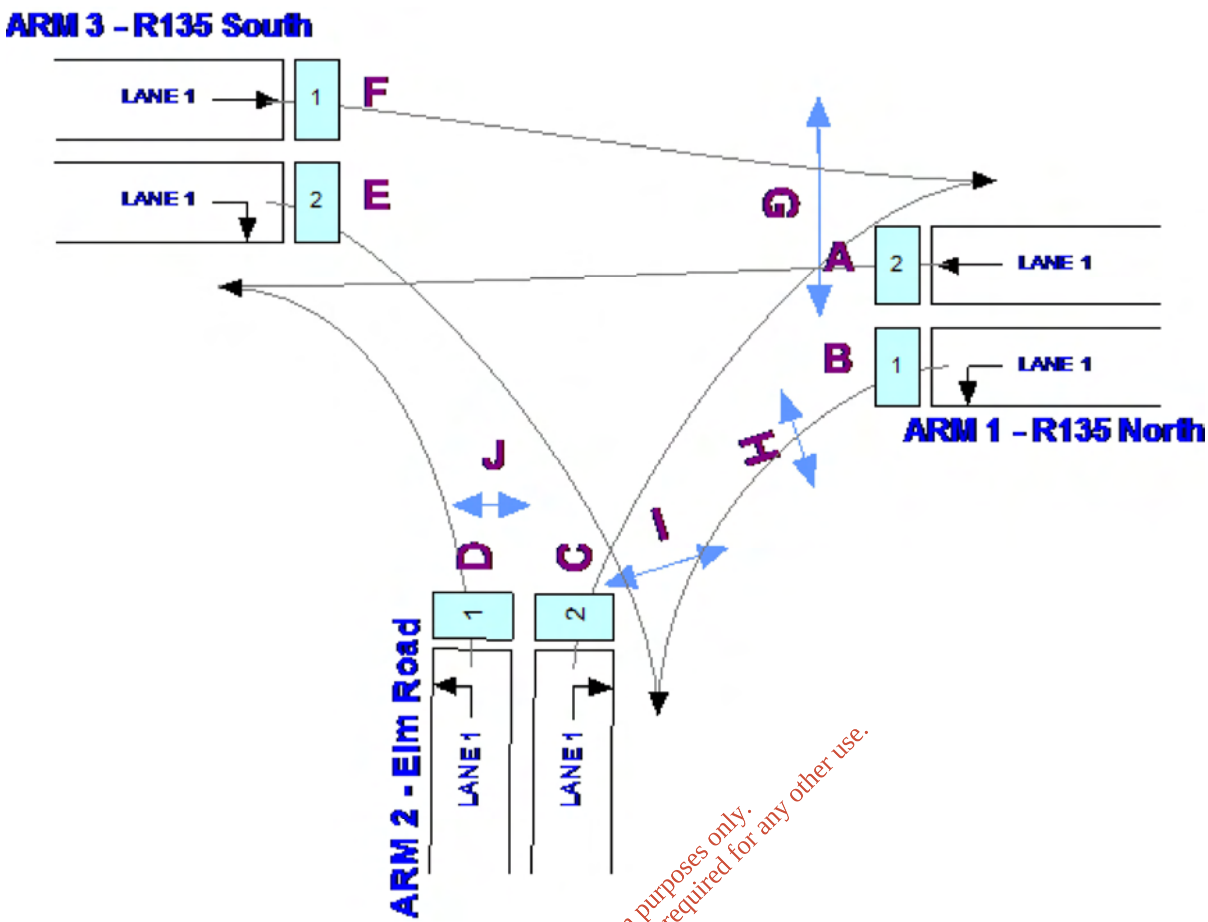
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

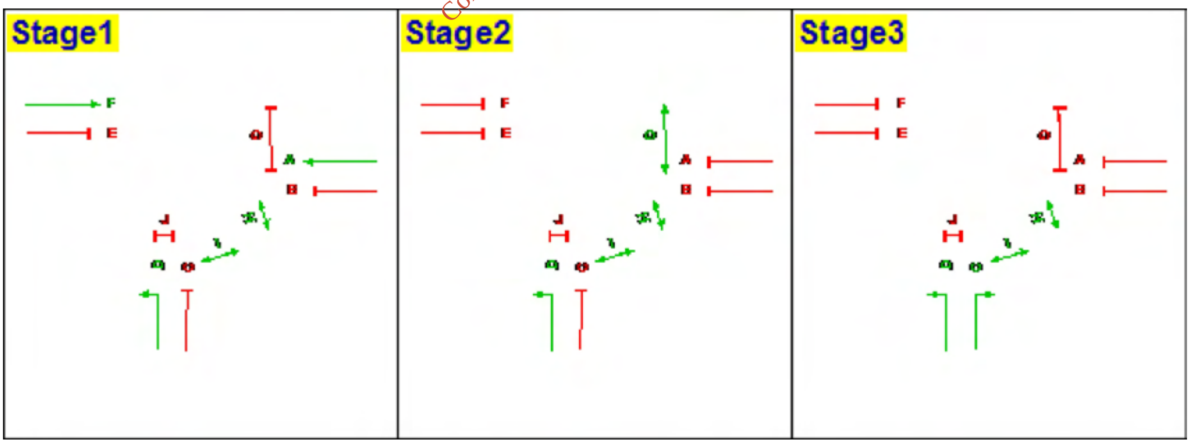
Intergreen Matrix

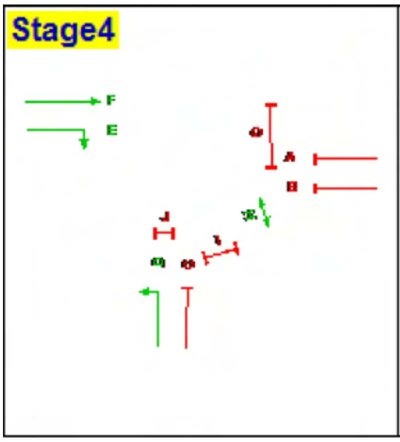
		To									
		A	B	C	D	E	F	G	H	I	J
From	A	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

Stage Diagrams

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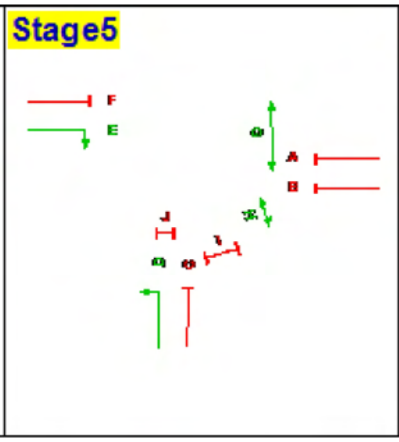
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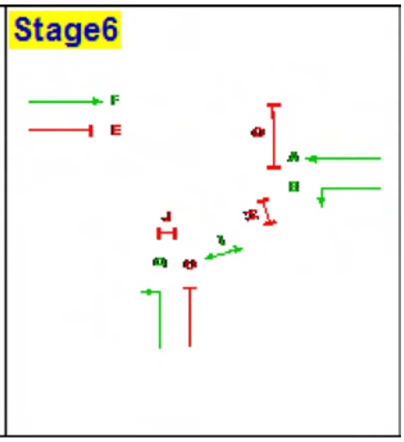
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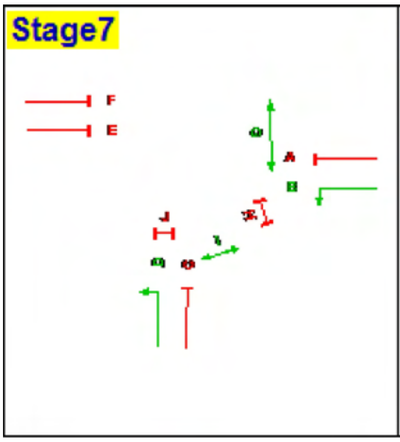
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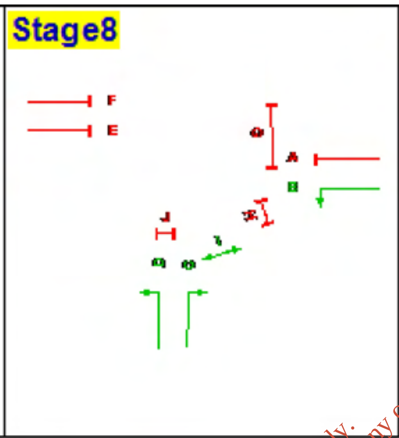
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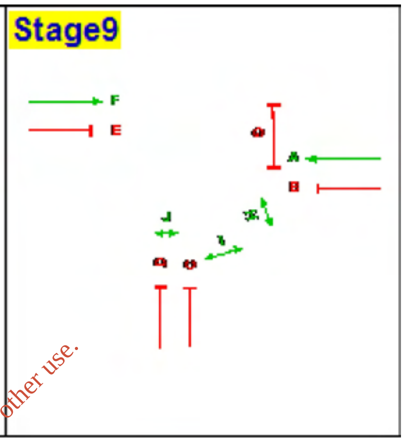
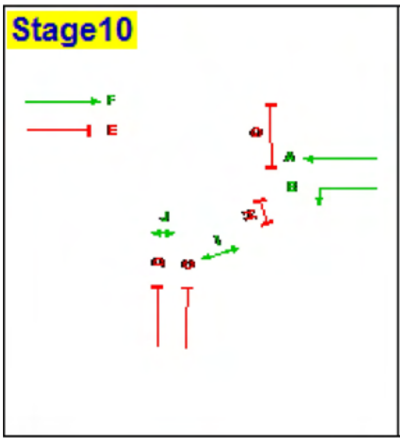

Stage9

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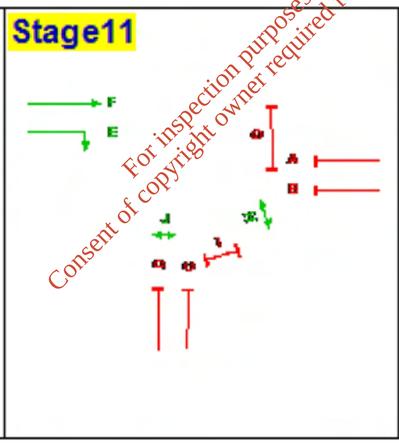
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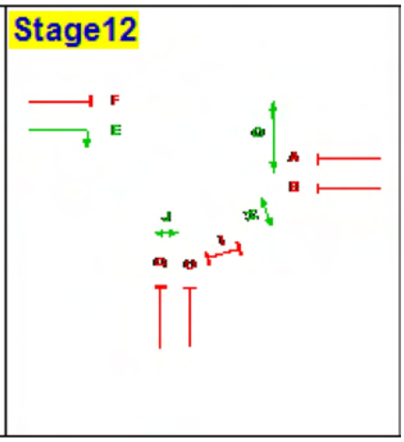
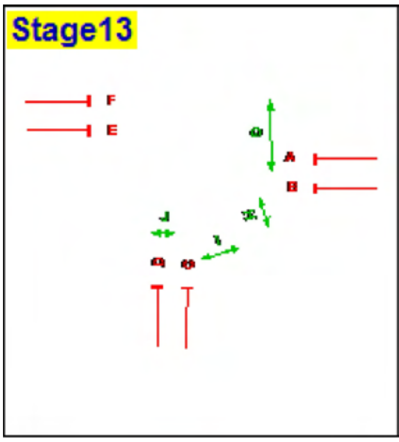
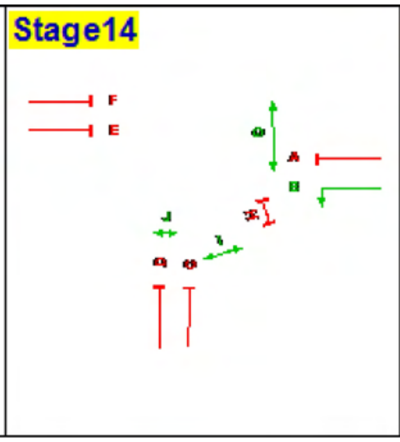
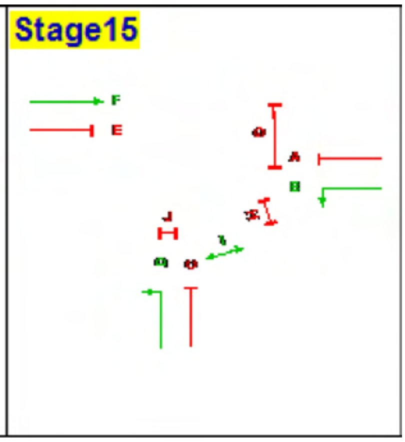
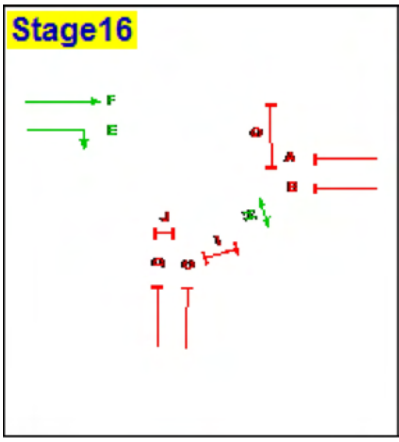
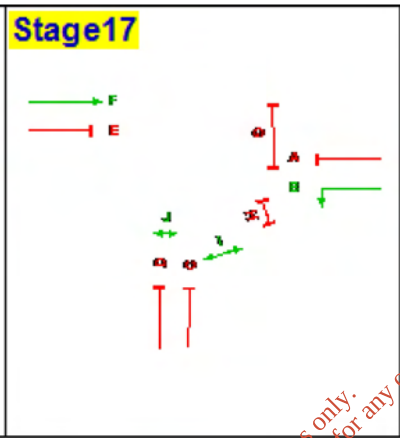

Stage12











Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	Yes	16:30	18:00	ODTAB	No	D1

Demand Set10 - 2023 PM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

	To			
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	354	35
	Arm 2	32	-	2
	Arm 3	403	178	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - R135 North	1	B	265	317	388	388	317	265
1 - R135 North	2	A	26	31	38	38	31	26
2 - Elm Road	1	D	2	2	2	2	2	2
2 - Elm Road	2	C	24	29	35	35	29	24
3 - R135 South	1	F	301	359	440	440	359	301
3 - R135 South	2	E	135	161	198	198	161	135
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	91	9	-
2 - Elm Road	6	-	94
3 - R135 South	-	69	31

Results

Note:*Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

Note:*Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	225.91	3.76	3.76	156.4

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	171.31	3.79	3.79	155.80

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
8	7.0	7.0	14.0
11	19.0	38.0	57.0
10	64.0	43.0	107.0
14	115.0	5.0	0.0

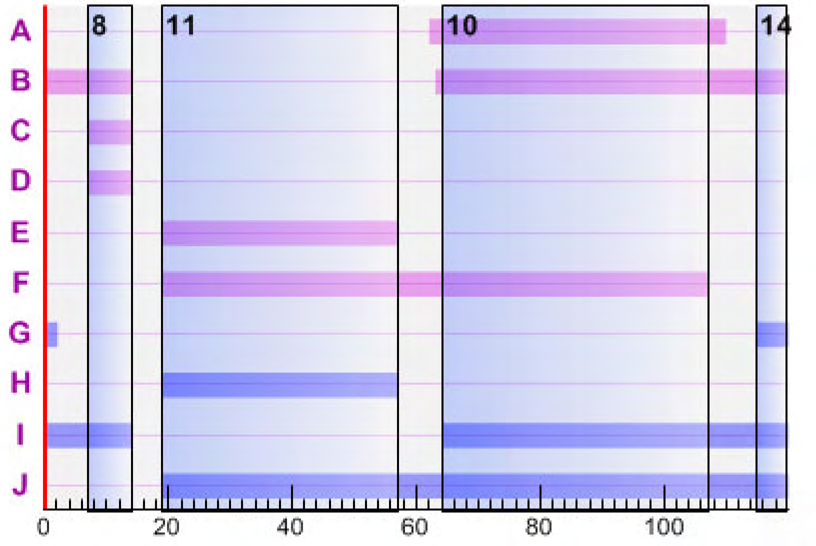
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	62	48.0	110						
B	63	71.0	14						
C	7	7.0	14						
D	7	7.0	14						
E	19	38.0	57						
F	19	88.0	107						
G	115	7.0	2						
H	19	38.0	57						
I	64	70.0	14						
J	19	101.0	0						

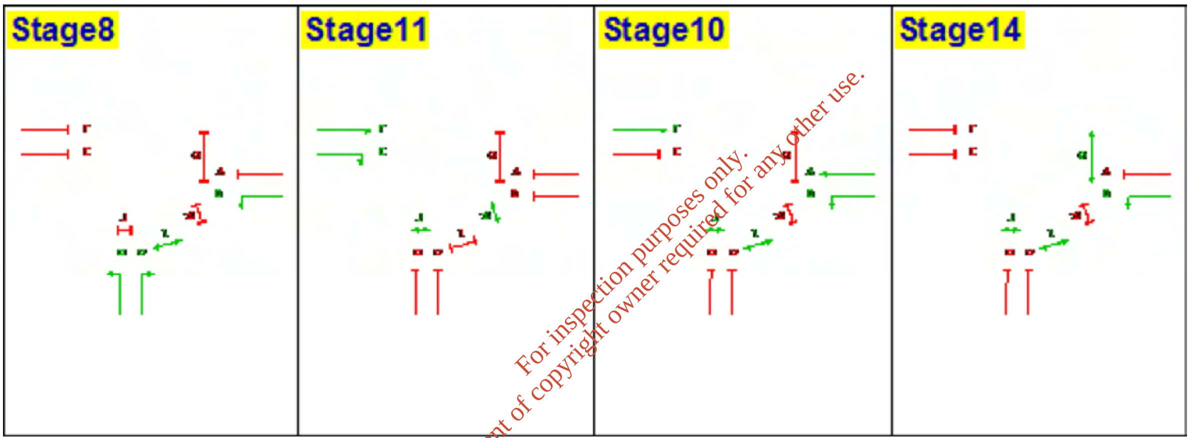
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	10	14	3.00	
Losing	G	14	8	2.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	323	B	72.50	12.06	1.08	27.61	225.91	0.07	4.63	4.56	55.30
1	**2**	32	A	49.50	21.13	0.19	3.69	9999.00	0.00	0.63	0.63	4.30
2	**1**	2	D	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.10
2	**2**	29	C	8.50	57.62	0.46	21.88	311.30	0.04	0.94	0.90	0.90
3	**1**	367	F	89.50	5.31	0.54	25.04	259.40	0.06	3.42	3.36	80.70
3	**2**	165	E	39.50	31.16	1.43	27.39	228.57	0.07	3.89	3.82	15.10
Ped	**1**	1	J	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	I	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	265	2	72.50	11.49	0.85	22.66	297.25	0.05	3.74	3.69	7.80
1	**2**	26	1	49.50	21.05	0.15	2.99	9999.00	0.00	0.51	0.51	0.60
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	24	3	8.50	56.36	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	301	6	89.50	5.00	0.42	20.54	338.21	0.04	2.75	2.71	11.20
3	**2**	135	5	39.50	30.28	1.14	22.41	301.58	0.04	3.15	3.10	2.20
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	317	2	72.50	12.00	1.06	27.10	232.08	0.07	4.54	4.47	9.10
1	**2**	31	1	49.50	21.12	0.18	3.57	9999.00	0.00	0.61	0.61	0.70
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	29	3	8.50	57.58	0.46	21.88	311.30	0.04	0.94	0.90	0.10
3	**1**	359	6	89.50	5.27	0.53	24.50	267.41	0.06	3.33	3.28	13.20
3	**2**	161	5	39.50	31.04	1.39	26.73	236.73	0.07	3.79	3.72	2.50
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	388	2	72.50	12.76	1.38	33.17	171.31	0.12	5.67	5.55	10.70
1	**2**	38	1	49.50	21.22	0.22	4.38	9999.00	0.00	0.75	0.75	0.80
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	35	3	8.50	59.15	0.58	26.41	240.79	0.06	1.15	1.09	0.20
3	**1**	440	6	89.50	5.69	0.70	30.02	199.77	0.09	4.18	4.09	15.80
3	**2**	198	5	39.50	32.20	1.77	32.87	173.81	0.11	4.72	4.61	2.90
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	388	2	72.50	12.77	1.38	33.17	171.31	0.12	5.67	5.55	10.70
1	**2**	38	1	49.50	21.22	0.22	4.38	9999.00	0.00	0.75	0.75	0.80
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	35	3	8.50	59.21	0.58	26.41	240.79	0.06	1.15	1.09	0.20
3	**1**	440	6	89.50	5.69	0.70	30.02	199.77	0.09	4.18	4.09	15.80
3	**2**	198	5	39.50	32.21	1.77	32.87	173.81	0.11	4.72	4.61	2.90
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	317	2	72.50	12.00	1.06	27.10	232.08	0.07	4.54	4.47	9.10
1	**2**	31	1	49.50	21.12	0.18	3.57	9999.00	0.00	0.61	0.61	0.70
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	29	3	8.50	57.70	0.46	21.88	311.30	0.04	0.94	0.90	0.10
3	**1**	359	6	89.50	5.27	0.53	24.50	267.41	0.06	3.33	3.28	13.20
3	**2**	161	5	39.50	31.05	1.39	26.73	236.73	0.07	3.79	3.72	2.50
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	265	2	72.50	11.49	0.85	22.66	297.25	0.05	3.74	3.69	7.80
1	**2**	26	1	49.50	21.05	0.15	2.99	9999.00	0.00	0.51	0.51	0.60
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	24	3	8.50	56.48	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	301	6	89.50	5.00	0.42	20.54	338.21	0.04	2.75	2.71	11.20
3	**2**	135	5	39.50	30.29	1.14	22.41	301.58	0.04	3.15	3.10	2.20
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	71.50	9.80	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	39.50	27.00	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

OSCADY PRO

GUI Version: 1.3.1 [05/05/11]
Analysis Program Version: v1.3 23/03/2009

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Web: www.trlsoftware.co.uk

The user of this computer program for the solution of an engineering problem is in no way relieved of their responsibility for the correctness of the solution

File: S:\Jobs\2016\16047 New Access at Huntstown Quarry, Co. Dublin\16047-02 North Quarry TIA\Reports\Appendices\T-Junction.osc
Report generation date: 04/08/2016 10:39:31

Summary

File Description

Title	(untitled)
Date	21/07/2016
Location	
Driving Side	Left
Identifier	
Client	
Jobnumber	
Enumerator	gfrisby [ROADPLAN-PC02]
Status	(new file)
Description	

Run Options

Run Evaluation Set	No
Evaluation Only	No
Optimise Critical Cycle TimeOnly	No
Use Horizontal Queues	Yes
Favour Continuous Green	No
Phase Timings Fuzziness (s)	0.5
Integer Phase Timings	Yes
Phase Snapping Distance (s)	0
Automatic Lane Turning Props	Yes
Automatic Vehicle Props	No

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R135 North	50.0	10	10	80	0
2	Elm Road	50.0	10	10	80	0
3	R135 South	50.0	10	10	80	0

Traffic Streams

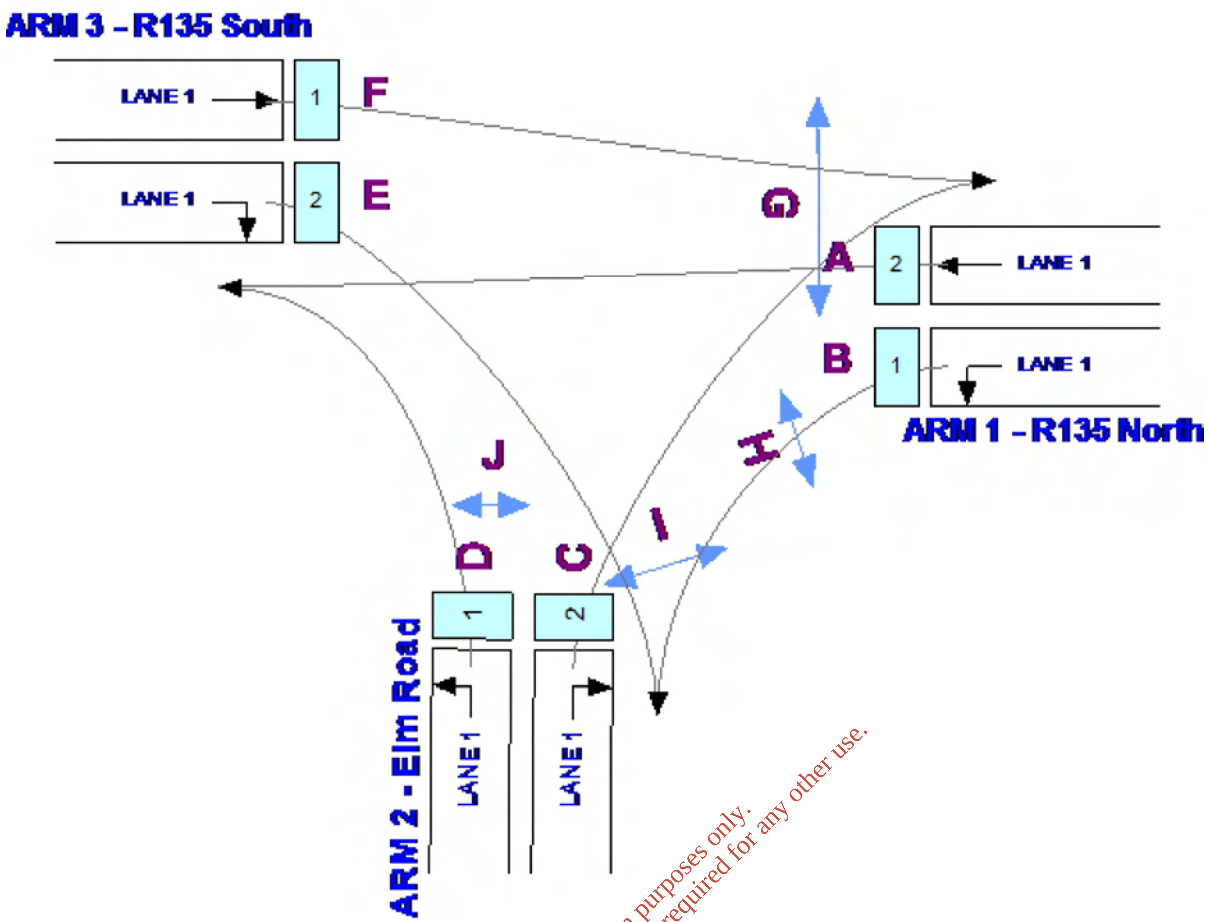
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1936	Yes	0	B	-
1	**2**	Traffic		2105	Yes	0	A	-
2	**1**	Traffic		1747	Yes	0	D	-
2	**2**	Traffic		1871	Yes	0	C	-
3	**1**	Traffic		1965	Yes	0	F	-
3	**2**	Traffic		1830	Yes	0	E	-
(Ped)	**1**	Pedestrian		10000	Yes	0	J	-
(Ped)	**2**	Pedestrian		10000	Yes	0	I	-
(Ped)	**3**	Pedestrian		10000	Yes	0	H	-
(Ped)	**4**	Pedestrian		10000	Yes	0	G	-

Arm	Traffic Stream	Relative Start Displacement (s)	Relative End Displacement (s)	Max Deg Sat (%)	Delay Weight (%)	Max Queue (PCU)	Initial Queue (PCU)	Average PCU Per Veh	Heavy Vehicles Percentage
1	**1**	0.0	0.0	90	100	0	0.0	1.10	0
1	**2**	0.0	0.0	90	100	0	0.0	1.10	0
2	**1**	0.0	0.0	90	100	0	0.0	1.10	0
2	**2**	0.0	0.0	90	100	0	0.0	1.10	0
3	**1**	0.0	0.0	90	100	0	0.0	1.10	0
3	**2**	0.0	0.0	90	100	0	0.0	1.10	0
(Ped)	**1**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**2**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**3**	0.0	0.0	90	100	0	0.0	-	0
(Ped)	**4**	0.0	0.0	90	100	0	0.0	-	0

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2			1.00	100	Yes	3.50	0.0	0
1	**2**	**1**			3		0.00	10	No	3.50	0.0	0
2	**1**	**1**		3			1.00	12	Yes	3.50	0.0	0
2	**2**	**1**				1	1.00	12	No	3.50	0.0	0
3	**1**	**1**			1		0.00	10	Yes	3.50	0.0	0
3	**2**	**1**				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	120
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	0.0	No
B	(Name)	Traffic	-	7.0	0.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	7.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No
H	(Name)	Pedestrian	-	7.0	0.0	No
I	(Name)	Pedestrian	-	7.0	0.0	No
J	(Name)	Pedestrian	-	7.0	0.0	No

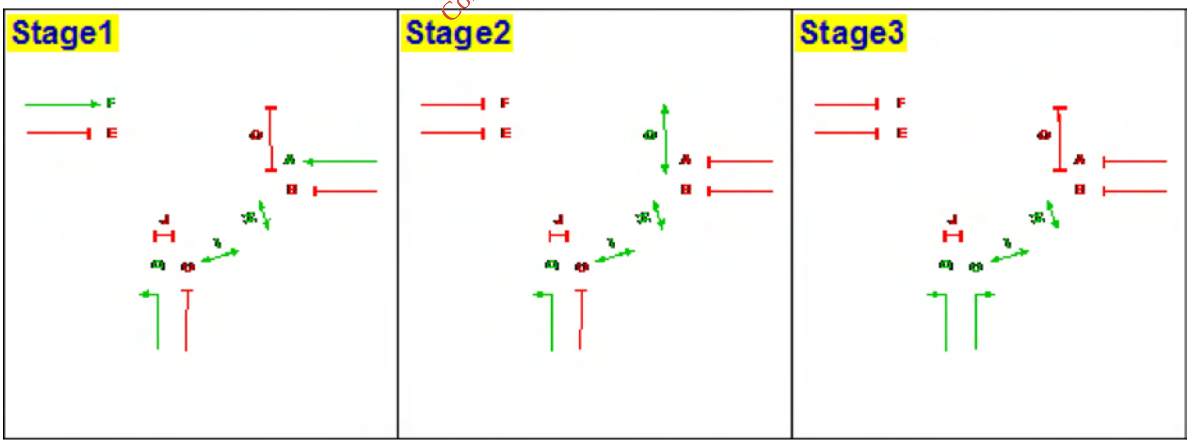
Intergreen Matrix

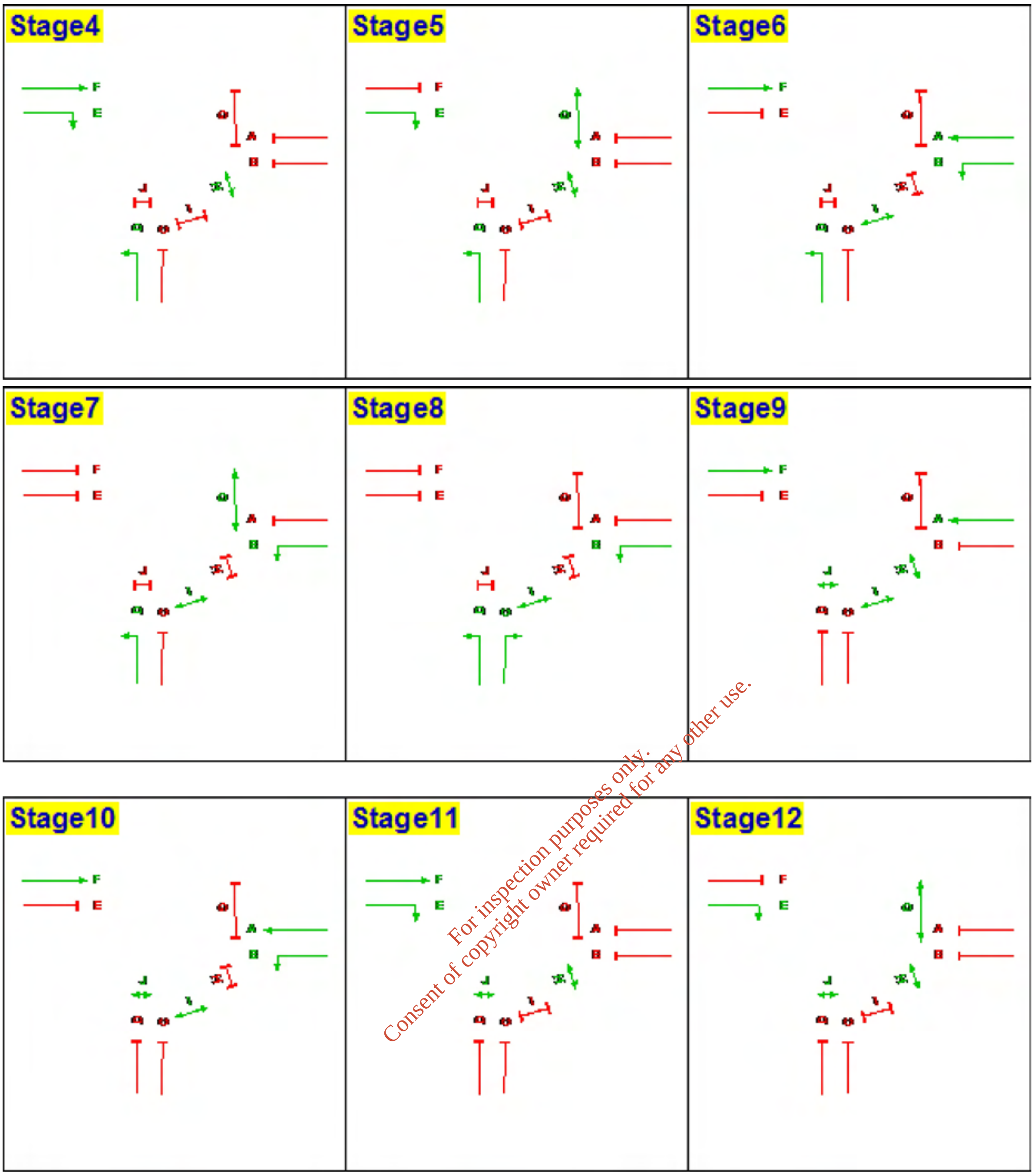
		To									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
From	**A**	-		5		5		5			
	B		-			5			5		
	C	5		-		5	5	8			5
	D				-						5
	E	5	6	5		-				7	
	F			5			-	8			
	G	5		5			5	-			
	H		6						-		
	I					5				-	
	J			5	7						-

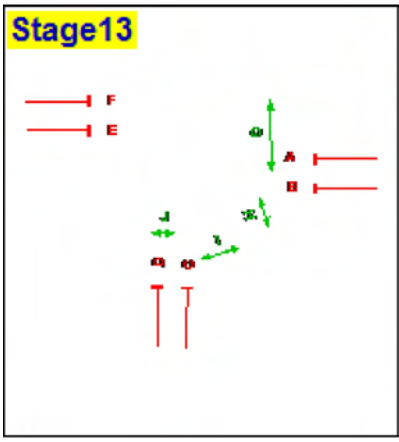
Stages

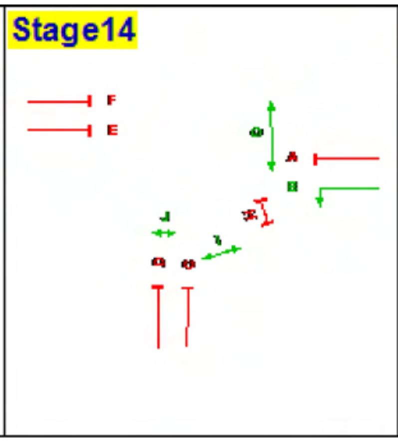
Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D,F,H,I	Yes
2	-1	D,G,H,I	Yes
3	-1	C,D,H,I	Yes
4	-1	D,E,F,H	Yes
5	-1	D,E,G,H	Yes
6	-1	A,B,D,F,I	Yes
7	-1	B,D,G,I	Yes
8	-1	B,C,D,I	Yes
9	-1	A,F,H,I,J	Yes
10	-1	A,B,F,I,J	Yes
11	-1	E,F,H,J	Yes
12	-1	E,G,H,J	Yes
13	-1	G,H,I,J	Yes
14	-1	B,G,I,J	Yes
15	-1	B,D,F,I	Yes
16	-1	E,F,H	Yes
17	-1	B,F,I,J	Yes

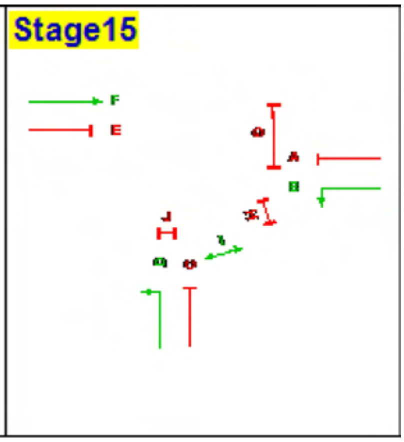
Stage Diagrams

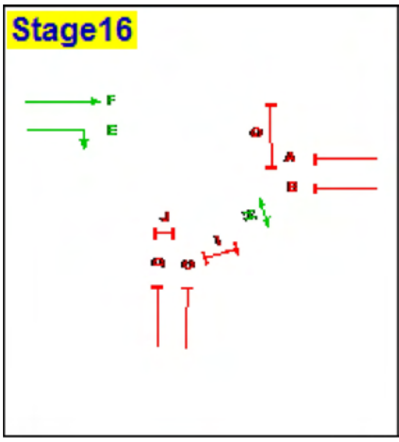


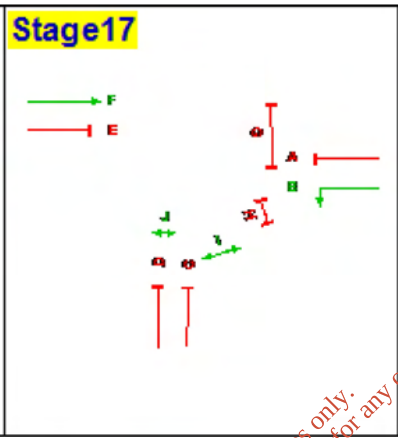

Stage4
Stage5
Stage6
Stage7
Stage8
Stage9
Stage10
Stage11
Stage12
F
E
A
B











Sequences

Sequence	Name	Stages In This Sequence
1		1,2,13,12,13,14,7,8,6
2		1,6,8,7,14,13,12,13,2
3		1,2,13,14,13,2,3,4
4		1,4,3,2,13,14,13,2
5		1,2,13,12,13,14,13,2,3
6		1,3,2,13,14,13,12,13,2
7		1,2,13,14,13,12,13,2,3
8		1,3,2,13,12,13,14,13,2

Constraints

(No constraints)

Traffic

Note:*Traffic flows are only shown for selected demand sets. Resultant flows are the sums of the selected demand sets adjusted by the global traffic scaling factor, and are shown as the arrival rates in the final results tables.*

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	90
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
2016 AM Peak Existing	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2017 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak No Dev	No	07:15	08:45	ODTAB	No	D1
2023 AM Peak With Dev	No	07:15	08:45	ODTAB	No	D1
2016 PM Peak Existing	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2017 PM Peak With Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak No Dev	No	16:30	18:00	ODTAB	No	D1
2023 PM Peak With Dev	Yes	16:30	18:00	ODTAB	No	D1

Demand Set10 - 2023 PM Peak With Dev

ODTAB Data (PCU/hr during central 60 min peak period)

		To		
		Arm 1	**Arm 2**	**Arm 3**
From	**Arm 1**	-	354	51
	Arm 2	32	-	2
	Arm 3	419	194	-

Average pedestrian flow on each pedestrian stream (if applicable): 1 ped/hr

Traffic flows (PCU/hr)

Arm	Traffic Stream	Phase	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
1 - R135 North	1	B	264	316	386	386	316	264
1 - R135 North	2	A	39	47	58	58	47	39
2 - Elm Road	1	D	2	2	2	2	2	2
2 - Elm Road	2	C	24	29	35	35	29	24
3 - R135 South	1	F	313	373	457	457	373	313
3 - R135 South	2	E	147	176	215	215	176	147
Pedestrians	1	J	1	1	1	1	1	1
Pedestrians	2	I	1	1	1	1	1	1
Pedestrians	3	H	1	1	1	1	1	1
Pedestrians	4	G	1	1	1	1	1	1

Turning Proportions

Arm	Left Movement Percentage	Straight Movement Percentage	Right Movement Percentage
1 - R135 North	87	13	-
2 - Elm Road	6	-	94
3 - R135 South	-	68	32

Results

Note: *Duplicate solutions are not shown.*

Sequence3; Objective: MAXIMUM CAPACITY

***Note:**Individual time segment results are included for this sequence/objective. Results for the 'Signal Optimiser Run' tables are based on the signal optimiser traffic flows, rather than individual time segment flows.*

Summary (Signal Optimiser Run)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	217.91	4.05	4.05	160.9

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Summary (Time Segments)

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
-	164.92	4.07	4.07	159.80

- *PRC is the lowest value encountered over all streams and time segments.*
- *Rate of delay is the sum of each stream's rate of delay, averaged over time segments.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
8	7.0	7.0	14.0
11	19.0	40.0	59.0
10	66.0	41.0	107.0
14	115.0	5.0	0.0

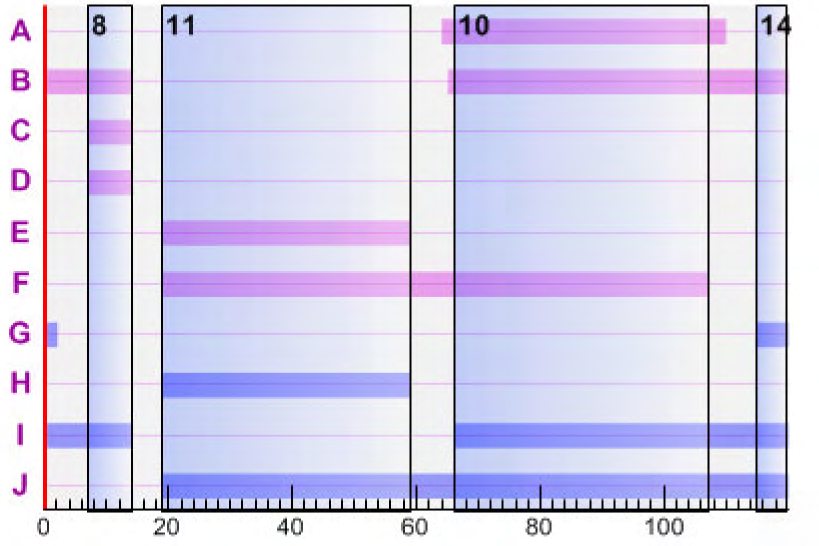
Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	64	46.0	110						
B	65	69.0	14						
C	7	7.0	14						
D	7	7.0	14						
E	19	40.0	59						
F	19	88.0	107						
G	115	7.0	2						
H	19	40.0	59						
I	66	68.0	14						
J	19	101.0	0						

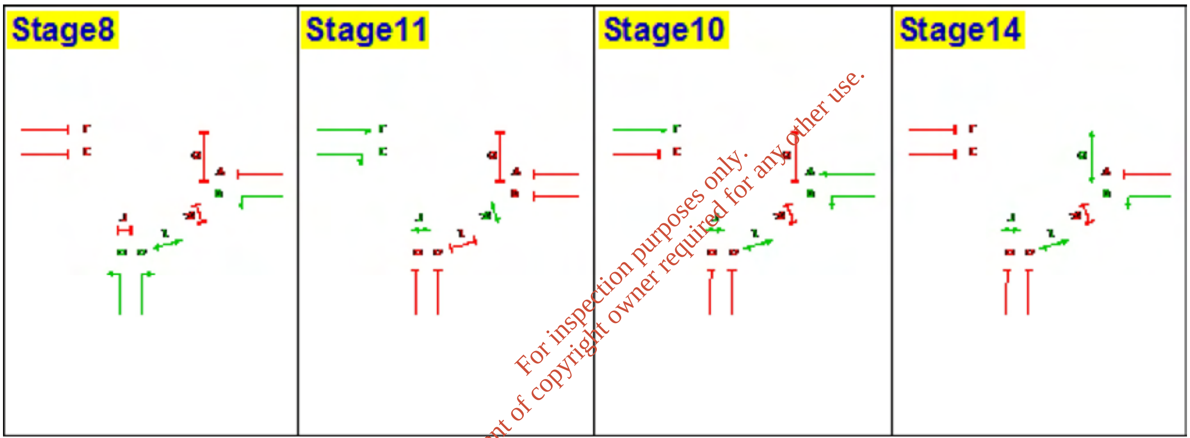
Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	10	14	3.00	
Losing	G	14	8	2.00	

Phase Timings Diagram



Final Stage Sequence



Traffic Stream Details (Signal Optimiser Run)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	322	B	70.50	13.07	1.17	28.31	217.91	0.08	4.81	4.73	53.20
1	**2**	48	A	47.50	22.59	0.30	5.76	9999.00	0.00	0.98	0.98	6.10
2	**1**	2	D	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.10
2	**2**	29	C	8.50	57.62	0.46	21.88	311.30	0.04	0.94	0.90	0.90
3	**1**	381	F	89.50	5.38	0.57	26.00	246.20	0.07	3.56	3.49	83.50
3	**2**	179	E	41.50	29.94	1.49	28.28	218.21	0.08	4.12	4.05	17.10
Ped	**1**	1	J	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	I	69.50	10.63	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	H	41.50	25.68	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	G	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:30-16:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	264	2	70.50	12.45	0.91	23.21	287.75	0.05	3.88	3.83	7.50
1	**2**	39	1	47.50	22.45	0.24	4.68	9999.00	0.00	0.79	0.79	0.80
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	24	3	8.50	56.36	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	313	6	89.50	5.05	0.44	21.36	321.41	0.04	2.87	2.83	11.60
3	**2**	147	5	41.50	29.05	1.19	23.23	287.47	0.05	3.35	3.30	2.40
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	69.50	10.63	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	41.50	25.68	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (16:45-17:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	316	2	70.50	13.00	1.14	27.78	223.94	0.08	4.71	4.64	8.70
1	**2**	47	1	47.50	22.57	0.29	5.64	9999.00	0.00	0.96	0.96	1.00
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	29	3	8.50	57.58	0.46	21.88	311.30	0.04	0.94	0.90	0.10
3	**1**	373	6	89.50	5.34	0.55	25.45	253.62	0.06	3.48	3.41	13.70
3	**2**	176	5	41.50	29.85	1.46	27.81	223.63	0.07	4.05	3.98	2.80
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	69.50	10.63	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	41.50	25.68	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:00-17:15)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	386	2	70.50	13.82	1.48	33.94	165.20	0.12	5.88	5.75	10.20
1	**2**	58	1	47.50	22.73	0.37	6.96	9999.00	0.00	1.19	1.18	1.20
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	35	3	8.50	59.15	0.58	26.41	240.79	0.06	1.15	1.09	0.20
3	**1**	457	6	89.50	5.78	0.73	31.18	188.62	0.10	4.36	4.26	16.30
3	**2**	215	5	41.50	31.02	1.85	33.97	164.92	0.12	5.02	4.90	3.30
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	69.50	10.63	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	41.50	25.68	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:15-17:30)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	386	2	70.50	13.82	1.48	33.94	165.20	0.12	5.88	5.75	10.20
1	**2**	58	1	47.50	22.73	0.37	6.96	9999.00	0.00	1.19	1.18	1.20
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	35	3	8.50	59.21	0.58	26.41	240.79	0.06	1.15	1.09	0.20
3	**1**	457	6	89.50	5.78	0.73	31.18	188.62	0.10	4.36	4.26	16.30
3	**2**	215	5	41.50	31.02	1.85	33.97	164.92	0.12	5.02	4.90	3.30
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	69.50	10.63	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	41.50	25.68	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:30-17:45)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	316	2	70.50	13.01	1.14	27.78	223.94	0.08	4.71	4.64	8.70
1	**2**	47	1	47.50	22.57	0.29	5.64	9999.00	0.00	0.96	0.96	1.00
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	29	3	8.50	57.70	0.46	21.88	311.30	0.04	0.94	0.90	0.10
3	**1**	373	6	89.50	5.34	0.55	25.45	253.62	0.06	3.48	3.41	13.70
3	**2**	176	5	41.50	29.86	1.46	27.81	223.63	0.07	4.05	3.98	2.80
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	69.50	10.63	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	41.50	25.68	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00

Traffic Stream Details (17:45-18:00)

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	264	2	70.50	12.45	0.91	23.21	287.75	0.05	3.88	3.83	7.50
1	**2**	39	1	47.50	22.45	0.24	4.68	9999.00	0.00	0.79	0.79	0.80
2	**1**	2	4	8.50	52.18	0.03	1.62	9999.00	0.00	0.06	0.06	0.00
2	**2**	24	3	8.50	56.48	0.38	18.11	396.98	0.03	0.77	0.75	0.10
3	**1**	313	6	89.50	5.05	0.44	21.36	321.41	0.04	2.87	2.83	11.60
3	**2**	147	5	41.50	29.06	1.19	23.23	287.47	0.05	3.35	3.30	2.40
Ped	**1**	1	10	102.50	1.28	0.00	0.01	9999.00	0.00	0.00	0.00	0.00
Ped	**2**	1	9	69.50	10.63	0.00	0.02	9999.00	0.00	0.01	0.01	0.00
Ped	**3**	1	8	41.50	25.68	0.01	0.03	9999.00	0.00	0.02	0.02	0.00
Ped	**4**	1	7	8.50	51.81	0.01	0.14	9999.00	0.00	0.03	0.03	0.00