BARRETT **MAHONY**
CONSULTING ENGINEERS
CIVIL & STRUCTURAL

TRAFFIC & TRANSPORT ASSESSMENT REPORT

Claremont Project, Howth

PROJECT: **TRAFFIC AND TRANSPORT ASSESSMENT FOR MIXED USE RESIDENTIAL DEVELOPMENT AT CLAREMONT, HOWTH ROAD, HOWTH, DUBLIN 13**

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PL6	25/11/2019	PLANNING	MR	MC	VD	

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1.0 INTRODUCTION

1.1 GENERAL DESCRIPTION

Atlas GP Limited has commissioned by Barrett Mahony Consulting Engineers to provide a Traffic and Transport Assessment for the mixed-use development at Claremont, Howth Road, Howth, Dublin 13. The proposed development will consist of 512 No. apartments, 2,873m^2 of retail / commercial / crèche space, 439 No. car parking spaces and 1335 No. bicycle parking spaces.

The scope of the TTA for this development will be broadly similar to scope adhered to in the previous application on the site in 2015.

Therefore, the impact of the proposed development on the following 6 No. junctions will be assessed within this report:

- Sutton Cross Signalised junction
- Greenfield Road / Church Road priority junction
- Church Road / Howth Road priority junction
- Offington Park / Howth Road priority junction
- Claremont Road / Howth Road priority junction
- Harbour Road / Church Street priority junction

The flows at the Development entrance / Howth Road junction are derived from the flows at the above 6 No. junctions.

Traffic surveys at the above 6 No. junctions were carried out on Tuesday 15th January 2019.

The traffic assessment within this report will analyse the existing flows on the major adjacent intersections, detail the existing level of operational efficiency at these locations, and will also assess the impact that the flows predicted to be generated by both the proposed and adjacent developments will have on these operational efficiencies.

This assessment will also take account of the planned adjacent SHD development on Balscadden Road.

The analysis within this report is undertaken on the basis of 1.4% annual growth in network traffic over the period 2019 to 2030 period, decreasing to 0.4% in the 2030 to 2039 period, consistent with the 'medium growth' assumption for the four planning authorities within the Dublin city area as detailed within the 2016 Transport Infrastructure Ireland document 'Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections', PE-PAG-02017 October 2016.

1.2 SITE ACCESS TO ROAD NETWORK

The subject site is located on the R105 Howth Road, County Dublin, approximately 2 km east of the Sutton Cross / Station Road / Howth Road signalised intersection.

The current proposal has 2 No. access points onto Howth Road. For the purposes of the traffic assessment, it will be assumed that 70% of generated traffic will access via the east entrance.

The site layout indicating the 2 No. site entrances is contained within Appendix 1

Sightlines are good in both directions for exiting drivers, complying with the requirements of DMURS, i.e. a 65-metre sightline is available from a 2-metre set-back within a 60 km/h speed zone.

Figure 1-1 details the available sightlines at the access point to the subject site.

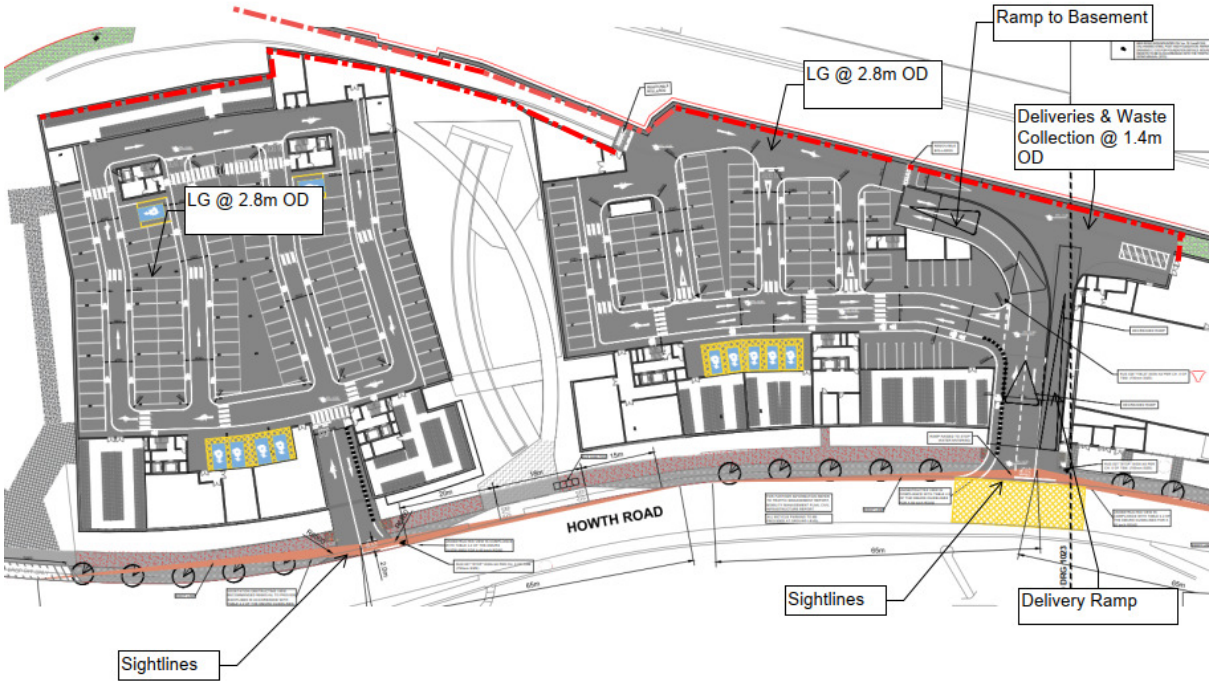

Figure 1-1: Available sightlines at development entrances

To the north-west of the subject site, the R105 Howth Road links towards Dublin city, while, to the east, the R105 links to Howth Head and onwards towards Sutton Cross junction.

A site location map, indicating the location of the 6 No. traffic surveys, is contained within Figure 1-2

The site location map also indicates the subject site (marked in blue) and the adjacent planned site at Balscadden Road (marked in red).

Figure 1-2: Site location map also indicating location of 6 No. traffic surveys

1.3 SCOPE OF THE REPORT

Section 2 provides details of the receiving environment.

Section 3 details the traffic predicted to be generated by the proposed development.

Section 4 provides an analysis of the traffic impact of the proposed development on the development entrance and nearby critical junctions.

Section 5 makes some concluding comments regarding the sustainability of the proposed project in traffic impact terms.

2.0 RECEIVING ENVIRONMENT

The site is located on the north side of the R105 Howth Road, within Howth Village, immediately west of the Howth DART Station.

The location of the site relative to the 6 No. nearby surveyed junctions is detailed within Figure 1-1.

The development is a mixed-use development, with the majority of the development residential the majority of car, peak flows will typically occur on weekdays, with peak flows typically occurring between 7am and 9am in the morning and between 4pm and 6pm in the evening.

Accordingly, traffic surveys were carried out on Tuesday 15th January 2019 at the 6 No. junctions.

The raw data from these surveys is contained within Appendix 2.

The surveys were carried out over a 12-hour period between 0700 and 1900 in order to ascertain the peak hour flows for all traffic movements at the 6 No. junctions.

The surveys indicated that the weekday morning peak occurred between 0800 and 0900 with the evening peak occurring between 1600 and 1800 – these were observed to be the timeframes during which the junctions were most heavily loaded. The following analysis is based on these peak periods.

On the basis of the results of both the surveys and assumptions regarding when peak flows from the generated traffic will occur, the morning peak hour has been taken as 0800 to 0900, with the evening peak taken to occur between 1700 and 1800.

The survey data is detailed for the morning and evening peak hours in Diagrams 1 and 2 within Appendix 3.

Table 2-1 indicates the total flows incident on all 6 No. junctions during the morning and evening peaks, and compares the values obtained with the results from the 2015 surveys completed for the previous application at the subject site:

		2015		2019			
		8 to 9	5 to 6	8 to 9	5 to 6		
		AM	PM	AM	PM	AM +/-	PM +/-
Sutton Crossroads	site 1	1933	2004	1949	1694	**0.8**	**-15.5**
Greenfield Road / Church Road	site 2	1092	778	1107	814	**1.4**	**4.6**
Church Road / Howth Road	site 3	921	1203	983	824	**6.7**	**-31.5**
Offington Park / Howth Road	site 4	890	1152	898	797	**0.9**	**-30.8**
Claremont Road / Howth Road	site 5	823	1112	798	756	**-3.0**	**-32.0**
Harbour Road / Church Street	site 6	717	932	658	712	**-8.2**	**-23.6**

Table 2-1: Comparison of 2015 and 2019 surveys at 6 No. critical junctions

One can see that, while traffic during the morning peak has marginally increased over the 4-year period, the PM peak values have decreased by at least 10%.

It can thus be said that flows at the critical junctions have not deteriorated in the intervening 4-year period.

3.0 TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT FOR PROPOSED DEVELOPMENT

3.1 INTRODUCTION

The traffic impact of the proposed development is derived by assessing the trips generated by both the proposal and planned development on Balscadden Road, east of the subject site, taking the existing, day of opening and design year flows on the network, gauging the extent to which the superimposed flows from the proposed and adjacent developments will affect the efficiency of future network flows.

3.2 TRIPS GENERATED BY CANDIDATE SITE

The planned quantum of the development is as follows:

- 512 No. apartments
- 1705 m^2 GFA Anchor Unit
- 603 m^2 GFA Retail
- 329 m^2 GFA café / restaurant
- 236 m^2 crèche

The majority of creche is assumed to be mostly internal use or used by locals and would result in very little vehicular traffic. Based on the location of the site and current congestion issues at Sutton Cross, these vehicles will be passing traffic and already on the network. Therefore, no additional vehicles will be added.

TRICS typically gives the following weekday morning and evening peak trip rates for apartments using Irish sites only where parking provision is not greater than 1.2 spaces per dwelling unit:

		Weekday AM		Weekday PM	
		IN	OUT	IN	OUT
Apartments	Trips/Unit	0.042	0.16	0.15	0.08

Table 3-1: Peak hour trip rates for apartments within development site

The above TRICS trip rates give rise to the following weekday morning and evening peak trip rates for apartments:

		Weekday AM		Weekday PM	
	Units (No.)	IN	OUT	IN	OUT
Apartments	512	22	82	77	41

Table 3-2: Peak hour flows generated by proposed apartments within development site

Trips generated by the commercial / mixed-use component of the proposed development:
TRICS typically gives the following weekday morning and evening peak trip rates for major retail component of the development:

		Weekday AM		Weekday PM	
		IN	OUT	IN	OUT
Retail space	Trips/100m^2 GFA	3.3	2.9	4.1	4.6

Table 3-3: Typical peak hour trip rates for pharmacy component within development site

The above TRICS trip rates give rise to the following weekday morning and evening peak trip rates for the major retail component:

		Weekday AM		Weekday PM	
	GFA m^2	IN	OUT	IN	OUT
Retail space	2637	87	77	108	121

Table 3-4: Peak hour flows generated by major retail component within development site

It would be reasonable to assume that a significant proportion of these volumes are multi-purpose trips that involve use of the retail facilities by the inhabitants of the residential units. Also, a significant proportion of trips generated will be pass-by / diverted trips which are already on the network and are thus not deemed new trips. Therefore, it would be reasonable to assume that 50% of the values within Table 3-4 are new trips.

The following are the combined flows generated by the residential and major retail components within the subject site for the morning and evening peak:

	Weekday AM		Weekday PM	
	IN	OUT	IN	OUT
Apartments	22	82	77	41
Retail	44	39	54	61
Total generated flows	66	121	131	102

Table 3-5: Total flows generated by the proposed development

Thus, the proposal will result in a 2-way flow of 187 vehicles per hour in the morning peak, increasing to 233 vehicles per hour in the evening peak (3.1 vehicles entering or exiting every minute during the morning peak, rising to 3.9 vehicles entering or exiting per minute during the evening peak).

3.3 TRIPS GENERATED BY NEARBY PLANNED DEVELOPMENT ON BALSCADDEN ROAD

As detailed within the submitted TTA for the Balscadden Road SHD, the proposed development was predicted to generate 41 No. outbound trips and 7 No. inbound trips during the morning peak hour between 0800 and 0900, with 27 No. inbound trips and 9 No. outbound trips generated during the evening peak between 1700 and 1800.

3.4 DISTRIBUTION OF GENERATED FLOWS FROM PROPOSED AND PLANNED DEVELOPMENTS

3.4.1 PROPOSED DEVELOPMENT AT TECHCRETE SITE

The incident flows along the R105 / Howth Road are relatively well balanced during both the morning and evening peaks.

In the morning peak in the interests of robustness of the analysis within this report, for exiting traffic (peak direction of flow), a 2:1 ratio will be assumed in favour of traffic exiting towards Sutton Cross. Of the one-third exiting towards Howth Village, 50% of trips are assumed to terminate in the local area, with the remaining 50% accessing Sutton Cross via Greenfield Road.

For traffic entering the development (non-peak direction of flow), 50% is assumed to enter from the Howth Village direction, with 50% from Sutton Cross via Howth Road.

At Sutton Cross, for exiting traffic (peak direction of flow) from Howth Road / Greenfield Road, 60% is assumed to exit to the Dublin Road, with 40% exiting to Station Road, while for traffic entering (non-peak direction of flow) from Sutton Cross, 50% will enter form Dublin Road and 50% from Station Road. 50% of this entering traffic will exit onto Howth Road, with 50% exiting onto Greenfield Road.

Diagram 3 within Appendix 3 details the assumed distributions for the AM peak hour generated flows.

In the evening peak, for exiting traffic (non-peak direction of flow), a 50:50 split will be assumed between traffic exiting towards Sutton Cross and Howth Village. Of the 50% exiting towards Howth Village, again 50% of trips are assumed to terminate in the local area, with the remaining 50% accessing Sutton Cross via Greenfield Road.

For traffic entering the development (peak direction of flow), one-third are assumed to enter from the Howth Village direction, with two-thirds from Sutton Cross via Howth Road.

At Sutton Cross, for exiting traffic (non-peak direction of flow) from Howth Road / Greenfield Road, 60% is assumed to exit to the Dublin Road, with 40% exiting to Station Road, while for traffic entering (peak direction of flow) from Sutton Cross, 60% will enter form Dublin Road and 40% from Station Road. 60% of this entering traffic will exit onto Howth Road, with 40% exiting onto Greenfield Road.

Diagram 4 within Appendix 3 details the assumed distributions for the PM peak hour generated flows.

3.4.2 PLANNED DEVELOPMENT ON BALSCADDEN ROAD

The same assumptions will be made for the flows generated by the planned development on Balscadden Road.

These assumed distributions are detailed for the morning and evening peak hours within Diagrams 5 and 6 respectively within Appendix 3.

3.4.3 COMBINED GENERATED FLOWS

The combined AM and PM peak hour generated flows are detailed within Diagrams 7 and 8 respectively within Appendix 3.

3.5 TRIP ASSIGNMENT

The 2014 Traffic and Transport Assessment Guidelines published by the NRA requires that the relevant junctions be analysed for the existing situation, the year of opening (2024) with the proposed and adjacent developments in place, the design year 1 (year of opening plus 5) with the proposed and adjacent developments in place, and the design year 2 (year of opening plus 15) with the proposed and adjacent developments in place. In order to bring focus to the analysis, design year 1 has been omitted from those junctions fully analysed.

An annual growth rate of 1.4% has been assumed for the period 2019 to 2030, decreasing to 0.5% for 2031 to 2039, based on the medium growth estimate for Fingal County Council published by TII in 2017 (PE-PAG-02017).

The 2024 Do-Nothing ('without development') scenario is derived by factoring the survey results in Diagrams 1 and 2 up by 4.2% ($(1.014)^3$ - 1 = 0.042). The 2024 Do-Something ('with development') scenario is derived by adding the development flows detailed within Diagrams 7 and 8 to these factored network flows.

The 2039 Do-Nothing ('without development') scenario is derived by factoring the survey results in Diagrams 1 and 2 up by 20.7% ($(1.014)^{11} – 1))((1.005)^7 – 1) = 0.207$). The 2039 Do-Something ('with development') scenario is derived by adding the development flows detailed within Diagrams 7 and 8 to these factored network flows.

The 2039 analysis constitutes a significantly conservative analysis, as given current transport policy in the Greater Dublin Area, where use of the private car for the trip to work is being actively discouraged and use of public transport and soft modes actively encouraged, it is highly unlikely that an increase in traffic volumes of 21% from now until 2039 will take place.

The comparison of 2015 and 2019 flows at Sutton Cross detailed within Table 2-1 would reinforce this assertion.

In reality, it could reasonably be assumed going forward that traffic volume increases during the morning and evening peaks will be marginal over the coming years.

3.6 IMPACT OF GENERATED FLOWS ON CRITICAL JUNCTIONS

The increase in traffic at the 6 No. existing junctions, plus the proposed development entrances, is detailed below in Table 3-6:

		EXISTING TRAFFIC		GENERATED TRAFFIC		PERCENTAGE INCREASE	
		AM	PM	AM	PM	AM	PM
Sutton Crossroads	site 1	1949	1694	187	224	9.6	13.2
Greenfield Road / Church Road	site 2	1107	814	42	78	3.8	9.5
Church Road / Howth Road	site 3	983	824	145	164	14.8	19.9
Offington Park / Howth Road	site 4	898	797	145	164	16.2	20.6
Claremont Road / Howth Road	site 5	798	756	145	164	18.2	21.7
Harbour Road / Church Street	site 6	658	712	104	119	15.8	16.7
Development Entrances (Howth Road)	Subject site	658	700	218	256	33.1	36.5

Table 3-6: Impact of generated flows on critical junctions

Thus, no further analysis of Greenfield Road / Howth Road is required, as the increases are below 5%.

In the case of Claremont Road / Howth Road, the minor road flows are low (approximately one vehicle exiting onto major road every three minutes). Thus, no detailed analysis is necessary.

Thus, Sutton Cross will be analysed in detail for existing flows, day of opening with and without development, and Design year with and without development (year of opening plus 15).

The other 4 No. priority junctions (Development Entrance, Offington Park, Church Road and Church Street) will be analysed for day of opening with and without development.

4.0 Traffic Impact Assessment of 5 No. critical junctions in proximity to the subject site

4.1 INTRODUCTION

The traffic analysis will analyse the performance of the following 1 No. signalised and 4 No. priority intersections for the following scenarios:

Sutton Cross

- Existing flows (AM and PM peak)
- 2024 flows with and without proposed and adjacent development in place (AM and PM peak) – existing timings
- 2024 flows with proposed and adjacent development in place (AM peak) – optimised timings
- 2024 flows with proposed and adjacent development in place (AM peak) – optimised timings and no retail flows (opening after 10AM)
- 2039 flows with and without proposed and adjacent development in place (AM and PM peak)

Development Entrance

- 2024 flows with proposed and adjacent development in place (AM and PM peak)
- 2039 flows with proposed and adjacent development in place (AM and PM peak)

Offington Park / Howth Road

- 2024 flows with and without proposed and adjacent development in place (AM and PM peak)

Church Road / Howth Road

- 2024 flows with and without proposed and adjacent development in place (AM and PM peak)

Harbour Road / Church Street

- 2024 flows with and without proposed and adjacent development in place (AM and PM peak)

The OSCADY programme will be used to analysis the signalised junctions and the PICADY programme will be utilised to analyse the priority for all relevant scenarios.

4.2 ANALYSIS OF SUTTON CROSS SIGNALISED JUNCTION

4.2.1 GEOMETRIC PARAMETERS

For the junction in question, the following geometric characteristics have been used for the purposes of this assessment:

Howth Road approach (Arm A)
2 No. lanes, inside lane for straight-ahead and left-turning traffic (4 metres wide), outside lane for right-turning only (3 metres wide).

Greenfield Road South (Arm B)
1 No. lanes for all directions of traffic (3 metres wide).

Dublin Road (Arm C)
2 No. lanes, inside lane for left-turning and straight-ahead traffic (3 metres wide), outside lane for right-turning traffic only (3 metres wide).

Station Road North (Arm D)
2 No. lanes, inside lane for left-turning traffic only (3 metres wide), outside lane for straight-ahead and right-turning only (3 metres wide).

4.2.2 SIGNAL TIMINGS AND PHASING

A 6-phase signal cycle is in place at the junction, as observed in January 2019, configured as follows:

Phase 1
Straight-ahead and left-turning traffic on Arms A and C have priority. All other traffic is stopped.
Phase 2
All movements on Arm A and left-turning on Arm D have priority. All other traffic is stopped.
Phase 3
All movements on Arms B and D have priority. All other traffic is stopped.
Phase 4
Pedestrians have priority. All traffic is stopped.
Phase 5
All movements on Arm C have priority. All other traffic is stopped.
Phase 6
Straight-ahead and left-turning movements on Arm C have priority. All other traffic is stopped.

The following timings are assumed based on observations during the January 2019 surveys:

<u>AM PEAK</u>
Phase 1: 20 seconds
Phase 2: 17 seconds
Phase 3: 80 seconds
Phase 4: 7 seconds
Phase 5: 25 seconds
Phase 6: 7 seconds

<u>PM PEAK</u>
Phase 1: 40 seconds
Phase 2: 15 seconds
Phase 3: 55 seconds
Phase 4: 7 seconds
Phase 5: 20 seconds
Phase 6: 10 seconds

An inter-stage time of 5 seconds assumed.

A cycle time of approximately 3 minutes is assumed.

The 'with development' scenario in 2024 is also run with the cycle optimised to provide more realistic queuing levels with the development in place (rather than solely using existing timings)

4.2.3 ANALYSIS OF EXISTING AM AND PM PEAK HOUR FLOWS

Table 4-1 and Table 4-2 immediately below detail the flows, capacities, RFC's and queue lengths for the existing morning and evening peaks:

	EXISTING AM PEAK FLOWS			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.03	6.89	0.73	13
Howth Road (East) R	1.70	2.62	0.65	6
Greenfield Road (South) L+S+R	6.87	9.38	0.73	13
Dublin Road (East) L+S	3.53	9.45	0.37	8
Dublin Road (East) R	2.47	3.75	0.66	8
Station Road (North) L	1.70	13.66	0.12	3
Station Road (North) S+R	5.17	10.25	0.51	10
0815-0830	**Flow** (veh/min)	**Cap.** (veh/m3.08 in)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.85	6.75	0.87	17
Howth Road (East) R	2.22	2.62	0.85	9
Greenfield Road (South) L+S+R	8.27	8.65	0.96	21
Dublin Road (East) L+S	5.47	9.35	0.59	12
Dublin Road (East) R	4.20	3.75	1.12	20
Station Road (North) L	2.13	13.66	0.16	3
Station Road (North) S+R	6.87	9.58	0.72	13
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.50	6.80	0.96	21
Howth Road (East) R	2.83	2.62	1.08	14
Greenfield Road (South) L+S+R	8.13	8.18	1.00	24
Dublin Road (East) L+S	5.83	9.51	0.61	13
Dublin Road (East) R	3.24	3.75	0.86	15
Station Road (North) L	3.52	13.66	0.26	5
Station Road (North) S+R	7.62	9.63	0.79	15
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.65	7.07	0.80	16
Howth Road (East) R	2.35	2.62	0.90	14
Greenfield Road (South) L+S+R	7.93	9.61	0.83	17
Dublin Road (East) L+S	4.72	9.52	0.49	10
Dublin Road (East) R	2.02	3.75	0.54	6
Station Road (North) L	2.31	13.66	0.17	4
Station Road (North) S+R	5.15	9.47	0.54	10

Table 4-1: Existing capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour

	EXISTING PM PEAK FLOWS			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.01	10.16	0.49	10
Howth Road (East) R	1.66	2.46	0.67	5
Greenfield Road (South) L+S+R	6.47	6.47	1.00	20
Dublin Road (East) L+S	5.61	13.10	0.43	10
Dublin Road (East) R	3.39	3.20	1.06	15
Station Road (North) L	1.96	10.61	0.19	4
Station Road (North) S+R	4.04	7.35	0.55	9
1715-1730	**Flow** (veh/min)	**Cap.** (veh/m3.08 in)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	4.54	10.38	0.44	9
Howth Road (East) R	1.93	2.46	0.79	7
Greenfield Road (South) L+S+R	4.73	6.98	0.68	11
Dublin Road (East) L+S	5.63	13.13	0.43	10
Dublin Road (East) R	2.17	3.20	0.68	8
Station Road (North) L	1.96	10.61	0.19	4
Station Road (North) S+R	3.04	7.60	0.40	7
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.02	10.52	0.67	15
Howth Road (East) R	2.78	2.46	1.13	15
Greenfield Road (South) L+S+R	4.07	6.84	0.59	9
Dublin Road (East) L+S	6.40	13.01	0.49	11
Dublin Road (East) R	2.53	3.20	0.79	9
Station Road (North) L	2.24	10.61	0.21	4
Station Road (North) S+R	4.29	7.67	0.56	9
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	4.58	10.24	0.45	9
Howth Road (East) R	1.29	2.46	0.53	6
Greenfield Road (South) L+S+R	5.67	6.11	0.93	16
Dublin Road (East) L+S	6.44	13.45	0.48	11
Dublin Road (East) R	3.29	3.20	1.03	15
Station Road (North) L	2.93	10.61	0.28	5
Station Road (North) S+R	4.67	7.86	0.59	10

Table 4-2: Existing capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour

One can see that the junction is at present heavily loaded, with between 15 and 20 vehicles queuing on major approaches during both peak hours. The maximum ration of flow to capacity is estimated at 112% in the morning peak and 113% in the evening peak.

Queuing and delays are thus significant during both peak hours.

	MORNING PEAK	
0800-0900	**Max. queue modelled** (average veh)	**Max. queue observed** (average veh)
Howth Road (East) L+S	17	14
Greenfield Road (South) L+S+R	18	23
Dublin Road (East) L+S	13	14
Station Road (North) S+R	12	18
	EVENING PEAK	
1700-1800	**Max. queue modelled** (average veh)	**Max. queue observed** (average veh)
Howth Road (East) L+S	11	12
Greenfield Road (South) L+S+R	14	19
Dublin Road (East) L+S	12	10
Station Road (North) S+R	10	11

Table 4-3: COMPARISON OF MODELLED AND OBSERVED QUEUES AT SUTTON CROSS

The data within Table 4-3 above demonstrates that the modelling process is accurate, with significant convergence between the modelled and observed queuing at the major approaches at the signalised junction.

4.2.4 ANALYSIS OF DAY OF OPENING (2024) AM AND PM PEAK HOUR FLOWS (DEVELOPMENT NOT IN PLACE)

Tables 4-4 and 4-5 immediately below detail the flows, capacities, RFC's and queue lengths for the day of opening morning and evening peaks without the development in place:

	2024 AM PEAK FLOWS (WITHOUT DEV)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.29	6.89	0.77	14
Howth Road (East) R	1.78	2.62	0.68	6
Greenfield Road (South) L+S+R	7.13	9.32	0.77	14
Dublin Road (East) L+S	3.64	9.45	0.38	8
Dublin Road (East) R	2.56	3.75	0.68	8
Station Road (North) L	1.75	13.66	0.13	3
Station Road (North) S+R	5.38	10.17	0.53	10
0815-0830	**Flow** (veh/min)	**Cap.** (veh/m3.08 in)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.08	6.78	0.90	18
Howth Road (East) R	2.32	2.62	0.89	9
Greenfield Road (South) L+S+R	8.60	8.54	1.00	24
Dublin Road (East) L+S	5.71	9.35	0.61	13
Dublin Road (East) R	4.36	3.75	1.16	22
Station Road (North) L	2.23	13.66	0.16	4
Station Road (North) S+R	7.17	9.42	0.76	14
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.77	6.83	0.99	24
Howth Road (East) R	2.97	2.62	1.13	17
Greenfield Road (South) L+S+R	8.47	8.04	1.05	32
Dublin Road (East) L+S	6.05	9.51	0.64	13
Dublin Road (East) R	3.35	3.75	0.89	18
Station Road (North) L	3.67	13.66	0.27	6
Station Road (North) S+R	7.93	9.48	0.84	17
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.89	7.07	0.83	17
Howth Road (East) R	2.44	2.62	0.93	16
Greenfield Road (South) L+S+R	8.27	9.57	0.86	21
Dublin Road (East) L+S	4.92	9.53	0.52	11
Dublin Road (East) R	2.08	3.75	0.56	8
Station Road (North) L	2.43	13.66	0.18	4
Station Road (North) S+R	5.37	9.34	0.58	10

Table 4-4: Day of opening (2024) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development not in place)

	2024 PM PEAK FLOWS (WITHOUT DEV)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.22	10.17	0.51	11
Howth Road (East) R	1.71	2.46	0.70	6
Greenfield Road (South) L+S+R	6.73	6.40	1.05	23
Dublin Road (East) L+S	5.85	13.11	0.45	10
Dublin Road (East) R	3.55	3.20	1.11	17
Station Road (North) L	2.04	10.61	0.19	4
Station Road (North) S+R	4.23	7.27	0.58	9
1715-1730	**Flow** (veh/min)	**Cap.** (veh/m3.08 in)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	4.72	10.38	0.46	10
Howth Road (East) R	2.01	2.46	0.82	7
Greenfield Road (South) L+S+R	4.93	6.95	0.71	13
Dublin Road (East) L+S	5.88	13.13	0.45	10
Dublin Road (East) R	2.26	3.20	0.71	9
Station Road (North) L	2.06	10.61	0.19	4
Station Road (North) S+R	3.14	7.54	0.42	7
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.31	10.52	0.70	15
Howth Road (East) R	2.89	2.46	1.17	17
Greenfield Road (South) L+S+R	4.27	6.80	0.63	19
Dublin Road (East) L+S	6.68	13.01	0.51	11
Dublin Road (East) R	2.65	3.20	0.83	9
Station Road (North) L	2.33	10.61	0.22	4
Station Road (North) S+R	4.47	7.61	0.59	10
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	4.80	10.24	0.47	10
Howth Road (East) R	1.34	2.46	0.54	6
Greenfield Road (South) L+S+R	5.93	6.03	0.98	19
Dublin Road (East) L+S	6.71	13.45	0.50	11
Dublin Road (East) R	3.42	3.20	1.07	16
Station Road (North) L	3.06	10.61	0.29	6
Station Road (North) S+R	4.87	7.81	0.62	11

Table 4-5: **Day of opening (2024) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development not in place)**

Assuming network flow increases of 4.2 % over the next 5 No. years until the projected day of opening of the proposed development in 2024, maximum queuing will increase by 30 No. vehicles during the morning peak relative to the existing situation on the busiest approach (Greenfield Road), and an increase of 3 No. vehicles during the evening peak relative to the existing situation at the same location.

4.2.5 ANALYSIS OF DAY OF OPENING (2024) AM AND PM PEAK HOUR FLOWS (DEVELOPMENT IN PLACE) – existing timings

Tables 4-6 and 4-7 immediately below detail the flows, capacities, RFC's and queue lengths for the day of opening morning and evening peaks with the development in place:

	2024 AM PEAK FLOWS (WITH DEV)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.49	6.94	0.94	20
Howth Road (East) R	2.24	2.62	0.86	9
Greenfield Road (South) L+S+R	7.53	9.32	0.81	15
Dublin Road (East) L+S	4.09	9.48	0.43	9
Dublin Road (East) R	2.58	3.75	0.69	8
Station Road (North) L	1.96	13.66	0.14	3
Station Road (North) S+R	5.64	9.96	0.57	11
0815-0830	**Flow** (veh/min)	**Cap.** (veh/m3.08 in)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.28	6.83	1.07	30
Howth Road (East) R	2.78	2.62	1.06	14
Greenfield Road (South) L+S+R	9.00	8.56	1.05	28
Dublin Road (East) L+S	6.18	9.38	0.66	14
Dublin Road (East) R	4.36	3.75	1.16	22
Station Road (North) L	2.42	13.66	0.18	4
Station Road (North) S+R	7.44	9.21	0.90	15
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.95	6.88	1.16	46
Howth Road (East) R	3.45	2.62	1.32	26
Greenfield Road (South) L+S+R	8.80	8.10	1.09	38
Dublin Road (East) L+S	6.48	9.53	0.68	14
Dublin Road (East) R	3.38	3.75	0.90	18
Station Road (North) L	3.87	13.66	0.28	6
Station Road (North) S+R	8.20	9.32	0.88	18
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.08	7.11	0.99	47
Howth Road (East) R	2.92	2.62	1.11	31
Greenfield Road (South) L+S+R	8.67	9.55	0.91	31
Dublin Road (East) L+S	5.34	9.55	0.56	12
Dublin Road (East) R	2.12	3.75	0.57	8
Station Road (North) L	2.63	13.66	0.19	4
Station Road (North) S+R	5.64	9.19	0.61	11

Table 4-6: Day of opening (2024) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development in place) – existing signal timings

	2024 PM PEAK FLOWS (WITH DEV)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.89	10.22	0.58	12
Howth Road (East) R	1.97	2.46	0.80	7
Greenfield Road (South) L+S+R	7.27	6.40	1.16	31
Dublin Road (East) L+S	7.05	13.20	0.53	12
Dublin Road (East) R	3.75	3.20	1.17	19
Station Road (North) L	2.56	10.61	0.24	5
Station Road (North) S+R	4.64	7.14	0.65	10
1715-1730	**Flow** (veh/min)	**Cap.** (veh/m3.08 in)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.42	10.42	0.52	11
Howth Road (East) R	2.25	2.46	0.89	9
Greenfield Road (South) L+S+R	5.40	6.82	0.79	16
Dublin Road (East) L+S	7.07	13.25	0.53	12
Dublin Road (East) R	2.46	3.20	0.77	11
Station Road (North) L	2.59	10.61	0.24	5
Station Road (North) S+R	3.55	7.47	0.48	8
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.98	10.54	0.76	17
Howth Road (East) R	3.15	2.46	1.28	21
Greenfield Road (South) L+S+R	4.73	6.67	0.71	11
Dublin Road (East) L+S	7.89	13.13	0.60	13
Dublin Road (East) R	2.85	3.20	0.89	11
Station Road (North) L	2.86	10.61	0.27	5
Station Road (North) S+R	4.81	7.53	0.64	11
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.48	10.29	0.53	11
Howth Road (East) R	1.58	2.46	0.65	9
Greenfield Road (South) L+S+R	6.40	5.90	1.08	18
Dublin Road (East) L+S	7.92	13.50	0.59	6
Dublin Road (East) R	3.61	3.20	1.13	15
Station Road (North) L	3.61	10.61	0.34	3
Station Road (North) S+R	5.25	7.869	0.68	6

Table 4-7: **Day of opening (2024) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development in place)- existing signal timings**

Assuming network flow increases of 4.2 % over the next 5 No. years until the projected day of opening of the proposed development in 2024 plus development flows of 179 No. vehicles during the morning peak and 227 No. vehicles during the evening peak, maximum queuing will increase by 30 No. vehicles during the morning peak relative to the 'without development' scenario on the busiest approach (Howth Road), and an increase of 8 No. vehicles during the evening peak relative to the 'without development' scenario at Greenfield Road.

4.2.6 ANALYSIS OF DAY OF OPENING (2024) AM PEAK HOUR FLOWS (DEVELOPMENT IN PLACE) – optimised timings

Tables 4-7a immediately below details the flows, capacities, RFC's and queue lengths for the day of opening morning peak with the development in place using optimised signal timings. This will have the effect of providing more realistic estimates of queue lengths, given the increases resulting from using the existing timings:

	2024 AM PEAK FLOWS (WITH DEV)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.49	7.90	0.82	17
Howth Road (East) R	2.24	3.62	0.62	6
Greenfield Road (South) L+S+R	7.53	8.87	0.85	16
Dublin Road (East) L+S	4.09	9.08	0.45	9
Dublin Road (East) R	2.58	3.60	0.72	8
Station Road (North) L	1.96	14.12	0.14	3
Station Road (North) S+R	5.64	9.41	0.60	11
0815-0830	**Flow** (veh/min)	**Cap.** (veh/m3.08 in)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.28	7.20	1.00	31
Howth Road (East) R	2.78	2.75	1.00	15
Greenfield Road (South) L+S+R	9.00	8.89	1.00	30
Dublin Road (East) L+S	6.18	9.71	0.63	17
Dublin Road (East) R	4.36	4.31	1.01	21
Station Road (North) L	2.42	14.01	0.18	4
Station Road (North) S+R	7.44	9.57	0.77	18
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.95	7.93	1.00	36
Howth Road (East) R	3.45	3.44	1.00	19
Greenfield Road (South) L+S+R	8.80	8.75	1.00	33
Dublin Road (East) L+S	6.48	8.79	0.74	19
Dublin Road (East) R	3.38	3.37	1.00	20
Station Road (North) L	3.87	14.95	0.26	6
Station Road (North) S+R	8.20	10.05	0.82	20
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.08	8.31	0.85	24
Howth Road (East) R	2.92	4.20	0.70	11
Greenfield Road (South) L+S+R	8.67	9.81	0.88	24
Dublin Road (East) L+S	5.34	8.08	0.66	14
Dublin Road (East) R	2.12	3.18	0.67	9
Station Road (North) L	2.63	15.33	0.17	4
Station Road (North) S+R	5.64	9.47	0.60	12

Table 4-7a: Day of opening (2024) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development in place) - optimised timings

One can see that optimising the timings has the effect of significantly reducing queue lengths, as the different flow patterns are allowed for in adjusted timings. Maximum queue increases is reduced significantly to 12 extra vehicles on the busiest approach on Howth Road (from 30 No. using the existing timings).

Overall queuing at the junction is also significantly reduced.

4.2.7 ANALYSIS OF DESIGN YEAR (2039) AM AND PM PEAK HOUR FLOWS (DEVELOPMENT NOT IN PLACE)

Tables 4-8 and 4-9 immediately below detail the flows, capacities, RFC's and queue lengths for the design year morning and evening peaks without the development in place:

	2039 AM PEAK FLOWS (WITHOUT DEV)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC** **(-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.08	6.89	0.88	18
Howth Road (East) R	2.06	2.62	0.78	8
Greenfield Road (South) L+S+R	8.27	9.06	0.91	19
Dublin Road (East) L+S	4.24	9.45	0.45	9
Dublin Road (East) R	2.96	3.75	0.79	10
Station Road (North) L	2.05	13.66	0.15	3
Station Road (North) S+R	6.22	9.75	0.64	12
0815-0830	**Flow** (veh/min)	**Cap.** (veh/m3.08 in)	**RFC** **(-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.06	6.78	1.04	27
Howth Road (East) R	2.68	2.62	1.02	13
Greenfield Road (South) L+S+R	10.00	8.07	1.23	48
Dublin Road (East) L+S	6.57	9.35	0.70	15
Dublin Road (East) R	5.03	3.75	1.34	32
Station Road (North) L	2.58	13.66	0.19	4
Station Road (North) S+R	8.29	8.82	0.94	20
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC** **(-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.84	6.83	1.15	43
Howth Road (East) R	3.43	2.62	1.30	25
Greenfield Road (South) L+S+R	9.80	7.51	1.30	81
Dublin Road (East) L+S	7.03	9.51	0.74	16
Dublin Road (East) R	3.91	3.75	1.04	34
Station Road (North) L	4.22	13.66	0.31	6
Station Road (North) S+R	9.19	8.91	1.03	28
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC** **(-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.83	7.07	0.96	42
Howth Road (East) R	2.83	2.62	1.08	28
Greenfield Road (South) L+S+R	9.60	9.38	1.02	88
Dublin Road (East) L+S	5.71	9.53	0.60	12
Dublin Road (East) R	2.42	3.75	0.65	16
Station Road (North) L	2.80	13.66	0.21	4
Station Road (North) S+R	6.20	8.80	0.70	13

Table 4-8: **Design Year (2039) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development not in place)**

	2039 PM PEAK FLOWS (WITHOUT DEV)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.06	10.17	0.59	13
Howth Road (East) R	2.00	2.46	0.82	7
Greenfield Road (South) L+S+R	7.80	6.12	1.27	39
Dublin Road (East) L+S	6.78	13.11	0.52	11
Dublin Road (East) R	4.09	3.20	1.28	23
Station Road (North) L	2.38	10.61	0.22	4
Station Road (North) S+R	4.89	6.91	0.71	11
1715-1730	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.43	10.38	0.52	11
Howth Road (East) R	2.30	2.46	0.94	10
Greenfield Road (South) L+S+R	5.67	6.81	0.83	26
Dublin Road (East) L+S	6.78	13.13	0.52	12
Dublin Road (East) R	2.62	3.20	0.82	16
Station Road (North) L	2.36	10.61	0.22	4
Station Road (North) S+R	3.64	7.30	0.50	8
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	8.45	10.52	0.80	19
Howth Road (East) R	3.35	2.46	1.36	24
Greenfield Road (South) L+S+R	4.93	6.62	0.75	13
Dublin Road (East) L+S	7.74	13.01	0.60	13
Dublin Road (East) R	3.06	3.20	0.96	16
Station Road (North) L	2.70	10.61	0.26	5
Station Road (North) S+R	5.16	7.41	0.70	11
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	5.52	10.24	0.54	11
Howth Road (East) R	1.55	2.46	0.63	12
Greenfield Road (South) L+S+R	6.87	5.68	1.20	32
Dublin Road (East) L+S	7.76	13.45	0.58	13
Dublin Road (East) R	3.97	3.20	1.24	28
Station Road (North) L	3.54	10.61	0.33	6
Station Road (North) S+R	5.66	7.60	0.74	13

Table 4-9: **Design Year (2039) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development not in place)**

Assuming network flow increases of 21 % over the next 20 No. years until the design year for the proposed development in 2039 (day-of-opening plus 15), maximum queuing has grown significantly over existing levels.

It should be stated, however, that an increase of 21% in network flows over the next 20 No. years in highly unlikely given the aim of existing transport policies within the Greater Dublin area to minimise use of the private car for the journey to work.

4.2.8 ANALYSIS OF DESIGN YEAR (2039) AM AND PM PEAK HOUR FLOWS (DEVELOPMENT IN PLACE)

Tables 4-10 and 4-11 immediately below detail the flows, capacities, RFC's and queue lengths for the design year morning and evening peaks with the development in place:

	2039 AM PEAK FLOWS (WITH DEV)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	7.30	6.94	1.05	27
Howth Road (East) R	2.50	2.62	0.96	11
Greenfield Road (South) L+S+R	8.67	9.06	0.96	21
Dublin Road (East) L+S	4.68	9.48	0.49	10
Dublin Road (East) R	2.99	3.75	0.80	10
Station Road (North) L	2.25	13.66	0.17	4
Station Road (North) S+R	6.48	9.55	0.68	12
0815-0830	**Flow** (veh/min)	**Cap.** (veh/m3.08 in)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	8.26	6.82	1.21	49
Howth Road (East) R	3.14	2.62	1.20	20
Greenfield Road (South) L+S+R	10.33	8.10	1.28	54
Dublin Road (East) L+S	7.04	9.35	0.75	16
Dublin Road (East) R	5.02	3.75	1.34	32
Station Road (North) L	2.78	13.66	0.20	4
Station Road (North) S+R	8.55	8.65	0.99	23
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	9.02	6.87	1.31	81
Howth Road (East) R	3.91	2.62	1.49	39
Greenfield Road (South) L+S+R	10.13	7.57	1.34	91
Dublin Road (East) L+S	7.47	9.52	0.78	17
Dublin Road (East) R	3.93	3.75	1.05	35
Station Road (North) L	4.43	13.66	0.33	6
Station Road (North) S+R	9.43	8.75	1.08	35
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	8.02	7.11	1.13	96
Howth Road (East) R	3.31	2.62	1.26	49
Greenfield Road (South) L+S+R	9.93	9.38	1.06	103
Dublin Road (East) L+S	6.14	9.55	0.64	13
Dublin Road (East) R	2.46	3.75	0.66	17
Station Road (North) L	3.00	13.66	0.22	4
Station Road (North) S+R	6.46	8.68	0.74	15

Table 4-10: Design Year (2039) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development in place)

	2039 PM PEAK FLOWS (WITH DEV)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.75	10.21	0.66	14
Howth Road (East) R	2.25	2.46	0.91	9
Greenfield Road (South) L+S+R	8.33	5.97	1.39	49
Dublin Road (East) L+S	7.96	13.20	0.60	13
Dublin Road (East) R	4.30	3.20	1.34	26
Station Road (North) L	2.88	10.61	0.27	5
Station Road (North) S+R	5.26	6.81	0.77	12
1715-1730	**Flow** (veh/min)	**Cap.** (veh/m3.08 in)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.11	10.41	0.59	12
Howth Road (East) R	2.55	2.46	1.04	13
Greenfield Road (South) L+S+R	6.20	6.67	0.93	45
Dublin Road (East) L+S	7.97	13.24	0.60	13
Dublin Road (East) R	2.83	3.20	0.88	22
Station Road (North) L	2.90	10.61	0.27	5
Station Road (North) S+R	4.04	7.21	0.56	9
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	9.13	10.54	0.87	20
Howth Road (East) R	3.60	2.46	1.47	30
Greenfield Road (South) L+S+R	5.40	6.49	0.83	30
Dublin Road (East) L+S	8.94	13.11	0.68	15
Dublin Road (East) R	3.26	3.20	1.01	24
Station Road (North) L	3.23	10.61	0.30	6
Station Road (North) S+R	5.51	7.32	0.75	12
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Max. queue** (vehicles)
Howth Road (East) L+S	6.21	10.28	0.60	13
Howth Road (East) R	1.79	2.46	0.73	21
Greenfield Road (South) L+S+R	7.33	5.57	1.31	54
Dublin Road (East) L+S	8.97	13.49	0.66	15
Dublin Road (East) R	4.17	3.20	1.30	38
Station Road (North) L	4.07	10.61	0.38	7
Station Road (North) S+R	6.00	7.49	0.80	14

Table 4-11: **Design Year (2039) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development in place)**

Assuming network flow increases of 21 % over the next 20 No. years until the design year for the proposed development in 2039 (day-of-opening plus 15) plus 2-way development flows of approximately 3 vehicles per minute, maximum queuing has grown significantly over existing levels, and further above the 2039 'without development' scenario.

It should again be stated, however, that an increase of 21% in network flows over the next 20 years is highly unlikely given the aim of existing transport policies within the Greater Dublin area to minimise use of the private car for the journey to work. It should also be stated that the trip distribution assumptions are very robust, with the assumption that 75% of all development flows would be incident on Sutton Cross during both peaks. In reality, vehicle trips with local destinations during the morning peak and with local origins during the evening peak may form a significantly greater cohort than assumed within this analysis.

4.3 ANALYSIS OF DEVELOPMENT ENTRANCES

4.3.1 FLOW ASSUMPTIONS

There are two proposed vehicular entrances at the subject site as detailed within Appendix 1.

Diagrams 9 and 10 within Appendix 3 contains the generated flows at the 2 No. development entrances.

While there is a road connecting the two entrances, given the layout of the entrances relative to the on-site car parking, it has been assumed that 70% of development flows will enter / exit via the most easterly entrance.

Thus, the east entrance will be analysed within this report as it is assumed to be the most heavily loaded of the two junctions.

The geometric layout of the 2 No. entrances will be identical for design purposes.

4.3.2 GEOMETRIC PARAMETERS

For the junction in question, the analysis assumes that the Howth Road major carriageway is 7.3 metres wide in the vicinity of the entrance (2.2 metre wide right-turning lane assumed for westbound traffic), with the Development Entrance minor approach assumed to consist of 1 No. 3.0 metre wide lane.

4.3.3 DAY OF OPENING (2024) ANALYSIS WITH DEVELOPMENT IN PLACE

All sight distances are assumed to be a minimum of 50 metres for the purposes of this analysis.

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Howth Road / Development entrance priority junction are detailed below for 2024 with the development in place within Tables 4-12 and 4-13:

	Morning peak hour 2024 (with development in place)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.47	7.88	0.19	1
Howth Road westbound entering right into Development (C-B)	9.13	9.13	0.03	0
0815-0830	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.47	7.89	0.19	1
Howth Road westbound entering right into Development (C-B)	0.28	9.19	0.03	0
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.47	7.11	0.21	1
Howth Road westbound entering right into Development (C-B)	0.34	8.60	0.04	0
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.47	6.72	0.22	1
Howth Road westbound entering right into Development (C-B)	0.41	8.41	0.05	0

Table 4-12: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development in place)

	Evening peak hour 2024 (with development in place)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.20	6.38	0.19	1
Howth Road westbound entering right into Development (C-B)	0.70	7.64	0.09	1
1715-1730	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.20	6.95	0.17	1
Howth Road westbound entering right into Development (C-B)	0.76	8.26	0.09	1
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.20	6.95	0.17	1
Howth Road westbound entering right into Development (C-B)	0.84	8.19	0.08	1
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.20	6.96	0.17	1
Howth Road westbound entering right into Development (C-B)	0.64	8.16	0.07	1

Table 4-13: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development in place)

All approaches will be within capacity at all times during both peaks on the projected day of opening of the proposed development in 2024.

A minimum of 78% spare capacity exists on all opposed movement over all peak times.

Queuing at present is at very low levels for turning movements at the junctions during the morning and evening peaks, with queuing on any opposed movement never exceeding 1 vehicle.

4.3.4 DESIGN YEAR ANALYSIS WITH DEVELOPMENT IN PLACE

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Howth Road / Development entrance priority junction are detailed below for 2039 with the development in place within Tables 4-14 and 4-15:

	Morning peak hour 2039 (with development in place)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.47	7.69	0.19	1
Howth Road westbound entering right into Development (C-B)	0.26	9.01	0.03	0
0815-0830	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.47	7.71	0.19	1
Howth Road westbound entering right into Development (C-B)	0.28	9.08	0.03	0
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.47	6.79	0.22	1
Howth Road westbound entering right into Development (C-B)	0.35	8.39	0.04	0
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.47	6.32	0.23	1
Howth Road westbound entering right into Development (C-B)	0.41	8.16	0.05	0

Table 4-14: Projected 2039 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development in place)

	Evening peak hour 2039 (with development in place)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.20	5.96	0.20	1
Howth Road westbound entering right into Development (C-B)	0.71	7.32	0.10	1
1715-1730	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.20	6.64	0.18	1
Howth Road westbound entering right into Development (C-B)	0.77	8.04	0.10	1
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.20	6.63	0.18	1
Howth Road westbound entering right into Development (C-B)	0.77	8.04	0.10	1
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Development entrance exit left/right onto Howth Road (B-AC)	1.20	6.63	0.18	1
Howth Road westbound entering right into Development (C-B)	0.69	7.95	0.09	1

Table 4-15: Projected 2039 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development in place)

All approaches will be within capacity at all times during both peaks 18 No. years after the day of opening of the proposed development in 2039.

A minimum of 77% spare capacity exists on all opposed movement over all peak times.

Queuing at present is at very low levels for turning movements at the junctions during the morning and evening peaks, with queuing on any opposed movement never exceeding 1 vehicle.

4.4 ANALYSIS OF OFFINGTON PARK / HOWTH ROAD PRIORITY JUNCTION

4.4.1 GEOMETRIC PARAMETERS

For the junction in question, the analysis assumes that the Howth Road major carriageway is 7.3 metres wide in the vicinity of the entrance (2.2 metre wide right-turning lane assumed for eastbound traffic), with the Offington Park minor approach assumed to consist of 1 No. 3.0 metre wide lane.

4.4.2 DAY OF OPENING (2024) ANALYSIS WITHOUT DEVELOPMENT IN PLACE

All sight distances are assumed to be a minimum of 50 metres for the purposes of this analysis.

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Offington Park / Howth Road priority junction are detailed below for 2024 without the development in place within Tables 4-16 and 4-17:

	Morning peak hour 2024 (without development in place)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.13	7.71	0.15	1
Howth Road eastbound entering right into Offington Park (C-B)	0.68	8.69	0.08	0
0815-0830	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.87	7.72	0.24	1
Howth Road eastbound entering right into Offington Park (C-B)	0.74	8.75	0.08	0
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	3.87	6.69	0.58	2
Howth Road eastbound entering right into Offington Park (C-B)	1.21	8.11	0.15	0
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	3.80	7.14	0.53	2
Howth Road eastbound entering right into Offington Park (C-B)	0.96	8.35	0.12	0

Table 4-16: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development not in place)

	Evening peak hour 2024 (without development in place)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.40	7.41	0.19	1
Howth Road eastbound entering right into Offington Park (C-B)	0.48	8.66	0.06	0
1715-1730	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.47	7.48	0.20	1
Howth Road eastbound entering right into Offington Park (C-B)	0.59	8.89	0.07	0
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.40	6.96	0.20	1
Howth Road eastbound entering right into Offington Park (C-B)	0.79	8.63	0.09	0
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.13	7.54	0.15	1
Howth Road eastbound entering right into Offington Park (C-B)	0.63	9.01	0.08	0

Table 4-17: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development not in place)

All approaches will be within capacity at all times during both peaks on the projected day of opening of the proposed development in 2024 without the development in place.

A minimum of 42% spare capacity exists on all opposed movement over all peak times.

Queuing in 2024 without the development in place will be at very low levels for opposed turning movements at the junctions during the morning and evening peaks, with queuing on any opposed movement never exceeding 2 vehicles.

4.4.3 DAY OF OPENING (2024) ANALYSIS WITH DEVELOPMENT IN PLACE

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Offington Park / Howth Road priority junction are detailed below for 2024 without the development in place within Tables 4-18 and 4-19:

	Morning peak hour 2024 (with development in place)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.13	7.22	0.16	1
Howth Road eastbound entering right into Offington Park (C-B)	0.70	8.28	0.09	0
0815-0830	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.87	7.24	0.26	1
Howth Road eastbound entering right into Offington Park (C-B)	0.76	8.35	0.09	0
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	3.87	6.20	0.62	2
Howth Road eastbound entering right into Offington Park (C-B)	1.18	7.72	0.15	1
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	3.80	6.65	0.57	2
Howth Road eastbound entering right into Offington Park (C-B)	0.96	7.95	0.12	1

Table 4-18: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development in place)

	Evening peak hour 2024 (with development in place)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.40	7.08	0.20	1
Howth Road eastbound entering right into Offington Park (C-B)	0.55	8.45	0.07	0
1715-1730	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.47	7.16	0.21	1
Howth Road eastbound entering right into Offington Park (C-B)	0.64	8.67	0.07	0
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.40	6.63	0.21	1
Howth Road eastbound entering right into Offington Park (C-B)	0.81	8.42	0.10	0
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Offington Park exit left/right onto Howth Road (B-AC)	1.13	7.23	0.16	1
Howth Road eastbound entering right into Offington Park (C-B)	0.67	8.80	0.08	0

Table 4-19: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development in place)

All approaches will be within capacity at all times during both peaks on the projected day of opening of the proposed development in 2024 with the development in place.

A minimum of 38% spare capacity exists on all opposed movement over all peak times, 4% less than the 'without development' scenario.

Queuing in 2024 with the development in place will remain at very low levels for opposed turning movements at the junctions during the morning and evening peaks, with queuing on any opposed movement never exceeding 2 vehicles.

Given the significant spare capacity and low queuing levels in existence in 2024 with the development in place, analysis beyond the day of opening is not required.

4.5 ANALYSIS OF CHURCH ROAD / HOWTH ROAD PRIORITY JUNCTION

4.5.1 GEOMETRIC PARAMETERS

For the junction in question, the analysis assumes that the Howth Road major carriageway is 7.3 metres wide in the vicinity of the entrance (2.2 metre wide right-turning lane assumed for eastbound traffic), with the Church Road minor approach assumed to consist of 1 No. 3.0 metre wide lane.

4.5.2 DAY OF OPENING (2024) ANALYSIS WITHOUT DEVELOPMENT IN PLACE

All sight distances are assumed to be a minimum of 50 metres for the purposes of this analysis.

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Church Road / Howth Road entrance priority junction are detailed below for 2024 without the development in place within Tables 4-20 and 4-21:

	Morning peak hour 2024 (without development in place)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	2.27	8.52	0.27	1
Howth Road eastbound entering right into Church Road (C-B)	1.26	8.66	0.15	1
0815-0830	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	2.40	8.44	0.28	1
Howth Road eastbound entering right into Church Road (C-B)	1.50	8.66	0.17	1
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	3.60	7.64	0.47	1
Howth Road eastbound entering right into Church Road (C-B)	2.07	8.10	0.26	1
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	2.73	7.87	0.35	1
Howth Road eastbound entering right into Church Road (C-B)	1.80	8.22	0.22	1

Table 4-20: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development not in place)

	Evening peak hour 2024 (without development in place)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	1.07	8.82	0.12	1
Howth Road eastbound entering right into Church Road (C-B)	0.87	8.69	0.10	1
1715-1730	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	1.00	9.02	0.11	1
Howth Road eastbound entering right into Church Road (C-B)	1.10	8.95	0.12	1
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	0.67	8.64	0.08	0
Howth Road eastbound entering right into Church Road (C-B)	1.44	8.72	0.17	1
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	1.13	9.17	0.12	1
Howth Road eastbound entering right into Church Road (C-B)	1.21	9.13	0.13	1

Table 4-21: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development not in place)

All approaches will be within capacity at all times during both peaks on the projected day of opening of the proposed development in 2024 without the development in place.

A minimum of 53% spare capacity exists on all opposed movement over all peak times.

Queuing in 2024 without the development in place will be at very low levels for opposed turning movements at the junctions during the morning and evening peaks, with queuing on any opposed movement never exceeding 1 vehicle.

4.5.3 DAY OF OPENING (2024) ANALYSIS WITH DEVELOPMENT IN PLACE

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Church Road / Howth Road priority junction are detailed below for 2024 without the development in place within Tables 4-22 and 4-23:

	Morning peak hour 2024 (with development in place)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	2.27	8.02	0.28	1
Howth Road eastbound entering right into Church Road (C-B)	1.29	8.25	0.16	1
0815-0830	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	2.40	7.93	0.30	1
Howth Road eastbound entering right into Church Road (C-B)	1.51	8.25	0.18	1
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	3.60	7.13	0.51	1
Howth Road eastbound entering right into Church Road (C-B)	2.04	7.70	0.27	1
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	2.73	7.36	0.37	1
Howth Road eastbound entering right into Church Road (C-B)	1.79	7.82	0.23	1

Table 4-22: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development in place)

	Evening peak hour 2024 (with development in place)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	1.07	8.43	0.13	1
Howth Road eastbound entering right into Church Road (C-B)	0.90	8.48	0.11	1
1715-1730	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	1.00	8.63	0.12	1
Howth Road eastbound entering right into Church Road (C-B)	1.08	8.75	0.12	1
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	0.67	8.22	0.08	0
Howth Road eastbound entering right into Church Road (C-B)	1.36	8.51	0.16	1
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Road exit left/right onto Howth Road (B-AC)	1.13	8.77	0.13	1
Howth Road eastbound entering right into Church Road (C-B)	1.18	8.92	0.13	1

Table 4-23: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development in place)

All approaches will be within capacity at all times during both peaks on the projected day of opening of the proposed development in 2024 with the development in place.

A minimum of 49% spare capacity exists on all opposed movement over all peak times, 4% less than the 'without development' scenario.

Queuing in 2024 with the development in place will remain at very low levels for opposed turning movements at the junctions during the morning and evening peaks, with queuing on any opposed movement never exceeding 1 vehicle.

Given the significant spare capacity and low queuing levels in existence in 2024 with the development in place, analysis beyond the day of opening is not required.

4.6 ANALYSIS OF HARBOUR ROAD / CHURCH STREET PRIORITY JUNCTION

4.6.1 GEOMETRIC PARAMETERS

For the junction in question, the analysis assumes that the Harbour Road major carriageway is 7 metres wide in the vicinity of the entrance (2.2 metre wide right-turning lane assumed for eastbound traffic), with the Church Street minor approach assumed to consist of 1 No. 3.0 metre wide lane.

4.6.2 DAY OF OPENING (2024) ANALYSIS WITHOUT DEVELOPMENT IN PLACE

All sight distances are assumed to be a minimum of 50 metres for the purposes of this analysis.

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Harbour Road / Church Street priority junction are detailed below for 2024 without the development in place within Tables 4-24 and 4-25:

	Morning peak hour 2024 (without development in place)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.93	10.00	0.19	1
Harbour Road eastbound entering right into Church Street (C-B)	1.78	9.32	0.19	1
0815-0830	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.93	9.91	0.20	1
Harbour Road eastbound entering right into Church Street (C-B)	1.64	9.23	0.18	1
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	2.53	9.66	0.26	1
Harbour Road eastbound entering right into Church Street (C-B)	3.04	9.04	0.34	1
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	3.13	9.40	0.33	1
Harbour Road eastbound entering right into Church Street (C-B)	3.49	8.82	0.40	1

Table 4-24: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development not in place)

	Evening peak hour 2024 (without development in place)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.27	9.63	0.13	1
Harbour Road eastbound entering right into Church Street (C-B)	4.09	9.17	0.45	1
1715-1730	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.67	9.75	0.17	1
Harbour Road eastbound entering right into Church Street (C-B)	2.86	9.20	0.31	1
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.27	9.78	0.13	1
Harbour Road eastbound entering right into Church Street (C-B)	3.00	9.25	0.33	1
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.27	9.81	0.13	1
Harbour Road eastbound entering right into Church Street (C-B)	3.06	9.28	0.33	1

Table 4-25: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development not in place)

All approaches will be within capacity at all times during both peaks on the projected day of opening of the proposed development in 2024 without the development in place.

A minimum of 55% spare capacity exists on all opposed movement over all peak times.

Queuing in 2024 without the development in place will be at very low levels for opposed turning movements at the junctions during the morning and evening peaks, with queuing on any opposed movement never exceeding 1 vehicle.

4.6.3 DAY OF OPENING (2024) ANALYSIS WITH DEVELOPMENT IN PLACE

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Harbour Road / Church Street priority junction are detailed below for 2024 without the development in place within Tables 4-26 and 4-27:

	Morning peak hour 2024 (with development in place)			
0800-0815	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.93	9.71	0.20	1
Harbour Road eastbound entering right into Church Street (C-B)	1.85	9.10	0.20	1
0815-0830	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.93	9.64	0.20	1
Harbour Road eastbound entering right into Church Street (C-B)	1.76	9.03	0.20	1
0830-0845	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	2.53	9.35	0.27	1
Harbour Road eastbound entering right into Church Street (C-B)	2.93	8.82	0.33	1
0845-0900	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	3.13	9.09	0.35	1
Harbour Road eastbound entering right into Church Street (C-B)	3.31	8.59	0.39	1

Table 4-26: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development in place)

	Evening peak hour 2024 (with development in place)			
1700-1715	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.27	9.32	0.14	1
Harbour Road eastbound entering right into Church Street (C-B)	3.93	9.00	0.45	1
1715-1730	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.67	9.44	0.18	1
Harbour Road eastbound entering right into Church Street (C-B)	2.87	9.01	0.32	1
1730-1745	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.27	9.48	0.13	1
Harbour Road eastbound entering right into Church Street (C-B)	3.00	9.06	0.33	1
1745-1800	**Flow** (veh/min)	**Cap.** (veh/min)	**RFC (-)**	**Q Length** (veh)
Church Street exit left/right onto Howth Road (B-AC)	1.27	9.50	0.13	1
Harbour Road eastbound entering right into Church Street (C-B)	3.07	9.09	0.34	1

Table 4-27: Projected 2024 flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development in place)

All approaches will be within capacity at all times during both peaks on the projected day of opening of the proposed development in 2024 with the development in place.

A minimum of 56% spare capacity exists on all opposed movement over all peak times, the same as the 'without development' scenario.

Queuing in 2024 with the development in place will remain at very low levels for opposed turning movements at the junctions during the morning and evening peaks, with queuing on any opposed movement never exceeding 1 vehicle.

Given the significant spare capacity and low queuing levels in existence in 2024 with the development in place, analysis beyond the day of opening is not required.

5.0 CONCLUDING COMMENT ON TRAFFIC IMPACT OF PROPOSED DEVELOPMENT

The above analysis demonstrates that both the development entrances plus five other priority junctions in the vicinity of the subject site will operate efficiently with the proposed development in place, with significant spare capacity on all opposed movements.

The Sutton Cross signalised junction is a very busy junction presently operating at or just over capacity. The analysis within this report demonstrates that the proposed development will add marginally to the queuing at all approaches on the day of opening of the development relative to the assumed 'without development' scenario. The additional queuing is predicted to become significant in the design year in 2039, fifteen years after the projected opening day. These queues are predicted on the basis of 21% traffic growth in the 2019 to 2039 period. Such a growth assumption is highly pessimistic given existing transport planning policies in place within the Greater Dublin area.

The 'with development' scenarios at Sutton Cross analysed within this report used existing signal timings to make with- and without-development figures as comparable as possible. However, a more realistic approach is to re-configure / optimise timings for the 'with development' approach given the changing flow patterns.

This has been done for the critical AM peak at Sutton Cross, and results in significant decreases in extra queuing.

Furthermore, as detailed within this report, the 2019 surveys carried out for this project, when compared with the 2015 surveys undertaken for a previous application on the subject site, is consistent with the argument that traffic growth year on year is presently at low levels, well below the values assumed within this report. Lower network growths would further decrease additional queuing at the critical approaches to Sutton Cross.

Thus, it can be stated that the impact of the proposed development, relative to those of the 'without project' are very modest, thus making the proposal totally sustainable in transport planning terms.

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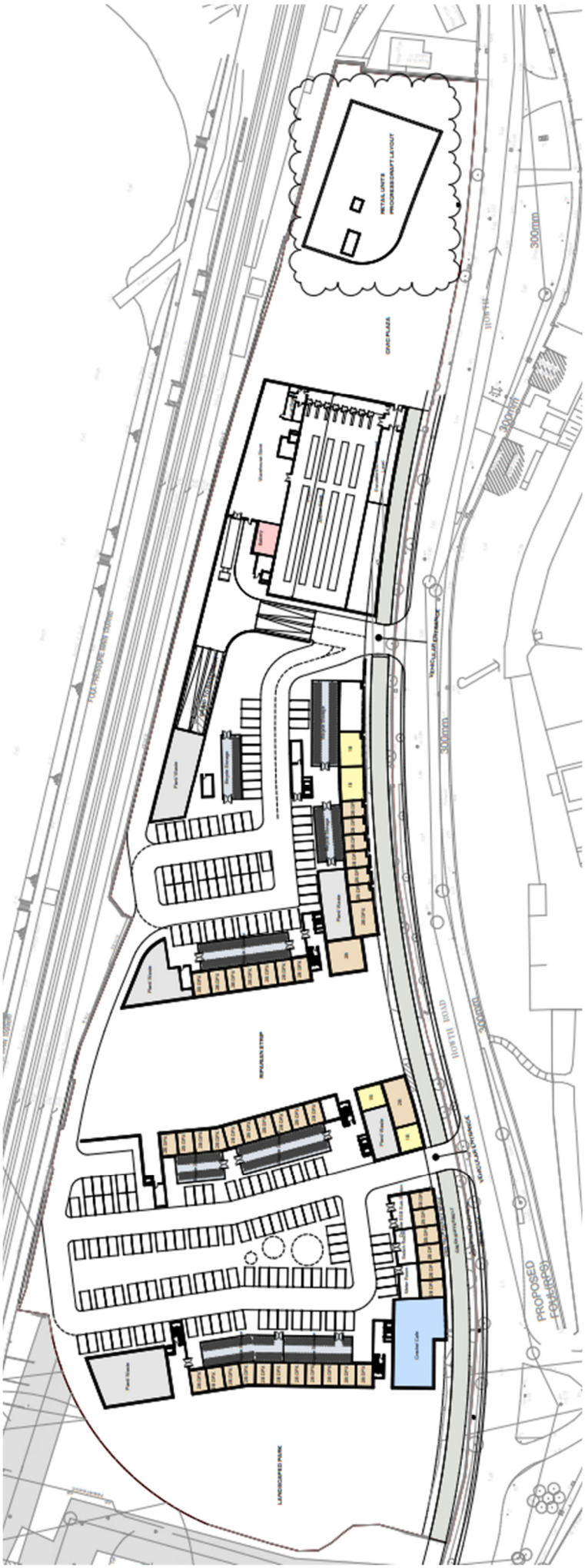
CONSULTING ENGINEERS
CIVIL & STRUCTURAL

APPENDIX 1

SITE LAYOUT PLAN


RETAIL UNITS
PROPOSED DEVELOPMENT LAYOUT
OASIS PLAZA
300mm
HILL ROAD
PROPOSED
FOOTPATH

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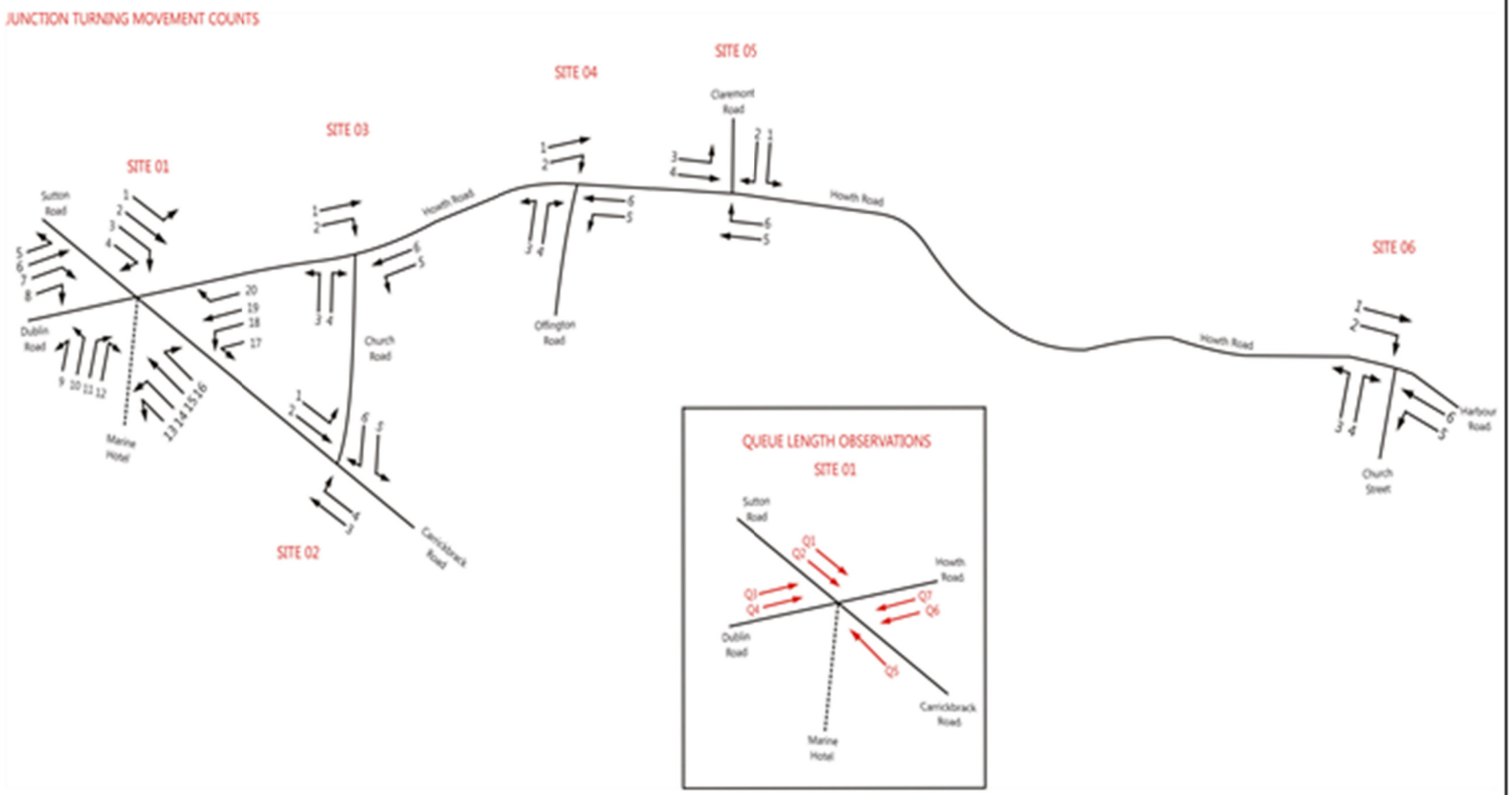
APPENDIX 2

TRAFFIC SURVEYS JANUARY 2019

Site/Movement Numbering



Job number: TRA/19/003	Job Date: 15th January 2019	Drawing No: TRA/19/003-01	traffinomics.ie
Client: BMCE	Job Day: Tuesday	Author: SPW	

LOCATION: Sutton Cross
SITE: 01
MOVEMENT 1
MOVEMENT 2
MOVEMENT 3
MOVEMENT 4
MOVEMENT 5
MOVEMENT 6
MOVEMENT 7
MOVEMENT 8
MOVEMENT 9
MOVEMENT 10
TIME
07:00
07:15
07:30
07:45
H/TOT
08:00
08:15
08:30
08:45
09:00
09:15
09:30
09:45
10:00
10:15
10:30
10:45
11:00
11:15
11:30
11:45
12:00
12:15
12:30
12:45

LOCATION: Greenfield Road/Church Road

SITE: 02

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							PCU's Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
07:00	0	0	0	0	0	0	0	15	3	0	0	1	19	20	50	1	0	0	0	51	51	73
07:15	1	0	0	0	0	1	1	23	11	0	0	1	35	36	46	1	0	0	1	48	49	92
07:30	3	0	0	0	0	3	3	46	11	0	0	0	57	57	63	1	1	0	0	65	66	134
07:45	4	1	0	0	0	5	5	52	13	0	0	1	66	67	64	4	0	0	1	69	70	152
H/TOT	8	1	0	0	0	9	9	136	38	0	0	3	177	180	223	7	1	0	2	233	236	451
08:00	9	1	0	0	1	11	12	84	10	2	0	0	96	97	98	2	0	0	0	100	100	227
08:15	14	0	1	0	0	15	16	123	12	2	0	5	142	148	111	1	0	0	4	116	120	308
08:30	9	0	0	0	0	9	9	130	8	1	2	0	141	144	110	1	1	0	3	115	119	319
08:45	1	0	0	0	0	1	1	74	8	3	0	1	86	89	109	3	0	0	2	114	116	254
H/TOT	33	1	1	0	1	36	38	411	38	8	2	6	465	478	428	7	1	0	9	445	455	1107
09:00	6	0	0	0	0	6	6	34	8	3	0	0	45	47	86	4	1	0	2	93	96	176
09:15	5	0	0	0	0	5	5	35	11	2	0	0	48	49	51	1	3	1	0	56	59	136
09:30	5	0	0	0	0	5	5	21	5	0	0	0	26	26	51	4	1	0	0	56	57	107
09:45	5	0	0	0	0	5	5	34	4	1	1	0	40	42	61	4	0	0	0	65	65	129
H/TOT	21	0	0	0	0	21	21	124	28	6	1	0	159	163	249	13	5	1	2	270	276	547
10:00	6	1	0	0	0	7	7	42	8	3	0	1	54	57	64	4	2	0	1	71	73	152
10:15	9	0	0	0	0	9	9	34	4	2	0	0	40	41	57	5	2	0	1	65	67	149
10:30	5	2	1	0	0	8	9	46	10	2	2	1	61	66	52	4	2	0	0	58	59	162
10:45	2	1	1	0	0	4	5	42	7	5	1	0	55	59	50	6	4	0	2	62	66	154
H/TOT	22	4	2	0	0	28	29	164	29	12	3	2	210	222	223	19	10	0	4	256	265	616
11:00	1	0	0	0	0	1	1	41	8	1	0	1	51	53	75	9	2	0	0	86	87	157
11:15	3	0	0	0	0	3	3	39	12	2	0	0	53	54	53	4	2	0	0	59	60	144
11:30	8	1	0	0	0	9	9	43	6	2	0	0	51	52	64	5	5	0	0	74	77	155
11:45	4	1	0	0	0	5	5	45	6	2	1	0	54	56	63	5	2	1	0	71	73	165
H/TOT	16	2	0	0	0	18	18	168	32	7	1	1	209	215	255	23	11	1	0	290	297	620
12:00	3	0	0	0	0	3	3	50	2	3	0	1	56	59	62	4	7	0	0	73	77	158
12:15	3	1	0	0	0	4	4	47	3	1	0	1	52	54	61	7	0	0	0	68	68	159
12:30	0	0	0	0	0	0	0	50	6	2	0	0	58	59	53	7	2	0	0	62	63	146
12:45	6	0	0	0	0	6	6	55	4	3	0	0	62	64	63	1	3	0	0	67	69	169
H/TOT	12	1	0	0	0	13	13	202	15	9	0	2	228	235	239	19	12	0	0	270	276	632

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	3	0	0	0	0	3	3	2	0	0	0	0	2	2	0	1	0	0	0	1	1
07:30	2	0	0	0	0	2	2	5	0	0	0	0	5	5	1	0	0	0	0	1	1
07:45	5	0	0	0	0	5	5	3	0	0	0	0	3	3	2	0	0	0	0	2	2
H/TOT	12	0	0	0	0	12	12	10	0	0	0	0	10	10	3	1	0	0	0	4	4
08:00	7	0	0	0	0	7	7	8	0	0	0	0	8	8	2	1	0	0	0	3	3
08:15	7	0	0	0	0	7	7	12	1	0	0	0	13	13	4	0	0	0	0	4	4
08:30	19	0	0	0	0	19	19	25	0	0	0	0	25	25	3	0	0	0	0	3	3
08:45	25	0	0	0	0	25	25	20	0	0	0	0	20	20	3	0	0	0	0	3	3
H/TOT	58	0	0	0	0	58	58	65	1	0	0	0	66	66	12	1	0	0	0	13	13
09:00	17	0	1	0	0	18	19	5	0	1	0	0	6	7	3	0	0	0	0	3	3
09:15	7	0	0	0	0	7	7	5	1	0	0	0	6	6	10	0	0	0	0	10	10
09:30	10	0	0	0	0	10	10	7	1	0	0	0	8	8	1	0	0	0	0	1	1
09:45	5	0	0	0	0	5	5	4	0	0	0	0	4	4	8	0	0	0	0	8	8
H/TOT	39	0	1	0	0	40	41	21	2	1	0	0	24	25	22	0	0	0	0	22	22
10:00	6	0	0	0	0	6	6	3	0	0	0	0	3	3	5	1	0	0	0	6	6
10:15	9	0	1	0	0	10	11	11	1	0	0	0	12	12	8	1	0	0	0	9	9
10:30	11	1	0	0	0	12	12	9	1	1	0	0	11	12	3	1	1	0	0	5	6
10:45	7	1	0	0	0	8	8	11	0	1	0	0	12	13	4	0	0	0	0	4	4
H/TOT	33	2	1	0	0	36	37	34	2	2	0	0	38	39	20	3	1	0	0	24	25
11:00	4	1	0	0	0	5	5	7	0	0	0	0	7	7	4	0	0	0	0	4	4
11:15	8	1	0	0	0	9	9	11	0	1	0	0	12	13	5	0	0	0	0	5	5
11:30	6	0	0	0	0	6	6	7	0	1	0	0	8	9	3	0	0	0	0	3	3
11:45	10	0	0	0	0	10	10	10	0	0	0	0	10	10	10	0	0	0	0	10	10
H/TOT	28	2	0	0	0	30	30	35	0	2	0	0	37	38	22	0	0	0	0	22	22
12:00	2	0	1	0	0	3	4	10	1	0	0	0	11	11	4	0	1	0	0	5	6
12:15	14	1	0	0	0	15	15	11	0	1	0	0	12	13	5	1	0	0	0	6	6
12:30	10	1	0	0	0	11	11	10	1	0	0	0	11	11	2	0	0	0	0	2	2
12:45	12	1	0	0	0	13	13	11	2	0	0	0	13	13	5	0	0	0	0	5	5
H/TOT	38	3	1	0	0	42	43	42	4	1	0	0	47	48	16	1	1	0	0	18	19

LOCATION: Greenfield Road/Church Road

SITE: 02

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							PCU's Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
13:00	4	1	0	0	0	5	5	67	6	3	0	0	76	78	60	7	2	0	0	69	70	189
13:15	4	0	1	0	0	5	6	78	5	0	0	0	83	83	60	8	2	0	0	70	71	184
13:30	3	1	0	0	0	4	4	73	7	2	0	1	83	85	76	2	0	0	1	79	80	204
13:45	2	0	1	0	0	3	4	59	4	1	1	0	65	67	69	6	3	0	0	78	80	170
H/TOT	13	2	2	0	0	17	18	277	22	6	1	1	307	312	265	23	7	0	1	296	301	746
14:00	4	0	0	0	0	4	4	84	5	2	1	0	92	94	85	12	1	0	1	99	101	224
14:15	4	0	1	0	0	5	6	76	7	0	0	1	84	85	97	10	2	1	1	111	114	240
14:30	6	2	0	0	0	8	8	76	4	1	1	2	84	88	95	8	1	0	0	104	105	233
14:45	6	1	1	0	0	8	9	56	7	1	1	1	66	69	96	5	2	0	0	103	104	223
H/TOT	20	3	2	0	0	25	26	292	23	4	3	4	326	336	373	35	6	1	2	417	423	920
15:00	11	0	0	0	1	12	13	53	8	0	0	1	62	63	84	9	4	0	0	97	99	198
15:15	18	0	0	0	0	18	18	65	5	1	1	3	75	80	78	3	1	0	1	83	85	202
15:30	16	0	0	0	0	16	16	82	15	1	0	2	100	103	72	6	4	0	0	82	84	250
15:45	12	0	1	0	0	13	14	81	5	0	0	1	87	88	75	12	4	1	0	92	95	230
H/TOT	57	0	1	0	1	59	61	281	33	2	1	7	324	333	309	30	13	1	1	354	363	880
16:00	9	2	0	0	0	11	11	77	1	0	0	0	78	78	78	17	2	1	2	100	104	250
16:15	10	0	0	0	0	10	10	80	4	1	0	0	85	86	81	8	0	0	1	90	91	209
16:30	5	0	0	0	0	5	5	76	3	0	0	0	79	79	69	12	2	0	0	83	84	196
16:45	5	0	0	0	0	5	5	75	6	0	0	2	83	85	79	8	0	0	0	87	87	200
H/TOT	29	2	0	0	0	31	31	308	14	1	0	2	325	328	307	45	4	1	3	360	366	854
17:00	6	2	1	0	0	9	10	106	3	0	0	0	109	109	78	8	0	0	4	90	94	233
17:15	7	0	0	0	0	7	7	69	2	0	0	0	71	71	57	5	1	0	1	64	66	172
17:30	5	0	0	0	0	5	5	89	4	0	0	0	93	93	53	3	0	0	0	56	56	182
17:45	6	0	1	0	0	7	8	97	9	0	0	0	106	106	72	6	0	0	0	78	78	228
H/TOT	24	2	2	0	0	28	29	361	18	0	0	0	379	379	260	22	1	0	5	288	294	814
18:00	4	0	0	0	0	4	4	74	3	1	0	1	79	81	54	4	0	0	0	58	58	171
18:15	5	0	1	0	0	6	7	77	3	0	0	1	81	82	58	7	0	0	0	65	65	171
18:30	4	1	0	0	0	5	5	67	5	0	0	0	72	72	43	1	1	0	1	46	48	149
18:45	8	0	0	0	0	8	8	76	3	0	0	1	80	81	54	3	0	0	0	57	57	174
H/TOT	21	1	1	0	0	23	24	294	14	1	0	3	312	316	209	15	1	0	1	226	228	664

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	12	0	1	0	0	13	14	15	0	0	0	0	15	15	8	0	0	0	0	8	8
13:15	9	0	0	0	0	9	9	11	1	0	0	0	12	12	3	0	0	0	0	3	3
13:30	11	0	0	0	0	11	11	17	1	0	0	0	18	18	3	1	1	0	0	5	6
13:45	7	0	0	0	0	7	7	7	1	0	0	0	8	8	4	1	0	0	0	5	5
H/TOT	39	0	1	0	0	40	41	50	3	0	0	0	53	53	18	2	1	0	0	21	22
14:00	9	0	0	0	0	9	9	10	0	0	0	0	10	10	4	2	0	0	0	6	6
14:15	8	1	0	0	0	9	9	15	0	0	0	0	15	15	11	0	0	0	0	11	11
14:30	17	0	0	0	0	17	17	11	1	0	0	0	12	12	4	0	0	0	0	4	4
14:45	17	0	0	0	1	18	19	11	1	0	0	0	12	12	11	0	0	0	0	11	11
H/TOT	51	1	0	0	1	53	54	47	2	0	0	0	49	49	30	2	0	0	0	32	32
15:00	10	0	0	0	0	10	10	9	0	0	0	0	9	9	4	0	0	0	0	4	4
15:15	7	0	0	0	1	8	9	9	0	0	0	0	9	9	1	1	0	0	0	2	2
15:30	11	0	0	0	0	11	11	17	0	0	0	0	17	17	19	0	0	0	0	19	19
15:45	10	0	0	0	0	10	10	13	0	1	0	0	14	15	9	0	0	0	0	9	9
H/TOT	38	0	0	0	1	39	40	48	0	1	0	0	49	50	33	1	0	0	0	34	34
16:00	22	1	1	0	0	24	25	18	0	0	0	1	19	20	10	2	0	0	0	12	12
16:15	8	0	0	0	0	8	8	9	0	0	0	0	9	9	5	0	0	0	0	5	5
16:30	9	0	0	0	0	9	9	13	0	0	0	0	13	13	6	0	0	0	0	6	6
16:45	7	1	0	0	0	8	8	10	0	0	0	0	10	10	3	0	1	0	0	4	5
H/TOT	46	2	1	0	0	49	50	50	0	0	0	1	51	52	24	2	1	0	0	27	28
17:00	7	0	0	0	0	7	7	10	0	0	0	0	10	10	3	0	0	0	0	3	3
17:15	8	0	0	0	0	8	8	15	0	0	0	0	15	15	5	0	0	0	0	5	5
17:30	7	0	0	0	0	7	7	16	0	0	0	0	16	16	5	0	0	0	0	5	5
17:45	11	0	0	0	0	11	11	18	0	0	0	0	18	18	7	0	0	0	0	7	7
H/TOT	33	0	0	0	0	33	33	59	0	0	0	0	59	59	20	0	0	0	0	20	20
18:00	7	0	0	0	0	7	7	14	0	0	0	0	14	14	7	0	0	0	0	7	7
18:15	9	0	0	0	0	9	9	6	0	0	0	0	6	6	2	0	0	0	0	2	2
18:30	8	0	0	0	0	8	8	11	0	0	0	0	11	11	5	0	0	0	0	5	5
18:45	7	0	0	0	0	7	7	17	0	0	0	0	17	17	3	1	0	0	0	4	4
H/TOT	31	0	0	0	0	31	31	48	0	0	0	0	48	48	17	1	0	0	0	18	18

LOCATION: Houth Road/Church Road

SITE: 03

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3								PCU's Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU		
07:00	17	13	1	0	1	32	34	2	0	0	0	0	2	2	2	0	0	0	0	2	2		110
07:15	23	6	4	1	0	34	37	4	0	0	0	0	4	4	7	0	0	0	0	7	7		126
07:30	36	9	1	1	1	48	51	6	0	0	0	0	6	6	5	2	0	0	0	7	7		152
07:45	53	14	3	2	1	73	78	2	1	0	0	0	3	3	5	0	0	0	0	5	5		159
H/TOT	129	42	9	4	3	187	200	14	1	0	0	0	15	15	19	2	0	0	0	21	21		547
08:00	34	13	3	0	3	53	58	13	2	1	0	1	17	19	26	1	0	0	0	27	27		200
08:15	45	11	1	1	2	60	64	26	0	0	0	0	26	26	29	0	0	0	0	29	29		215
08:30	85	13	4	0	0	102	104	20	1	0	0	0	21	21	43	0	0	0	0	43	43		304
08:45	69	8	5	0	1	83	87	16	1	3	0	0	20	22	34	1	0	0	0	35	35		266
H/TOT	233	45	13	1	6	298	312	75	4	4	0	1	84	87	132	2	0	0	0	134	134		983
09:00	70	13	5	0	1	89	93	14	0	0	0	0	14	14	16	0	1	0	0	17	18		264
09:15	59	13	2	0	0	74	75	7	2	0	0	0	9	9	11	0	0	0	0	11	11		213
09:30	39	11	2	0	1	53	55	13	0	1	0	0	14	15	15	0	1	0	0	16	17		180
09:45	57	10	8	1	0	76	81	7	0	0	0	0	7	7	8	1	1	0	0	10	11		188
H/TOT	225	47	17	1	2	292	304	41	2	1	0	0	44	45	50	1	3	0	0	54	56		845
10:00	49	13	3	1	1	67	71	8	2	0	0	0	10	10	14	0	0	0	0	14	14		185
10:15	57	8	4	1	1	71	75	16	2	0	0	0	18	18	16	0	0	0	0	16	16		174
10:30	85	10	1	1	1	98	101	8	1	0	0	0	9	9	17	1	0	0	0	18	18		236
10:45	86	16	3	2	2	109	115	10	1	1	0	0	12	13	11	1	2	0	0	14	15		242
H/TOT	277	47	11	5	5	345	362	42	6	1	0	0	49	50	58	2	2	0	0	62	63		837
11:00	80	5	3	0	2	90	94	6	0	0	0	0	6	6	7	1	0	0	0	8	8		211
11:15	64	10	4	0	2	80	84	13	0	1	0	0	14	15	8	1	0	0	0	9	9		173
11:30	61	5	6	0	0	72	75	8	0	0	0	0	8	8	11	0	0	0	0	11	11		191
11:45	97	13	6	0	1	117	121	10	0	0	0	0	10	10	15	0	0	0	0	15	15		240
H/TOT	302	33	19	0	5	359	374	37	0	1	0	0	38	39	41	2	0	0	0	43	43		814
12:00	70	14	3	1	1	89	93	10	0	0	0	0	10	10	5	0	0	0	0	5	5		198
12:15	73	9	0	1	1	84	86	9	2	1	0	0	12	13	14	1	0	0	0	15	15		225
12:30	105	13	6	1	0	125	129	10	1	0	0	0	11	11	11	1	0	0	0	12	12		252
12:45	91	11	0	0	1	103	104	14	2	0	0	0	16	16	12	0	0	0	0	12	12		218
H/TOT	339	47	9	3	3	401	412	43	5	1	0	0	49	50	42	2	0	0	0	44	44		893

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	1	0	0	0	0	1	1	62	9	0	0	0	71	71
07:15	0	1	0	0	0	1	1	1	0	0	0	0	1	1	72	2	0	0	1	75	76
07:30	1	0	0	0	0	1	1	2	0	0	0	0	2	2	78	5	0	0	1	84	85
07:45	3	0	0	0	0	3	3	2	0	0	0	0	2	2	55	8	2	1	0	66	68
H/TOT	4	1	0	0	0	5	5	6	0	0	0	0	6	6	267	24	2	1	2	296	300
08:00	3	1	0	0	1	5	6	6	0	0	0	0	6	6	75	6	1	0	1	83	85
08:15	4	0	1	0	0	5	6	6	2	0	0	0	8	8	70	5	2	1	1	79	82
08:30	9	0	0	0	0	9	9	13	1	0	0	0	14	14	96	10	0	2	1	109	113
08:45	3	1	0	0	0	4	4	10	0	0	0	0	10	10	92	7	2	2	1	104	109
H/TOT	19	2	1	0	1	23	25	35	3	0	0	0	38	38	333	28	5	5	4	375	388
09:00	2	0	1	0	0	3	4	3	0	2	0	0	5	6	114	12	3	0	0	129	131
09:15	2	1	2	0	0	5	6	7	0	1	0	0	8	9	93	7	1	0	1	102	104
09:30	0	0	0	0	0	0	0	1	0	1	0	0	2	3	79	4	4	0	1	88	91
09:45	3	0	1	0	0	4	5	4	1	1	0	0	6	7	62	10	3	0	1	76	79
H/TOT	7	1	4	0	0	12	14	15	1	5	0	0	21	24	348	33	11	0	3	395	404
10:00	1	0	0	0	0	1	1	3	0	0	0	0	3	3	67	12	2	1	1	83	86
10:15	2	0	0	0	0	2	2	3	0	0	0	0	3	3	48	7	3	0	0	58	60
10:30	0	0	0	0	0	0	0	5	0	1	0	0	6	7	72	9	8	2	2	93	102
10:45	1	0	0	0	0	1	1	2	0	0	0	0	2	2	77	11	3	0	2	93	97
H/TOT	4	0	0	0	0	4	4	13	0	1	0	0	14	15	264	39	16	3	5	327	344
11:00	0	0	0	0	0	0	0	2	0	0	0	0	2	2	79	8	5	2	1	95	101
11:15	0	0	0	0	0	0	0	0	0	1	0	0	1	2	57	5	1	0	0	63	64
11:30	2	0	0	0	0	2	2	0	0	2	0	0	2	3	75	8	2	1	2	88	92
11:45	1	1	0	0	0	2	2	1	0	1	0	0	2	3	70	9	4	1	1	85	89
H/TOT	3	1	0	0	0	4	4	3	0	4	0	0	7	9	281	30	12	4	4	331	346
12:00	0	0	0	0	0	0	0	3	0	0	0	0	3	3	64	13	4	1	1	83	87
12:15	0	0	0	0	0	0	0	2	0	0	0	0	2	2	81	14	7	0	2	104	110
12:30	1	0	0	0	0	1	1	1	0	0	0	0	1	1	76	16	4	0	0	96	98
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	10	1	0	2	83	86
H/TOT	1	0	0	0	0	1	1	6	0	0	0	0	6	6	291	53	16	1	5	366	380

LOCATION: Howth Road/Church Road

SITE: 03

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							PCU's Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
13:00	84	14	1	1	2	102	106	20	0	0	0	0	20	20	11	0	0	0	0	11	11	237
13:15	83	10	3	1	1	98	102	17	1	0	0	0	18	18	11	0	0	0	0	11	11	234
13:30	74	6	2	0	0	82	83	16	2	0	0	0	18	18	10	0	0	0	0	10	10	203
13:45	91	9	1	0	1	102	104	15	0	0	0	0	15	15	7	1	0	0	0	8	8	226
H/TOT	332	39	7	2	4	384	394	68	3	0	0	0	71	71	39	1	0	0	0	40	40	900
14:00	81	6	1	0	1	89	91	15	1	0	0	0	16	16	14	0	0	0	0	14	14	210
14:15	75	4	2	0	1	82	84	5	1	0	0	0	6	6	11	1	1	0	0	13	14	230
14:30	98	10	4	0	1	113	116	16	2	0	0	0	18	18	19	0	0	0	0	19	19	225
14:45	52	4	1	1	1	59	62	8	1	0	0	0	9	9	22	0	0	0	0	22	22	204
H/TOT	306	24	8	1	4	343	352	44	5	0	0	0	49	49	66	1	1	0	0	68	69	869
15:00	58	8	3	1	2	72	77	12	0	0	0	0	12	12	17	0	0	0	0	17	17	201
15:15	101	13	2	1	1	118	121	21	0	0	0	0	21	21	9	1	0	0	0	10	10	233
15:30	46	4	1	0	1	52	54	15	0	0	0	0	15	15	36	0	0	0	0	36	36	213
15:45	85	8	3	0	0	96	98	17	0	1	0	0	18	19	31	0	0	0	3	34	37	233
H/TOT	290	33	9	2	4	338	349	65	0	1	0	0	66	67	93	1	0	0	3	97	100	879
16:00	96	9	2	0	2	109	112	16	0	0	0	0	16	16	30	0	1	0	0	31	32	259
16:15	91	1	2	0	0	94	95	14	0	0	0	0	14	14	15	1	0	0	0	16	16	198
16:30	69	8	0	0	1	78	79	13	0	0	0	0	13	13	7	0	0	0	0	7	7	182
16:45	102	10	1	0	0	113	114	11	0	0	0	0	11	11	5	1	0	0	0	6	6	222
H/TOT	358	28	5	0	3	394	400	54	0	0	0	0	54	54	57	2	1	0	0	60	61	861
17:00	70	7	0	0	0	77	77	10	0	0	0	0	10	10	15	0	0	0	0	15	15	191
17:15	85	7	1	0	0	93	94	17	0	0	0	0	17	17	12	1	1	0	0	14	15	196
17:30	113	6	1	0	2	122	125	20	0	0	0	0	20	20	10	0	0	0	0	10	10	241
17:45	88	6	0	2	0	96	99	23	0	0	0	0	23	23	12	0	2	0	0	14	15	197
H/TOT	356	26	2	2	2	388	394	70	0	0	0	0	70	70	49	1	3	0	0	53	55	824
18:00	84	7	0	0	1	92	93	20	0	0	0	0	20	20	10	1	0	0	0	11	11	203
18:15	94	3	0	0	0	97	97	13	0	0	0	0	13	13	12	0	0	0	0	12	12	193
18:30	88	3	1	0	0	92	93	23	0	0	0	0	23	23	20	1	0	0	0	21	21	212
18:45	125	2	1	0	2	130	133	21	0	0	0	0	21	21	10	1	0	0	0	11	11	229
H/TOT	391	15	2	0	3	411	415	77	0	0	0	0	77	77	52	3	0	0	0	55	55	836

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	1	0	0	0	0	1	1	2	0	0	0	0	2	2	77	12	4	1	0	94	97
13:15	2	0	0	0	0	2	2	4	0	0	0	0	4	4	84	6	2	0	2	94	97
13:30	1	0	0	0	0	1	1	0	1	0	0	0	1	1	75	10	2	0	1	88	90
13:45	1	0	0	0	0	1	1	1	0	0	0	0	1	1	77	12	4	1	0	94	97
H/TOT	5	0	0	0	0	5	5	7	1	0	0	0	8	8	313	40	12	2	3	370	382
14:00	2	0	0	0	0	2	2	1	0	0	0	0	1	1	70	11	1	1	1	84	87
14:15	1	0	0	0	0	1	1	7	0	0	0	0	7	7	101	10	2	1	1	115	118
14:30	0	0	0	0	0	0	0	2	0	1	0	0	3	4	61	4	1	0	1	67	69
14:45	1	1	1	0	0	3	4	2	0	0	0	0	2	2	88	14	0	0	2	104	106
H/TOT	4	1	1	0	0	6	7	12	0	1	0	0	13	14	320	39	4	2	5	370	380
15:00	2	0	0	0	0	2	2	2	0	0	0	0	2	2	78	5	1	1	2	87	91
15:15	1	0	0	0	0	1	1	5	0	0	0	0	5	5	62	11	1	0	0	74	75
15:30	1	0	0	0	0	1	1	3	0	0	0	0	3	3	90	9	1	0	2	102	105
15:45	0	0	0	0	0	0	0	1	0	0	0	0	1	1	62	11	1	1	1	76	79
H/TOT	4	0	0	0	0	4	4	11	0	0	0	0	11	11	292	36	4	2	5	339	349
16:00	3	0	0	0	0	3	3	2	0	1	0	1	4	6	71	16	1	0	1	89	91
16:15	2	0	0	0	0	2	2	1	0	0	0	0	1	1	61	7	0	0	1	69	70
16:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	63	11	4	0	1	79	82
16:45	2	0	0	0	0	2	2	3	0	0	0	0	3	3	70	12	3	0	0	85	87
H/TOT	7	0	0	0	0	7	7	7	0	1	0	1	9	11	265	46	8	0	3	322	329
17:00	0	0	0	0	0	0	0	2	0	0	0	0	2	2	73	10	1	0	1	85	87
17:15	0	0	0	0	0	0	0	2	0	0	0	0	2	2	62	5	0	0	1	68	69
17:30	0	0	0	0	0	0	0	2	0	0	0	0	2	2	75	6	2	0	0	83	84
17:45	1	0	0	0	0	1	1	1	0	0	0	0	1	1	51	5	0	0	1	57	58
H/TOT	1	0	0	0	0	1	1	7	0	0	0	0	7	7	261	26	3	0	3	293	298
18:00	0	0	3	0	0	3	5	4	0	0	0	0	4	4	59	9	0	0	1	69	70
18:15	2	0	0	0	0	2	2	0	0	0	0	0	0	0	60	9	0	0	0	69	69
18:30	1	0	1	0	0	2	3	0	1	0	0	0	1	1	67	3	0	0	1	71	72
18:45	2	0	0	0	0	2	2	3	0	0	0	0	3	3	55	4	0	0	0	59	59
H/TOT	5	0	4	0	0	9	11	7	1	0	0	0	8	8	241	25	0	0	2	268	270

LOCATION: Howth Road/Offington Park

SITE: 04

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							MOVEMENT 4							MOVEMENT 5							MOVEMENT 6							PCU's Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
07:00	15	13	1	0	1	30	32	2	0	0	0	0	2	2	8	0	0	0	0	8	8	07:00	4	3	0	0	0	7	7	2	1	0	0	0	3	3	55	9	0	0	0	64	64	116
07:15	22	3	4	1	0	30	33	1	4	0	0	0	5	5	3	1	0	0	0	4	4	07:15	0	0	0	0	0	0	0	2	0	0	0	0	2	2	70	1	0	0	1	72	73	117
07:30	35	9	1	1	1	47	50	2	0	0	0	0	2	2	7	0	0	0	0	7	7	07:30	9	0	0	0	0	9	9	4	0	0	0	0	4	4	73	5	0	0	1	79	80	152
07:45	51	13	2	2	1	69	74	5	1	1	0	0	7	8	5	1	0	0	0	6	6	07:45	16	0	0	0	0	16	16	3	0	0	0	0	3	3	52	7	2	1	0	62	64	170
H/TOT	123	38	8	4	3	176	188	10	5	1	0	0	16	17	23	2	0	0	0	25	25	H/TOT	29	3	0	0	0	32	32	11	1	0	0	0	12	12	250	22	2	1	2	277	281	555
08:00	28	14	3	0	4	49	55	9	0	0	0	0	9	9	7	0	0	0	0	7	7	08:00	9	0	0	0	0	9	9	5	0	0	0	0	5	5	74	6	1	0	1	82	84	168
08:15	46	11	2	1	2	62	66	3	0	0	0	0	3	3	13	1	0	0	0	14	14	08:15	13	0	0	0	0	13	13	8	0	0	0	0	8	8	63	6	2	1	1	73	76	181
08:30	73	12	4	0	0	89	91	21	1	0	0	0	22	22	21	3	0	0	0	24	24	08:30	31	1	0	0	0	32	32	23	0	0	0	0	23	23	88	8	0	2	1	99	103	295
08:45	52	9	4	0	1	66	69	20	0	1	0	0	21	22	19	0	0	1	0	20	21	08:45	33	0	0	0	0	33	33	13	0	0	0	0	13	13	83	7	2	1	1	94	97	255
H/TOT	199	46	13	1	7	266	281	53	1	1	0	0	55	56	60	4	0	1	0	65	66	H/TOT	86	1	0	0	0	87	87	49	0	0	0	0	49	49	308	27	5	4	4	348	360	898
09:00	66	12	6	0	1	85	89	6	1	0	0	0	7	7	13	1	0	0	0	14	14	09:00	29	0	0	0	0	29	29	9	0	0	0	0	9	9	104	11	5	0	0	120	123	271
09:15	55	13	4	0	0	72	74	6	1	0	0	0	7	7	15	1	0	0	0	16	16	09:15	13	0	0	0	0	13	13	11	0	0	0	0	11	11	85	6	2	0	1	94	96	217
09:30	31	11	2	0	1	45	47	8	0	0	0	0	8	8	9	0	0	0	0	9	9	09:30	5	2	0	0	0	7	7	4	0	0	0	0	4	4	71	4	5	0	1	81	85	160
09:45	50	10	9	1	0	70	76	10	0	0	0	0	10	10	7	1	0	0	0	8	8	09:45	10	0	0	0	0	10	10	5	0	1	0	0	6	7	59	10	4	0	1	74	77	187
H/TOT	202	46	21	1	2	272	286	30	2	0	0	0	32	32	44	3	0	0	0	47	47	H/TOT	57	2	0	0	0	59	59	29	0	1	0	0	30	31	319	31	16	0	3	369	380	834
10:00	43	12	3	1	1	60	64	7	1	0	0	0	8	8	13	0	0	0	0	13	13	10:00	11	0	0	0	0	11	11	3	0	0	0	0	3	3	57	12	2	1	1	73	76	175
10:15	56	8	4	1	1	70	74	3	0	0	0	0	3	3	10	0	0	0	0	10	10	10:15	13	0	0	0	0	13	13	5	0	0	0	0	5	5	41	7	3	0	0	51	53	158
10:30	79	10	1	1	1	92	95	6	0	0	0	0	6	6	11	0	0	0	0	11	11	10:30	9	1	1	0	0	11	12	6	0	0	0	0	6	6	66	9	9	2	2	88	97	226
10:45	81	15	3	2	2	103	109	6	1	0	0	0	7	7	7	0	0	0	0	7	7	10:45	19	0	0	0	0	19	19	7	2	1	0	0	10	11	72	11	3	0	2	88	92	244
H/TOT	259	45	11	5	5	325	342	22	2	0	0	0	24	24	41	0	0	0	0	41	41	H/TOT	52	1	1	0	0	54	55	21	2	1	0	0	24	25	236	39	17	3	5	300	317	803
11:00	73	4	3	0	2	82	86	7	1	0	0	0	8	8	4	0	1	0	0	5	6	11:00	10	1	0	0	0	11	11	6	0	0	0	0	6	6	77	8	4	2	1	92	98	214
11:15	62	9	4	0	2	77	81	2	1	0	0	0	3	3	6	1	0	0	0	7	7	11:15	9	2	0	0	0	11	11	9	0	0	0	0	9	9	51	4	2	0	0	57	58	169
11:30	57	5	5	0	0	67	70	6	0	1	0	0	7	8	6	1	0	0	0	7	7	11:30	11	1	0	0	0	12	12	9	2	0	0	0	11	11	69	7	4	1	2	83	88	195
11:45	87	11	6	0	1	105	109	11	3	0	0	0	14	14	9	2	0	0	0	11	11	11:45	12	1	0	0	0	13	13	5	0	0	0	0	5	5	62	7	5	1	1	76	81	233
H/TOT	279	29	18	0	5	331	345	26	5	1	0	0	32	33	25	4	1	0	0	30	31	H/TOT	42	5	0	0	0	47	47	29	2	0	0	0	31	31	259	26	15	4	4	308	325	811
12:00	64	13	3	1	1	82	86	6	1	0	0	0	7	7	15	2	0	0	0	17	17	12:00	7	0	0	0	0	7	7	7	0	0	0	0	7	7	52	11	4	1	1	69	73	197
12:15	65	9	0	1	1	76	78	8	0	0	0	0	8	8	11	0	0	0	0	11	11	12:15	6	0	0	0	0	6	6	8	1	0	0	0	9	9	72	14	7	0	2	95	101	213
12:30	92	13	6	1	0	112	116	14	0	0	0	0	14	14	5	0	0	0	0	5	5	12:30	3	0	0	0	0	3	3	6	0	0	0	0	6	6	72	16	4	0	0	92	94	238
12:45	80	11	0	0	1	92	93	11	0	0	0	0	11	11	13	0	0	0	0	13	13	12:45	4	1	0	0	0	5	5	17	0	0	0	0	17	17	57	10	1	0	2	70	73	212
H/TOT	301	46	9	3	3	362	373	39	1	0	0	0	40	40	44	2	0	0	0	46	46	H/TOT	20	1	0	0	0	21	21	38	1	0	0	0	39	39	253	51	16	1	5	326	340	860

LOCATION: Howth Road/Offington Park

SITE: 04

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							PCU's Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
13:00	77	13	1	1	2	94	98	8	1	0	0	0	9	9	10	0	0	0	0	10	10	236
13:15	69	10	3	1	1	84	88	16	0	0	0	0	16	16	9	0	2	0	0	11	12	229
13:30	68	6	2	0	0	76	77	7	0	0	0	0	7	7	14	0	0	0	0	14	14	192
13:45	86	9	1	0	1	97	99	6	0	0	0	0	6	6	8	1	0	0	0	9	9	224
H/TOT	300	38	7	2	4	351	361	37	1	0	0	0	38	38	41	1	2	0	0	44	45	881
14:00	65	5	1	0	1	72	74	18	1	0	0	0	19	19	12	1	0	0	0	13	13	202
14:15	61	4	2	0	0	67	68	15	0	0	0	1	16	17	9	1	0	0	0	10	10	256
14:30	81	10	4	0	1	96	99	17	0	0	0	0	17	17	15	1	0	0	1	17	18	219
14:45	43	4	2	1	1	51	54	10	1	0	0	0	11	11	9	1	0	0	0	10	10	216
H/TOT	250	23	9	1	3	286	295	60	2	0	0	1	63	64	45	4	0	0	1	50	51	893
15:00	43	8	3	1	2	57	62	17	0	0	0	0	17	17	10	0	0	0	0	10	10	199
15:15	81	13	2	1	1	98	101	21	0	0	0	0	21	21	6	1	0	0	0	7	7	236
15:30	39	4	1	0	1	45	47	8	0	0	0	0	8	8	15	0	0	0	0	15	15	202
15:45	74	7	3	0	0	84	86	11	1	0	0	0	12	12	16	3	1	0	0	20	21	223
H/TOT	237	32	9	2	4	284	295	57	1	0	0	0	58	58	47	4	1	0	0	52	53	861
16:00	89	9	2	0	2	102	105	10	0	0	0	0	10	10	8	1	0	0	0	9	9	259
16:15	84	0	2	0	0	86	87	9	1	0	0	0	10	10	3	0	0	0	0	3	3	193
16:30	58	8	0	0	1	67	68	11	0	0	0	0	11	11	6	1	0	0	0	7	7	192
16:45	96	9	1	0	0	106	107	8	1	0	0	0	9	9	8	1	0	0	0	9	9	229
H/TOT	327	26	5	0	3	361	367	38	2	0	0	0	40	40	25	3	0	0	0	28	28	872
17:00	61	7	0	0	0	68	68	9	0	0	0	0	9	9	6	1	0	0	0	7	7	188
17:15	76	6	0	0	0	82	82	9	1	1	0	0	11	12	5	2	0	0	0	7	7	191
17:30	99	6	1	0	2	108	111	14	0	0	0	0	14	14	6	1	0	0	0	7	7	237
17:45	81	6	0	2	0	89	92	8	0	0	0	0	8	8	2	0	0	0	0	2	2	183
H/TOT	317	25	1	2	2	347	352	40	1	1	0	0	42	43	19	4	0	0	0	23	23	797
18:00	75	7	3	0	1	86	89	9	0	0	0	0	9	9	4	0	0	0	0	4	4	189
18:15	87	3	0	0	0	90	90	9	0	0	0	0	9	9	4	0	0	0	0	4	4	192
18:30	76	3	2	0	0	81	82	13	0	0	0	0	13	13	6	0	0	0	0	6	6	196
18:45	114	2	1	0	2	119	122	13	0	0	0	0	13	13	10	1	0	0	0	11	11	218
H/TOT	352	15	6	0	3	376	382	44	0	0	0	0	44	44	24	1	0	0	0	25	25	794

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	16	0	0	0	0	16	16	14	0	0	0	0	14	14	69	12	4	1	0	86	89
13:15	6	1	0	0	0	7	7	16	1	0	0	0	17	17	79	6	0	0	2	87	89
13:30	9	1	0	0	0	10	10	7	0	0	0	0	7	7	61	11	2	0	1	75	77
13:45	6	1	0	0	0	7	7	14	0	0	0	0	14	14	70	11	4	1	0	86	89
H/TOT	37	3	0	0	0	40	40	51	1	0	0	0	52	52	279	40	10	2	3	334	345
14:00	7	0	0	0	0	7	7	12	1	1	0	0	14	15	59	10	1	1	1	72	75
14:15	25	1	0	0	0	26	26	20	0	0	0	0	20	20	99	9	2	1	1	112	115
14:30	18	0	0	0	0	18	18	13	0	0	0	0	13	13	48	3	2	0	0	53	54
14:45	18	2	1	0	0	21	22	17	2	0	0	1	20	21	81	13	0	0	2	96	98
H/TOT	68	3	1	0	0	72	73	62	3	1	0	1	67	69	287	35	5	2	4	333	342
15:00	10	3	0	0	0	13	13	13	0	1	0	0	14	15	70	5	1	1	2	79	83
15:15	21	2	0	0	0	23	23	9	1	1	0	0	11	12	61	10	1	0	0	72	73
15:30	21	0	0	0	0	21	21	17	2	0	0	0	19	19	78	9	1	0	2	90	93
15:45	26	0	0	0	0	26	26	18	0	0	0	1	19	20	47	8	0	1	1	57	59
H/TOT	78	5	0	0	0	83	83	57	3	2	0	1	63	65	256	32	3	2	5	298	307
16:00	21	0	0	0	0	21	21	24	1	1	0	0	26	27	65	15	2	0	2	84	87
16:15	16	1	0	0	0	17	17	8	0	0	0	0	8	8	59	7	0	0	1	67	68
16:30	12	0	0	0	0	12	12	15	1	1	0	0	17	18	58	10	4	0	1	73	76
16:45	13	1	0	0	0	14	14	9	1	0	0	0	10	10	65	11	3	0	0	79	81
H/TOT	62	2	0	0	0	64	64	56	3	2	0	0	61	62	247	43	9	0	4	303	312
17:00	12	1	0	0	0	13	13	8	1	0	0	0	9	9	69	9	1	0	1	80	82
17:15	14	0	0	0	0	14	14	12	0	0	0	0	12	12	59	3	0	0	1	63	64
17:30	11	2	0	0	0	13	13	11	2	0	0	0	13	13	71	5	2	0	0	78	79
17:45	14	0	0	0	0	14	14	10	0	0	0	0	10	10	50	5	0	0	1	56	57
H/TOT	51	3	0	0	0	54	54	41	3	0	0	0	44	44	249	22	3	0	3	277	282
18:00	7	1	0	0	0	8	8	9	0	0	0	0	9	9	59	9	0	0	1	69	70
18:15	14	0	0	0	0	14	14	10	0	0	0	0	10	10	56	9	0	0	0	65	65
18:30	11	1	0	0	0	12	12	16	0	0	0	0	16	16	61	4	0	0	1	66	67
18:45	12	0	0	0	0	12	12	9	0	0	0	0	9	9	48	3	0	0	0	51	51
H/TOT	44	2	0	0	0	46	46	44	0	0	0	0	44	44	224	25	0	0	2	251	253

LOCATION: Howth Road/Claremont Road (Corr Bridge)

SITE: 05

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							PCU's Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
07:00	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	2	0	0	0	2	2	106
07:15	0	1	0	0	0	1	1	1	0	0	0	0	1	1	1	0	0	0	0	1	1	110
07:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	143
07:45	2	0	0	0	0	2	2	1	1	0	0	0	2	2	5	0	0	0	0	5	5	160
H/TOT	2	1	0	0	0	3	3	4	2	0	0	0	6	6	6	2	0	0	0	8	8	519
08:00	2	0	0	0	0	2	2	1	1	0	0	0	2	2	4	0	0	0	0	4	4	155
08:15	0	1	0	0	0	1	1	0	1	0	0	0	1	1	3	1	0	0	0	4	4	168
08:30	5	0	0	0	0	5	5	3	1	0	0	0	4	4	6	0	0	0	0	6	6	257
08:45	5	1	0	0	0	6	6	1	0	0	0	0	1	1	9	0	0	0	0	9	9	218
H/TOT	12	2	0	0	0	14	14	5	3	0	0	0	8	8	22	1	0	0	0	23	23	798
09:00	4	0	0	0	0	4	4	0	0	0	0	0	0	0	6	0	1	0	0	7	8	260
09:15	2	0	0	0	0	2	2	2	0	0	0	0	2	2	6	1	0	0	0	7	7	200
09:30	3	0	0	0	0	3	3	1	0	1	0	0	2	3	1	0	0	0	0	1	1	148
09:45	0	0	0	0	0	0	0	3	0	0	0	0	3	3	6	0	0	0	0	6	6	171
H/TOT	9	0	0	0	0	9	9	6	0	1	0	0	7	8	19	1	1	0	0	21	22	778
10:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1	159
10:15	4	1	1	0	0	6	7	2	0	0	0	0	2	2	7	0	0	0	0	7	7	154
10:30	3	1	0	0	0	4	4	0	0	0	0	0	0	0	7	0	0	0	0	7	7	220
10:45	4	0	0	0	0	4	4	3	0	0	0	0	3	3	6	0	0	0	0	6	6	239
H/TOT	12	2	1	0	0	15	16	5	0	0	0	0	5	5	21	0	0	0	0	21	21	773
11:00	1	0	0	0	0	1	1	2	1	0	0	0	3	3	4	0	0	0	0	4	4	207
11:15	4	0	0	0	0	4	4	1	0	0	0	0	1	1	6	0	0	0	0	6	6	166
11:30	4	0	0	0	0	4	4	0	0	0	0	0	0	0	4	1	0	0	0	5	5	191
11:45	1	1	0	0	0	2	2	2	0	0	0	0	2	2	7	0	0	0	0	7	7	213
H/TOT	10	1	0	0	0	11	11	5	1	0	0	0	6	6	21	1	0	0	0	22	22	777
12:00	6	1	0	0	0	7	7	1	1	0	0	0	2	2	4	1	0	0	0	5	5	183
12:15	1	0	1	0	0	2	3	1	1	0	0	0	2	2	5	0	0	0	0	5	5	201
12:30	4	2	0	0	0	6	6	3	0	0	0	0	3	3	3	0	0	0	0	3	3	229
12:45	5	1	0	0	0	6	6	1	0	0	0	0	1	1	3	0	0	0	0	3	3	198
H/TOT	16	4	1	0	0	21	22	6	2	0	0	0	8	8	15	1	0	0	0	16	16	811

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	19	14	1	0	1	35	37	56	9	0	0	0	65	65	0	0	0	0	0	0	0
07:15	21	3	4	1	0	29	32	71	1	0	0	1	73	74	1	0	0	0	0	1	1
07:30	44	9	1	1	1	56	59	76	5	0	0	1	82	83	0	0	0	0	0	0	0
07:45	62	13	2	2	1	80	85	54	6	2	1	0	63	65	0	1	0	0	0	1	1
H/TOT	146	39	8	4	3	200	212	257	21	2	1	2	283	287	1	1	0	0	0	2	2
08:00	33	14	3	0	4	54	60	78	5	1	0	1	85	87	0	1	0	0	0	1	1
08:15	56	10	2	1	2	71	75	71	5	2	1	1	80	83	3	0	0	0	0	3	3
08:30	98	13	4	0	0	115	117	108	7	0	2	1	118	122	3	0	0	0	0	3	3
08:45	76	9	4	0	1	90	93	95	7	2	1	1	106	109	0	0	0	0	0	0	0
H/TOT	263	46	13	1	7	330	345	352	24	5	4	4	389	401	6	1	0	0	0	7	7
09:00	89	12	5	0	1	107	111	113	11	5	0	0	129	132	6	0	0	0	0	6	6
09:15	62	12	4	0	0	78	80	94	6	2	0	1	103	105	4	0	0	0	0	4	4
09:30	35	13	2	0	1	51	53	74	4	4	0	1	83	86	1	1	0	0	0	2	2
09:45	54	10	9	1	0	74	80	61	10	5	0	1	77	81	1	1	0	0	0	2	2
H/TOT	240	47	20	1	2	310	323	342	31	16	0	3	392	403	12	2	0	0	0	14	14
10:00	53	12	3	1	1	70	74	60	12	2	1	1	76	79	4	0	0	0	0	4	4
10:15	62	8	4	1	1	76	80	44	7	3	0	0	54	56	3	0	0	0	0	3	3
10:30	81	11	2	1	1	96	99	72	9	9	2	2	94	103	6	1	0	0	0	7	7
10:45	94	15	3	2	2	116	122	76	13	4	0	2	95	99	3	2	0	0	0	5	5
H/TOT	290	46	12	5	5	358	376	252	41	18	3	5	319	337	16	3	0	0	0	19	19
11:00	79	5	3	0	2	89	93	81	7	4	2	1	95	101	6	0	0	0	0	6	6
11:15	65	11	4	0	2	82	86	59	4	2	0	0	65	66	3	0	0	0	0	3	3
11:30	64	5	5	0	0	74	77	78	9	4	1	2	94	99	6	0	0	0	0	6	6
11:45	92	12	6	0	1	111	115	65	7	5	1	1	79	84	2	1	0	0	0	3	3
H/TOT	300	33	18	0	5	356	370	283	27	15	4	4	333	350	17	1	0	0	0	18	18
12:00	67	12	3	1	1	84	88	58	10	4	1	1	74	78	3	0	0	0	0	3	3
12:15	66	9	0	1	1	77	79	79	14	7	0	2	102	108	5	0	0	0	0	5	5
12:30	92	13	6	1	0	112	116	75	16	4	0	0	95	97	4	0	0	0	0	4	4
12:45	81	12	0	0	1	94	95	73	10	1	0	2	86	89	4	0	0	0	0	4	4
H/TOT	306	46	9	3	3	367	378	285	50	16	1	5	357	371	16	0	0	0	0	16	16

LOCATION: Howth Road/Claremont Road (Corr Bridge)

SITE: 05

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							PCU's Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
13:00	4	0	0	0	0	4	4	0	0	0	0	0	0	0	3	0	0	0	0	3	3	228
13:15	5	0	0	0	0	5	5	4	0	0	0	0	4	4	1	0	0	0	0	1	1	209
13:30	3	0	0	0	0	3	3	2	0	0	0	0	2	2	5	0	0	0	0	5	5	175
13:45	2	2	0	0	0	4	4	0	0	0	0	0	0	0	4	0	0	0	0	4	4	223
H/TOT	14	2	0	0	0	16	16	6	0	0	0	0	6	6	13	0	0	0	0	13	13	835
14:00	6	0	1	0	0	7	8	3	0	0	0	0	3	3	2	0	0	0	0	2	2	182
14:15	2	0	0	0	0	2	2	4	0	2	0	0	6	7	8	1	0	0	0	9	9	235
14:30	9	0	0	0	0	9	9	0	0	0	0	0	0	0	6	0	0	0	0	6	6	199
14:45	5	0	0	0	0	5	5	0	0	0	0	0	0	0	3	0	0	0	0	3	3	203
H/TOT	22	0	1	0	0	23	24	7	0	2	0	0	9	10	19	1	0	0	0	20	20	819
15:00	2	0	0	0	0	2	2	1	0	0	0	0	1	1	5	0	0	0	0	5	5	184
15:15	3	1	0	0	0	4	4	0	1	0	0	0	1	1	5	1	0	0	0	6	6	216
15:30	5	0	0	0	0	5	5	1	0	0	0	0	1	1	5	0	0	0	0	5	5	192
15:45	4	0	0	0	0	4	4	0	0	0	0	0	0	0	10	0	0	0	0	10	10	200
H/TOT	14	1	0	0	0	15	15	2	1	0	0	0	3	3	25	1	0	0	0	26	26	792
16:00	5	0	0	0	0	5	5	2	0	0	0	0	2	2	6	1	0	0	0	7	7	249
16:15	5	1	0	0	0	6	6	1	2	0	0	0	3	3	6	0	0	0	0	6	6	191
16:30	2	0	0	0	0	2	2	3	0	0	0	0	3	3	4	1	0	0	0	5	5	182
16:45	11	1	0	0	0	12	12	3	0	0	0	0	3	3	6	0	0	0	0	6	6	228
H/TOT	23	2	0	0	0	25	25	9	2	0	0	0	11	11	22	2	0	0	0	24	24	849
17:00	3	0	0	0	0	3	3	1	1	0	0	0	2	2	1	1	0	0	0	2	2	179
17:15	1	0	0	0	0	1	1	0	2	0	0	0	2	2	4	1	0	0	0	5	5	174
17:30	1	0	0	0	0	1	1	0	2	0	0	0	2	2	2	0	0	0	0	2	2	223
17:45	3	2	0	0	0	5	5	2	0	0	0	0	2	2	5	0	0	0	0	5	5	181
H/TOT	8	2	0	0	0	10	10	3	5	0	0	0	8	8	12	2	0	0	0	14	14	756
18:00	5	0	0	0	0	5	5	1	1	0	0	0	2	2	2	0	0	0	0	2	2	182
18:15	2	0	0	0	0	2	2	0	1	0	0	0	1	1	1	0	0	0	0	1	1	184
18:30	1	0	0	0	0	1	1	0	1	0	0	0	1	1	3	1	2	0	0	6	7	180
18:45	1	0	0	0	0	1	1	1	0	0	0	0	1	1	4	1	0	0	0	5	5	195
H/TOT	9	0	0	0	0	9	9	2	3	0	0	0	5	5	10	2	2	0	0	14	15	740

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	90	13	1	1	2	107	111	83	12	4	1	0	100	103	6	1	0	0	0	7	7
13:15	74	11	3	1	1	90	94	91	7	0	0	2	100	102	3	0	0	0	0	3	3
13:30	72	7	2	0	0	81	82	66	11	2	0	1	80	82	1	0	0	0	0	1	1
13:45	88	10	1	0	1	100	102	84	11	4	1	0	100	103	10	0	0	0	0	10	10
H/TOT	324	41	7	2	4	378	388	324	41	10	2	3	380	391	20	1	0	0	0	21	21
14:00	70	5	1	0	1	77	79	68	11	2	1	1	83	86	3	0	1	0	0	4	5
14:15	78	4	2	0	0	84	85	115	9	0	1	1	126	128	4	0	0	0	0	4	4
14:30	93	10	4	0	1	108	111	61	3	2	0	0	66	67	6	0	0	0	0	6	6
14:45	58	6	3	1	1	69	73	98	15	0	0	3	116	119	3	0	0	0	0	3	3
H/TOT	299	25	10	1	3	338	347	342	38	4	2	5	391	401	16	0	1	0	0	17	18
15:00	48	11	3	1	2	65	70	82	5	2	1	2	92	96	9	1	0	0	0	10	10
15:15	97	14	2	1	1	115	118	70	10	2	0	0	82	83	4	0	0	0	0	4	4
15:30	55	4	1	0	1	61	63	94	11	1	0	2	108	111	8	0	0	0	0	8	8
15:45	90	7	3	0	0	100	102	65	8	0	1	2	76	79	5	0	0	0	0	5	5
H/TOT	290	36	9	2	4	341	352	311	34	5	2	6	358	369	26	1	0	0	0	27	27
16:00	104	8	2	0	2	116	119	87	16	3	0	2	108	112	3	1	0	0	0	4	4
16:15	94	1	2	0	0	97	98	66	5	0	0	1	72	73	5	0	0	0	0	5	5
16:30	66	7	0	0	1	74	75	70	11	5	0	1	87	91	5	1	0	0	0	6	6
16:45	103	10	1	0	0	114	115	71	12	3	0	0	86	88	5	0	0	0	0	5	5
H/TOT	367	26	5	0	3	401	407	294	44	11	0	4	353	363	18	2	0	0	0	20	20
17:00	72	7	0	0	0	79	79	76	9	1	0	1	87	89	3	1	0	0	0	4	4
17:15	86	5	0	0	0	91	91	71	1	0	0	1	73	74	1	0	0	0	0	1	1
17:30	108	8	1	0	2	119	122	82	5	2	0	0	89	90	6	0	0	0	0	6	6
17:45	90	6	0	2	0	98	101	58	5	0	0	1	64	65	3	0	0	0	0	3	3
H/TOT	356	26	1	2	2	387	392	287	20	3	0	3	313	318	13	1	0	0	0	14	14
18:00	80	8	3	0	1	92	95	67	8	0	0	1	76	77	1	0	0	0	0	1	1
18:15	100	3	0	0	0	103	103	66	8	0	0	0	74	74	3	0	0	0	0	3	3
18:30	84	3	0	0	0	87	87	77	3	0	0	1	81	82	1	1	0	0	0	2	2
18:45	122	1	1	0	2	126	129	56	3	0	0	0	59	59	0	0	0	0	0	0	0
H/TOT	386	15	4	0	3	408	413	266	22	0	0	2	290	292	5	1	0	0	0	6	6

LOCATION: Howth Road (Harbour Road)/Church Street

SITE: 06

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							PCU's Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
07:00	8	1	0	0	2	11	13	6	1	0	0	0	7	7	26	3	0	0	0	29	29	95
07:15	9	0	0	0	0	9	9	11	1	0	0	0	12	12	34	0	0	0	0	34	34	85
07:30	22	6	1	0	2	31	34	12	0	0	0	0	12	12	34	1	1	0	0	36	37	127
07:45	33	9	0	0	0	42	42	14	2	0	0	0	16	16	34	1	0	0	0	35	35	165
H/TOT	72	16	1	0	4	93	98	43	4	0	0	0	47	47	128	5	1	0	0	134	135	472
08:00	14	5	2	0	4	25	30	15	3	0	0	1	19	20	27	1	0	0	0	28	28	124
08:15	15	1	0	0	2	18	20	21	3	0	1	0	25	26	24	2	0	0	1	27	28	126
08:30	22	8	0	0	0	30	30	50	2	2	0	0	54	55	35	0	1	0	0	36	37	186
08:45	43	5	1	1	1	51	54	43	1	0	0	0	44	44	45	0	0	0	0	45	45	222
H/TOT	94	19	3	1	7	124	134	129	9	2	1	1	142	145	131	3	1	0	1	136	138	658
09:00	36	5	0	0	1	42	43	28	3	1	0	0	32	33	41	3	1	0	0	45	46	190
09:15	32	4	2	0	0	38	39	19	2	0	0	0	21	21	27	2	1	0	0	30	31	140
09:30	22	7	2	0	2	33	36	16	2	1	0	0	19	20	19	1	1	0	0	21	22	123
09:45	35	7	1	1	0	44	46	14	1	1	0	0	16	17	17	0	0	0	0	17	17	128
H/TOT	125	23	5	1	3	157	164	77	8	3	0	0	88	90	104	6	3	0	0	113	115	580
10:00	34	7	4	0	1	46	49	20	0	1	0	0	21	22	16	4	1	0	0	21	22	134
10:15	28	5	1	0	1	35	37	8	2	0	0	0	10	10	11	2	0	0	0	13	13	107
10:30	38	12	4	0	0	54	56	10	1	0	0	0	11	11	16	0	1	0	0	17	18	153
10:45	48	10	1	0	1	60	62	20	0	0	0	0	20	20	23	1	0	0	0	24	24	168
H/TOT	148	34	10	0	3	195	203	58	3	1	0	0	62	63	66	7	2	0	0	75	76	562
11:00	42	4	2	0	1	49	51	20	0	1	0	0	21	22	23	0	0	0	0	23	23	152
11:15	41	7	3	0	2	53	57	11	1	1	0	0	13	14	9	0	2	0	0	11	12	141
11:30	46	3	0	1	0	50	51	10	0	0	0	0	10	10	14	2	0	0	0	16	16	145
11:45	37	5	2	0	1	45	47	23	2	2	0	0	27	28	0	2	1	0	0	3	4	146
H/TOT	166	19	7	1	4	197	206	64	3	4	0	0	71	73	46	4	3	0	0	53	55	583
12:00	50	5	2	0	0	57	58	19	0	1	0	0	20	21	13	0	1	0	0	14	15	136
12:15	57	4	0	0	1	62	63	21	3	1	0	0	25	26	31	2	0	0	0	33	33	178
12:30	48	3	3	1	1	56	60	25	3	0	0	0	28	28	14	1	2	0	0	17	18	167
12:45	50	5	0	0	1	56	57	28	3	1	0	0	32	33	17	1	0	0	0	18	18	172
H/TOT	205	17	5	1	3	231	238	93	9	3	0	0	105	107	75	4	3	0	0	82	84	652

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	40	3	1	0	0	44	45
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	1	0	0	2	28	30
07:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	39	3	0	0	1	43	44
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61	6	2	0	1	70	72
H/TOT	2	0	0	0	0	2	2	0	0	0	0	0	0	0	165	13	3	0	4	185	191
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	5	0	0	0	46	46
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	3	1	0	0	51	52
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	5	1	0	1	63	65
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	5	0	0	1	78	79
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	216	18	2	0	2	238	241
09:00	0	0	0	0	0	0	0	1	0	0	0	0	1	1	61	7	0	0	0	68	68
09:15	0	0	0	0	0	0	0	1	0	0	0	0	1	1	43	3	0	0	1	47	48
09:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	39	1	3	0	0	43	45
09:45	0	0	0	0	0	0	0	1	0	1	0	0	2	3	34	7	2	0	1	44	46
H/TOT	0	0	0	0	0	0	0	4	0	1	0	0	5	6	177	18	5	0	2	202	207
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	3	2	0	1	40	42
10:15	0	0	0	0	0	0	0	3	0	0	0	0	3	3	35	5	3	0	0	43	45
10:30	1	0	0	0	0	1	1	2	0	0	0	0	2	2	46	8	5	0	2	61	66
10:45	1	0	0	0	0	1	1	0	1	0	0	0	1	1	46	9	2	0	1	58	60
H/TOT	2	0	0	0	0	2	2	5	1	0	0	0	6	6	161	25	12	0	4	202	212
11:00	1	0	0	0	0	1	1	1	0	0	0	0	1	1	47	3	3	0	0	53	55
11:15	1	0	0	0	0	1	1	1	1	0	0	0	2	2	48	6	1	0	0	55	56
11:30	0	0	0	0	0	0	0	3	0	1	0	0	4	5	56	2	1	0	2	61	64
11:45	1	0	0	0	0	1	1	2	1	0	0	0	3	3	49	4	4	0	2	59	63
H/TOT	3	0	0	0	0	3	3	7	2	1	0	0	10	11	200	15	9	0	4	228	237
12:00	0	0	0	0	0	0	0	2	0	0	0	0	2	2	30	6	3	0	0	39	41
12:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	46	6	1	0	1	54	56
12:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	52	4	0	0	2	58	60
12:45	0	0	0	0	0	0	0	2	0	0	0	0	2	2	53	2	2	1	1	59	62
H/TOT	1	0	0	0	0	1	1	5	0	0	0	0	5	5	181	18	6	1	4	210	218

LOCATION: Howth Road (Harbour Road)/Church Street

SITE: 06

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3								MOVEMENT 4							MOVEMENT 5							MOVEMENT 6							PCU's Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
13:00	53	8	1	1	1	64	67	25	4	0	0	0	29	29	17	0	0	0	0	17	17	13:00	1	0	0	0	0	1	1	1	0	0	0	0	1	1	49	4	3	0	1	57	60	174
13:15	36	3	0	0	1	40	41	39	3	0	0	0	42	42	7	1	1	0	0	9	10	13:15	0	0	0	0	0	0	0	1	0	0	0	0	1	1	44	4	1	0	0	49	50	143
13:30	54	8	0	0	1	63	64	19	4	0	0	0	23	23	21	1	0	0	0	22	22	13:30	0	0	0	0	0	0	0	0	1	0	0	0	1	1	47	4	0	0	1	52	53	163
13:45	44	3	0	0	1	48	49	38	0	0	0	0	38	38	19	1	0	0	0	20	20	13:45	1	0	0	0	0	1	1	3	0	0	0	0	3	3	59	8	1	0	1	69	71	182
H/TOT	187	22	1	1	4	215	221	121	11	0	0	0	132	132	64	3	1	0	0	68	69	H/TOT	2	0	0	0	0	2	2	5	1	0	0	0	6	6	199	20	5	0	3	227	233	662
14:00	38	4	1	0	0	43	44	14	1	0	0	0	15	15	14	3	0	0	0	17	17	14:00	0	0	0	0	0	0	0	3	2	0	0	0	5	5	60	7	1	0	0	68	69	149
14:15	48	2	2	0	1	53	55	41	4	0	0	0	45	45	16	0	0	0	0	16	16	14:15	0	0	0	0	0	0	0	3	0	0	0	0	3	3	54	5	0	0	1	60	61	180
14:30	46	6	1	0	1	54	56	29	3	0	0	0	32	32	43	1	0	0	0	44	44	14:30	0	0	1	0	0	1	2	2	0	0	0	0	2	2	40	3	0	0	2	45	47	182
14:45	56	5	1	0	0	62	63	24	2	1	0	0	27	28	10	3	0	0	0	13	13	14:45	1	0	0	0	0	1	1	2	1	0	0	0	3	3	59	3	1	0	2	65	68	175
H/TOT	188	17	5	0	2	212	217	108	10	1	0	0	119	120	83	7	0	0	0	90	90	H/TOT	1	0	1	0	0	2	3	10	3	0	0	0	13	13	213	18	2	0	5	238	244	686
15:00	40	6	2	0	2	50	53	21	2	1	0	0	24	25	23	3	0	0	0	26	26	15:00	0	0	0	0	0	0	0	2	0	0	0	0	2	2	50	7	1	0	1	59	61	166
15:15	51	5	0	0	1	57	58	28	3	0	0	0	31	31	18	0	0	0	0	18	18	15:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	49	9	1	0	0	59	60	168
15:30	51	3	0	0	2	56	58	31	5	0	1	0	37	38	19	5	1	0	0	25	26	15:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	37	6	0	0	1	44	45	168
15:45	55	4	1	0	0	60	61	18	0	0	0	0	18	18	17	1	1	0	0	19	20	15:45	1	0	0	0	0	1	1	2	0	0	0	0	2	2	40	2	0	0	2	44	46	147
H/TOT	197	18	3	0	5	223	230	98	10	1	1	0	110	112	77	9	2	0	0	88	89	H/TOT	2	0	0	0	0	2	2	5	0	0	0	0	5	5	176	24	2	0	4	206	211	648
16:00	55	8	1	0	2	66	69	25	1	1	0	0	27	28	12	1	0	0	0	13	13	16:00	0	0	0	0	0	0	0	2	0	0	0	0	2	2	45	10	1	0	0	56	57	168
16:15	69	3	1	0	0	73	74	50	0	0	0	0	50	50	16	4	0	0	0	20	20	16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	4	0	0	1	40	41	185
16:30	48	1	0	0	1	50	51	27	2	0	0	0	29	29	25	0	2	0	0	27	28	16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	7	1	0	1	69	71	179
16:45	58	1	1	0	0	60	61	47	7	0	0	0	54	54	14	1	0	0	0	15	15	16:45	2	0	0	0	0	2	2	4	0	0	0	0	4	4	38	6	2	0	1	47	49	185
H/TOT	230	13	3	0	3	249	254	149	10	1	0	0	160	161	67	6	2	0	0	75	76	H/TOT	2	0	0	0	0	2	2	6	0	0	0	0	6	6	178	27	4	0	3	212	217	715
17:00	68	9	1	0	0	78	79	52	3	0	0	0	55	55	16	2	0	0	0	18	18	17:00	0	0	0	0	0	0	0	3	1	0	0	0	4	4	40	8	1	0	1	50	52	207
17:15	51	3	0	0	0	54	54	36	3	0	0	0	39	39	22	2	0	0	0	24	24	17:15	0	0	0	0	0	0	0	2	0	0	0	0	2	2	45	2	2	0	1	50	52	171
17:30	46	4	0	0	2	52	54	43	1	0	0	0	44	44	15	2	0	0	0	17	17	17:30	0	1	0	0	0	1	1	0	1	0	0	0	1	1	47	3	0	0	0	50	50	167
17:45	47	1	0	0	0	48	48	49	3	0	0	0	52	52	16	2	0	0	0	18	18	17:45	0	0	0	0	0	0	0	4	0	0	0	0	4	4	39	4	0	0	1	44	45	167
H/TOT	212	17	1	0	2	232	235	180	10	0	0	0	190	190	69	8	0	0	0	77	77	H/TOT	0	1	0	0	0	1	1	9	2	0	0	0	11	11	171	17	3	0	3	194	199	712
18:00	48	2	0	0	1	51	52	32	6	0	0	0	38	38	17	1	0	0	0	18	18	18:00	1	0	0	0	0	1	1	1	0	0	0	0	1	1	46	3	0	0	1	50	51	161
18:15	62	2	1	0	0	65	66	44	2	0	0	0	46	46	18	1	0	0	0	19	19	18:15	0	0	0	0	0	0	0	4	0	0	0	0	4	4	44	1	0	0	1	46	47	182
18:30	58	2	0	0	0	60	60	45	2	0	0	0	47	47	27	0	0	0	0	27	27	18:30	0	0	0	0	0	0	0	4	0	0	0	0	4	4	44	2	0	0	0	46	46	184
18:45	55	1	1	0	1	58	60	42	2	0	0	0	44	44	15	1	0	0	0	16	16	18:45	0	0	0	0	0	0	0	3	0	0	0	0	3	3	40	2	0	0	1	43	44	167
H/TOT	223	7	2	0	2	234	237	163	12	0	0	0	175	175	77	3	0	0	0	80	80	H/TOT	1	0	0	0	0	1	1	12	0	0	0	0	12	12	174	8	0	0	3	185	188	693

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APPENDIX 3

FLOW DIAGRAMS

DIAGRAM 1 – AM PEAK EXISTING FLOWS

DIAGRAM 2 – PM PEAK EXISTING FLOWS

DIAGRAM 3 - DISTRIBUTION OF AM GENERATED FLOWS (SUBJECT SITE)

DIAGRAM 4 - DISTRIBUTION OF PM GENERATED FLOWS (SUBJECT SITE)

DIAGRAM 5 - DISTRIBUTION OF AM GENERATED FLOWS (ADJACENT BALSCADDEN ROAD SITE)

DIAGRAM 6 - DISTRIBUTION OF PM GENERATED FLOWS (ADJACENT BALSCADDEN ROAD SITE)

DIAGRAM 7 - DISTRIBUTION OF AM GENERATED FLOWS (SUBJECT + ADJACENT SITE)

DIAGRAM 8 - DISTRIBUTION OF PM GENERATED FLOWS (SUBJECT + ADJACENT SITE)

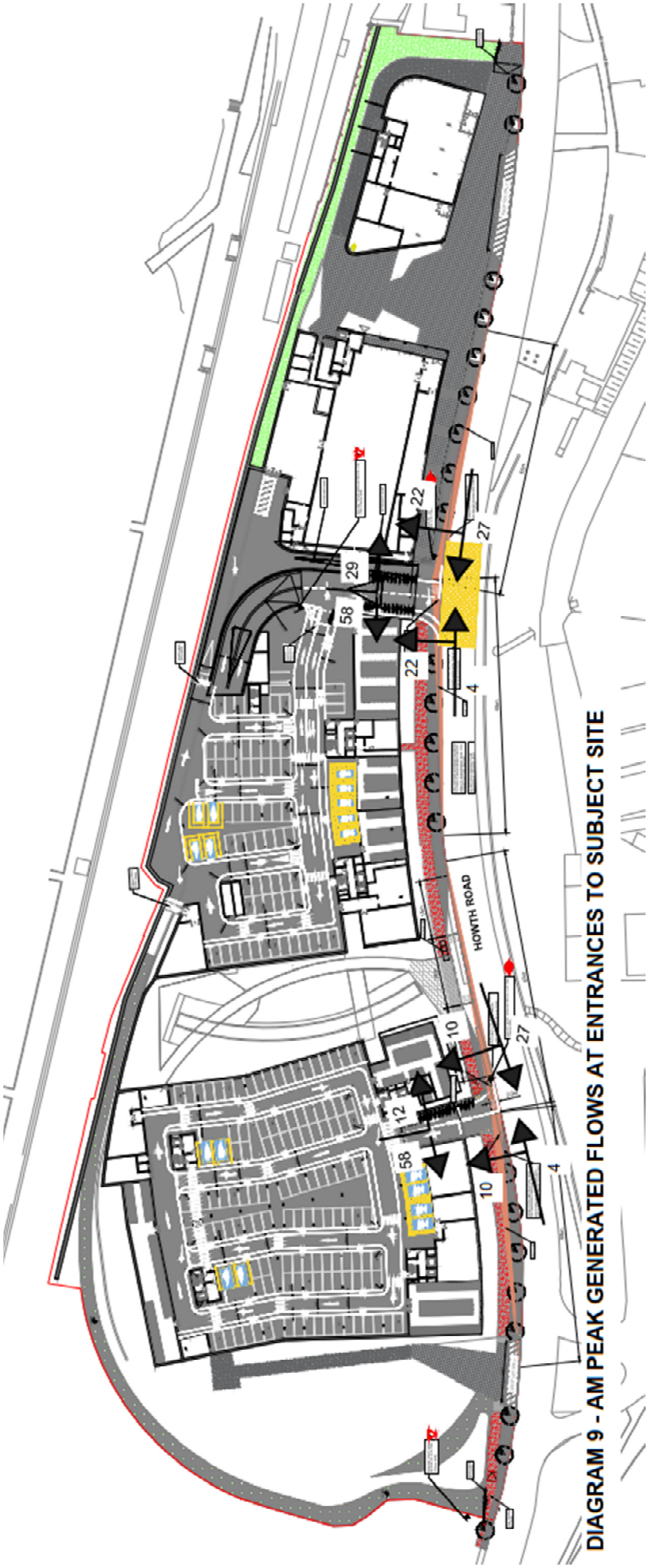

DIAGRAM 9 - AM PEAK GENERATED FLOWS AT ENTRANCES TO SUBJECT SITE

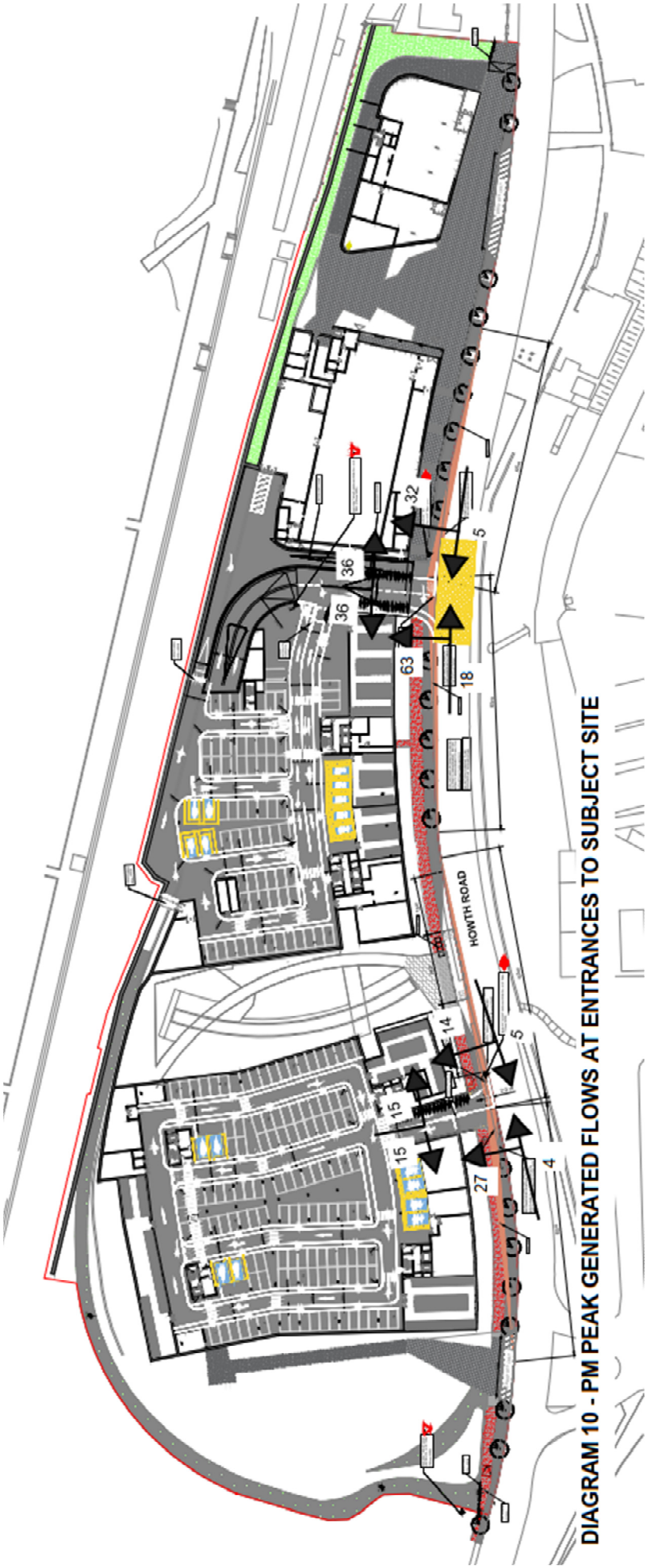

DIAGRAM 10 - PM PEAK GENERATED FLOWS AT ENTRANCES TO SUBJECT SITE

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APPENDIX 4

CALCULATIONS

_____ O S C A D Y 5 _____

Analysis Program: Release 3.0 (Jan 2008)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770018
Old Wokingham Road Fax: +44 (0) 1344 770864
Crowthorne, Berks. Email: softwarebureau@trl.co.uk
RG45 6AU, UK. Web: www.trlsoftware.co.uk

Run with file:- "C:\Program Files\OSCADY 5\Sutton Cross 2022 PM WOD.voi" at 14:25:50 on Friday, 22 February 2019

FILE PROPERTIES
****

RUN TITLE: sutton cross
LOCATION:
DATE: 18/02/2019
CLIENT:
ENUMERATOR: martin.rogers [BST245-L-ROGERS]
JOB NUMBER:
STATUS:
DESCRIPTION:

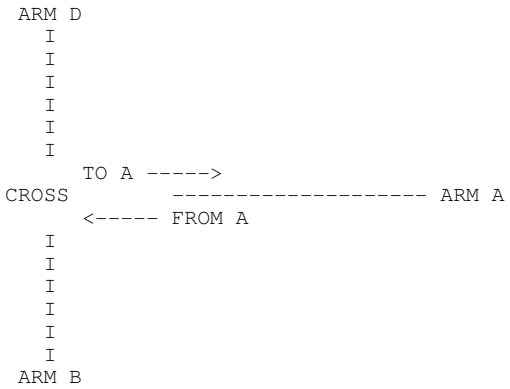
**** ERROR AND WARNING MESSAGES ****
==========

*** WARNING *** Arm A:Warning on CT14: Opposed right-turners - CT08/CT14 contradiction
[Opposing traffic / Lanes on green]

*** WARNING *** Warnings in data - check output carefully

TRAFFIC SIGNAL JUNCTION ANALYSIS
****

INPUT DATA



ARM A IS Howth Road
ARM B IS Carrickrock Road
ARM C IS Dublin Road
ARM D IS Station Road

GEOMETRIC DATA

DATA ITEM		ARM A	ARM B	ARM C	ARM D
GRADIENT		0.0 %	0.0 %	0.0 %	0.0 %
NUMBER OF LANES		2	1	2	2
PERMITTED MOVEMENTS	LANE 1	LS	LSR	LS	L
	LANE 2	R		R	SR
TOTAL EXIT WIDTH FOR STRAIGHT-AHEAD VEHICLES FROM THIS ARM		N/A	N/A	N/A	N/A
LANE WIDTHS	LANE 1	4.00 M	3.00 M	3.00 M	3.00 M
	LANE 2	3.00 M	0.00 M	3.00 M	3.00 M
LEFT TURN RADII	LANE 1	5.0 M	5.0 M	5.0 M	5.0 M
RIGHT TURN RADII	LANE 1	N/A	5.0 M	N/A	N/A
	LANE 2	5.0 M	N/A	5.0 M	5.0 M
OPPOSING TRAFFIC MOVEMENTS		STRAIGHT	STRAIGHT	STRAIGHT	STRAIGHT
STORAGE BEYOND STOPLINE	LANE 1	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS
	LANE 2	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS

TRAFFIC DEMAND DATA

DEMAND DATA ARE INPUT USING THE ** DIRECT ** OPTION

TURNING PROPORTIONS ARE ESTIMATED BY FLOW BALANCING USING THE TPBAL OPTION

DEMAND DATA SUPPLIED BETWEEN TIMES - 17.00 TO 18.00
PERIOD OF INTEREST (FOR QUEUE AND DELAY CALCULATIONS) - 17.00 TO 18.00

THE FOLLOWING DATA HAS BEEN INPUT
+ / ESTIMATED

TRAFFIC SCALING FACTOR HAS BEEN SET TO 100 %

TIME PERIOD	ARM	VEHICLE TYPE PROPORTIONS: CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.00-17.15	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
17.15-17.30	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
17.30-17.45	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
17.45-18.00	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000

TIME PERIOD	FROM/TO	TURNING PROPORTIONS ARM A	ARM B	ARM C	ARM D
17.00-17.15	ARM A GROUP 1	0.000	0.370	0.383	0.247
	ARM B GROUP 1	0.366	0.000	0.385	0.248
	ARM C GROUP 1	0.371	0.377	0.000	0.252
	ARM D GROUP 1	0.326	0.331	0.343	0.000
17.15-17.30	ARM A GROUP 1	0.000	0.291	0.410	0.299
	ARM B GROUP 1	0.393	0.000	0.351	0.256
	ARM C GROUP 1	0.438	0.277	0.000	0.285
	ARM D GROUP 1	0.396	0.251	0.354	0.000
17.30-17.45	ARM A GROUP 1	0.000	0.260	0.456	0.284
	ARM B GROUP 1	0.335	0.000	0.410	0.255
	ARM C GROUP 1	0.406	0.284	0.000	0.309
	ARM D GROUP 1	0.342	0.239	0.419	0.000
17.45-18.00	ARM A GROUP 1	0.000	0.361	0.421	0.218
	ARM B GROUP 1	0.435	0.000	0.373	0.193
	ARM C GROUP 1	0.459	0.337	0.000	0.204
	ARM D GROUP 1	0.386	0.284	0.331	0.000

SIGNAL TIMING DETAILS FOR SIGNAL SET 1

TIMING OPTION- FIXED MODE: TIMINGS ARE PROVIDED BY USER

FIXED CYCLE TIME- 177.0 SECONDS
PERIODS FOR WHICH THESE SETTINGS APPLY- 17.00-18.00

GLOBAL EFFECTIVE GREEN DISPLACEMENTS - START = 1.4
END = 2.9

DATA ITEM		STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
LANES ON GREEN:	ARM A	1	1 2			
	B			1		
	C	1				1 2
	D		1	1 2		
GREEN TIME (SECS)		40.0	15.0	55.0	7.0	20.0
PRECEDING INTERSTAGE		5.0	5.0	5.0	5.0	5.0

DATA ITEM		STAGE 6
LANES ON GREEN:	ARM A	
	B	
	C	1
	D	
GREEN TIME (SECS)		10.0
PRECEDING INTERSTAGE		5.0

DEMAND AND CAPACITY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 17.00 AND 18.00

TIME / ARM	LANES	MOVEMENT	DEMAND (VEHS/MIN)	SAT FLOW (PCU/HR)	SAT FLOW (VEHS/MIN)	EFFECTIVE GREEN-TIME TRUE (SECS)	EFFECTIVE GREEN-TIME FLARE+NOTIONL (SECS)	CAPACITY (VEHS /MIN)
17.00-17.15								
A	1	L S	5.22	1756.0	29.27	61.5		10.17
	2	R	1.71	1580.8	26.35	16.5		2.46
B	1	L S R	6.73	1203.2	20.05	56.5		6.40
C	1	L S	5.85	1707.9	28.47	81.5		13.11
	2	R	3.55	1580.8	26.35	21.5		3.20
D	1	L	2.04	1473.1	24.55	76.5		10.61
	2	S R	4.23	1366.9	22.78	56.5		7.27

17.15-17.30								
A	1	L S	4.72	1792.0	29.87	61.5	10.38	
	2	R	2.01	1580.8	26.35	16.5	2.46	
B	1	L S R	4.93	1306.0	21.77	56.5	6.95	
C	1	L S	5.88	1712.7	28.54	81.5	13.14	
	2	R	2.26	1580.8	26.35	21.5	3.20	
D	1	L	2.06	1473.1	24.55	76.5	10.61	
	2	S R	3.14	1418.1	23.64	56.5	7.54	
17.30-17.45								
A	1	L S	7.31	1816.8	30.28	61.5	10.52	
	2	R	2.89	1580.8	26.35	16.5	2.46	
B	1	L S R	4.27	1278.2	21.30	56.5	6.80	
C	1	L S	6.68	1695.2	28.25	81.5	13.01	
	2	R	2.65	1580.8	26.35	21.5	3.20	
D	1	L	2.33	1473.1	24.55	76.5	10.61	
	2	S R	4.47	1430.4	23.84	56.5	7.61	
17.45-18.00								
A	1	L S	4.80	1769.9	29.50	61.5	10.25	
	2	R	1.34	1580.8	26.35	16.5	2.46	
B	1	L S R	5.93	1132.9	18.88	56.5	6.03	
C	1	L S	6.71	1753.4	29.22	81.5	13.46	
	2	R	3.42	1580.8	26.35	21.5	3.20	
D	1	L	3.06	1473.1	24.55	76.5	10.61	
	2	S R	4.87	1467.9	24.46	56.5	7.81	

QUEUE AND DELAY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 17.00 AND 18.00

TIME ARM	LANES	MOVEMENT	DEMAND EXCL 2-WHEEL (VEHS/MIN)	CAPACITY (VEHS/MIN)	DEGREE OF SAT (RFC)	QUEUE AT END OF SEGMENT MEAN (PHASE AVERAGED) (VEHS/LANE)	QUEUE AT END OF SEGMENT MAXIMUM (END OF RED) (VEHS/LANE)	QUEUEING DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.00-17.15									
A	1	L S	5.22	10.17	0.514	4.3	10.4	64.6	
	2	R	1.71	2.46	0.697	3.1	5.4	44.5	
B	1	L S R	6.73	6.40	1.052	16.5	23.0	191.5	
C	1	L S	5.85	13.11	0.446	3.4	9.5	50.6	
	2	R	3.55	3.20	1.109	12.4	16.6	136.7	
D	1	L	2.04	10.61	0.192	1.1	3.4	16.3	
	2	S R	4.23	7.27	0.581	4.0	9.0	60.1	
17.15-17.30									
A	1	L S	4.72	10.38	0.455	3.8	9.3	56.3	
	2	R	2.01	2.46	0.819	4.3	7.0	63.8	
B	1	L S R	4.93	6.95	0.710	6.3	12.2	120.1	
C	1	L S	5.88	13.14	0.447	3.4	9.6	50.9	
	2	R	2.26	3.20	0.705	4.7	8.3	112.4	
D	1	L	2.06	10.61	0.194	1.1	3.5	16.4	
	2	S R	3.14	7.54	0.416	2.7	6.5	39.9	
17.30-17.45									
A	1	L S	7.31	10.52	0.695	7.0	15.0	104.2	
	2	R	2.89	2.46	1.178	12.9	16.1	145.2	
B	1	L S R	4.27	6.80	0.627	4.3	9.2	64.7	
C	1	L S	6.68	13.01	0.514	4.1	11.0	61.2	
	2	R	2.65	3.20	0.829	5.2	8.8	79.1	
D	1	L	2.33	10.61	0.219	1.3	3.9	18.9	
	2	S R	4.47	7.61	0.588	4.3	9.5	63.8	
17.45-18.00									
A	1	L S	4.80	10.25	0.468	3.8	9.5	57.9	
	2	R	1.34	2.46	0.544	3.0	5.7	91.7	
B	1	L S R	5.93	6.03	0.984	12.1	18.1	158.4	
C	1	L S	6.71	13.46	0.499	4.0	11.0	60.6	
	2	R	3.42	3.20	1.068	11.7	15.8	147.0	
D	1	L	3.06	10.61	0.288	1.7	5.2	26.0	
	2	S R	4.87	7.81	0.624	4.8	10.4	71.6	

QUEUES FOR ARM A

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	3.1	5.4	***++
	1	4.3	10.4	****++++++
17.30	2	4.3	7.0	****+++
	1	3.8	9.3	****+++++
17.45	2	12.9	16.1	**********+++
	1	7.0	15.0	*******++++++++
18.00	2	3.0	5.7	***+++
	1	3.8	9.5	****+++++

QUEUES FOR ARM B

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	1	16.5	23.0	******************++++++
17.30	1	6.3	12.2	******++++++
17.45	1	4.3	9.2	****+++++
18.00	1	12.1	18.1	************++++++

QUEUES FOR ARM C

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	12.4	16.6	************+++++
	1	3.4	9.5	***+++++++
17.30	2	4.7	8.3	*****+++
	1	3.4	9.6	***+++++++
17.45	2	5.2	8.8	*****++++
	1	4.1	11.0	****++++++++
18.00	2	11.7	15.8	************++++
	1	4.0	11.0	****++++++++

QUEUES FOR ARM D

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	4.0	9.0	****+++++
	1	1.1	3.4	*++
17.30	2	2.7	6.5	***+++
	1	1.1	3.5	*++
17.45	2	4.3	9.5	****+++++
	1	1.3	3.9	*+++
18.00	2	4.8	10.4	*****+++++
	1	1.7	5.2	**+++

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD (17.00-18.00)

STREAM	TOTAL DEMAND (EXCL 2-WHEEL)		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A-B	141.0	141.0	119.7	0.85	120.1	0.85
A-C	189.8	189.8	163.3	0.86	163.7	0.86
A-D	119.3	119.3	345.3	2.90	347.1	2.91
B-C	124.3	124.3	201.5	1.62	206.0	1.66
B-D	77.5	77.5	125.3	1.62	127.6	1.65
B-A	126.2	126.2	207.9	1.65	213.1	1.69
C-D	144.5	144.5	85.6	0.59	85.8	0.59
C-A	232.4	232.4	137.8	0.59	138.2	0.59
C-B	178.1	178.1	475.2	2.67	496.6	2.79
D-A	142.3	142.3	77.6	0.55	77.7	0.55
D-B	108.9	108.9	102.4	0.94	103.0	0.95
D-C	141.9	141.9	133.1	0.94	133.8	0.94
ALL	1726.0	1726.0	2174.6	1.26	2212.8	1.28

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

* TOTAL GEOMETRIC DELAY INCLUDES DELAY SUFFERED BY VEHICLES STILL QUEUEING AT THE END OF THE WHOLE TIME PERIOD.
* THE SUM OF DELAYS FOR EACH SEGMENT AND THE TOTAL GEOMETRIC DELAY WILL BE SIGNIFICANTLY DIFFERENT ONLY IF THERE IS
* A LARGE QUEUE AT THE END OF THE TIME PERIOD.

****** OSCADY 5 run completed
========== end of file ==========

Printed at 14:26:09 on 22/02/2019]

_____ O S C A D Y 5 _____

Analysis Program: Release 3.0 (Jan 2008)

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Old Wokingham Road Fax: +44 (0) 1344 770864
Crowthorne, Berks. Email: softwarebureau@trl.co.uk
RG45 6AU, UK. Web: www.trlsoftware.co.uk

Run with file:- "C:\Program Files\OSCADY 5\Sutton Cross 2022 AM wod.voi" at 14:21:27 on Friday, 22 February 2019

FILE PROPERTIES
****

RUN TITLE: sutton cross
LOCATION:
DATE: 18/02/2019
CLIENT:
ENUMERATOR: martin.rogers [BST245-L-ROGERS]
JOB NUMBER:
STATUS:
DESCRIPTION:

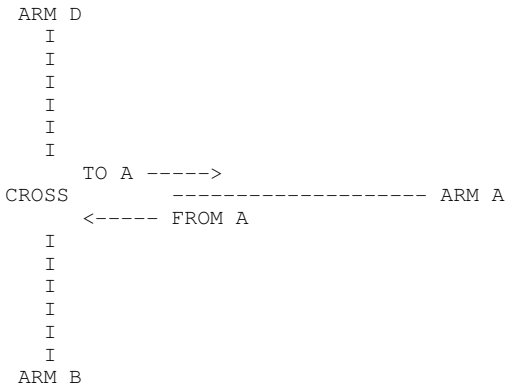
**** ERROR AND WARNING MESSAGES ****
==========

*** WARNING *** Arm A:Warning on CT14: Opposed right-turners - CT08/CT14 contradiction
[Opposing traffic / Lanes on green]

*** WARNING *** Warnings in data - check output carefully

TRAFFIC SIGNAL JUNCTION ANALYSIS
****

INPUT DATA



ARM A IS Howth Road
ARM B IS Carrickrock Road
ARM C IS Dublin Road
ARM D IS Station Road

GEOMETRIC DATA

DATA ITEM		ARM A	ARM B	ARM C	ARM D
GRADIENT		0.0 %	0.0 %	0.0 %	0.0 %
NUMBER OF LANES		2	1	2	2
PERMITTED MOVEMENTS	LANE 1	LS	LSR	LS	L
	LANE 2	R		R	SR
TOTAL EXIT WIDTH FOR STRAIGHT-AHEAD VEHICLES FROM THIS ARM		N/A	N/A	N/A	N/A
LANE WIDTHS	LANE 1	4.00 M	3.00 M	3.00 M	3.00 M
	LANE 2	3.00 M	0.00 M	3.00 M	3.00 M
LEFT TURN RADII	LANE 1	5.0 M	5.0 M	5.0 M	5.0 M
RIGHT TURN RADII	LANE 1	N/A	5.0 M	N/A	N/A
	LANE 2	5.0 M	N/A	5.0 M	5.0 M
OPPOSING TRAFFIC MOVEMENTS		STRAIGHT	STRAIGHT	STRAIGHT	STRAIGHT
STORAGE BEYOND STOPLINE	LANE 1	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS
	LANE 2	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS

TRAFFIC DEMAND DATA

DEMAND DATA ARE INPUT USING THE ** DIRECT ** OPTION

TURNING PROPORTIONS ARE ESTIMATED BY FLOW BALANCING USING THE TPBAL OPTION

DEMAND DATA SUPPLIED BETWEEN TIMES - 08.00 TO 09.00
PERIOD OF INTEREST (FOR QUEUE AND DELAY CALCULATIONS) - 08.00 TO 09.00

THE FOLLOWING DATA HAS BEEN INPUT
+ / ESTIMATED

TRAFFIC SCALING FACTOR HAS BEEN SET TO 100 %

TIME PERIOD	ARM	VEHICLE TYPE PROPORTIONS					
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.00-08.15	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.15-08.30	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.30-08.45	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.45-09.00	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000

TIME PERIOD	FROM/TO	TURNING PROPORTIONS ARM A	ARM B	ARM C	ARM D
08.00-08.15	ARM A GROUP 1	0.000	0.349	0.399	0.251
	ARM B GROUP 1	0.273	0.000	0.446	0.281
	ARM C GROUP 1	0.289	0.414	0.000	0.298
	ARM D GROUP 1	0.246	0.352	0.402	0.000
08.15-08.30	ARM A GROUP 1	0.000	0.382	0.342	0.276
	ARM B GROUP 1	0.267	0.000	0.406	0.328
	ARM C GROUP 1	0.254	0.433	0.000	0.313
	ARM D GROUP 1	0.237	0.403	0.360	0.000
08.30-08.45	ARM A GROUP 1	0.000	0.348	0.347	0.305
	ARM B GROUP 1	0.330	0.000	0.357	0.313
	ARM C GROUP 1	0.330	0.357	0.000	0.313
	ARM D GROUP 1	0.316	0.342	0.342	0.000
08.45-09.00	ARM A GROUP 1	0.000	0.259	0.448	0.293
	ARM B GROUP 1	0.301	0.000	0.422	0.276
	ARM C GROUP 1	0.366	0.297	0.000	0.336
	ARM D GROUP 1	0.311	0.253	0.436	0.000

SIGNAL TIMING DETAILS FOR SIGNAL SET 1

TIMING OPTION- FIXED MODE: TIMINGS ARE PROVIDED BY USER

FIXED CYCLE TIME- 186.0 SECONDS
PERIODS FOR WHICH THESE SETTINGS APPLY- 08.00-09.00

GLOBAL EFFECTIVE GREEN DISPLACEMENTS - START = 1.4
END = 2.9

DATA ITEM		STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
LANES ON GREEN:	ARM A	1	1 2			
	B			1		
	C	1				1 2
	D		1	1 2		
GREEN TIME (SECS)		20.0	17.0	80.0	7.0	25.0
PRECEDING INTERSTAGE		5.0	5.0	5.0	5.0	5.0

DATA ITEM		STAGE 6
LANES ON GREEN:	ARM A	
	B	
	C	1
	D	
GREEN TIME (SECS)		7.0
PRECEDING INTERSTAGE		5.0

DEMAND AND CAPACITY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 08.00 AND 09.00

TIME ARM	LANES	MOVEMENT	DEMAND (VEHS/MIN)	SAT FLOW (PCU/HR)	SAT FLOW (VEHS/MIN)	EFFECTIVE GREEN-TIME TRUE (SECS)	FLARE+NOTIONL (SECS)	CAPACITY (VEHS /MIN)
08.00-08.15								
A	1	L S	5.29	1767.4	29.46	43.5		6.89
	2	R	1.78	1580.8	26.35	18.5		2.62
B	1	L S R	7.13	1275.8	21.26	81.5		9.32
C	1	L S	3.64	1662.1	27.70	63.5		9.46
	2	R	2.56	1580.8	26.35	26.5		3.75
D	1	L	1.75	1473.1	24.55	103.5		13.66
	2	S R	5.38	1392.4	23.21	81.5		10.17

08.15-08.30								
A	1	L S	6.08	1739.6	28.99	43.5		6.78
	2	R	2.32	1580.8	26.35	18.5		2.62
B	1	L S R	8.60	1169.7	19.49	81.5		8.54
C	1	L S	5.71	1643.2	27.39	63.5		9.35
	2	R	4.36	1580.8	26.35	26.5		3.75
D	1	L	2.23	1473.1	24.55	103.5		13.66
	2	S R	7.17	1289.3	21.49	81.5		9.42
08.30-08.45								
A	1	L S	6.77	1752.2	29.20	43.5		6.83
	2	R	2.97	1580.8	26.35	18.5		2.62
B	1	L S R	8.47	1100.8	18.35	81.5		8.04
C	1	L S	6.05	1671.0	27.85	63.5		9.51
	2	R	3.35	1580.8	26.35	26.5		3.75
D	1	L	3.67	1473.1	24.55	103.5		13.66
	2	S R	7.93	1298.4	21.64	81.5		9.48
08.45-09.00								
A	1	L S	5.89	1815.3	30.25	43.5		7.08
	2	R	2.44	1580.8	26.35	18.5		2.62
B	1	L S R	8.27	1310.1	21.84	81.5		9.57
C	1	L S	4.92	1674.6	27.91	63.5		9.53
	2	R	2.08	1580.8	26.35	26.5		3.75
D	1	L	2.43	1473.1	24.55	103.5		13.66
	2	S R	5.37	1278.9	21.31	81.5		9.34

QUEUE AND DELAY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 08.00 AND 09.00

TIME ARM	LANES	MOVEMENT	DEMAND EXCL 2-WHEEL (VEHS/MIN)	CAPACITY (VEHS/MIN)	DEGREE OF SAT (RFC)	QUEUE AT END OF SEGMENT MEAN (PHASE AVERAGED) (VEHS/LANE)	MAXIMUM (END OF RED) (VEHS/LANE)	QUEUEING DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15									
A	1	L S	5.29	6.89	0.768	7.3	14.0	107.3	
	2	R	1.78	2.62	0.678	3.2	5.7	46.3	
B	1	L S R	7.13	9.32	0.766	6.7	13.8	98.6	
C	1	L S	3.64	9.46	0.384	3.0	7.6	44.3	
	2	R	2.56	3.75	0.683	4.0	7.6	59.8	
D	1	L	1.75	13.66	0.128	0.6	2.4	8.8	
	2	S R	5.38	10.17	0.529	3.8	9.7	56.6	
08.15-08.30									
A	1	L S	6.08	6.78	0.897	10.4	17.8	153.1	
	2	R	2.32	2.62	0.885	5.6	8.9	80.1	
B	1	L S R	8.60	8.54	1.007	16.3	23.8	212.4	
C	1	L S	5.71	9.35	0.611	5.4	12.2	81.1	
	2	R	4.36	3.75	1.161	17.0	22.0	184.8	
D	1	L	2.23	13.66	0.163	0.8	3.1	11.5	
	2	S R	7.17	9.42	0.762	6.6	13.9	99.0	
08.30-08.45									
A	1	L S	6.77	6.83	0.991	15.6	23.7	221.7	
	2	R	2.97	2.62	1.133	12.7	16.4	153.0	
B	1	L S R	8.47	8.04	1.053	24.1	31.1	321.3	
C	1	L S	6.05	9.51	0.636	5.8	13.0	87.8	
	2	R	3.35	3.75	0.894	12.8	17.8	231.4	
D	1	L	3.67	13.66	0.269	1.4	5.1	20.6	
	2	S R	7.93	9.48	0.836	8.4	16.1	126.4	
08.45-09.00									
A	1	L S	5.89	7.08	0.833	9.6	16.9	166.5	
	2	R	2.44	2.62	0.932	12.5	16.0	186.0	
B	1	L S R	8.27	9.57	0.864	12.3	20.5	281.1	
C	1	L S	4.92	9.53	0.516	4.3	10.4	65.3	
	2	R	2.08	3.75	0.555	3.7	7.3	73.3	
D	1	L	2.43	13.66	0.178	0.8	3.4	12.7	
	2	S R	5.37	9.34	0.575	4.0	9.8	60.8	

QUEUES FOR ARM A

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	3.2	5.7	***+++
	1	7.3	14.0	*******+++++++
08.30	2	5.6	8.9	******+++
	1	10.4	17.8	**********++++++++
08.45	2	12.7	16.4	**********+++
	1	15.6	23.7	**********++++++++
09.00	2	12.5	16.0	**********++++
	1	9.6	16.9	**********+++++++

QUEUES FOR ARM B

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	1	6.7	13.8	*******+++++++
08.30	1	16.3	23.8	**********++++++++
08.45	1	24.1	31.1	**********+++++++
09.00	1	12.3	20.5	**********++++++++

QUEUES FOR ARM C

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	4.0	7.6	****++++
	1	3.0	7.6	***+++++
08.30	2	17.0	22.0	**********+++++
	1	5.4	12.2	*****+++++++
08.45	2	12.8	17.8	**********+++++
	1	5.8	13.0	******+++++++
09.00	2	3.7	7.3	****+++
	1	4.3	10.4	****++++++

QUEUES FOR ARM D

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	3.8	9.7	****++++++
	1	0.6	2.4	*+
08.30	2	6.6	13.9	*******+++++++
	1	0.8	3.1	*++
08.45	2	8.4	16.1	********++++++++
	1	1.4	5.1	*++++
09.00	2	4.0	9.8	****++++++
	1	0.8	3.4	*++

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD (08.00-09.00)

STREAM	TOTAL DEMAND (EXCL 2-WHEEL)		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A-B	168.3	168.3	302.9	1.80	305.3	1.81
A-C	192.1	192.1	345.9	1.80	350.0	1.82
A-D	142.6	142.6	465.4	3.26	495.1	3.47
B-C	197.8	197.8	363.5	1.84	366.8	1.85
B-D	146.4	146.4	275.6	1.88	277.8	1.90
B-A	142.9	142.9	274.3	1.92	276.6	1.94
C-D	154.3	154.3	141.2	0.91	141.6	0.92
C-A	150.3	150.3	137.3	0.91	137.8	0.92
C-B	185.4	185.4	549.4	2.96	551.2	2.97
D-A	151.1	151.1	53.6	0.35	53.6	0.35
D-B	183.5	183.5	164.2	0.89	164.5	0.90
D-C	204.3	204.3	178.7	0.87	179.2	0.88
ALL	2019.0	2019.0	3251.8	1.61	3299.6	1.63

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

* TOTAL GEOMETRIC DELAY INCLUDES DELAY SUFFERED BY VEHICLES STILL QUEUEING AT THE END OF THE WHOLE TIME PERIOD.
* THE SUM OF DELAYS FOR EACH SEGMENT AND THE TOTAL GEOMETRIC DELAY WILL BE SIGNIFICANTLY DIFFERENT ONLY IF THERE IS
* A LARGE QUEUE AT THE END OF THE TIME PERIOD.

****** OSCADY 5 run completed
========== end of file ==========

Printed at 14:22:03 on 22/02/2019]

_____ O S C A D Y 5 _____

Analysis Program: Release 3.0 (Jan 2008)

_____

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Run with file:- "C:\Program Files\OSCADY 5\Sutton Cross 2022 AM wdev.voi" at 14:42:08 on Friday, 22 February 2019

FILE PROPERTIES
****

RUN TITLE: sutton cross
LOCATION:
DATE: 18/02/2019
CLIENT:
ENUMERATOR: martin.rogers [BST245-L-ROGERS]
JOB NUMBER:
STATUS:
DESCRIPTION:

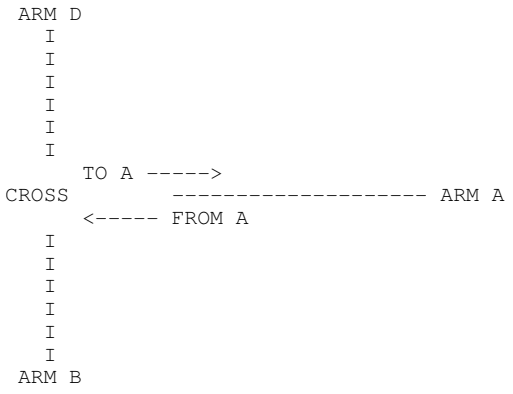
**** ERROR AND WARNING MESSAGES ****
==========

*** WARNING *** Arm A:Warning on CT14: Opposed right-turners -
CT08/CT14 contradiction
[Opposing traffic / Lanes on green]

*** WARNING *** Warnings in data - check output carefully

TRAFFIC SIGNAL JUNCTION ANALYSIS
****

INPUT DATA



ARM A IS Howth Road
ARM B IS Carrickrock Road
ARM C IS Dublin Road
ARM D IS Station Road

GEOMETRIC DATA

DATA ITEM		ARM A	ARM B	ARM C	ARM D
GRADIENT		0.0 %	0.0 %	0.0 %	0.0 %
NUMBER OF LANES		2	1	2	2
PERMITTED MOVEMENTS	LANE 1	LS	LSR	LS	L
	LANE 2	R		R	SR
TOTAL EXIT WIDTH FOR STRAIGHT-AHEAD VEHICLES FROM THIS ARM		N/A	N/A	N/A	N/A
LANE WIDTHS	LANE 1	4.00 M	3.00 M	3.00 M	3.00 M
	LANE 2	3.00 M	0.00 M	3.00 M	3.00 M
LEFT TURN RADII	LANE 1	5.0 M	5.0 M	5.0 M	5.0 M
RIGHT TURN RADII	LANE 1	N/A	5.0 M	N/A	N/A
	LANE 2	5.0 M	N/A	5.0 M	5.0 M
OPPOSING TRAFFIC MOVEMENTS		STRAIGHT	STRAIGHT	STRAIGHT	STRAIGHT
STORAGE BEYOND STOPLINE	LANE 1	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS
	LANE 2	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS

TRAFFIC DEMAND DATA

DEMAND DATA ARE INPUT USING THE ** DIRECT ** OPTION

TURNING PROPORTIONS ARE ESTIMATED BY FLOW BALANCING USING THE TPBAL OPTION

DEMAND DATA SUPPLIED BETWEEN TIMES - 08.00 TO 09.00
PERIOD OF INTEREST (FOR QUEUE AND DELAY CALCULATIONS) - 08.00 TO 09.00

THE FOLLOWING DATA HAS BEEN INPUT
+ / ESTIMATED

TRAFFIC SCALING FACTOR HAS BEEN SET TO 100 %

TIME PERIOD	ARM	VEHICLE TYPE PROPORTIONS					
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.00-08.15	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.15-08.30	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.30-08.45	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.45-09.00	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000

TIME PERIOD	FROM/TO	TURNING PROPORTIONS ARM A	ARM B	ARM C	ARM D
08.00-08.15	ARM A GROUP 1	0.000	0.325	0.418	0.257
	ARM B GROUP 1	0.277	0.000	0.448	0.275
	ARM C GROUP 1	0.307	0.387	0.000	0.306
	ARM D GROUP 1	0.258	0.324	0.418	0.000
08.15-08.30	ARM A GROUP 1	0.000	0.361	0.362	0.276
	ARM B GROUP 1	0.270	0.000	0.414	0.316
	ARM C GROUP 1	0.270	0.414	0.000	0.317
	ARM D GROUP 1	0.246	0.377	0.378	0.000
08.30-08.45	ARM A GROUP 1	0.000	0.330	0.368	0.302
	ARM B GROUP 1	0.329	0.000	0.368	0.303
	ARM C GROUP 1	0.343	0.343	0.000	0.315
	ARM D GROUP 1	0.321	0.321	0.358	0.000
08.45-09.00	ARM A GROUP 1	0.000	0.247	0.461	0.292
	ARM B GROUP 1	0.304	0.000	0.426	0.270
	ARM C GROUP 1	0.380	0.284	0.000	0.336
	ARM D GROUP 1	0.318	0.238	0.444	0.000

SIGNAL TIMING DETAILS FOR SIGNAL SET 1

TIMING OPTION- FIXED MODE: TIMINGS ARE PROVIDED BY USER

FIXED CYCLE TIME- 186.0 SECONDS
PERIODS FOR WHICH THESE SETTINGS APPLY- 08.00-09.00

GLOBAL EFFECTIVE GREEN DISPLACEMENTS - START = 1.4
END = 2.9

DATA ITEM	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
LANES ON GREEN: ARM A	1	1 2			
B			1		
C	1				1 2
D		1	1 2		
GREEN TIME (SECS)	20.0	17.0	80.0	7.0	25.0
PRECEDING INTERSTAGE	5.0	5.0	5.0	5.0	5.0

DATA ITEM	STAGE 6
LANES ON GREEN: ARM A	
B	
C	1
D	
GREEN TIME (SECS)	7.0
PRECEDING INTERSTAGE	5.0

DEMAND AND CAPACITY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 08.00 AND 09.00

ARM	LANES	MOVEMENT	DEMAND (VEHS/MIN)	SAT FLOW (PCU/HR)	SAT FLOW (VEHS/MIN)	EFFECTIVE GREEN-TIME TRUE (SECS)	FLARE+NOTIONL (SECS)	CAPACITY (VEHS /MIN)
08.00-08.15								
A	1	L S	6.49	1781.3	29.69	43.5		6.94
	2	R	2.24	1580.8	26.35	18.5		2.62
B	1	L S R	7.53	1276.6	21.28	81.5		9.32
C	1	L S	4.09	1665.7	27.76	63.5		9.48
	2	R	2.58	1580.8	26.35	26.5		3.75
D	1	L	1.96	1473.1	24.55	103.5		13.66
	2	S R	5.64	1361.9	22.70	81.5		9.95

08.15-08.30								
A	1	L S	7.28	1752.6	29.21	43.5	6.83	
	2	R	2.78	1580.8	26.35	18.5	2.62	
B	1	L S R	9.00	1172.2	19.54	81.5	8.56	
C	1	L S	6.18	1648.1	27.47	63.5	9.38	
	2	R	4.36	1580.8	26.35	26.5	3.75	
D	1	L	2.42	1473.1	24.55	103.5	13.66	
	2	S R	7.44	1261.3	21.02	81.5	9.21	
08.30-08.45								
A	1	L S	7.95	1764.7	29.41	43.5	6.88	
	2	R	3.45	1580.8	26.35	18.5	2.62	
B	1	L S R	8.80	1109.7	18.49	81.5	8.10	
C	1	L S	6.48	1674.5	27.91	63.5	9.53	
	2	R	3.38	1580.8	26.35	26.5	3.75	
D	1	L	3.87	1473.1	24.55	103.5	13.66	
	2	S R	8.20	1276.0	21.27	81.5	9.32	
08.45-09.00								
A	1	L S	7.08	1824.2	30.40	43.5	7.11	
	2	R	2.92	1580.8	26.35	18.5	2.62	
B	1	L S R	8.67	1307.6	21.79	81.5	9.55	
C	1	L S	5.34	1678.5	27.98	63.5	9.55	
	2	R	2.12	1580.8	26.35	26.5	3.75	
D	1	L	2.63	1473.1	24.55	103.5	13.66	
	2	S R	5.64	1257.8	20.96	81.5	9.19	

QUEUE AND DELAY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 08.00 AND 09.00

TIME ARM	LANES	MOVEMENT	DEMAND EXCL 2-WHEEL (VEHS/MIN)	CAPACITY (VEHS/MIN)	DEGREE OF SAT (RFC)	QUEUE AT END OF SEGMENT MEAN (PHASE AVERAGED) (VEHS/LANE)	QUEUE AT END OF SEGMENT MAXIMUM (END OF RED) (VEHS/LANE)	QUEUEING DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15									
A	1	L S	6.49	6.94	0.935	12.0	19.8	164.9	
	2	R	2.24	2.62	0.857	5.1	8.3	70.3	
B	1	L S R	7.53	9.32	0.808	7.6	15.0	111.1	
C	1	L S	4.09	9.48	0.431	3.4	8.5	51.2	
	2	R	2.58	3.75	0.687	4.1	7.7	60.4	
D	1	L	1.96	13.66	0.143	0.7	2.7	10.0	
	2	S R	5.64	9.95	0.567	4.1	10.3	61.5	
08.15-08.30									
A	1	L S	7.28	6.83	1.066	21.8	29.9	278.6	
	2	R	2.78	2.62	1.062	10.2	13.9	131.5	
B	1	L S R	9.00	8.56	1.051	20.2	27.7	246.1	
C	1	L S	6.18	9.38	0.659	6.1	13.4	91.3	
	2	R	4.36	3.75	1.160	16.9	21.9	184.8	
D	1	L	2.42	13.66	0.177	0.8	3.4	12.6	
	2	S R	7.44	9.21	0.808	7.5	14.8	111.1	
08.30-08.45									
A	1	L S	7.95	6.88	1.156	38.4	46.6	467.1	
	2	R	3.45	2.62	1.316	23.0	26.7	258.7	
B	1	L S R	8.80	8.10	1.086	31.2	38.3	402.2	
C	1	L S	6.48	9.53	0.680	6.5	14.1	98.1	
	2	R	3.38	3.75	0.901	13.0	18.0	234.1	
D	1	L	3.87	13.66	0.283	1.5	5.4	22.0	
	2	S R	8.20	9.32	0.880	9.7	17.4	145.6	
08.45-09.00									
A	1	L S	7.08	7.11	0.996	39.3	47.8	591.1	
	2	R	2.92	2.62	1.114	27.7	31.3	386.0	
B	1	L S R	8.67	9.55	0.908	22.7	31.0	419.2	
C	1	L S	5.34	9.55	0.559	4.9	11.3	73.2	
	2	R	2.12	3.75	0.566	3.8	7.5	77.0	
D	1	L	2.63	13.66	0.192	0.9	3.6	13.9	
	2	S R	5.64	9.19	0.614	4.4	10.4	67.5	

QUEUES FOR ARM A

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	5.1	8.3	*****+++
	1	12.0	19.8	************++++++++
08.30	2	10.2	13.9	**********++++
	1	21.8	29.9	************************++++++++
08.45	2	23.0	26.7	************************++++
	1	38.4	46.6	**+++++++++
09.00	2	27.7	31.3	****************************+++
	1	39.3	47.8	**+++++++++

QUEUES FOR ARM B

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	1	7.6	15.0	********+++++++
08.30	1	20.2	27.7	************************++++++++
08.45	1	31.2	38.3	***********************************+++++++
09.00	1	22.7	31.0	************************++++++++

QUEUES FOR ARM C

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	4.1	7.7	****++++
	1	3.4	8.5	***++++++
08.30	2	16.9	21.9	******************+++++
	1	6.1	13.4	******+++++++
08.45	2	13.0	18.0	*************+++++
	1	6.5	14.1	*******+++++++
09.00	2	3.8	7.5	****+++
	1	4.9	11.3	*****++++++

QUEUES FOR ARM D

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	4.1	10.3	****++++++
	1	0.7	2.7	*++
08.30	2	7.5	14.8	*******++++++++
	1	0.8	3.4	*++
08.45	2	9.7	17.4	**********+++++++
	1	1.5	5.4	*++++
09.00	2	4.4	10.4	****++++++
	1	0.9	3.6	*+++

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD (08.00-09.00)

STREAM	TOTAL DEMAND (EXCL 2-WHEEL) (VEH)	TOTAL DEMAND (EXCL 2-WHEEL) (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A-B	190.5	190.5	638.1	3.35	676.0	3.55
A-C	241.6	241.6	863.6	3.57	934.5	3.87
A-D	170.9	170.9	846.5	4.95	992.5	5.81
B-C	210.5	210.5	478.3	2.27	489.8	2.33
B-D	148.8	148.8	343.1	2.31	350.3	2.35
B-A	150.7	150.7	357.2	2.37	365.4	2.42
C-D	164.8	164.8	156.2	0.95	156.8	0.95
C-A	166.6	166.6	157.7	0.95	158.3	0.95
C-B	186.6	186.6	556.2	2.98	558.2	2.99
D-A	163.2	163.2	58.5	0.36	58.5	0.36
D-B	180.3	180.3	174.7	0.97	175.1	0.97
D-C	223.5	223.5	211.0	0.94	211.7	0.95
ALL	2198.0	2198.0	4841.1	2.20	5127.1	2.33

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

* TOTAL GEOMETRIC DELAY INCLUDES DELAY SUFFERED BY VEHICLES STILL QUEUEING AT THE END OF THE WHOLE TIME PERIOD.
* THE SUM OF DELAYS FOR EACH SEGMENT AND THE TOTAL GEOMETRIC DELAY WILL BE SIGNIFICANTLY DIFFERENT ONLY IF THERE IS
* A LARGE QUEUE AT THE END OF THE TIME PERIOD.

****** OSCADY 5 run completed
========== end of file ==========

Printed at 14:44:02 on 22/02/2019]

O S C A D Y 5

Analysis Program: Release 3.0 (Jan 2008)

For sales and distribution information,
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Run with file:- "C:\Program Files\OSCADY 5\Sutton Cross 2022 PM wdev.voi" at 14:48:02 on Friday, 22 February 2019

FILE PROPERTIES

RUN TITLE: sutton cross
LOCATION:
DATE: 18/02/2019
CLIENT:
ENUMERATOR: martin.rogers [BST245-L-ROGERS]
JOB NUMBER:
STATUS:
DESCRIPTION:

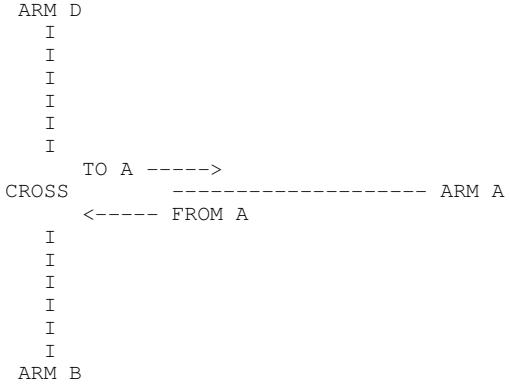
**** ERROR AND WARNING MESSAGES ****

*** WARNING *** Arm A:Warning on CT14: Opposed right-turners - CT08/CT14 contradiction
[Opposing traffic / Lanes on green]

*** WARNING *** Warnings in data - check output carefully

TRAFFIC SIGNAL JUNCTION ANALYSIS

INPUT DATA



ARM A IS Howth Road
ARM B IS Carrickrock Road
ARM C IS Dublin Road
ARM D IS Station Road

GEOMETRIC DATA

DATA ITEM		ARM A	ARM B	ARM C	ARM D
GRADIENT		0.0 %	0.0 %	0.0 %	0.0 %
NUMBER OF LANES		2	1	2	2
PERMITTED MOVEMENTS	LANE 1	LS	LSR	LS	L
	LANE 2	R		R	SR
TOTAL EXIT WIDTH FOR STRAIGHT-AHEAD VEHICLES FROM THIS ARM		N/A	N/A	N/A	N/A
LANE WIDTHS	LANE 1	4.00 M	3.00 M	3.00 M	3.00 M
	LANE 2	3.00 M	0.00 M	3.00 M	3.00 M
LEFT TURN RADII	LANE 1	5.0 M	5.0 M	5.0 M	5.0 M
RIGHT TURN RADII	LANE 1	N/A	5.0 M	N/A	N/A
	LANE 2	5.0 M	N/A	5.0 M	5.0 M
OPPOSING TRAFFIC MOVEMENTS		STRAIGHT	STRAIGHT	STRAIGHT	STRAIGHT
STORAGE BEYOND STOPLINE	LANE 1	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS
	LANE 2	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS

TRAFFIC DEMAND DATA

DEMAND DATA ARE INPUT USING THE ** DIRECT ** OPTION

TURNING PROPORTIONS ARE ESTIMATED BY FLOW BALANCING USING THE TPBAL OPTION

DEMAND DATA SUPPLIED BETWEEN TIMES - 17.00 TO 18.00
PERIOD OF INTEREST (FOR QUEUE AND DELAY CALCULATIONS) - 17.00 TO 18.00

THE FOLLOWING DATA HAS BEEN INPUT
+ / ESTIMATED

TRAFFIC SCALING FACTOR HAS BEEN SET TO 100 %

TIME PERIOD	ARM	VEHICLE TYPE PROPORTIONS: CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.00-17.15	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
17.15-17.30	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
17.30-17.45	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
17.45-18.00	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000

TIME PERIOD	FROM/TO	TURNING PROPORTIONS ARM A	ARM B	ARM C	ARM D
17.00-17.15	ARM A GROUP 1	0.000	0.354	0.395	0.251
	ARM B GROUP 1	0.391	0.000	0.373	0.237
	ARM C GROUP 1	0.406	0.348	0.000	0.246
	ARM D GROUP 1	0.356	0.304	0.340	0.000
17.15-17.30	ARM A GROUP 1	0.000	0.282	0.425	0.293
	ARM B GROUP 1	0.418	0.000	0.344	0.238
	ARM C GROUP 1	0.473	0.258	0.000	0.269
	ARM D GROUP 1	0.422	0.230	0.348	0.000
17.30-17.45	ARM A GROUP 1	0.000	0.257	0.460	0.283
	ARM B GROUP 1	0.365	0.000	0.393	0.242
	ARM C GROUP 1	0.442	0.266	0.000	0.293
	ARM D GROUP 1	0.373	0.225	0.402	0.000
17.45-18.00	ARM A GROUP 1	0.000	0.346	0.430	0.224
	ARM B GROUP 1	0.449	0.000	0.362	0.189
	ARM C GROUP 1	0.484	0.313	0.000	0.203
	ARM D GROUP 1	0.408	0.264	0.328	0.000

SIGNAL TIMING DETAILS FOR SIGNAL SET 1

TIMING OPTION- FIXED MODE: TIMINGS ARE PROVIDED BY USER

FIXED CYCLE TIME- 177.0 SECONDS
PERIODS FOR WHICH THESE SETTINGS APPLY- 17.00-18.00

GLOBAL EFFECTIVE GREEN DISPLACEMENTS - START = 1.4
END = 2.9

DATA ITEM		STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
LANES ON GREEN:	ARM A	1	1 2			
	B			1		
	C	1				1 2
	D		1	1 2		
GREEN TIME (SECS)		40.0	15.0	55.0	7.0	20.0
PRECEDING INTERSTAGE		5.0	5.0	5.0	5.0	5.0

DATA ITEM		STAGE 6
LANES ON GREEN:	ARM A	
	B	
	C	1
	D	
GREEN TIME (SECS)		10.0
PRECEDING INTERSTAGE		5.0

DEMAND AND CAPACITY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 17.00 AND 18.00

TIME / ARM	LANES	MOVEMENT	DEMAND (VEHS/MIN)	SAT FLOW (PCU/HR)	SAT FLOW (VEHS/MIN)	EFFECTIVE GREEN-TIME TRUE (SECS)	EFFECTIVE GREEN-TIME FLARE+NOTIONL (SECS)	CAPACITY (VEHS /MIN)
17.00-17.15								
A	1	L S	5.89	1764.8	29.41	61.5		10.22
	2	R	1.97	1580.8	26.35	16.5		2.46
B	1	L S R	7.27	1172.0	19.53	56.5		6.24
C	1	L S	7.05	1720.3	28.67	81.5		13.20
	2	R	3.75	1580.8	26.35	21.5		3.20
D	1	L	2.56	1473.1	24.55	76.5		10.61
	2	S R	4.64	1342.7	22.38	56.5		7.14

17.15-17.30								
A	1	L S	5.42	1799.9	30.00	61.5	10.42	
	2	R	2.25	1580.8	26.35	16.5	2.46	
B	1	L S R	5.40	1282.3	21.37	56.5	6.82	
C	1	L S	7.07	1727.1	28.78	81.5	13.25	
	2	R	2.46	1580.8	26.35	21.5	3.20	
D	1	L	2.59	1473.1	24.55	76.5	10.61	
	2	S R	3.55	1404.0	23.40	56.5	7.47	
17.30-17.45								
A	1	L S	7.98	1819.5	30.32	61.5	10.54	
	2	R	3.15	1580.8	26.35	16.5	2.46	
B	1	L S R	4.73	1253.7	20.90	56.5	6.67	
C	1	L S	7.88	1710.5	28.51	81.5	13.13	
	2	R	2.85	1580.8	26.35	21.5	3.20	
D	1	L	2.86	1473.1	24.55	76.5	10.61	
	2	S R	4.81	1415.4	23.59	56.5	7.53	
17.45-18.00								
A	1	L S	5.48	1777.3	29.62	61.5	10.29	
	2	R	1.58	1580.8	26.35	16.5	2.46	
B	1	L S R	6.40	1109.3	18.49	56.5	5.90	
C	1	L S	7.92	1758.9	29.32	81.5	13.50	
	2	R	3.61	1580.8	26.35	21.5	3.20	
D	1	L	3.61	1473.1	24.55	76.5	10.61	
	2	S R	5.25	1446.3	24.10	56.5	7.69	

QUEUE AND DELAY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 17.00 AND 18.00

TIME ARM	LANES	MOVEMENT	DEMAND EXCL 2-WHEEL (VEHS/MIN)	CAPACITY (VEHS/MIN)	DEGREE OF SAT (RFC)	QUEUE AT END OF SEGMENT MEAN (PHASE AVERAGED) (VEHS/LANE)	QUEUE AT END OF SEGMENT MAXIMUM (END OF RED) (VEHS/LANE)	QUEUEING DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.00-17.15									
A	1	L S	5.89	10.22	0.577	5.1	11.8	76.3	
	2	R	1.97	2.46	0.803	4.1	6.7	57.3	
B	1	L S R	7.27	6.24	1.165	24.6	30.9	247.0	
C	1	L S	7.05	13.20	0.534	4.4	11.6	65.6	
	2	R	3.75	3.20	1.173	14.9	19.0	154.1	
D	1	L	2.56	10.61	0.241	1.4	4.3	21.1	
	2	S R	4.64	7.14	0.649	4.7	10.0	70.0	
17.15-17.30									
A	1	L S	5.42	10.42	0.520	4.5	10.8	67.4	
	2	R	2.25	2.46	0.916	5.9	9.0	86.4	
B	1	L S R	5.40	6.82	0.792	8.8	15.5	251.5	
C	1	L S	7.07	13.25	0.534	4.4	11.6	65.9	
	2	R	2.46	3.20	0.769	6.3	10.3	163.7	
D	1	L	2.59	10.61	0.244	1.4	4.4	21.3	
	2	S R	3.55	7.47	0.475	3.1	7.4	46.9	
17.30-17.45									
A	1	L S	7.98	10.54	0.758	8.2	16.7	121.8	
	2	R	3.15	2.46	1.282	17.3	20.6	187.6	
B	1	L S R	4.73	6.67	0.710	5.3	10.6	81.0	
C	1	L S	7.88	13.13	0.600	5.2	13.1	78.2	
	2	R	2.85	3.20	0.891	6.7	10.4	101.8	
D	1	L	2.86	10.61	0.270	1.6	4.9	24.0	
	2	S R	4.81	7.53	0.638	4.8	10.3	71.6	
17.45-18.00									
A	1	L S	5.48	10.29	0.533	4.6	10.9	69.3	
	2	R	1.58	2.46	0.645	5.7	9.0	179.0	
B	1	L S R	6.40	5.90	1.084	17.8	23.8	206.0	
C	1	L S	7.92	13.50	0.587	5.2	13.1	77.4	
	2	R	3.61	3.20	1.129	14.8	18.9	178.6	
D	1	L	3.61	10.61	0.341	2.1	6.2	31.8	
	2	S R	5.25	7.69	0.683	5.4	11.4	81.8	

QUEUES FOR ARM A

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	4.1	6.7	****+++
	1	5.1	11.8	*****+++++++
17.30	2	5.9	9.0	******+++
	1	4.5	10.8	****+++++++
17.45	2	17.3	20.6	******************++++
	1	8.2	16.7	********+++++++++
18.00	2	5.7	9.0	******+++
	1	4.6	10.9	*****++++++

QUEUES FOR ARM B

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	1	24.6	30.9	****************************++++++
17.30	1	8.8	15.5	*********++++++
17.45	1	5.3	10.6	*****++++++
18.00	1	17.8	23.8	********************++++++

QUEUES FOR ARM C

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	14.9	19.0	***************++++
	1	4.4	11.6	****++++++++
17.30	2	6.3	10.3	******++++
	1	4.4	11.6	****++++++++
17.45	2	6.7	10.4	*******+++
	1	5.2	13.1	*****+++++++++
18.00	2	14.8	18.9	****************++++
	1	5.2	13.1	*****+++++++++

QUEUES FOR ARM D

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	4.7	10.0	*****+++++
	1	1.4	4.3	*+++
17.30	2	3.1	7.4	***++++
	1	1.4	4.4	*+++
17.45	2	4.8	10.3	*****+++++
	1	1.6	4.9	**+++
18.00	2	5.4	11.4	*****++++++
	1	2.1	6.2	**++++

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD (17.00-18.00)

STREAM	TOTAL DEMAND (EXCL 2-WHEEL)		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A-B	153.7	153.7	137.4	0.89	137.8	0.90
A-C	218.0	218.0	197.3	0.91	197.9	0.91
A-D	134.3	134.3	510.2	3.80	516.8	3.85
B-C	131.2	131.2	285.1	2.17	294.9	2.25
B-D	80.3	80.3	176.7	2.20	181.7	2.26
B-A	145.5	145.5	323.6	2.22	335.7	2.31
C-D	160.6	160.6	102.7	0.64	103.0	0.64
C-A	288.2	288.2	184.3	0.64	185.0	0.64
C-B	190.2	190.2	598.2	3.14	632.4	3.32
D-A	174.4	174.4	98.2	0.56	98.4	0.56
D-B	115.0	115.0	113.9	0.99	114.8	1.00
D-C	158.6	158.6	156.5	0.99	157.5	0.99
ALL	1950.0	1950.0	2884.1	1.48	2956.1	1.52

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

* TOTAL GEOMETRIC DELAY INCLUDES DELAY SUFFERED BY VEHICLES STILL QUEUEING AT THE END OF THE WHOLE TIME PERIOD.
* THE SUM OF DELAYS FOR EACH SEGMENT AND THE TOTAL GEOMETRIC DELAY WILL BE SIGNIFICANTLY DIFFERENT ONLY IF THERE IS
* A LARGE QUEUE AT THE END OF THE TIME PERIOD.

****** OSCADY 5 run completed
========== end of file ==========

Printed at 14:48:32 on 22/02/2019]

_____ O S C A D Y 5 _____

Analysis Program: Release 3.0 (Jan 2008)

_____

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Old Wokingham Road Fax: +44 (0) 1344 770864
Crowthorne, Berks. Email: softwarebureau@trl.co.uk
RG45 6AU, UK. Web: www.trlsoftware.co.uk

Run with file:- "C:\Program Files\OSCADY 5\Sutton Cross 2037 AM wdev veh act.voi" at 15:39:49 on Friday, 22 February 2019

FILE PROPERTIES
****

RUN TITLE: sutton cross
LOCATION:
DATE: 18/02/2019
CLIENT:
ENUMERATOR: martin.rogers [BST245-L-ROGERS]
JOB NUMBER:
STATUS:
DESCRIPTION:

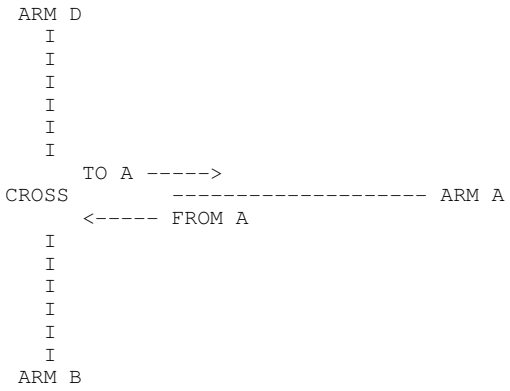
**** ERROR AND WARNING MESSAGES ****
==========

*** WARNING *** Arm A:Warning on CT14: Opposed right-turners -
CT08/CT14 contradiction
[Opposing traffic / Lanes on green]

*** WARNING *** Warnings in data - check output carefully

TRAFFIC SIGNAL JUNCTION ANALYSIS
****

INPUT DATA



ARM A IS Howth Road
ARM B IS Carrickrock Road
ARM C IS Dublin Road
ARM D IS Station Road

GEOMETRIC DATA

DATA ITEM		ARM A	ARM B	ARM C	ARM D
GRADIENT		0.0 %	0.0 %	0.0 %	0.0 %
NUMBER OF LANES		2	1	2	2
PERMITTED MOVEMENTS	LANE 1	LS	LSR	LS	L
	LANE 2	R		R	SR
TOTAL EXIT WIDTH FOR STRAIGHT-AHEAD VEHICLES FROM THIS ARM		N/A	N/A	N/A	N/A
LANE WIDTHS	LANE 1	4.00 M	3.00 M	3.00 M	3.00 M
	LANE 2	3.00 M	0.00 M	3.00 M	3.00 M
LEFT TURN RADII	LANE 1	5.0 M	5.0 M	5.0 M	5.0 M
RIGHT TURN RADII	LANE 1	N/A	5.0 M	N/A	N/A
	LANE 2	5.0 M	N/A	5.0 M	5.0 M
OPPOSING TRAFFIC MOVEMENTS		STRAIGHT	STRAIGHT	STRAIGHT	STRAIGHT
STORAGE BEYOND STOPLINE	LANE 1	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS
	LANE 2	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS

TRAFFIC DEMAND DATA

DEMAND DATA ARE INPUT USING THE ** DIRECT ** OPTION

TURNING PROPORTIONS ARE ESTIMATED BY FLOW BALANCING USING THE TPBAL OPTION

DEMAND DATA SUPPLIED BETWEEN TIMES - 08.00 TO 09.00
PERIOD OF INTEREST (FOR QUEUE AND DELAY CALCULATIONS) - 08.00 TO 09.00

THE FOLLOWING DATA HAS BEEN INPUT
+ / ESTIMATED

TRAFFIC SCALING FACTOR HAS BEEN SET TO 100 %

TIME PERIOD	ARM	VEHICLE TYPE PROPORTIONS					
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.00-08.15	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.15-08.30	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.30-08.45	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.45-09.00	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000

TIME PERIOD	FROM/TO	TURNING PROPORTIONS ARM A	ARM B	ARM C	ARM D
08.00-08.15	ARM A GROUP 1	0.000	0.328	0.416	0.256
	ARM B GROUP 1	0.278	0.000	0.447	0.275
	ARM C GROUP 1	0.307	0.390	0.000	0.303
	ARM D GROUP 1	0.258	0.327	0.415	0.000
08.15-08.30	ARM A GROUP 1	0.000	0.365	0.360	0.276
	ARM B GROUP 1	0.270	0.000	0.413	0.317
	ARM C GROUP 1	0.269	0.416	0.000	0.315
	ARM D GROUP 1	0.245	0.380	0.375	0.000
08.30-08.45	ARM A GROUP 1	0.000	0.332	0.365	0.303
	ARM B GROUP 1	0.329	0.000	0.367	0.304
	ARM C GROUP 1	0.340	0.345	0.000	0.314
	ARM D GROUP 1	0.320	0.324	0.356	0.000
08.45-09.00	ARM A GROUP 1	0.000	0.249	0.459	0.292
	ARM B GROUP 1	0.305	0.000	0.425	0.270
	ARM C GROUP 1	0.378	0.286	0.000	0.336
	ARM D GROUP 1	0.317	0.240	0.443	0.000

SIGNAL TIMING DETAILS FOR SIGNAL SET 1

TIMING OPTION- FIXED MODE: TIMINGS TO BE OPTIMISED BY OSCADY

PERIOD FOR OPTIMISATION- 08.00-09.00
FIXED CYCLE TIME- 180.0 SECONDS
OPTIMISED TIMINGS BELOW ARE- CAPACITY MAXIMIZED (see Note 1)
JUNCTION IS- OVERLOADED
MAXIMUM DEGREE OF SATURATION (X'): 112.4 PERCENT
PRACTICAL RESERVE CAPACITY OF JUNCTION [100(90-X')/X'] : -20.0 PERCENT

GLOBAL EFFECTIVE GREEN DISPLACEMENTS - START = 1.4
END = 2.9

DATA ITEM	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
LANES ON GREEN: ARM A	1	1 2			
B			1		
C	1				1 2
D		1	1 2		
MINIMUM GREEN TIME (SECS)	7.0	7.0	7.0	7.0	7.0
OPTIMISED GREEN TIME (SECS)	19.5	18.1	78.1	7.0	20.4
PRECEDING INTERSTAGE	5.0	5.0	5.0	5.0	5.0

DATA ITEM	STAGE 6
LANES ON GREEN: ARM A	
B	
C	1
D	
MINIMUM GREEN TIME (SECS)	7.0
OPTIMISED GREEN TIME (SECS)	7.0
PRECEDING INTERSTAGE	5.0

Note 1: The "capacity-maximized" timings above are for a maximum or fixed cycle time of 180.0 seconds and for demand and sat flows averaged over the specified optimisation period. They are used to calculate the queues and delays over this period and also the quoted maximum degree of saturation (112.4 %) and practical reserve capacity of the junction (-20.0 %) values.

DEMAND AND SATURATION FLOW INFORMATION OVER OPTIMISATION PERIOD (08.00-09.00) FOR SIGNAL SET 1

ARM	LANES	MOVEMENT	DEMAND (VEH/HR)	DEMAND (PCU/HR)	SAT FLOW (PCU/HR)	DEGREE OF SAT(%)	RESERVE CAPACITY (%)
A	1	L S	489.0	489.0	1778.0	112.4	-20.0
	2	R	193.0	193.0	1580.8	112.4	-20.0
B	1	L S R	586.0	586.0	1178.7	112.4	-20.0
C	1	L S	379.9	379.9	1666.4	70.3	28.0
	2	R	216.1	216.1	1580.8	112.4	-20.0
D	1	L	187.0	187.0	1473.1	22.3	304.3
	2	S R	464.0	464.0	1230.0	85.3	5.5

DEMAND AND CAPACITY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 08.00 AND 09.00

TIME / ARM	LANES	MOVEMENT	DEMAND (VEHS/MIN)	SAT FLOW (PCU/HR)	SAT FLOW (VEHS/MIN)	EFFECTIVE GREEN-TIME TRUE (SECS)	EFFECTIVE GREEN-TIME FLARE+NOTIONL (SECS)	CAPACITY (VEHS /MIN)
08.00-08.15								
A	1	L S	7.30	1779.6	29.66	44.0		7.25
	2	R	2.50	1580.8	26.35	19.6		2.86
B	1	L S R	8.67	1243.8	20.73	79.6		9.17
C	1	L S	4.68	1666.5	27.77	58.4		9.00
	2	R	2.99	1580.8	26.35	21.9		3.20
D	1	L	2.25	1473.1	24.55	102.6		14.00
	2	S R	6.48	1312.1	21.87	79.6		9.67
08.15-08.30								
A	1	L S	8.26	1750.6	29.18	44.0		7.14
	2	R	3.14	1580.8	26.35	19.6		2.86
B	1	L S R	10.33	1114.2	18.57	79.6		8.21
C	1	L S	7.04	1648.2	27.47	58.4		8.91
	2	R	5.02	1580.8	26.35	21.9		3.20
D	1	L	2.78	1473.1	24.55	102.6		14.00
	2	S R	8.55	1190.1	19.83	79.6		8.77
08.30-08.45								
A	1	L S	9.02	1763.2	29.39	44.0		7.19
	2	R	3.91	1580.8	26.35	19.6		2.86
B	1	L S R	10.13	1042.5	17.37	79.6		7.68
C	1	L S	7.47	1673.9	27.90	58.4		9.04
	2	R	3.93	1580.8	26.35	21.9		3.20
D	1	L	4.43	1473.1	24.55	102.6		14.00
	2	S R	9.43	1204.4	20.07	79.6		8.88
08.45-09.00								
A	1	L S	8.02	1822.9	30.38	44.0		7.43
	2	R	3.31	1580.8	26.35	19.6		2.86
B	1	L S R	9.93	1284.9	21.42	79.6		9.47
C	1	L S	6.14	1678.3	27.97	58.4		9.07
	2	R	2.46	1580.8	26.35	21.9		3.20
D	1	L	3.00	1473.1	24.55	102.6		14.00
	2	S R	6.46	1193.6	19.89	79.6		8.80

QUEUE AND DELAY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 08.00 AND 09.00

TIME / ARM	LANES	MOVEMENT	DEMAND EXCL 2-WHEEL (VEHS/MIN)	CAPACITY (VEHS/MIN)	DEGREE OF SAT (RFC)	QUEUE AT END OF SEGMENT MEAN (PHASE AVERAGED) (VEHS/LANE)	QUEUE AT END OF SEGMENT MAXIMUM (END OF RED) (VEHS/LANE)	QUEUEING DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15									
A	1	L S	7.30	7.25	1.006	16.1	24.3	203.4	
	2	R	2.50	2.86	0.875	5.6	9.0	76.5	
B	1	L S R	8.67	9.17	0.946	12.3	19.8	166.0	
C	1	L S	4.68	9.00	0.520	4.2	9.8	62.7	
	2	R	2.99	3.20	0.933	7.2	11.2	95.3	
D	1	L	2.25	14.00	0.161	0.7	2.9	10.6	
	2	S R	6.48	9.67	0.670	5.1	11.6	76.0	

I 08.15-08.30									I
I A	1	L S		8.26	7.14	1.157	33.6	41.7	390.4 I
I	2		R	3.14	2.86	1.098	12.1	15.9	149.7 I
I B	1	L S R		10.33	8.21	1.258	44.7	51.6	444.5 I
I C	1	L S		7.04	8.91	0.791	8.1	15.9	120.9 I
I	2		R	5.02	3.20	1.569	35.2	39.4	329.2 I
I D	1	L		2.78	14.00	0.198	0.9	3.6	13.5 I
I	2	S R		8.55	8.77	0.975	13.8	21.1	184.8 I
I 08.30-08.45									I
I A	1	L S		9.02	7.19	1.255	61.3	69.4	723.0 I
I	2		R	3.91	2.86	1.367	28.1	31.9	310.6 I
I B	1	L S R		10.13	7.68	1.319	81.1	87.5	948.9 I
I C	1	L S		7.47	9.04	0.825	9.1	17.3	137.7 I
I	2		R	3.93	3.20	1.228	46.2	50.4	615.8 I
I D	1	L		4.43	14.00	0.317	1.6	5.8	23.8 I
I	2	S R		9.43	8.88	1.063	24.8	32.2	316.7 I
I 08.45-09.00									I
I A	1	L S		8.02	7.43	1.080	70.6	79.0	998.8 I
I	2		R	3.31	2.86	1.156	35.0	38.8	478.8 I
I B	1	L S R		9.93	9.47	1.049	89.7	97.6	1299.3 I
I C	1	L S		6.14	9.07	0.677	6.3	13.3	95.1 I
I	2		R	2.46	3.20	0.768	35.7	40.0	615.4 I
I D	1	L		3.00	14.00	0.215	1.0	3.9	14.8 I
I	2	S R		6.46	8.80	0.735	7.1	14.0	172.2 I

QUEUES FOR ARM A

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	5.6	9.0	******+++
	1	16.1	24.3	**********++++++++
08.30	2	12.1	15.9	**********++++
	1	33.6	41.7	**********++++++++
08.45	2	28.1	31.9	**********++++
	1	61.3	69.4	**********++++++++
09.00	2	35.0	38.8	**********++++
	1	70.6	79.0	**********++++++++

QUEUES FOR ARM B

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	1	12.3	19.8	**********++++++++
08.30	1	44.7	51.6	**********+++++++
08.45	1	81.1	87.5	**********++++
09.00	1	89.7	97.6	**********

QUEUES FOR ARM C

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	7.2	11.2	*******++++
	1	4.2	9.8	****++++++
08.30	2	35.2	39.4	************************************++++
	1	8.1	15.9	********+++++++++
08.45	2	46.2	50.4	**++++
	1	9.1	17.3	*********+++++++++
09.00	2	35.7	40.0	************************************++++
	1	6.3	13.3	******+++++++

QUEUES FOR ARM D

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	5.1	11.6	*****+++++++
	1	0.7	2.9	*++
08.30	2	13.8	21.1	**************+++++++
	1	0.9	3.6	*+++
08.45	2	24.8	32.2	***************************+++++++
	1	1.6	5.8	**++++
09.00	2	7.1	14.0	*******+++++++
	1	1.0	3.9	*+++

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD (08.00-09.00)

STREAM	TOTAL DEMAND (EXCL 2-WHEEL)		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A-B	217.3	217.3	981.2	4.52	1098.9	5.06
A-C	271.7	271.7	1334.5	4.91	1552.1	5.71
A-D	193.0	193.0	1015.7	5.26	1229.3	6.37
B-C	241.3	241.3	1158.7	4.80	1339.3	5.55
B-D	171.3	171.3	825.9	4.82	940.8	5.49
B-A	173.4	173.4	874.2	5.04	1003.6	5.79
C-D	189.0	189.0	207.2	1.10	208.2	1.10
C-A	191.0	191.0	209.1	1.10	210.3	1.10
C-B	216.1	216.1	1655.6	7.66	1854.9	8.58
D-A	187.0	187.0	62.6	0.33	62.6	0.33
D-B	208.9	208.9	337.8	1.62	338.8	1.62
D-C	255.1	255.1	412.0	1.61	413.8	1.62
ALL	2515.0	2515.0	9074.3	3.61	10252.7	4.08

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

* TOTAL GEOMETRIC DELAY INCLUDES DELAY SUFFERED BY VEHICLES STILL QUEUEING AT THE END OF THE WHOLE TIME PERIOD.
* THE SUM OF DELAYS FOR EACH SEGMENT AND THE TOTAL GEOMETRIC DELAY WILL BE SIGNIFICANTLY DIFFERENT ONLY IF THERE IS
* A LARGE QUEUE AT THE END OF THE TIME PERIOD.

****** OSCADY 5 run completed
========== end of file ==========

Printed at 15:40:03 on 22/02/2019]

_____ O S C A D Y 5 _____

Analysis Program: Release 3.0 (Jan 2008)

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Run with file:- "C:\Program Files\OSCADY 5\Sutton Cross 2037 PM Wdev.voi" at 15:21:55 on Friday, 22 February 2019

FILE PROPERTIES
****

RUN TITLE: sutton cross
LOCATION:
DATE: 18/02/2019
CLIENT:
ENUMERATOR: martin.rogers [BST245-L-ROGERS]
JOB NUMBER:
STATUS:
DESCRIPTION:

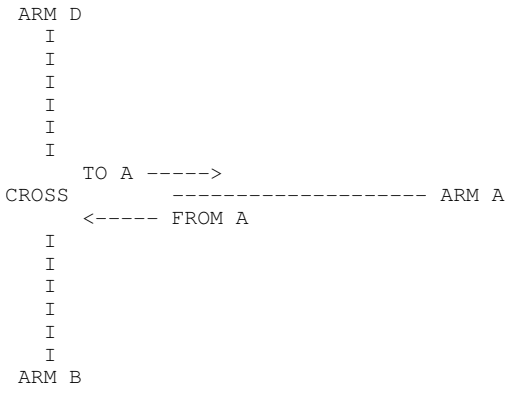
**** ERROR AND WARNING MESSAGES ****
==========

*** WARNING *** Arm A:Warning on CT14: Opposed right-turners -
CT08/CT14 contradiction
[Opposing traffic / Lanes on green]

*** WARNING *** Warnings in data - check output carefully

TRAFFIC SIGNAL JUNCTION ANALYSIS
****

INPUT DATA



ARM A IS Howth Road
ARM B IS Carrickrock Road
ARM C IS Dublin Road
ARM D IS Station Road

GEOMETRIC DATA

DATA ITEM		ARM A	ARM B	ARM C	ARM D
GRADIENT		0.0 %	0.0 %	0.0 %	0.0 %
NUMBER OF LANES		2	1	2	2
PERMITTED MOVEMENTS	LANE 1	LS	LSR	LS	L
	LANE 2	R		R	SR
TOTAL EXIT WIDTH FOR STRAIGHT-AHEAD VEHICLES FROM THIS ARM		N/A	N/A	N/A	N/A
LANE WIDTHS	LANE 1	4.00 M	3.00 M	3.00 M	3.00 M
	LANE 2	3.00 M	0.00 M	3.00 M	3.00 M
LEFT TURN RADII	LANE 1	5.0 M	5.0 M	5.0 M	5.0 M
RIGHT TURN RADII	LANE 1	N/A	5.0 M	N/A	N/A
	LANE 2	5.0 M	N/A	5.0 M	5.0 M
OPPOSING TRAFFIC MOVEMENTS		STRAIGHT	STRAIGHT	STRAIGHT	STRAIGHT
STORAGE BEYOND STOPLINE	LANE 1	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS
	LANE 2	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS

TRAFFIC DEMAND DATA

DEMAND DATA ARE INPUT USING THE ** DIRECT ** OPTION

TURNING PROPORTIONS ARE ESTIMATED BY FLOW BALANCING USING THE TPBAL OPTION

DEMAND DATA SUPPLIED BETWEEN TIMES - 17.00 TO 18.00
PERIOD OF INTEREST (FOR QUEUE AND DELAY CALCULATIONS) - 17.00 TO 18.00

THE FOLLOWING DATA HAS BEEN INPUT
+ / ESTIMATED

TRAFFIC SCALING FACTOR HAS BEEN SET TO 100 %

TIME PERIOD	ARM	VEHICLE TYPE PROPORTIONS					
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.00-17.15	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.15-17.30	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.30-17.45	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.45-18.00	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000

TIME PERIOD	FROM/TO	TURNING PROPORTIONS ARM A	ARM B	ARM C	ARM D
17.00-17.15	ARM A GROUP 1	0.000	0.357	0.394	0.249
	ARM B GROUP 1	0.390	0.000	0.374	0.237
	ARM C GROUP 1	0.404	0.351	0.000	0.245
	ARM D GROUP 1	0.354	0.307	0.339	0.000
17.15-17.30	ARM A GROUP 1	0.000	0.284	0.421	0.295
	ARM B GROUP 1	0.414	0.000	0.345	0.241
	ARM C GROUP 1	0.467	0.262	0.000	0.272
	ARM D GROUP 1	0.418	0.234	0.348	0.000
17.30-17.45	ARM A GROUP 1	0.000	0.257	0.461	0.283
	ARM B GROUP 1	0.361	0.000	0.396	0.243
	ARM C GROUP 1	0.438	0.267	0.000	0.294
	ARM D GROUP 1	0.370	0.226	0.405	0.000
17.45-18.00	ARM A GROUP 1	0.000	0.349	0.427	0.224
	ARM B GROUP 1	0.447	0.000	0.363	0.190
	ARM C GROUP 1	0.479	0.317	0.000	0.204
	ARM D GROUP 1	0.404	0.268	0.328	0.000

SIGNAL TIMING DETAILS FOR SIGNAL SET 1

TIMING OPTION- FIXED MODE: TIMINGS ARE PROVIDED BY USER

FIXED CYCLE TIME- 177.0 SECONDS
PERIODS FOR WHICH THESE SETTINGS APPLY- 17.00-18.00

GLOBAL EFFECTIVE GREEN DISPLACEMENTS - START = 1.4
END = 2.9

DATA ITEM		STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
LANES ON GREEN:	ARM A	1	1 2			
	B			1		
	C	1				1 2
	D		1	1 2		
GREEN TIME (SECS)		40.0	15.0	55.0	7.0	20.0
PRECEDING INTERSTAGE		5.0	5.0	5.0	5.0	5.0

DATA ITEM		STAGE 6
LANES ON GREEN:	ARM A	
	B	
	C	1
	D	
GREEN TIME (SECS)		10.0
PRECEDING INTERSTAGE		5.0

DEMAND AND CAPACITY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 17.00 AND 18.00

TIME ARM	LANES	MOVEMENT	DEMAND (VEHS/MIN)	SAT FLOW (PCU/HR)	SAT FLOW (VEHS/MIN)	EFFECTIVE GREEN-TIME TRUE (SECS)	FLARE+NOTIONL (SECS)	CAPACITY (VEHS /MIN)
17.00-17.15								
A	1	L S	6.75	1763.5	29.39	61.5		10.21
	2	R	2.25	1580.8	26.35	16.5		2.46
B	1	L S R	8.33	1121.3	18.69	56.5		5.97
C	1	L S	7.96	1720.0	28.67	81.5		13.20
	2	R	4.30	1580.8	26.35	21.5		3.20
D	1	L	2.88	1473.1	24.55	76.5		10.61
	2	S R	5.26	1280.0	21.33	56.5		6.81

17.15-17.30								
A	1	L S		6.11	1797.9	29.96	61.5	10.41
	2		R	2.55	1580.8	26.35	16.5	2.46
B	1	L S R		6.20	1253.9	20.90	56.5	6.67
C	1	L S		7.97	1724.7	28.74	81.5	13.24
	2		R	2.83	1580.8	26.35	21.5	3.20
D	1	L		2.90	1473.1	24.55	76.5	10.61
	2	S	R	4.04	1355.4	22.59	56.5	7.21
17.30-17.45								
A	1	L S		9.13	1819.6	30.33	61.5	10.54
	2		R	3.60	1580.8	26.35	16.5	2.46
B	1	L S R		5.40	1219.7	20.33	56.5	6.49
C	1	L S		8.94	1709.0	28.48	81.5	13.11
	2		R	3.26	1580.8	26.35	21.5	3.20
D	1	L		3.23	1473.1	24.55	76.5	10.61
	2	S	R	5.51	1376.2	22.94	56.5	7.32
17.45-18.00								
A	1	L S		6.21	1775.7	29.59	61.5	10.28
	2		R	1.79	1580.8	26.35	16.5	2.46
B	1	L S R		7.33	1046.7	17.45	56.5	5.57
C	1	L S		8.97	1757.8	29.30	81.5	13.49
	2		R	4.17	1580.8	26.35	21.5	3.20
D	1	L		4.07	1473.1	24.55	76.5	10.61
	2	S	R	6.00	1406.9	23.45	56.5	7.49

QUEUE AND DELAY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 17.00 AND 18.00

TIME ARM	LANES	MOVEMENT	DEMAND EXCL 2-WHEEL (VEHS/MIN)	CAPACITY (VEHS/MIN)	DEGREE OF SAT (RFC)	QUEUE AT END OF SEGMENT MEAN (PHASE AVERAGED) (VEHS/LANE)	MAXIMUM (END OF RED) (VEHS/LANE)	QUEUEING DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.00-17.15									
A	1	L S	6.75	10.21	0.661	6.3	13.8	93.6	
	2	R	2.25	2.46	0.914	5.7	8.7	74.7	
B	1	L S R	8.33	5.97	1.397	42.9	48.9	376.1	
C	1	L S	7.96	13.20	0.603	5.3	13.2	79.0	
	2	R	4.30	3.20	1.345	22.2	26.3	206.4	
D	1	L	2.88	10.61	0.271	1.6	4.9	24.1	
	2	S	R	5.26	6.81	0.772	6.2	12.0	91.3
17.15-17.30									
A	1	L S	6.11	10.41	0.587	5.3	12.3	80.0	
	2	R	2.55	2.46	1.040	9.4	12.7	126.7	
B	1	L S R	6.20	6.67	0.929	38.1	44.8	614.1	
C	1	L S	7.97	13.24	0.602	5.3	13.2	79.3	
	2	R	2.83	3.20	0.883	18.1	22.2	303.5	
D	1	L	2.90	10.61	0.273	1.6	4.9	24.4	
	2	S	R	4.04	7.21	0.560	3.8	8.5	57.5
17.30-17.45									
A	1	L S	9.13	10.54	0.867	11.1	20.4	162.8	
	2	R	3.60	2.46	1.465	26.8	30.1	280.0	
B	1	L S R	5.40	6.49	0.832	23.4	29.9	463.9	
C	1	L S	8.94	13.11	0.681	6.4	15.1	96.8	
	2	R	3.26	3.20	1.019	19.8	23.9	291.6	
D	1	L	3.23	10.61	0.304	1.8	5.5	27.7	
	2	S	R	5.51	7.32	0.752	6.2	12.3	92.9
17.45-18.00									
A	1	L S	6.21	10.28	0.604	5.5	12.5	83.8	
	2	R	1.79	2.46	0.729	17.7	21.0	335.5	
B	1	L S R	7.33	5.57	1.317	49.1	54.7	547.5	
C	1	L S	8.97	13.49	0.665	6.4	15.1	95.1	
	2	R	4.17	3.20	1.302	34.4	38.6	414.4	
D	1	L	4.07	10.61	0.384	2.5	7.0	36.9	
	2	S	R	6.00	7.49	0.801	7.3	13.8	109.7

QUEUES FOR ARM A

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	5.7	8.7	******+++
	1	6.3	13.8	******++++++++
17.30	2	9.4	12.7	*********++++
	1	5.3	12.3	*****+++++++
17.45	2	26.8	30.1	****************************+++
	1	11.1	20.4	***********+++++++++
18.00	2	17.7	21.0	******************+++
	1	5.5	12.5	******+++++++

QUEUES FOR ARM B

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	1	42.9	48.9	**++++++
17.30	1	38.1	44.8	***************************************+++++++
17.45	1	23.4	29.9	************************+++++++
18.00	1	49.1	54.7	**++++++

QUEUES FOR ARM C

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	22.2	26.3	************************++++
	1	5.3	13.2	*****++++++++
17.30	2	18.1	22.2	******************++++
	1	5.3	13.2	*****++++++++
17.45	2	19.8	23.9	**********************++++
	1	6.4	15.1	******+++++++++
18.00	2	34.4	38.6	************************************+++++
	1	6.4	15.1	******+++++++++

QUEUES FOR ARM D

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	6.2	12.0	******++++++
	1	1.6	4.9	**+++
17.30	2	3.8	8.5	****+++++
	1	1.6	4.9	**+++
17.45	2	6.2	12.3	******++++++
	1	1.8	5.5	**+++
18.00	2	7.3	13.8	*******++++++++
	1	2.5	7.0	**+++++

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD (17.00-18.00)

STREAM	TOTAL DEMAND (EXCL 2-WHEEL)		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A-B	176.0	176.0	172.6	0.98	173.3	0.98
A-C	247.2	247.2	247.6	1.00	248.4	1.00
A-D	152.8	152.8	816.9	5.35	880.8	5.76
B-C	150.7	150.7	734.5	4.87	813.1	5.39
B-D	92.6	92.6	453.7	4.90	494.9	5.35
B-A	165.7	165.7	813.4	4.91	910.2	5.49
C-D	183.1	183.1	126.3	0.69	126.7	0.69
C-A	324.5	324.5	223.9	0.69	225.0	0.69
C-B	218.4	218.4	1215.9	5.57	1401.1	6.42
D-A	196.1	196.1	113.1	0.58	113.4	0.58
D-B	131.8	131.8	149.1	1.13	150.7	1.14
D-C	180.1	180.1	202.3	1.12	204.2	1.13
ALL	2219.0	2219.0	5269.3	2.37	5741.9	2.59

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

* TOTAL GEOMETRIC DELAY INCLUDES DELAY SUFFERED BY VEHICLES STILL QUEUEING AT THE END OF THE WHOLE TIME PERIOD.
* THE SUM OF DELAYS FOR EACH SEGMENT AND THE TOTAL GEOMETRIC DELAY WILL BE SIGNIFICANTLY DIFFERENT ONLY IF THERE IS
* A LARGE QUEUE AT THE END OF THE TIME PERIOD.

****** OSCADY 5 run completed
========== end of file ==========

Printed at 15:22:37 on 22/02/2019]

_____ O S C A D Y 5 _____

Analysis Program: Release 3.0 (Jan 2008)

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Run with file:- "C:\Program Files\OSCADY 5\Sutton Cross 2037 PM WOD.voi" at 15:17:22 on Friday, 22 February 2019

FILE PROPERTIES
****

RUN TITLE: sutton cross
LOCATION:
DATE: 18/02/2019
CLIENT:
ENUMERATOR: martin.rogers [BST245-L-ROGERS]
JOB NUMBER:
STATUS:
DESCRIPTION:

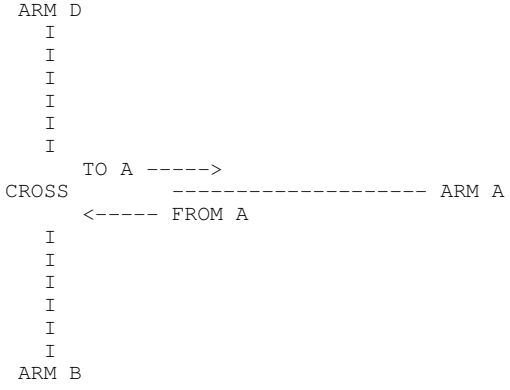
**** ERROR AND WARNING MESSAGES ****
==========

*** WARNING *** Arm A:Warning on CT14: Opposed right-turners -
CT08/CT14 contradiction
[Opposing traffic / Lanes on green]

*** WARNING *** Warnings in data - check output carefully

TRAFFIC SIGNAL JUNCTION ANALYSIS
****

INPUT DATA



ARM A IS Howth Road
ARM B IS Carrickrock Road
ARM C IS Dublin Road
ARM D IS Station Road

GEOMETRIC DATA

DATA ITEM		ARM A	ARM B	ARM C	ARM D
GRADIENT		0.0 %	0.0 %	0.0 %	0.0 %
NUMBER OF LANES		2	1	2	2
PERMITTED MOVEMENTS	LANE 1	LS	LSR	LS	L
	LANE 2	R		R	SR
TOTAL EXIT WIDTH FOR STRAIGHT-AHEAD VEHICLES FROM THIS ARM		N/A	N/A	N/A	N/A
LANE WIDTHS	LANE 1	4.00 M	3.00 M	3.00 M	3.00 M
	LANE 2	3.00 M	0.00 M	3.00 M	3.00 M
LEFT TURN RADII	LANE 1	5.0 M	5.0 M	5.0 M	5.0 M
RIGHT TURN RADII	LANE 1	N/A	5.0 M	N/A	N/A
	LANE 2	5.0 M	N/A	5.0 M	5.0 M
OPPOSING TRAFFIC MOVEMENTS		STRAIGHT	STRAIGHT	STRAIGHT	STRAIGHT
STORAGE BEYOND STOPLINE	LANE 1	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS
	LANE 2	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS

TRAFFIC DEMAND DATA

DEMAND DATA ARE INPUT USING THE ** DIRECT ** OPTION

TURNING PROPORTIONS ARE ESTIMATED BY FLOW BALANCING USING THE TPBAL OPTION

DEMAND DATA SUPPLIED BETWEEN TIMES - 17.00 TO 18.00
PERIOD OF INTEREST (FOR QUEUE AND DELAY CALCULATIONS) - 17.00 TO 18.00

THE FOLLOWING DATA HAS BEEN INPUT
+ / ESTIMATED

TRAFFIC SCALING FACTOR HAS BEEN SET TO 100 %

TIME PERIOD	ARM	VEHICLE TYPE PROPORTIONS: CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.00-17.15	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
17.15-17.30	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
17.30-17.45	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
17.45-18.00	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000

TIME PERIOD	FROM/TO	TURNING PROPORTIONS ARM A	ARM B	ARM C	ARM D
17.00-17.15	ARM A GROUP 1	0.000	0.370	0.382	0.248
	ARM B GROUP 1	0.367	0.000	0.383	0.250
	ARM C GROUP 1	0.371	0.376	0.000	0.252
	ARM D GROUP 1	0.327	0.331	0.342	0.000
17.15-17.30	ARM A GROUP 1	0.000	0.291	0.412	0.298
	ARM B GROUP 1	0.391	0.000	0.353	0.256
	ARM C GROUP 1	0.436	0.278	0.000	0.285
	ARM D GROUP 1	0.393	0.251	0.356	0.000
17.30-17.45	ARM A GROUP 1	0.000	0.261	0.455	0.284
	ARM B GROUP 1	0.336	0.000	0.408	0.255
	ARM C GROUP 1	0.408	0.283	0.000	0.309
	ARM D GROUP 1	0.344	0.239	0.417	0.000
17.45-18.00	ARM A GROUP 1	0.000	0.362	0.419	0.219
	ARM B GROUP 1	0.434	0.000	0.372	0.194
	ARM C GROUP 1	0.457	0.338	0.000	0.204
	ARM D GROUP 1	0.385	0.285	0.330	0.000

SIGNAL TIMING DETAILS FOR SIGNAL SET 1

TIMING OPTION- FIXED MODE: TIMINGS ARE PROVIDED BY USER

FIXED CYCLE TIME- 177.0 SECONDS
PERIODS FOR WHICH THESE SETTINGS APPLY- 17.00-18.00

GLOBAL EFFECTIVE GREEN DISPLACEMENTS - START = 1.4
END = 2.9

DATA ITEM		STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
LANES ON GREEN:	ARM A	1	1 2			
	B			1		
	C	1				1 2
	D		1	1 2		
GREEN TIME (SECS)		40.0	15.0	55.0	7.0	20.0
PRECEDING INTERSTAGE		5.0	5.0	5.0	5.0	5.0

DATA ITEM		STAGE 6
LANES ON GREEN:	ARM A	
	B	
	C	1
	D	
GREEN TIME (SECS)		10.0
PRECEDING INTERSTAGE		5.0

DEMAND AND CAPACITY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 17.00 AND 18.00

TIME ARM	LANES	MOVEMENT	DEMAND (VEHS/MIN)	SAT FLOW (PCU/HR)	SAT FLOW (VEHS/MIN)	EFFECTIVE GREEN-TIME TRUE (SECS)	FLARE+NOTIONL (SECS)	CAPACITY (VEHS /MIN)
17.00-17.15								
A	1	L S	6.06	1755.7	29.26	61.5		10.17
	2	R	2.00	1580.8	26.35	16.5		2.46
B	1	L S R	7.80	1151.0	19.18	56.5		6.12
C	1	L S	6.78	1707.7	28.46	81.5		13.11
	2	R	4.09	1580.8	26.35	21.5		3.20
D	1	L	2.38	1473.1	24.55	76.5		10.61
	2	S R	4.89	1299.2	21.65	56.5		6.91

17.15-17.30								
A	1	L S	5.43	1792.5	29.87	61.5	10.38	
	2	R	2.30	1580.8	26.35	16.5	2.46	
B	1	L S R	5.67	1280.5	21.34	56.5	6.81	
C	1	L S	6.78	1711.8	28.53	81.5	13.14	
	2	R	2.62	1580.8	26.35	21.5	3.20	
D	1	L	2.36	1473.1	24.55	76.5	10.61	
	2	S R	3.64	1373.0	22.88	56.5	7.30	
17.30-17.45								
A	1	L S	8.45	1816.5	30.28	61.5	10.52	
	2	R	3.35	1580.8	26.35	16.5	2.46	
B	1	L S R	4.93	1244.7	20.74	56.5	6.62	
C	1	L S	7.74	1695.6	28.26	81.5	13.01	
	2	R	3.06	1580.8	26.35	21.5	3.20	
D	1	L	2.70	1473.1	24.55	76.5	10.61	
	2	S R	5.16	1392.1	23.20	56.5	7.41	
17.45-18.00								
A	1	L S	5.52	1769.0	29.48	61.5	10.24	
	2	R	1.55	1580.8	26.35	16.5	2.46	
B	1	L S R	6.87	1067.5	17.79	56.5	5.68	
C	1	L S	7.76	1752.6	29.21	81.5	13.45	
	2	R	3.97	1580.8	26.35	21.5	3.20	
D	1	L	3.54	1473.1	24.55	76.5	10.61	
	2	S R	5.66	1428.8	23.81	56.5	7.60	

QUEUE AND DELAY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 17.00 AND 18.00

TIME ARM	LANES	MOVEMENT	DEMAND EXCL 2-WHEEL (VEHS/MIN)	CAPACITY (VEHS/MIN)	DEGREE OF SAT (RFC)	QUEUE AT END OF SEGMENT MEAN (PHASE AVERAGED) (VEHS/LANE)	QUEUE AT END OF SEGMENT MAXIMUM (END OF RED) (VEHS/LANE)	QUEUEING DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.00-17.15									
A	1	L S	6.06	10.17	0.596	5.3	12.2	79.7	
	2	R	2.00	2.46	0.816	4.2	6.9	59.1	
B	1	L S R	7.80	6.12	1.274	33.2	39.4	307.5	
C	1	L S	6.78	13.11	0.517	4.2	11.1	62.2	
	2	R	4.09	3.20	1.277	19.2	23.4	185.0	
D	1	L	2.38	10.61	0.224	1.3	4.0	19.4	
	2	S R	4.89	6.91	0.707	5.3	10.8	78.5	
17.15-17.30									
A	1	L S	5.43	10.38	0.523	4.5	10.8	67.7	
	2	R	2.30	2.46	0.938	6.4	9.5	92.1	
B	1	L S R	5.67	6.81	0.832	18.9	25.8	401.9	
C	1	L S	6.78	13.14	0.516	4.2	11.1	62.3	
	2	R	2.62	3.20	0.818	12.2	16.4	239.2	
D	1	L	2.36	10.61	0.222	1.3	4.0	19.2	
	2	S R	3.64	7.30	0.498	3.3	7.6	49.2	
17.30-17.45									
A	1	L S	8.45	10.52	0.803	9.2	18.1	136.2	
	2	R	3.35	2.46	1.366	20.6	23.9	214.2	
B	1	L S R	4.93	6.62	0.745	6.8	12.8	149.6	
C	1	L S	7.74	13.01	0.595	5.1	12.8	76.4	
	2	R	3.06	3.20	0.957	12.3	16.3	187.0	
D	1	L	2.70	10.61	0.255	1.5	4.6	22.5	
	2	S R	5.16	7.41	0.697	5.5	11.3	81.6	
17.45-18.00									
A	1	L S	5.52	10.24	0.539	4.6	11.0	70.3	
	2	R	1.55	2.46	0.629	8.2	11.4	220.1	
B	1	L S R	6.87	5.68	1.209	26.6	32.3	269.7	
C	1	L S	7.76	13.45	0.577	5.0	12.8	75.2	
	2	R	3.97	3.20	1.241	24.4	28.6	287.3	
D	1	L	3.54	10.61	0.334	2.1	6.0	31.0	
	2	S R	5.66	7.60	0.744	6.3	12.6	94.8	

QUEUES FOR ARM A

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	4.2	6.9	****+++
	1	5.3	12.2	*****+++++++
17.30	2	6.4	9.5	******++++
	1	4.5	10.8	*****++++++
17.45	2	20.6	23.9	**********************+++
	1	9.2	18.1	*********+++++++++
18.00	2	8.2	11.4	********+++
	1	4.6	11.0	*****++++++

QUEUES FOR ARM B

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	1	33.2	39.4	************************************++++++
17.30	1	18.9	25.8	********************+++++++
17.45	1	6.8	12.8	*******++++++
18.00	1	26.6	32.3	****************************+++++

QUEUES FOR ARM C

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	19.2	23.4	********************++++
	1	4.2	11.1	****+++++++
17.30	2	12.2	16.4	************++++
	1	4.2	11.1	****+++++++
17.45	2	12.3	16.3	************++++
	1	5.1	12.8	*****++++++++
18.00	2	24.4	28.6	*************************+++++
	1	5.0	12.8	*****++++++++

QUEUES FOR ARM D

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	5.3	10.8	*****++++++
	1	1.3	4.0	*+++
17.30	2	3.3	7.6	***+++++
	1	1.3	4.0	*+++
17.45	2	5.5	11.3	*****++++++
	1	1.5	4.6	*++++
18.00	2	6.3	12.6	******+++++++
	1	2.1	6.0	**++++

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD (17.00-18.00)

STREAM	TOTAL DEMAND (EXCL 2-WHEEL)		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A-B	163.0	163.0	149.5	0.92	149.9	0.92
A-C	218.9	218.9	204.5	0.93	205.0	0.94
A-D	138.1	138.1	585.5	4.24	599.1	4.34
B-C	143.4	143.4	421.2	2.94	444.4	3.10
B-D	89.8	89.8	270.1	3.01	282.2	3.14
B-A	145.8	145.8	437.4	3.00	464.5	3.19
C-D	167.4	167.4	106.0	0.63	106.3	0.63
C-A	268.5	268.5	170.1	0.63	170.8	0.64
C-B	206.0	206.0	898.5	4.36	991.7	4.81
D-A	164.8	164.8	92.1	0.56	92.3	0.56
D-B	126.2	126.2	132.7	1.05	133.9	1.06
D-C	164.0	164.0	171.4	1.05	172.8	1.05
ALL	1996.0	1996.0	3639.0	1.82	3812.8	1.91

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

* TOTAL GEOMETRIC DELAY INCLUDES DELAY SUFFERED BY VEHICLES STILL QUEUEING AT THE END OF THE WHOLE TIME PERIOD.
* THE SUM OF DELAYS FOR EACH SEGMENT AND THE TOTAL GEOMETRIC DELAY WILL BE SIGNIFICANTLY DIFFERENT ONLY IF THERE IS
* A LARGE QUEUE AT THE END OF THE TIME PERIOD.

****** OSCADY 5 run completed
========== end of file ==========

Printed at 15:17:38 on 22/02/2019]

_____ O S C A D Y 5 _____

Analysis Program: Release 3.0 (Jan 2008)

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Run with file:- "C:\Program Files\OSCADY 5\Sutton Cross 2037 AM wod veh act.voi" at 15:33:28 on Friday, 22 February 2019

FILE PROPERTIES
****

RUN TITLE: sutton cross
LOCATION:
DATE: 18/02/2019
CLIENT:
ENUMERATOR: martin.rogers [BST245-L-ROGERS]
JOB NUMBER:
STATUS:
DESCRIPTION:

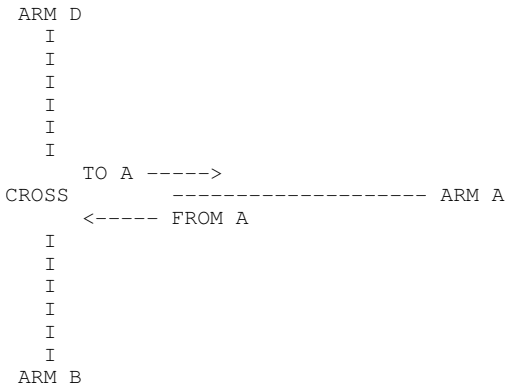
**** ERROR AND WARNING MESSAGES ****
==========

*** WARNING *** Arm A:Warning on CT14: Opposed right-turners - CT08/CT14 contradiction
[Opposing traffic / Lanes on green]

*** WARNING *** Warnings in data - check output carefully

TRAFFIC SIGNAL JUNCTION ANALYSIS
****

INPUT DATA



ARM A IS Howth Road
ARM B IS Carrickrock Road
ARM C IS Dublin Road
ARM D IS Station Road

GEOMETRIC DATA

DATA ITEM		ARM A	ARM B	ARM C	ARM D
GRADIENT		0.0 %	0.0 %	0.0 %	0.0 %
NUMBER OF LANES		2	1	2	2
PERMITTED MOVEMENTS	LANE 1	LS	LSR	LS	L
	LANE 2	R		R	SR
TOTAL EXIT WIDTH FOR STRAIGHT-AHEAD VEHICLES FROM THIS ARM		N/A	N/A	N/A	N/A
LANE WIDTHS	LANE 1	4.00 M	3.00 M	3.00 M	3.00 M
	LANE 2	3.00 M	0.00 M	3.00 M	3.00 M
LEFT TURN RADII	LANE 1	5.0 M	5.0 M	5.0 M	5.0 M
RIGHT TURN RADII	LANE 1	N/A	5.0 M	N/A	N/A
	LANE 2	5.0 M	N/A	5.0 M	5.0 M
OPPOSING TRAFFIC MOVEMENTS		STRAIGHT	STRAIGHT	STRAIGHT	STRAIGHT
STORAGE BEYOND STOPLINE	LANE 1	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS
	LANE 2	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS

TRAFFIC DEMAND DATA

DEMAND DATA ARE INPUT USING THE ** DIRECT ** OPTION

TURNING PROPORTIONS ARE ESTIMATED BY FLOW BALANCING USING THE TPBAL OPTION

DEMAND DATA SUPPLIED BETWEEN TIMES - 08.00 TO 09.00
PERIOD OF INTEREST (FOR QUEUE AND DELAY CALCULATIONS) - 08.00 TO 09.00

THE FOLLOWING DATA HAS BEEN INPUT
+ / ESTIMATED

TRAFFIC SCALING FACTOR HAS BEEN SET TO 100 %

TIME PERIOD	ARM	VEHICLE TYPE PROPORTIONS					
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.00-08.15	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.15-08.30	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.30-08.45	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.45-09.00	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000

TIME PERIOD	FROM/TO	TURNING PROPORTIONS ARM A	ARM B	ARM C	ARM D
08.00-08.15	ARM A GROUP 1	0.000	0.349	0.398	0.253
	ARM B GROUP 1	0.274	0.000	0.444	0.282
	ARM C GROUP 1	0.290	0.412	0.000	0.298
	ARM D GROUP 1	0.248	0.351	0.401	0.000
08.15-08.30	ARM A GROUP 1	0.000	0.384	0.341	0.275
	ARM B GROUP 1	0.268	0.000	0.406	0.327
	ARM C GROUP 1	0.255	0.434	0.000	0.311
	ARM D GROUP 1	0.237	0.404	0.359	0.000
08.30-08.45	ARM A GROUP 1	0.000	0.347	0.349	0.304
	ARM B GROUP 1	0.329	0.000	0.359	0.312
	ARM C GROUP 1	0.330	0.357	0.000	0.313
	ARM D GROUP 1	0.315	0.341	0.344	0.000
08.45-09.00	ARM A GROUP 1	0.000	0.260	0.447	0.293
	ARM B GROUP 1	0.302	0.000	0.422	0.276
	ARM C GROUP 1	0.367	0.298	0.000	0.336
	ARM D GROUP 1	0.312	0.253	0.435	0.000

SIGNAL TIMING DETAILS FOR SIGNAL SET 1

TIMING OPTION- FIXED MODE: TIMINGS TO BE OPTIMISED BY OSCADY

PERIOD FOR OPTIMISATION- 08.00-09.00
FIXED CYCLE TIME- 180.0 SECONDS
OPTIMISED TIMINGS BELOW ARE- CAPACITY MAXIMIZED (see Note 1)
JUNCTION IS- OVERLOADED
MAXIMUM DEGREE OF SATURATION (X'): 119.4 PERCENT
PRACTICAL RESERVE CAPACITY OF JUNCTION [100(90-X')/X'] : -24.6 PERCENT

GLOBAL EFFECTIVE GREEN DISPLACEMENTS - START = 1.4
END = 2.9

DATA ITEM	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
LANES ON GREEN: ARM A	1	1 2			
B			1		
C	1				1 2
D		1	1 2		
MINIMUM GREEN TIME (SECS)	20.0	17.0	80.0	7.0	7.0
OPTIMISED GREEN TIME (SECS)	20.0	17.0	80.0	7.0	19.0
PRECEDING INTERSTAGE	5.0	5.0	5.0	5.0	5.0

DATA ITEM	STAGE 6
LANES ON GREEN: ARM A	
B	
C	1
D	
MINIMUM GREEN TIME (SECS)	7.0
OPTIMISED GREEN TIME (SECS)	7.0
PRECEDING INTERSTAGE	5.0

Note 1: The "capacity-maximized" timings above are for a maximum or fixed cycle time of 180.0 seconds and for demand and sat flows averaged over the specified optimisation period. They are used to calculate the queues and delays over this period and also the quoted maximum degree of saturation (119.4 %) and practical reserve capacity of the junction (-24.6 %) values.

DEMAND AND SATURATION FLOW INFORMATION OVER OPTIMISATION PERIOD (08.00-09.00) FOR SIGNAL SET 1

ARM	LANES	MOVEMENT	DEMAND (VEH/HR)	DEMAND (PCU/HR)	SAT FLOW (PCU/HR)	DEGREE OF SAT(%)	RESERVE CAPACITY (%)
A	1	L S	417.2	417.2	1767.3	97.7	-7.9
	2	R	164.8	164.8	1580.8	101.5	-11.3
B	1	L S R	565.0	565.0	1183.2	105.5	-14.7
C	1	L S	353.1	353.1	1662.7	66.5	35.4
	2	R	214.9	214.9	1580.8	119.4	-24.6
D	1	L	174.7	174.7	1473.1	20.6	336.3
	2	S R	448.3	448.3	1262.3	78.4	14.7

DEMAND AND CAPACITY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 08.00 AND 09.00

TIME / ARM	LANES	MOVEMENT	DEMAND (VEHS/MIN)	SAT FLOW (PCU/HR)	SAT FLOW (VEHS/MIN)	EFFECTIVE GREEN-TIME TRUE (SECS)	EFFECTIVE GREEN-TIME FLARE+NOTIONL (SECS)	CAPACITY (VEHS /MIN)
08.00-08.15								
A	1	L S	6.08	1767.4	29.46	43.5		7.12
	2	R	2.06	1580.8	26.35	18.5		2.71
B	1	L S R	8.27	1249.1	20.82	81.5		9.43
C	1	L S	4.24	1662.2	27.70	57.5		8.85
	2	R	2.96	1580.8	26.35	20.5		3.00
D	1	L	2.05	1473.1	24.55	103.5		14.12
	2	S R	6.22	1348.2	22.47	81.5		10.17
08.15-08.30								
A	1	L S	7.06	1739.0	28.98	43.5		7.00
	2	R	2.68	1580.8	26.35	18.5		2.71
B	1	L S R	10.00	1120.4	18.67	81.5		8.45
C	1	L S	6.57	1644.0	27.40	57.5		8.75
	2	R	5.03	1580.8	26.35	20.5		3.00
D	1	L	2.58	1473.1	24.55	103.5		14.12
	2	S R	8.29	1226.8	20.45	81.5		9.26
08.30-08.45								
A	1	L S	7.84	1752.9	29.22	43.5		7.06
	2	R	3.43	1580.8	26.35	18.5		2.71
B	1	L S R	9.80	1046.6	17.44	81.5		7.90
C	1	L S	7.03	1670.8	27.85	57.5		8.90
	2	R	3.91	1580.8	26.35	20.5		3.00
D	1	L	4.22	1473.1	24.55	103.5		14.12
	2	S R	9.18	1238.5	20.64	81.5		9.35
08.45-09.00								
A	1	L S	6.83	1814.8	30.25	43.5		7.31
	2	R	2.83	1580.8	26.35	18.5		2.71
B	1	L S R	9.60	1291.0	21.52	81.5		9.74
C	1	L S	5.71	1674.8	27.91	57.5		8.92
	2	R	2.42	1580.8	26.35	20.5		3.00
D	1	L	2.80	1473.1	24.55	103.5		14.12
	2	S R	6.20	1222.6	20.38	81.5		9.23

QUEUE AND DELAY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 08.00 AND 09.00

TIME / ARM	LANES	MOVEMENT	DEMAND EXCL 2-WHEEL (VEHS/MIN)	CAPACITY (VEHS/MIN)	DEGREE OF SAT (RFC)	QUEUE AT END OF SEGMENT MEAN (PHASE AVERAGED) (VEHS/LANE)	QUEUE AT END OF SEGMENT MAXIMUM (END OF RED) (VEHS/LANE)	QUEUEING DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15									
A	1	L S	6.08	7.12	0.854	9.1	16.3	131.1	
	2	R	2.06	2.71	0.759	3.9	6.7	55.9	
B	1	L S R	8.27	9.43	0.877	9.2	16.6	132.0	
C	1	L S	4.24	8.85	0.479	3.7	8.9	56.0	
	2	R	2.96	3.00	0.988	8.3	12.3	104.2	
D	1	L	2.05	14.12	0.145	0.6	2.6	9.3	
	2	S R	6.22	10.17	0.611	4.4	10.8	66.3	

I 08.15-08.30									I
I A	1	L S		7.06	7.00	1.008	16.4	24.3	221.6 I
I	2		R	2.68	2.71	0.988	8.0	11.6	107.2 I
I B	1	L S R		10.00	8.45	1.183	34.6	41.6	355.4 I
I C	1	L S		6.57	8.75	0.750	7.3	14.7	108.4 I
I	2		R	5.03	3.00	1.678	39.1	43.1	363.6 I
I D	1	L		2.58	14.12	0.183	0.8	3.3	12.1 I
I	2	S R		8.29	9.26	0.895	9.8	17.1	140.8 I
I 08.30-08.45									I
I A	1	L S		7.84	7.06	1.111	29.2	37.3	361.7 I
I	2		R	3.43	2.71	1.265	19.4	23.0	216.4 I
I B	1	L S R		9.80	7.90	1.241	62.9	69.3	739.0 I
I C	1	L S		7.03	8.90	0.790	8.2	16.0	123.5 I
I	2		R	3.91	3.00	1.302	52.7	56.7	693.0 I
I D	1	L		4.22	14.12	0.299	1.5	5.5	21.9 I
I	2	S R		9.18	9.35	0.982	15.5	23.1	220.2 I
I 08.45-09.00									I
I A	1	L S		6.83	7.31	0.935	25.3	33.6	413.4 I
I	2		R	2.83	2.71	1.046	21.7	25.3	314.4 I
I B	1	L S R		9.60	9.74	0.985	64.0	72.0	961.1 I
I C	1	L S		5.71	8.92	0.640	5.7	12.4	86.0 I
I	2		R	2.42	3.00	0.807	44.6	48.6	730.1 I
I D	1	L		2.80	14.12	0.199	0.9	3.6	13.3 I
I	2	S R		6.20	9.23	0.672	4.9	11.0	82.6 I

QUEUES FOR ARM A

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	3.9	6.7	****+++
	1	9.1	16.3	*********+++++++
08.30	2	8.0	11.6	*********++++
	1	16.4	24.3	****************++++++++
08.45	2	19.4	23.0	********************++++
	1	29.2	37.3	********************************++++++++
09.00	2	21.7	25.3	************************+++
	1	25.3	33.6	************************+++++++++

QUEUES FOR ARM B

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	1	9.2	16.6	*********++++++++
08.30	1	34.6	41.6	************************************+++++++
08.45	1	62.9	69.3	**++++++
09.00	1	64.0	72.0	**++++++++

QUEUES FOR ARM C

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	8.3	12.3	********++++
	1	3.7	8.9	****+++++
08.30	2	39.1	43.1	**++++
	1	7.3	14.7	*******+++++++++
08.45	2	52.7	56.7	**++++
	1	8.2	16.0	********+++++++++
09.00	2	44.6	48.6	**++++
	1	5.7	12.4	******++++++

QUEUES FOR ARM D

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	4.4	10.8	****+++++++
	1	0.6	2.6	*++
08.30	2	9.8	17.1	**********+++++++
	1	0.8	3.3	*++
08.45	2	15.5	23.1	***************++++++++
	1	1.5	5.5	*++++
09.00	2	4.9	11.0	*****++++++
	1	0.9	3.6	*+++

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD (08.00-09.00)

STREAM	TOTAL DEMAND (EXCL 2-WHEEL) (VEH)	(VEH/H)	* QUEUEING * DELAY * (MIN)	(MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	(MIN/VEH)
A-B	194.9	194.9	510.7	2.62	526.8	2.70
A-C	222.3	222.3	617.1	2.78	644.8	2.90
A-D	164.8	164.8	693.8	4.21	780.6	4.74
B-C	229.4	229.4	873.2	3.81	961.8	4.19
B-D	169.6	169.6	649.7	3.83	707.7	4.17
B-A	166.0	166.0	664.4	4.00	727.8	4.39
C-D	178.6	178.6	189.2	1.06	190.0	1.06
C-A	174.5	174.5	184.6	1.06	185.6	1.06
C-B	214.9	214.9	1890.9	8.80	2222.2	10.34
D-A	174.7	174.7	56.5	0.32	56.6	0.32
D-B	212.2	212.2	245.6	1.16	246.0	1.16
D-C	236.1	236.1	264.3	1.12	265.1	1.12
ALL	2338.0	2338.0	6840.1	2.93	7515.1	3.21

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

* TOTAL GEOMETRIC DELAY INCLUDES DELAY SUFFERED BY VEHICLES STILL QUEUEING AT THE END OF THE WHOLE TIME PERIOD.
* THE SUM OF DELAYS FOR EACH SEGMENT AND THE TOTAL GEOMETRIC DELAY WILL BE SIGNIFICANTLY DIFFERENT ONLY IF THERE IS
* A LARGE QUEUE AT THE END OF THE TIME PERIOD.

****** OSCADY 5 run completed
========== end of file ==========

Printed at 15:34:33 on 22/02/2019]

_____ O S C A D Y 5 _____

Analysis Program: Release 3.0 (Jan 2008)

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Old Wokingham Road Fax: +44 (0) 1344 770864
Crowthorne, Berks. Email: softwarebureau@trl.co.uk
RG45 6AU, UK. Web: www.trlsoftware.co.uk

Run with file:- "C:\Program Files\OSCADY 5\Sutton Cross exist AM.voi" at 16:37:51 on Thursday, 21 February 2019

FILE PROPERTIES
****

RUN TITLE: sutton cross
LOCATION:
DATE: 18/02/2019
CLIENT:
ENUMERATOR: martin.rogers [BST245-L-ROGERS]
JOB NUMBER:
STATUS:
DESCRIPTION:

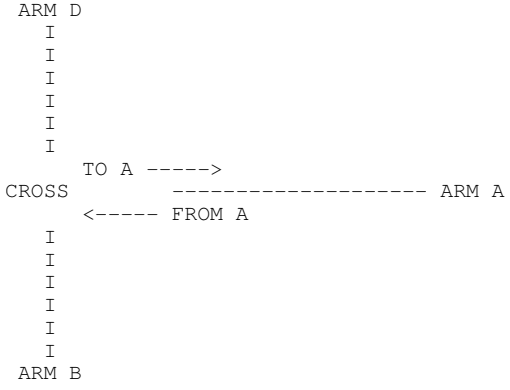
**** ERROR AND WARNING MESSAGES ****
==========

*** WARNING *** Arm A:Warning on CT14: Opposed right-turners - CT08/CT14 contradiction
[Opposing traffic / Lanes on green]

*** WARNING *** Warnings in data - check output carefully

TRAFFIC SIGNAL JUNCTION ANALYSIS
****

INPUT DATA



ARM A IS Howth Road
ARM B IS Carrickrock Road
ARM C IS Dublin Road
ARM D IS Station Road

GEOMETRIC DATA

DATA ITEM		ARM A	ARM B	ARM C	ARM D
GRADIENT		0.0 %	0.0 %	0.0 %	0.0 %
NUMBER OF LANES		2	1	2	2
PERMITTED MOVEMENTS	LANE 1	LS	LSR	LS	L
	LANE 2	R		R	SR
TOTAL EXIT WIDTH FOR STRAIGHT-AHEAD VEHICLES FROM THIS ARM		N/A	N/A	N/A	N/A
LANE WIDTHS	LANE 1	4.00 M	3.00 M	3.00 M	3.00 M
	LANE 2	3.00 M	0.00 M	3.00 M	3.00 M
LEFT TURN RADII	LANE 1	5.0 M	5.0 M	5.0 M	5.0 M
RIGHT TURN RADII	LANE 1	N/A	5.0 M	N/A	N/A
	LANE 2	5.0 M	N/A	5.0 M	5.0 M
OPPOSING TRAFFIC MOVEMENTS		STRAIGHT	STRAIGHT	STRAIGHT	STRAIGHT
STORAGE BEYOND STOPLINE	LANE 1	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS
	LANE 2	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS

TRAFFIC DEMAND DATA

DEMAND DATA ARE INPUT USING THE ** DIRECT ** OPTION

TURNING PROPORTIONS ARE ESTIMATED BY FLOW BALANCING USING THE TPBAL OPTION

DEMAND DATA SUPPLIED BETWEEN TIMES - 08.00 TO 09.00
PERIOD OF INTEREST (FOR QUEUE AND DELAY CALCULATIONS) - 08.00 TO 09.00

THE FOLLOWING DATA HAS BEEN INPUT
+ / ESTIMATED

TRAFFIC SCALING FACTOR HAS BEEN SET TO 100 %

TIME PERIOD	ARM	VEHICLE TYPE PROPORTIONS					
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.00-08.15	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.15-08.30	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.30-08.45	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
08.45-09.00	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000

TIME PERIOD	FROM/TO	TURNING PROPORTIONS ARM A	ARM B	ARM C	ARM D
08.00-08.15	ARM A GROUP 1	0.000	0.349	0.398	0.253
	ARM B GROUP 1	0.273	0.000	0.444	0.282
	ARM C GROUP 1	0.289	0.412	0.000	0.299
	ARM D GROUP 1	0.247	0.351	0.402	0.000
08.15-08.30	ARM A GROUP 1	0.000	0.384	0.341	0.275
	ARM B GROUP 1	0.267	0.000	0.405	0.327
	ARM C GROUP 1	0.254	0.434	0.000	0.311
	ARM D GROUP 1	0.237	0.404	0.359	0.000
08.30-08.45	ARM A GROUP 1	0.000	0.347	0.350	0.303
	ARM B GROUP 1	0.330	0.000	0.359	0.311
	ARM C GROUP 1	0.331	0.357	0.000	0.312
	ARM D GROUP 1	0.316	0.341	0.343	0.000
08.45-09.00	ARM A GROUP 1	0.000	0.261	0.445	0.293
	ARM B GROUP 1	0.301	0.000	0.422	0.278
	ARM C GROUP 1	0.364	0.300	0.000	0.336
	ARM D GROUP 1	0.310	0.255	0.435	0.000

SIGNAL TIMING DETAILS FOR SIGNAL SET 1

TIMING OPTION- FIXED MODE: TIMINGS ARE PROVIDED BY USER

FIXED CYCLE TIME- 186.0 SECONDS
PERIODS FOR WHICH THESE SETTINGS APPLY- 08.00-09.00

GLOBAL EFFECTIVE GREEN DISPLACEMENTS - START = 1.4
END = 2.9

DATA ITEM	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
LANES ON GREEN: ARM A	1	1 2			
B			1		
C	1				1 2
D		1	1 2		
GREEN TIME (SECS)	20.0	17.0	80.0	7.0	25.0
PRECEDING INTERSTAGE	5.0	5.0	5.0	5.0	5.0

DATA ITEM	STAGE 6
LANES ON GREEN: ARM A	
B	
C	1
D	
GREEN TIME (SECS)	7.0
PRECEDING INTERSTAGE	5.0

DEMAND AND CAPACITY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 08.00 AND 09.00

ARM	LANES	MOVEMENT	DEMAND (VEHS/MIN)	SAT FLOW (PCU/HR)	SAT FLOW (VEHS/MIN)	EFFECTIVE GREEN-TIME TRUE (SECS)	EFFECTIVE GREEN-TIME FLARE+NOTIONL (SECS)	CAPACITY (VEHS /MIN)
08.00-08.15								
A	1	L S	5.03	1767.5	29.46	43.5		6.89
	2	R	1.70	1580.8	26.35	18.5		2.62
B	1	L S R	6.87	1284.3	21.41	81.5		9.38
C	1	L S	3.53	1661.6	27.69	63.5		9.45
	2	R	2.47	1580.8	26.35	26.5		3.75
D	1	L	1.70	1473.1	24.55	103.5		13.66
	2	S R	5.17	1403.3	23.39	81.5		10.25

08.15-08.30								
A	1	L S	5.85	1738.7	28.98	43.5		6.78
	2	R	2.22	1580.8	26.35	18.5		2.62
B	1	L S R	8.27	1184.3	19.74	81.5		8.65
C	1	L S	5.47	1643.6	27.39	63.5		9.35
	2	R	4.20	1580.8	26.35	26.5		3.75
D	1	L	2.13	1473.1	24.55	103.5		13.66
	2	S R	6.87	1311.3	21.85	81.5		9.58
08.30-08.45								
A	1	L S	6.50	1753.0	29.22	43.5		6.83
	2	R	2.83	1580.8	26.35	18.5		2.62
B	1	L S R	8.13	1120.7	18.68	81.5		8.18
C	1	L S	5.83	1671.6	27.86	63.5		9.51
	2	R	3.24	1580.8	26.35	26.5		3.75
D	1	L	3.52	1473.1	24.55	103.5		13.66
	2	S R	7.62	1319.2	21.99	81.5		9.63
08.45-09.00								
A	1	L S	5.65	1813.8	30.23	43.5		7.07
	2	R	2.35	1580.8	26.35	18.5		2.62
B	1	L S R	7.93	1315.7	21.93	81.5		9.61
C	1	L S	4.72	1673.8	27.90	63.5		9.52
	2	R	2.02	1580.8	26.35	26.5		3.75
D	1	L	2.31	1473.1	24.55	103.5		13.66
	2	S R	5.15	1296.8	21.61	81.5		9.47

QUEUE AND DELAY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 08.00 AND 09.00

TIME ARM	LANES	MOVEMENT	DEMAND EXCL 2-WHEEL (VEHS/MIN)	CAPACITY (VEHS/MIN)	DEGREE OF SAT (RFC)	QUEUE AT END OF SEGMENT MEAN (PHASE AVERAGED) (VEHS/LANE)	QUEUE AT END OF SEGMENT MAXIMUM (END OF RED) (VEHS/LANE)	QUEUEING DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15									
A	1	L S	5.03	6.89	0.730	6.6	13.0	98.4	
	2	R	1.70	2.62	0.651	2.9	5.4	43.5	
B	1	L S R	6.87	9.38	0.732	6.1	13.1	90.5	
C	1	L S	3.53	9.45	0.373	2.9	7.3	42.8	
	2	R	2.47	3.75	0.658	3.8	7.3	56.5	
D	1	L	1.70	13.66	0.124	0.6	2.3	8.5	
	2	S R	5.17	10.25	0.505	3.6	9.3	53.2	
08.15-08.30									
A	1	L S	5.85	6.78	0.863	9.3	16.5	137.9	
	2	R	2.22	2.62	0.847	5.0	8.1	72.4	
B	1	L S R	8.27	8.65	0.956	12.7	20.2	176.6	
C	1	L S	5.47	9.35	0.585	5.1	11.6	76.1	
	2	R	4.20	3.75	1.119	15.0	19.9	169.4	
D	1	L	2.13	13.66	0.156	0.7	2.9	10.9	
	2	S R	6.87	9.58	0.717	5.9	13.0	88.9	
08.30-08.45									
A	1	L S	6.50	6.83	0.952	13.0	20.9	190.4	
	2	R	2.83	2.62	1.080	10.7	14.4	134.9	
B	1	L S R	8.13	8.18	0.994	16.7	23.8	240.7	
C	1	L S	5.83	9.51	0.613	5.5	12.5	83.0	
	2	R	3.24	3.75	0.863	9.9	14.8	192.6	
D	1	L	3.52	13.66	0.257	1.3	4.9	19.6	
	2	S R	7.62	9.63	0.791	7.4	14.9	110.8	
08.45-09.00									
A	1	L S	5.65	7.07	0.800	8.5	15.6	137.5	
	2	R	2.35	2.62	0.896	9.8	13.3	150.7	
B	1	L S R	7.93	9.61	0.826	8.8	16.5	160.1	
C	1	L S	4.72	9.52	0.495	4.1	9.9	61.7	
	2	R	2.02	3.75	0.538	2.9	5.8	50.7	
D	1	L	2.31	13.66	0.169	0.8	3.2	12.0	
	2	S R	5.15	9.47	0.544	3.7	9.4	56.1	

QUEUES FOR ARM A

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	2.9	5.4	***++
	1	6.6	13.0	*******++++++
08.30	2	5.0	8.1	*****+++
	1	9.3	16.5	*********++++++++
08.45	2	10.7	14.4	***********+++
	1	13.0	20.9	*************++++++++
09.00	2	9.8	13.3	**********+++
	1	8.5	15.6	********++++++++

QUEUES FOR ARM B

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	1	6.1	13.1	******+++++++
08.30	1	12.7	20.2	*************+++++++
08.45	1	16.7	23.8	******************+++++++
09.00	1	8.8	16.5	*********+++++++

QUEUES FOR ARM C

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	3.8	7.3	****+++
	1	2.9	7.3	***++++
08.30	2	15.0	19.9	****************+++++
	1	5.1	11.6	*****+++++++
08.45	2	9.9	14.8	**********+++++
	1	5.5	12.5	******++++++
09.00	2	2.9	5.8	***+++
	1	4.1	9.9	****++++++

QUEUES FOR ARM D

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
08.15	2	3.6	9.3	****+++++
	1	0.6	2.3	*+
08.30	2	5.9	13.0	******+++++++
	1	0.7	2.9	*++
08.45	2	7.4	14.9	*******++++++++
	1	1.3	4.9	*++++
09.00	2	3.7	9.4	****++++++
	1	0.8	3.2	*++

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD (08.00-09.00)

STREAM	TOTAL DEMAND (EXCL 2-WHEEL) (VEH)	TOTAL DEMAND (EXCL 2-WHEEL) (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A-B	161.6	161.6	264.6	1.64	266.5	1.65
A-C	183.9	183.9	299.5	1.63	302.8	1.65
A-D	136.5	136.5	401.5	2.94	419.7	3.07
B-C	190.0	190.0	265.7	1.40	267.3	1.41
B-D	140.7	140.7	202.7	1.44	203.8	1.45
B-A	137.3	137.3	199.4	1.45	200.7	1.46
C-D	148.5	148.5	133.5	0.90	134.0	0.90
C-A	144.7	144.7	130.0	0.90	130.5	0.90
C-B	178.9	178.9	469.2	2.62	470.4	2.63
D-A	144.8	144.8	51.0	0.35	51.0	0.35
D-B	176.3	176.3	147.9	0.84	148.1	0.84
D-C	195.9	195.9	161.2	0.82	161.6	0.83
ALL	1939.0	1939.0	2726.3	1.41	2756.4	1.42

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

* TOTAL GEOMETRIC DELAY INCLUDES DELAY SUFFERED BY VEHICLES STILL QUEUEING AT THE END OF THE WHOLE TIME PERIOD.
* THE SUM OF DELAYS FOR EACH SEGMENT AND THE TOTAL GEOMETRIC DELAY WILL BE SIGNIFICANTLY DIFFERENT ONLY IF THERE IS
* A LARGE QUEUE AT THE END OF THE TIME PERIOD.

****** OSCADY 5 run completed
========== end of file ==========

Printed at 16:40:17 on 21/02/2019]

_____ O S C A D Y 5 _____

Analysis Program: Release 3.0 (Jan 2008)

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Run with file:- "C:\Program Files\OSCADY 5\Sutton Cross exist PM.voi" at 16:42:18 on Thursday, 21 February 2019

FILE PROPERTIES
****

RUN TITLE: sutton cross
LOCATION:
DATE: 18/02/2019
CLIENT:
ENUMERATOR: martin.rogers [BST245-L-ROGERS]
JOB NUMBER:
STATUS:
DESCRIPTION:

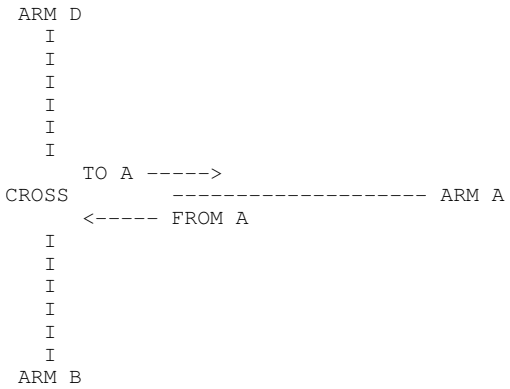
**** ERROR AND WARNING MESSAGES ****
==========

*** WARNING *** Arm A:Warning on CT14: Opposed right-turners - CT08/CT14 contradiction
[Opposing traffic / Lanes on green]

*** WARNING *** Warnings in data - check output carefully

TRAFFIC SIGNAL JUNCTION ANALYSIS
****

INPUT DATA



ARM A IS Howth Road
ARM B IS Carrickrock Road
ARM C IS Dublin Road
ARM D IS Station Road

GEOMETRIC DATA

DATA ITEM		ARM A	ARM B	ARM C	ARM D
GRADIENT		0.0 %	0.0 %	0.0 %	0.0 %
NUMBER OF LANES		2	1	2	2
PERMITTED MOVEMENTS	LANE 1	LS	LSR	LS	L
	LANE 2	R		R	SR
TOTAL EXIT WIDTH FOR STRAIGHT-AHEAD VEHICLES FROM THIS ARM		N/A	N/A	N/A	N/A
LANE WIDTHS	LANE 1	4.00 M	3.00 M	3.00 M	3.00 M
	LANE 2	3.00 M	0.00 M	3.00 M	3.00 M
LEFT TURN RADII	LANE 1	5.0 M	5.0 M	5.0 M	5.0 M
RIGHT TURN RADII	LANE 1	N/A	5.0 M	N/A	N/A
	LANE 2	5.0 M	N/A	5.0 M	5.0 M
OPPOSING TRAFFIC MOVEMENTS		STRAIGHT	STRAIGHT	STRAIGHT	STRAIGHT
STORAGE BEYOND STOPLINE	LANE 1	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS
	LANE 2	0.0 VEHS	0.0 VEHS	0.0 VEHS	0.0 VEHS

TRAFFIC DEMAND DATA

DEMAND DATA ARE INPUT USING THE ** DIRECT ** OPTION

TURNING PROPORTIONS ARE ESTIMATED BY FLOW BALANCING USING THE TPBAL OPTION

DEMAND DATA SUPPLIED BETWEEN TIMES - 17.00 TO 18.00
PERIOD OF INTEREST (FOR QUEUE AND DELAY CALCULATIONS) - 17.00 TO 18.00

THE FOLLOWING DATA HAS BEEN INPUT
+ / ESTIMATED

TRAFFIC SCALING FACTOR HAS BEEN SET TO 100 %

TIME PERIOD	ARM	VEHICLE TYPE PROPORTIONS					
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.00-17.15	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.15-17.30	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.30-17.45	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000
		CARS AND LIGHT GOODS	MEDIUM GOODS	HEAVY GOODS	BUSES AND COACHES	MOTOR CYCLES	PEDAL CYCLES
17.45-18.00	A	1.000	0.000	0.000	0.000	0.000	0.000
	B	1.000	0.000	0.000	0.000	0.000	0.000
	C	1.000	0.000	0.000	0.000	0.000	0.000
	D	1.000	0.000	0.000	0.000	0.000	0.000

TIME PERIOD	FROM/TO	TURNING PROPORTIONS ARM A	ARM B	ARM C	ARM D
17.00-17.15	ARM A GROUP 1	0.000	0.371	0.381	0.248
	ARM B GROUP 1	0.367	0.000	0.383	0.250
	ARM C GROUP 1	0.370	0.377	0.000	0.253
	ARM D GROUP 1	0.326	0.332	0.341	0.000
17.15-17.30	ARM A GROUP 1	0.000	0.290	0.412	0.298
	ARM B GROUP 1	0.390	0.000	0.354	0.256
	ARM C GROUP 1	0.436	0.278	0.000	0.286
	ARM D GROUP 1	0.393	0.251	0.356	0.000
17.30-17.45	ARM A GROUP 1	0.000	0.260	0.456	0.283
	ARM B GROUP 1	0.336	0.000	0.410	0.254
	ARM C GROUP 1	0.408	0.283	0.000	0.309
	ARM D GROUP 1	0.343	0.238	0.419	0.000
17.45-18.00	ARM A GROUP 1	0.000	0.362	0.418	0.220
	ARM B GROUP 1	0.435	0.000	0.370	0.195
	ARM C GROUP 1	0.457	0.338	0.000	0.205
	ARM D GROUP 1	0.386	0.285	0.329	0.000

SIGNAL TIMING DETAILS FOR SIGNAL SET 1

TIMING OPTION- FIXED MODE: TIMINGS ARE PROVIDED BY USER

FIXED CYCLE TIME- 177.0 SECONDS
PERIODS FOR WHICH THESE SETTINGS APPLY- 17.00-18.00

GLOBAL EFFECTIVE GREEN DISPLACEMENTS - START = 1.4
END = 2.9

DATA ITEM		STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
LANES ON GREEN:	ARM A	1	1 2			
	B			1		
	C	1				1 2
	D		1	1 2		
GREEN TIME (SECS)		40.0	15.0	55.0	7.0	20.0
PRECEDING INTERSTAGE		5.0	5.0	5.0	5.0	5.0

DATA ITEM		STAGE 6
LANES ON GREEN:	ARM A	
	B	
	C	1
	D	
GREEN TIME (SECS)		10.0
PRECEDING INTERSTAGE		5.0

DEMAND AND CAPACITY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 17.00 AND 18.00

TIME / ARM	LANES	MOVEMENT	DEMAND (VEHS/MIN)	SAT FLOW (PCU/HR)	SAT FLOW (VEHS/MIN)	EFFECTIVE GREEN-TIME TRUE (SECS)	FLARE+NOTIONL (SECS)	CAPACITY (VEHS /MIN)
17.00-17.15								
A	1	L S	5.01	1755.2	29.25	61.5		10.16
	2	R	1.66	1580.8	26.35	16.5		2.46
B	1	L S R	6.47	1216.1	20.27	56.5		6.47
C	1	L S	5.61	1707.3	28.45	81.5		13.10
	2	R	3.39	1580.8	26.35	21.5		3.20
D	1	L	1.96	1473.1	24.55	76.5		10.61
	2	S R	4.04	1381.3	23.02	56.5		7.35

17.15-17.30								
A	1	L S	4.54	1792.7	29.88	61.5	10.38	
	2	R	1.93	1580.8	26.35	16.5	2.46	
B	1	L S R	4.73	1312.5	21.87	56.5	6.98	
C	1	L S	5.63	1711.5	28.52	81.5	13.13	
	2	R	2.17	1580.8	26.35	21.5	3.20	
D	1	L	1.96	1473.1	24.55	76.5	10.61	
	2	S R	3.04	1428.1	23.80	56.5	7.60	
17.30-17.45								
A	1	L S	7.02	1817.1	30.29	61.5	10.52	
	2	R	2.78	1580.8	26.35	16.5	2.46	
B	1	L S R	4.07	1286.3	21.44	56.5	6.84	
C	1	L S	6.40	1695.7	28.26	81.5	13.01	
	2	R	2.53	1580.8	26.35	21.5	3.20	
D	1	L	2.24	1473.1	24.55	76.5	10.61	
	2	S R	4.29	1441.4	24.02	56.5	7.67	
17.45-18.00								
A	1	L S	4.58	1768.6	29.48	61.5	10.24	
	2	R	1.29	1580.8	26.35	16.5	2.46	
B	1	L S R	5.67	1147.6	19.13	56.5	6.11	
C	1	L S	6.44	1752.2	29.20	81.5	13.45	
	2	R	3.29	1580.8	26.35	21.5	3.20	
D	1	L	2.93	1473.1	24.55	76.5	10.61	
	2	S R	4.67	1477.1	24.62	56.5	7.86	

QUEUE AND DELAY INFORMATION FOR EACH 15 MINUTE TIME SEGMENT BETWEEN 17.00 AND 18.00

TIME ARM	LANES	MOVEMENT	DEMAND EXCL 2-WHEEL (VEHS/MIN)	CAPACITY (VEHS/MIN)	DEGREE OF SAT (RFC)	QUEUE AT END OF SEGMENT MEAN (PHASE AVERAGED) (VEHS/LANE)	QUEUE AT END OF SEGMENT MAXIMUM (END OF RED) (VEHS/LANE)	QUEUEING DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.00-17.15									
A	1	L S	5.01	10.16	0.493	4.1	9.9	61.2	
	2	R	1.66	2.46	0.674	2.9	5.2	42.3	
B	1	L S R	6.47	6.47	0.999	13.5	20.0	170.0	
C	1	L S	5.61	13.10	0.428	3.2	9.1	47.8	
	2	R	3.39	3.20	1.060	10.8	14.9	124.7	
D	1	L	1.96	10.61	0.185	1.0	3.3	15.6	
	2	S R	4.04	7.35	0.550	3.7	8.5	56.1	
17.15-17.30									
A	1	L S	4.54	10.38	0.437	3.6	8.9	53.5	
	2	R	1.93	2.46	0.785	3.9	6.5	58.3	
B	1	L S R	4.73	6.98	0.678	5.0	10.4	86.9	
C	1	L S	5.63	13.13	0.429	3.2	9.2	48.1	
	2	R	2.17	3.20	0.679	4.2	7.6	88.9	
D	1	L	1.96	10.61	0.185	1.0	3.3	15.6	
	2	S R	3.04	7.60	0.400	2.5	6.3	38.1	
17.30-17.45									
A	1	L S	7.02	10.52	0.667	6.5	14.3	97.7	
	2	R	2.78	2.46	1.131	11.2	14.5	131.2	
B	1	L S R	4.07	6.84	0.594	4.0	8.7	59.6	
C	1	L S	6.40	13.01	0.492	3.8	10.5	57.6	
	2	R	2.53	3.20	0.791	4.7	8.1	70.8	
D	1	L	2.24	10.61	0.211	1.2	3.8	18.1	
	2	S R	4.29	7.67	0.560	4.0	9.0	59.8	
17.45-18.00									
A	1	L S	4.58	10.24	0.447	3.6	9.0	54.4	
	2	R	1.29	2.46	0.525	2.7	5.2	71.2	
B	1	L S R	5.67	6.11	0.928	9.6	15.4	133.1	
C	1	L S	6.44	13.45	0.479	3.8	10.5	57.2	
	2	R	3.29	3.20	1.028	10.1	14.3	132.0	
D	1	L	2.93	10.61	0.276	1.6	5.0	24.7	
	2	S R	4.67	7.86	0.594	4.4	9.9	66.8	

QUEUES FOR ARM A

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	2.9	5.2	***++
	1	4.1	9.9	****++++++
17.30	2	3.9	6.5	****+++
	1	3.6	8.9	****+++++
17.45	2	11.2	14.5	***********++++
	1	6.5	14.3	*******++++++
18.00	2	2.7	5.2	***++
	1	3.6	9.0	****+++++

QUEUES FOR ARM B

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	1	13.5	20.0	**********++++++
17.30	1	5.0	10.4	*****+++++
17.45	1	4.0	8.7	****+++++
18.00	1	9.6	15.4	**********+++++

QUEUES FOR ARM C

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	10.8	14.9	***********++++
	1	3.2	9.1	***++++++
17.30	2	4.2	7.6	****++++
	1	3.2	9.2	***++++++
17.45	2	4.7	8.1	*****+++
	1	3.8	10.5	****++++++
18.00	2	10.1	14.3	**********++++
	1	3.8	10.5	****+++++++

QUEUES FOR ARM D

TIME SEGMENT ENDING	LANE	NUMBER OF VEHICLES IN QUEUE MEAN (PHASE AVERAGED) *	MAXIMUM (AT END OF RED) +	
17.15	2	3.7	8.5	****+++++
	1	1.0	3.3	*++
17.30	2	2.5	6.3	***+++
	1	1.0	3.3	*++
17.45	2	4.0	9.0	****+++++
	1	1.2	3.8	*+++
18.00	2	4.4	9.9	****++++++
	1	1.6	5.0	**+++

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD (17.00-18.00)

STREAM	TOTAL DEMAND (EXCL 2-WHEEL) (VEH)	TOTAL DEMAND (EXCL 2-WHEEL) (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A-B	135.3	135.3	113.0	0.84	113.3	0.84
A-C	181.9	181.9	153.8	0.85	154.1	0.85
A-D	114.8	114.8	302.8	2.64	304.4	2.65
B-C	118.8	118.8	169.7	1.43	172.5	1.45
B-D	74.5	74.5	105.9	1.42	107.4	1.44
B-A	120.7	120.7	174.1	1.44	177.3	1.47
C-D	138.9	138.9	81.0	0.58	81.1	0.58
C-A	222.3	222.3	129.7	0.58	130.1	0.59
C-B	170.8	170.8	416.4	2.44	432.5	2.53
D-A	136.4	136.4	74.0	0.54	74.1	0.54
D-B	104.6	104.6	96.2	0.92	96.8	0.92
D-C	136.0	136.0	124.7	0.92	125.4	0.92
ALL	1655.0	1655.0	1941.2	1.17	1968.9	1.19

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

* TOTAL GEOMETRIC DELAY INCLUDES DELAY SUFFERED BY VEHICLES STILL QUEUEING AT THE END OF THE WHOLE TIME PERIOD.
* THE SUM OF DELAYS FOR EACH SEGMENT AND THE TOTAL GEOMETRIC DELAY WILL BE SIGNIFICANTLY DIFFERENT ONLY IF THERE IS
* A LARGE QUEUE AT THE END OF THE TIME PERIOD.

****** OSCADY 5 run completed
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TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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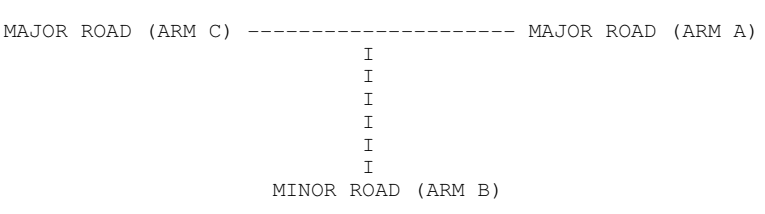
Run with file:- "C:\Program Files\PICADY 5\church road PM 2022 wdev.vpi" (drive-on-the-left) at 20:22:26 on Sunday, 24 Febr

RUN INFORMATION

RUN TITLE : church road howth road
LOCATION :
DATE : 24/02/19
CLIENT :
ENUMERATOR : martin.rogers [BST245-L-ROGERS]
JOB NUMBER :
STATUS :
DESCRIPTION :

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Howth road east
ARM B IS church road
ARM C IS Howth road west

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) 7.30 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: church road howth road

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
17.00 - 17.15				
	ENTRY	7.1	1.1	7.9
	EXIT	7.1	0.9	8.0
17.15 - 17.30				
	ENTRY	5.9	1.0	9.5
	EXIT	8.3	1.3	6.7
17.30 - 17.45				
	ENTRY	6.9	0.7	11.9
	EXIT	10.5	1.5	7.5
17.45 - 18.00				
	ENTRY	5.1	1.1	10.3
	EXIT	8.7	1.7	6.0

Demand set: church road howth road

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 17.15	ARM A	0.000	0.039	0.961
		(0.0)	(0.1)	(0.1)
	ARM B	0.165	0.000	0.835
		(0.1)	(0.0)	(0.1)
	ARM C	0.885	0.115	0.000
		(0.1)	(0.1)	(0.0)
17.15 - 17.30	ARM A	0.000	0.039	0.961
		(0.0)	(0.1)	(0.1)
	ARM B	0.165	0.000	0.835
		(0.1)	(0.0)	(0.1)
	ARM C	0.885	0.115	0.000
		(0.1)	(0.1)	(0.0)
17.30 - 17.45	ARM A	0.000	0.039	0.961
		(0.0)	(0.1)	(0.1)
	ARM B	0.165	0.000	0.835
		(0.1)	(0.0)	(0.1)
	ARM C	0.885	0.115	0.000
		(0.1)	(0.1)	(0.0)
17.45 - 18.00	ARM A	0.000	0.039	0.961
		(0.0)	(0.1)	(0.1)
	ARM B	0.165	0.000	0.835
		(0.1)	(0.0)	(0.1)
	ARM C	0.885	0.115	0.000
		(0.1)	(0.1)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
17.00-17.15									
B-AC	1.07	8.43	0.126		0.00	0.14	2.1		0.14
C-A	6.97								
C-B	0.90	8.48	0.106		0.00	0.12	1.7		0.13
A-B	0.28								
A-C	6.79								
17.15-17.30									
B-AC	1.00	8.63	0.116		0.14	0.13	2.0		0.13
C-A	8.38								
C-B	1.08	8.75	0.124		0.12	0.14	2.1		0.13
A-B	0.23								
A-C	5.64								
17.30-17.45									
B-AC	0.67	8.22	0.081		0.13	0.09	1.4		0.13
C-A	10.51								
C-B	1.36	8.51	0.160		0.14	0.19	2.8		0.14
A-B	0.27								
A-C	6.66								
17.45-18.00									
B-AC	1.13	8.77	0.129		0.09	0.15	2.1		0.13
C-A	9.09								
C-B	1.18	8.92	0.132		0.19	0.15	2.4		0.13
A-B	0.20								
A-C	4.87								

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-B

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	58.0	58.0	7.6	0.13	7.6	0.13
C-A	524.2	524.2				
C-B	67.8	67.8	8.9	0.13	8.9	0.13
A-B	14.6	14.6				
A-C	359.4	359.4				
ALL	1024.0	1024.0	16.5	0.02	16.5	0.02

* 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 RUN*******

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TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

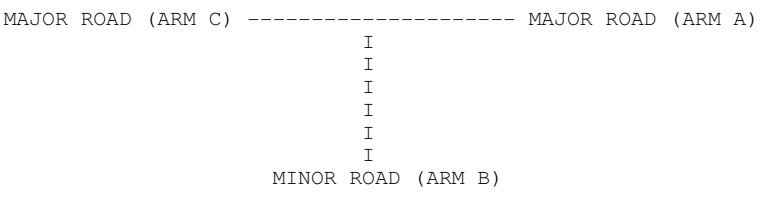
Run with file:- "C:\Program Files\PICADY 5\church road PM 2022 wod.vpi" (drive-on-the-left) at 20:19:54 on Sunday, 24 Febru

RUN INFORMATION
****

RUN TITLE : church road howth road
LOCATION :
DATE : 24/02/19
CLIENT :
ENUMERATOR : martin.rogers [BST245-L-ROGERS]
JOB NUMBER :
STATUS :
DESCRIPTION :

MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Howth road east
ARM B IS church road
ARM C IS Howth road west

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) 7.30 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: church road howth road

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
17.00 - 17.15				
	ENTRY	6.1	1.1	6.1
	EXIT	5.3	0.9	7.1
17.15 - 17.30				
	ENTRY	4.9	1.0	7.7
	EXIT	6.5	1.3	5.8
17.30 - 17.45				
	ENTRY	6.0	0.7	10.1
	EXIT	8.7	1.5	6.5
17.45 - 18.00				
	ENTRY	4.1	1.1	8.5
	EXIT	6.9	1.7	5.1

Demand set: church road howth road

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 17.15	ARM A	0.000 (0.0)	0.042 (0.1)	0.958 (0.1)
	ARM B	0.147 (0.1)	0.000 (0.0)	0.853 (0.1)
	ARM C	0.857 (0.1)	0.143 (0.1)	0.000 (0.0)
17.15 - 17.30	ARM A	0.000 (0.0)	0.042 (0.1)	0.958 (0.1)
	ARM B	0.147 (0.1)	0.000 (0.0)	0.853 (0.1)
	ARM C	0.857 (0.1)	0.143 (0.1)	0.000 (0.0)
17.30 - 17.45	ARM A	0.000 (0.0)	0.042 (0.1)	0.958 (0.1)
	ARM B	0.147 (0.1)	0.000 (0.0)	0.853 (0.1)
	ARM C	0.857 (0.1)	0.143 (0.1)	0.000 (0.0)
17.45 - 18.00	ARM A	0.000 (0.0)	0.042 (0.1)	0.958 (0.1)
	ARM B	0.147 (0.1)	0.000 (0.0)	0.853 (0.1)
	ARM C	0.857 (0.1)	0.143 (0.1)	0.000 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
17.00-17.15									
B-AC	1.07	8.82	0.121		0.00	0.14	2.0		0.13
C-A	5.20								
C-B	0.87	8.69	0.100		0.00	0.11	1.6		0.13
A-B	0.26								
A-C	5.88								

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-AC	1.00	9.02	0.111		0.14	0.13	1.9		0.12
C-A	6.57								
C-B	1.10	8.95	0.123		0.11	0.14	2.0		0.13
A-B	0.21								
A-C	4.73								

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)
17.30-17.45									
B-AC	0.67	8.64	0.077		0.13	0.08	1.3		0.13
C-A	8.63								
C-B	1.44	8.72	0.165		0.14	0.20	2.9		0.14
A-B	0.25								
A-C	5.75								

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-AC	1.13	9.17	0.124		0.08	0.14	2.0		0.12
C-A	7.26								
C-B	1.21	9.13	0.133		0.20	0.15	2.4		0.13
A-B	0.17								
A-C	3.96								

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-B

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	58.0	58.0	7.2	0.12	7.2	0.12
C-A	414.8	414.8				
C-B	69.2	69.2	8.9	0.13	8.9	0.13
A-B	13.3	13.3				
A-C	304.7	304.7				
ALL	860.0	860.0	16.1	0.02	16.1	0.02

* 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 RUN*******

========== end of file ==========

Printed at 20:20:14 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

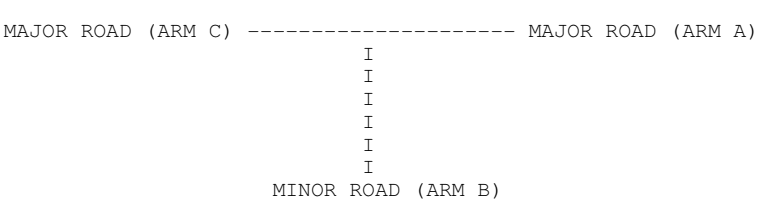
Run with file:- "C:\Program Files\PICADY 5\church road AM 2022 wdev.vpi" (drive-on-the-left) at 20:15:23 on Sunday, 24 Febr

RUN INFORMATION

RUN TITLE	: church road howth road
LOCATION	:
DATE	: 24/02/19
CLIENT	:
ENUMERATOR	: martin.rogers [BST245-L-ROGERS]
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Howth road east
ARM B IS church road
ARM C IS Howth road west

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)	7.30 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.
- VISIBILITY	(VC-B)	50.00 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)	3.00 M.
- LANE 2 WIDTH	(WB-A)	0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: church road howth road

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL	ARM A	ARM B	ARM C
08.00 - 08.15			
ENTRY	8.1	2.3	5.9
EXIT	5.0	1.7	9.6
08.15 - 08.30			
ENTRY	8.1	2.4	6.9
EXIT	5.4	2.3	9.6
08.30 - 08.45			
ENTRY	10.6	3.6	9.3
EXIT	8.5	2.4	12.7
08.45 - 09.00			
ENTRY	10.1	2.7	8.1
EXIT	6.9	2.2	11.8

Demand set: church road howth road

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 08.15	ARM A	0.000 (0.0)	0.057 (0.1)	0.943 (0.1)
	ARM B	0.227 (0.1)	0.000 (0.0)	0.773 (0.1)
	ARM C	0.780 (0.1)	0.220 (0.1)	0.000 (0.0)
08.15 - 08.30	ARM A	0.000 (0.0)	0.057 (0.1)	0.943 (0.1)
	ARM B	0.227 (0.1)	0.000 (0.0)	0.773 (0.1)
	ARM C	0.780 (0.1)	0.220 (0.1)	0.000 (0.0)
08.30 - 08.45	ARM A	0.000 (0.0)	0.057 (0.1)	0.943 (0.1)
	ARM B	0.227 (0.1)	0.000 (0.0)	0.773 (0.1)
	ARM C	0.780 (0.1)	0.220 (0.1)	0.000 (0.0)
08.45 - 09.00	ARM A	0.000 (0.0)	0.057 (0.1)	0.943 (0.1)
	ARM B	0.227 (0.1)	0.000 (0.0)	0.773 (0.1)
	ARM C	0.780 (0.1)	0.220 (0.1)	0.000 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
08.00-08.15									
B-AC	2.27	8.02	0.283		0.00	0.39	5.5		0.17
C-A	4.58								
C-B	1.29	8.25	0.157		0.00	0.18	2.6		0.14
A-B	0.46								
A-C	7.67								

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-AC	2.40	7.93	0.303		0.39	0.43	6.3		0.18
C-A	5.36								
C-B	1.51	8.25	0.183		0.18	0.22	3.3		0.15
A-B	0.46								
A-C	7.67								

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-AC	3.60	7.13	0.505		0.43	0.98	13.7		0.28
C-A	7.23								
C-B	2.04	7.70	0.265		0.22	0.35	5.1		0.18
A-B	0.60								
A-C	10.00								

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)
08.45-09.00									
B-AC	2.73	7.36	0.371		0.98	0.60	9.5		0.22
C-A	6.34								
C-B	1.79	7.82	0.229		0.35	0.30	4.6		0.17
A-B	0.57								
A-C	9.50								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.4	
08.30	0.4	
08.45	1.0	*
09.00	0.6	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.2
08.45	0.4
09.00	0.3

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	165.0	165.0	35.1	0.21	35.1	0.21
C-A	352.5	352.5				
C-B	99.5	99.5	15.7	0.16	15.7	0.16
A-B	31.4	31.4				
A-C	522.6	522.6				
ALL	1171.0	1171.0	50.7	0.04	50.8	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 RUN*******

========== end of file ==========

Printed at 20:15:42 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

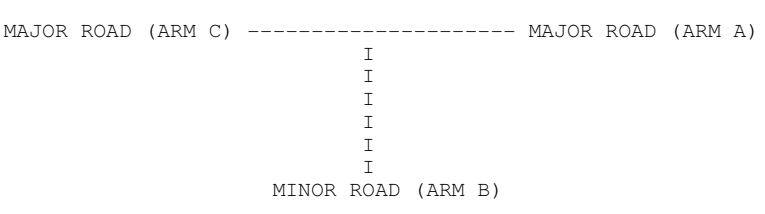
Run with file:- "C:\Program Files\PICADY 5\church road AM 2022 wod.vpi" (drive-on-the-left) at 20:12:46 on Sunday, 24 Febru

RUN INFORMATION

RUN TITLE : church road howth road
LOCATION :
DATE : 24/02/19
CLIENT :
ENUMERATOR : martin.rogers [BST245-L-ROGERS]
JOB NUMBER :
STATUS :
DESCRIPTION :

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Howth road east
ARM B IS church road
ARM C IS Howth road west

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) 7.30 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: church road howth road

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
08.00 - 08.15				
	ENTRY	6.3	2.3	5.3
	EXIT	4.4	1.7	7.7
08.15 - 08.30				
	ENTRY	6.3	2.4	6.3
	EXIT	4.8	2.3	7.7
08.30 - 08.45				
	ENTRY	8.8	3.6	8.7
	EXIT	7.9	2.4	10.8
08.45 - 09.00				
	ENTRY	8.3	2.7	7.5
	EXIT	6.3	2.2	10.0

Demand set: church road howth road

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 08.15	ARM A	0.000 (0.0)	0.070 (0.1)	0.930 (0.1)
	ARM B	0.223 (0.1)	0.000 (0.0)	0.777 (0.1)
	ARM C	0.761 (0.1)	0.239 (0.1)	0.000 (0.0)
08.15 - 08.30	ARM A	0.000 (0.0)	0.070 (0.1)	0.930 (0.1)
	ARM B	0.223 (0.1)	0.000 (0.0)	0.777 (0.1)
	ARM C	0.761 (0.1)	0.239 (0.1)	0.000 (0.0)
08.30 - 08.45	ARM A	0.000 (0.0)	0.070 (0.1)	0.930 (0.1)
	ARM B	0.223 (0.1)	0.000 (0.0)	0.777 (0.1)
	ARM C	0.761 (0.1)	0.239 (0.1)	0.000 (0.0)
08.45 - 09.00	ARM A	0.000 (0.0)	0.070 (0.1)	0.930 (0.1)
	ARM B	0.223 (0.1)	0.000 (0.0)	0.777 (0.1)
	ARM C	0.761 (0.1)	0.239 (0.1)	0.000 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
08.00-08.15									
B-AC	2.27	8.52	0.266		0.00	0.36	5.1		0.16
C-A	4.01								
C-B	1.26	8.66	0.146		0.00	0.17	2.4		0.13
A-B	0.44								
A-C	5.83								
08.15-08.30									
B-AC	2.40	8.44	0.284		0.36	0.39	5.8		0.17
C-A	4.77								
C-B	1.50	8.66	0.173		0.17	0.21	3.0		0.14
A-B	0.44								
A-C	5.83								
08.30-08.45									
B-AC	3.60	7.64	0.471		0.39	0.86	12.2		0.24
C-A	6.59								
C-B	2.07	8.10	0.256		0.21	0.34	4.9		0.17
A-B	0.62								
A-C	8.18								
08.45-09.00									
B-AC	2.73	7.87	0.347		0.86	0.54	8.5		0.20
C-A	5.73								
C-B	1.80	8.22	0.220		0.34	0.28	4.4		0.16
A-B	0.58								
A-C	7.69								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.4	
08.30	0.4	
08.45	0.9	*
09.00	0.5	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.2
08.45	0.3
09.00	0.3

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	165.0	165.0	31.6	0.19	31.6	0.19
C-A	316.4	316.4				
C-B	99.6	99.6	14.8	0.15	14.8	0.15
A-B	31.2	31.2				
A-C	412.8	412.8				
ALL	1025.0	1025.0	46.3	0.05	46.4	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 RUN*******

========== end of file ==========

Printed at 20:13:12 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

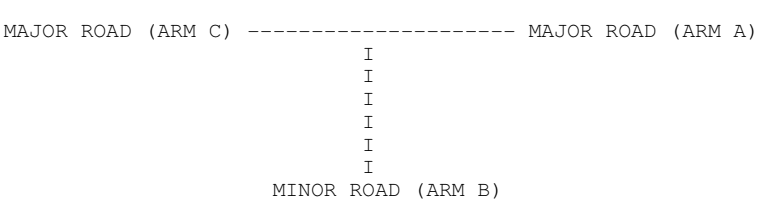
Run with file:- "C:\Program Files\PICADY 5\Harbour Road AM 2022 wdev.vpi" (drive-on-the-left) at 22:16:37 on Sunday, 24 Feb

RUN INFORMATION

RUN TITLE	: harbour road church street
LOCATION	:
DATE	: 24/02/19
CLIENT	:
ENUMERATOR	: martin.rogers [BST245-L-ROGERS]
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Harbout Road east
ARM B IS Church Street
ARM C IS Harbour Road west

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) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	0.10

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
518.51	0.23	0.09	0.14	0.33

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: harbour road church street

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
08.00 - 08.15				
	ENTRY	4.2	1.9	4.2
	EXIT	2.9	1.4	6.1
08.15 - 08.30				
	ENTRY	4.5	1.9	4.0
	EXIT	2.1	1.8	6.5
08.30 - 08.45				
	ENTRY	5.5	2.5	6.7
	EXIT	2.9	3.8	8.0
08.45 - 09.00				
	ENTRY	6.5	3.1	7.5
	EXIT	4.5	3.1	9.6

Demand set: harbour road church street

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 08.15				
	ARM A	0.000	0.035	0.965
		(0.0)	(0.1)	(0.1)
	ARM B	0.044	0.000	0.956
		(0.1)	(0.0)	(0.1)
	ARM C	0.561	0.439	0.000
		(0.1)	(0.1)	(0.0)
08.15 - 08.30				
	ARM A	0.000	0.035	0.965
		(0.0)	(0.1)	(0.1)
	ARM B	0.044	0.000	0.956
		(0.1)	(0.0)	(0.1)
	ARM C	0.561	0.439	0.000
		(0.1)	(0.1)	(0.0)
08.30 - 08.45				
	ARM A	0.000	0.035	0.965
		(0.0)	(0.1)	(0.1)
	ARM B	0.044	0.000	0.956
		(0.1)	(0.0)	(0.1)
	ARM C	0.561	0.439	0.000
		(0.1)	(0.1)	(0.0)
08.45 - 09.00				
	ARM A	0.000	0.035	0.965
		(0.0)	(0.1)	(0.1)
	ARM B	0.044	0.000	0.956
		(0.1)	(0.0)	(0.1)
	ARM C	0.561	0.439	0.000
		(0.1)	(0.1)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
08.00-08.15									
B-AC	1.93	9.71	0.199		0.00	0.25	3.6		0.13
C-A	2.35								
C-B	1.85	9.10	0.203		0.00	0.25	3.6		0.14
A-B	0.15								
A-C	4.05								

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									
B-AC	1.93	9.64	0.201		0.25	0.25	3.7		0.13
C-A	2.24								
C-B	1.76	9.03	0.195		0.25	0.24	3.7		0.14
A-B	0.16								
A-C	4.38								

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-AC	2.53	9.35	0.271		0.25	0.37	5.3		0.15
C-A	3.74								
C-B	2.93	8.82	0.332		0.24	0.49	7.0		0.17
A-B	0.19								
A-C	5.28								

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)
08.45-09.00									
B-AC	3.13	9.09	0.345		0.37	0.52	7.5		0.17
C-A	4.22								
C-B	3.31	8.59	0.385		0.49	0.61	8.9		0.19
A-B	0.22								
A-C	6.24								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.2	
08.30	0.2	
08.45	0.4	
09.00	0.5	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.3	
08.30	0.2	
08.45	0.5	
09.00	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	143.0	143.0	20.1	0.14	20.1	0.14
C-A	188.4	188.4				
C-B	147.6	147.6	23.3	0.16	23.3	0.16
A-B	10.7	10.7				
A-C	299.3	299.3				
ALL	789.0	789.0	43.4	0.05	43.4	0.06

* 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 RUN*******

========== end of file ==========

Printed at 22:16:51 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

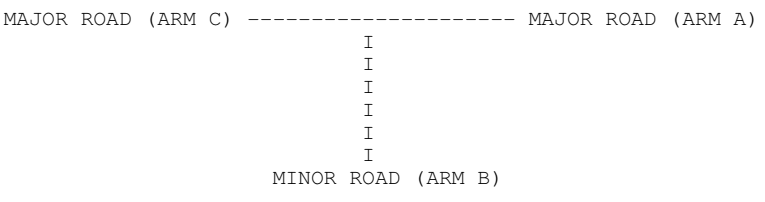
Run with file:- "C:\Program Files\PICADY 5\Harbour Road AM 2022 wod.vpi" (drive-on-the-left) at 22:13:30 on Sunday, 24 Febr

RUN INFORMATION

RUN TITLE	: harbour road church street
LOCATION	:
DATE	: 24/02/19
CLIENT	:
ENUMERATOR	: martin.rogers [BST245-L-ROGERS]
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Harbout Road east
ARM B IS Church Street
ARM C IS Harbour Road west

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) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	0.10

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
518.51	0.23	0.09	0.14	0.33

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: harbour road church street

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
08.00 - 08.15				
	ENTRY	3.2	1.9	3.5
	EXIT	2.1	1.4	5.1
08.15 - 08.30				
	ENTRY	3.6	1.9	3.2
	EXIT	1.4	1.8	5.5
08.30 - 08.45				
	ENTRY	4.5	2.5	5.9
	EXIT	2.1	3.8	7.0
08.45 - 09.00				
	ENTRY	5.5	3.1	6.8
	EXIT	3.7	3.1	8.6

Demand set: harbour road church street

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 08.15	ARM A	0.000 (0.0)	0.039 (0.1)	0.961 (0.1)
	ARM B	0.035 (0.1)	0.000 (0.0)	0.965 (0.1)
	ARM C	0.487 (0.1)	0.513 (0.1)	0.000 (0.0)
08.15 - 08.30	ARM A	0.000 (0.0)	0.039 (0.1)	0.961 (0.1)
	ARM B	0.035 (0.1)	0.000 (0.0)	0.965 (0.1)
	ARM C	0.487 (0.1)	0.513 (0.1)	0.000 (0.0)
08.30 - 08.45	ARM A	0.000 (0.0)	0.039 (0.1)	0.961 (0.1)
	ARM B	0.035 (0.1)	0.000 (0.0)	0.965 (0.1)
	ARM C	0.487 (0.1)	0.513 (0.1)	0.000 (0.0)
08.45 - 09.00	ARM A	0.000 (0.0)	0.039 (0.1)	0.961 (0.1)
	ARM B	0.035 (0.1)	0.000 (0.0)	0.965 (0.1)
	ARM C	0.487 (0.1)	0.513 (0.1)	0.000 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
08.00-08.15									
B-AC	1.93	10.00	0.193		0.00	0.24	3.4		0.12
C-A	1.69								
C-B	1.78	9.32	0.191		0.00	0.23	3.4		0.13
A-B	0.12								
A-C	3.08								

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-AC	1.93	9.91	0.195		0.24	0.24	3.6		0.13
C-A	1.56								
C-B	1.64	9.23	0.178		0.23	0.22	3.3		0.13
A-B	0.14								
A-C	3.46								

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-AC	2.53	9.66	0.262		0.24	0.35	5.1		0.14
C-A	2.89								
C-B	3.04	9.04	0.337		0.22	0.50	7.2		0.17
A-B	0.17								
A-C	4.29								

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)
08.45-09.00									
B-AC	3.13	9.40	0.333		0.35	0.49	7.1		0.16
C-A	3.31								
C-B	3.49	8.82	0.396		0.50	0.64	9.3		0.19
A-B	0.21								
A-C	5.25								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.2
08.45	0.4
09.00	0.5

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.2
08.45	0.5
09.00	0.6 *

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-AC	143.0	143.0	19.3	0.13	19.3	0.13
C-A	141.8	141.8				
C-B	149.2	149.2	23.1	0.16	23.2	0.16
A-B	9.7	9.7				
A-C	241.3	241.3				
ALL	685.0	685.0	42.4	0.06	42.5	0.06

* 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 RUN*******

========== end of file ==========

Printed at 22:13:46 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

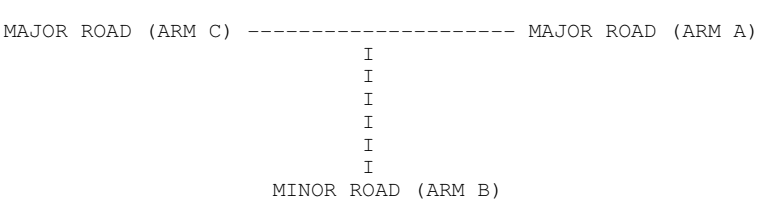
Run with file:- "C:\Program Files\PICADY 5\Harbour Road PM 2022 wdev.vpi" (drive-on-the-left) at 22:23:10 on Sunday, 24 Feb

RUN INFORMATION

RUN TITLE	: harbour road church street
LOCATION	:
DATE	: 24/02/19
CLIENT	:
ENUMERATOR	: martin.rogers [BST245-L-ROGERS]
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Harbout Road east
ARM B IS Church Street
ARM C IS Harbour Road west

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) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	0.10

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
518.51	0.23	0.09	0.14	0.33

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: harbour road church street

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
17.00 - 17.15				
	ENTRY	4.7	1.3	10.4
	EXIT	6.6	4.1	5.7
17.15 - 17.30				
	ENTRY	4.6	1.7	7.6
	EXIT	4.9	2.9	6.1
17.30 - 17.45				
	ENTRY	4.4	1.3	7.9
	EXIT	5.0	3.1	5.5
17.45 - 18.00				
	ENTRY	4.3	1.3	8.1
	EXIT	4.5	3.9	5.2

Demand set: harbour road church street

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 17.15				
	ARM A	0.000	0.079	0.921
		(0.0)	(0.1)	(0.1)
	ARM B	0.067	0.000	0.933
		(0.1)	(0.0)	(0.1)
	ARM C	0.622	0.378	0.000
		(0.1)	(0.1)	(0.0)
17.15 - 17.30				
	ARM A	0.000	0.079	0.921
		(0.0)	(0.1)	(0.1)
	ARM B	0.067	0.000	0.933
		(0.1)	(0.0)	(0.1)
	ARM C	0.622	0.378	0.000
		(0.1)	(0.1)	(0.0)
17.30 - 17.45				
	ARM A	0.000	0.079	0.921
		(0.0)	(0.1)	(0.1)
	ARM B	0.067	0.000	0.933
		(0.1)	(0.0)	(0.1)
	ARM C	0.622	0.378	0.000
		(0.1)	(0.1)	(0.0)
17.45 - 18.00				
	ARM A	0.000	0.079	0.921
		(0.0)	(0.1)	(0.1)
	ARM B	0.067	0.000	0.933
		(0.1)	(0.0)	(0.1)
	ARM C	0.622	0.378	0.000
		(0.1)	(0.1)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
17.00-17.15									
B-AC	1.27	9.32	0.136		0.00	0.16	2.3		0.12
C-A	6.47								
C-B	3.93	9.00	0.437		0.00	0.76	10.7		0.19
A-B	0.37								
A-C	4.30								
17.15-17.30									
B-AC	1.67	9.44	0.177		0.16	0.21	3.1		0.13
C-A	4.73								
C-B	2.87	9.01	0.319		0.76	0.48	7.4		0.16
A-B	0.36								
A-C	4.24								
17.30-17.45									
B-AC	1.27	9.48	0.134		0.21	0.16	2.4		0.12
C-A	4.93								
C-B	3.00	9.06	0.331		0.48	0.49	7.3		0.16
A-B	0.35								
A-C	4.05								
17.45-18.00									
B-AC	1.27	9.50	0.133		0.16	0.15	2.3		0.12
C-A	5.06								
C-B	3.07	9.09	0.338		0.49	0.51	7.5		0.17
A-B	0.34								
A-C	3.93								

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	0.8	*
17.30	0.5	
17.45	0.5	
18.00	0.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	82.0	82.0	10.1	0.12	10.1	0.12
C-A	317.8	317.8				
C-B	193.2	193.2	32.9	0.17	32.9	0.17
A-B	21.2	21.2				
A-C	247.8	247.8				
ALL	862.0	862.0	43.0	0.05	43.0	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 RUN*******

========== end of file ==========

Printed at 22:23:22 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

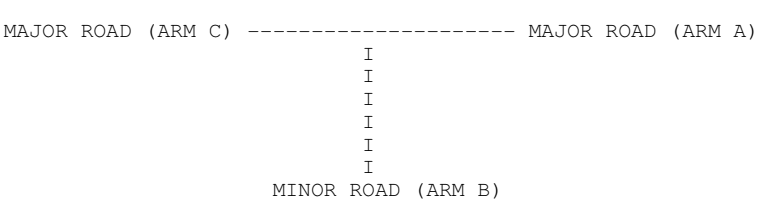
Run with file:- "C:\Program Files\PICADY 5\Harbour Road PM 2022 wod.vpi" (drive-on-the-left) at 22:20:45 on Sunday, 24 Febr

RUN INFORMATION

RUN TITLE	: harbour road church street
LOCATION	:
DATE	: 24/02/19
CLIENT	:
ENUMERATOR	: martin.rogers [BST245-L-ROGERS]
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Harbout Road east
ARM B IS Church Street
ARM C IS Harbour Road west

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) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	0.10

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
518.51	0.23	0.09	0.14	0.33

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: harbour road church street

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
17.00 - 17.15				
	ENTRY	3.9	1.3	9.3
	EXIT	5.5	4.1	4.8
17.15 - 17.30				
	ENTRY	3.7	1.7	6.5
	EXIT	3.7	2.9	5.3
17.30 - 17.45				
	ENTRY	3.5	1.3	6.8
	EXIT	3.8	3.1	4.7
17.45 - 18.00				
	ENTRY	3.4	1.3	6.9
	EXIT	3.3	3.9	4.4

Demand set: harbour road church street

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 17.15				
	ARM A	0.000	0.088	0.912
		(0.0)	(0.1)	(0.1)
	ARM B	0.054	0.000	0.946
		(0.1)	(0.0)	(0.1)
	ARM C	0.558	0.442	0.000
		(0.1)	(0.1)	(0.0)
17.15 - 17.30				
	ARM A	0.000	0.088	0.912
		(0.0)	(0.1)	(0.1)
	ARM B	0.054	0.000	0.946
		(0.1)	(0.0)	(0.1)
	ARM C	0.558	0.442	0.000
		(0.1)	(0.1)	(0.0)
17.30 - 17.45				
	ARM A	0.000	0.088	0.912
		(0.0)	(0.1)	(0.1)
	ARM B	0.054	0.000	0.946
		(0.1)	(0.0)	(0.1)
	ARM C	0.558	0.442	0.000
		(0.1)	(0.1)	(0.0)
17.45 - 18.00				
	ARM A	0.000	0.088	0.912
		(0.0)	(0.1)	(0.1)
	ARM B	0.054	0.000	0.946
		(0.1)	(0.0)	(0.1)
	ARM C	0.558	0.442	0.000
		(0.1)	(0.1)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
17.00-17.15									
B-AC	1.27	9.63	0.132		0.00	0.15	2.2		0.12
C-A	5.17								
C-B	4.09	9.17	0.446		0.00	0.79	11.1		0.19
A-B	0.34								
A-C	3.53								

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-AC	1.67	9.75	0.171		0.15	0.20	3.0		0.12
C-A	3.61								
C-B	2.86	9.20	0.310		0.79	0.46	7.1		0.16
A-B	0.33								
A-C	3.40								

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)
17.30-17.45									
B-AC	1.27	9.78	0.129		0.20	0.15	2.3		0.12
C-A	3.80								
C-B	3.00	9.25	0.325		0.46	0.47	7.0		0.16
A-B	0.31								
A-C	3.22								

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-AC	1.27	9.81	0.129		0.15	0.15	2.2		0.12
C-A	3.87								
C-B	3.06	9.28	0.330		0.47	0.49	7.2		0.16
A-B	0.30								
A-C	3.10								

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.15	0.8	*
17.30	0.5	
17.45	0.5	
18.00	0.5	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	82.0	82.0	9.7	0.12	9.7	0.12
C-A	246.8	246.8				
C-B	195.2	195.2	32.5	0.17	32.5	0.17
A-B	19.2	19.2				
A-C	198.8	198.8				
ALL	742.0	742.0	42.2	0.06	42.2	0.06

* 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 RUN*******

========== end of file ==========

Printed at 22:21:04 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

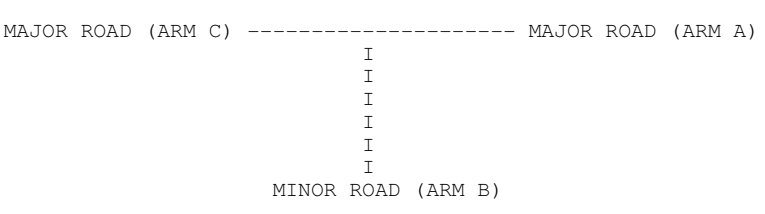
Run with file:- "C:\Program Files\PICADY 5\Offington Park AM 2022 wdev.vpi" (drive-on-the-left) at 16:33:58 on Sunday, 24 F

RUN INFORMATION

RUN TITLE	: offington park howth road
LOCATION	:
DATE	: 24/02/19
CLIENT	:
ENUMERATOR	: martin.rogers [BST245-L-ROGERS]
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Howth road east
ARM B IS Offington Park
ARM C IS Howth road west

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)	7.30 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.
- VISIBILITY	(VC-B)	50.00 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)	3.00 M.
- LANE 2 WIDTH	(WB-A)	0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: offington park howth road

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL	ARM A	ARM B	ARM C
08.00 - 08.15			
ENTRY	8.0	1.1	5.0
EXIT	5.0	1.0	8.1
08.15 - 08.30			
ENTRY	7.7	1.9	5.4
EXIT	6.1	0.7	8.1
08.30 - 08.45			
ENTRY	10.5	3.9	8.5
EXIT	9.1	3.1	10.6
08.45 - 09.00			
ENTRY	9.5	3.8	6.9
EXIT	7.7	2.4	10.1

Demand set: offington park howth road

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 08.15				
	ARM A	0.000 (0.0)	0.102 (0.1)	0.898 (0.1)
	ARM B	0.533 (0.1)	0.000 (0.0)	0.467 (0.1)
	ARM C	0.860 (0.1)	0.140 (0.1)	0.000 (0.0)
08.15 - 08.30				
	ARM A	0.000 (0.0)	0.102 (0.1)	0.898 (0.1)
	ARM B	0.533 (0.1)	0.000 (0.0)	0.467 (0.1)
	ARM C	0.860 (0.1)	0.140 (0.1)	0.000 (0.0)
08.30 - 08.45				
	ARM A	0.000 (0.0)	0.102 (0.1)	0.898 (0.1)
	ARM B	0.533 (0.1)	0.000 (0.0)	0.467 (0.1)
	ARM C	0.860 (0.1)	0.140 (0.1)	0.000 (0.0)
08.45 - 09.00				
	ARM A	0.000 (0.0)	0.102 (0.1)	0.898 (0.1)
	ARM B	0.533 (0.1)	0.000 (0.0)	0.467 (0.1)
	ARM C	0.860 (0.1)	0.140 (0.1)	0.000 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
08.00-08.15									
B-AC	1.13	7.22	0.157		0.00	0.18	2.6		0.16
C-A	4.30								
C-B	0.70	8.28	0.085		0.00	0.09	1.3		0.13
A-B	0.82								
A-C	7.18								

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-AC	1.87	7.24	0.258		0.18	0.34	4.9		0.19
C-A	4.64								
C-B	0.76	8.35	0.091		0.09	0.10	1.5		0.13
A-B	0.79								
A-C	6.88								

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-AC	3.87	6.20	0.624		0.34	1.55	20.6		0.40
C-A	7.28								
C-B	1.18	7.72	0.154		0.10	0.18	2.6		0.15
A-B	1.08								
A-C	9.45								

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)
08.45-09.00									
B-AC	3.80	6.65	0.571		1.55	1.39	21.5		0.35
C-A	5.91								
C-B	0.96	7.95	0.121		0.18	0.14	2.1		0.14
A-B	0.97								
A-C	8.50								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.2	
08.30	0.3	
08.45	1.5	**
09.00	1.4	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.1
08.30	0.1
08.45	0.2
09.00	0.1

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-AC	160.0	160.0	49.6	0.31	49.8	0.31
C-A	332.0	332.0				
C-B	54.0	54.0	7.5	0.14	7.5	0.14
A-B	54.8	54.8				
A-C	480.2	480.2				
ALL	1081.0	1081.0	57.1	0.05	57.3	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 RUN*******

========== end of file ==========

Printed at 16:34:18 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

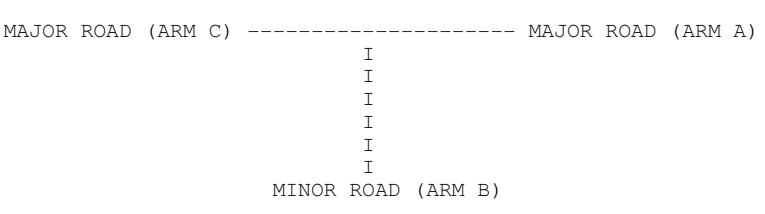
Run with file:- "C:\Program Files\PICADY 5\Offington Park AM 2022 wod.vpi" (drive-on-the-left) at 16:20:57 on Sunday, 24 Fe

RUN INFORMATION
****

RUN TITLE : offington park howth road
LOCATION :
DATE : 24/02/19
CLIENT :
ENUMERATOR : martin.rogers [BST245-L-ROGERS]
JOB NUMBER :
STATUS :
DESCRIPTION :

MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Howth road east
ARM B IS Offington Park
ARM C IS Howth road west

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) 7.30 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: offington park howth road

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
08.00 - 08.15				
	ENTRY	6.1	1.1	4.4
	EXIT	4.4	1.0	6.3
08.15 - 08.30				
	ENTRY	5.9	1.9	4.8
	EXIT	5.5	0.7	6.3
08.30 - 08.45				
	ENTRY	8.7	3.9	7.9
	EXIT	8.5	3.1	8.8
08.45 - 09.00				
	ENTRY	7.7	3.8	6.3
	EXIT	7.1	2.4	8.3

Demand set: offington park howth road

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 08.15	ARM A	0.000 (0.0)	0.129 (0.1)	0.871 (0.1)
	ARM B	0.538 (0.1)	0.000 (0.0)	0.462 (0.1)
	ARM C	0.846 (0.1)	0.154 (0.1)	0.000 (0.0)
08.15 - 08.30	ARM A	0.000 (0.0)	0.129 (0.1)	0.871 (0.1)
	ARM B	0.538 (0.1)	0.000 (0.0)	0.462 (0.1)
	ARM C	0.846 (0.1)	0.154 (0.1)	0.000 (0.0)
08.30 - 08.45	ARM A	0.000 (0.0)	0.129 (0.1)	0.871 (0.1)
	ARM B	0.538 (0.1)	0.000 (0.0)	0.462 (0.1)
	ARM C	0.846 (0.1)	0.154 (0.1)	0.000 (0.0)
08.45 - 09.00	ARM A	0.000 (0.0)	0.129 (0.1)	0.871 (0.1)
	ARM B	0.538 (0.1)	0.000 (0.0)	0.462 (0.1)
	ARM C	0.846 (0.1)	0.154 (0.1)	0.000 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
08.00-08.15									
B-AC	1.13	7.71	0.147		0.00	0.17	2.4		0.15
C-A	3.72								
C-B	0.68	8.69	0.078		0.00	0.08	1.2		0.12
A-B	0.79								
A-C	5.34								

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)
08.15-08.30									
B-AC	1.87	7.72	0.242		0.17	0.31	4.5		0.17
C-A	4.06								
C-B	0.74	8.75	0.084		0.08	0.09	1.4		0.12
A-B	0.76								
A-C	5.11								

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-AC	3.87	6.69	0.578		0.31	1.30	17.6		0.34
C-A	6.66								
C-B	1.21	8.11	0.149		0.09	0.17	2.5		0.14
A-B	1.13								
A-C	7.60								

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)
08.45-09.00									
B-AC	3.80	7.14	0.532		1.30	1.18	18.1		0.30
C-A	5.30								
C-B	0.96	8.35	0.116		0.17	0.13	2.0		0.14
A-B	0.99								
A-C	6.67								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.2	
08.30	0.3	
08.45	1.3	*
09.00	1.2	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.1
08.30	0.1
08.45	0.2
09.00	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	160.0	160.0	42.8	0.27	42.9	0.27
C-A	296.1	296.1				
C-B	53.9	53.9	7.1	0.13	7.1	0.13
A-B	55.1	55.1				
A-C	370.9	370.9				
ALL	936.0	936.0	49.9	0.05	50.0	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 RUN*******

========== end of file ==========

Printed at 16:21:39 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

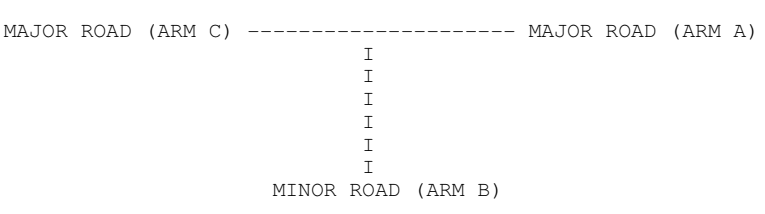
Run with file:- "C:\Program Files\PICADY 5\Offington Park PM 2022 wdev.vpi" (drive-on-the-left) at 16:48:31 on Sunday, 24 F

RUN INFORMATION

RUN TITLE : offington park howth road
LOCATION :
DATE : 24/02/19
CLIENT :
ENUMERATOR : martin.rogers [BST245-L-ROGERS]
JOB NUMBER :
STATUS :
DESCRIPTION :

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Howth road east
ARM B IS Offington Park
ARM C IS Howth road west

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)	7.30 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.
- VISIBILITY	(VC-B)	50.00 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)	3.00 M.
- LANE 2 WIDTH	(WB-A)	0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: offington park howth road

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
17.00 - 17.15				
	ENTRY	7.2	1.4	7.1
	EXIT	7.4	1.3	7.1
17.15 - 17.30				
	ENTRY	6.2	1.5	8.3
	EXIT	8.5	1.7	5.9
17.30 - 17.45				
	ENTRY	7.3	1.4	10.5
	EXIT	10.4	1.9	6.9
17.45 - 18.00				
	ENTRY	5.6	1.1	8.7
	EXIT	9.1	1.3	5.1

Demand set: offington park howth road

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 17.15	ARM A	0.000	0.130	0.870
		(0.0)	(0.1)	(0.1)
	ARM B	0.579	0.000	0.421
		(0.1)	(0.0)	(0.1)
	ARM C	0.923	0.077	0.000
		(0.1)	(0.1)	(0.0)
17.15 - 17.30	ARM A	0.000	0.130	0.870
		(0.0)	(0.1)	(0.1)
	ARM B	0.579	0.000	0.421
		(0.1)	(0.0)	(0.1)
	ARM C	0.923	0.077	0.000
		(0.1)	(0.1)	(0.0)
17.30 - 17.45	ARM A	0.000	0.130	0.870
		(0.0)	(0.1)	(0.1)
	ARM B	0.579	0.000	0.421
		(0.1)	(0.0)	(0.1)
	ARM C	0.923	0.077	0.000
		(0.1)	(0.1)	(0.0)
17.45 - 18.00	ARM A	0.000	0.130	0.870
		(0.0)	(0.1)	(0.1)
	ARM B	0.579	0.000	0.421
		(0.1)	(0.0)	(0.1)
	ARM C	0.923	0.077	0.000
		(0.1)	(0.1)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
17.00-17.15									
B-AC	1.40	7.08	0.198		0.00	0.24	3.5		0.18
C-A	6.58								
C-B	0.55	8.45	0.065		0.00	0.07	1.0		0.13
A-B	0.93								
A-C	6.27								

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-AC	1.47	7.16	0.205		0.24	0.25	3.8		0.18
C-A	7.63								
C-B	0.64	8.67	0.074		0.07	0.08	1.2		0.12
A-B	0.80								
A-C	5.40								

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)
17.30-17.45									
B-AC	1.40	6.63	0.211		0.25	0.26	3.9		0.19
C-A	9.66								
C-B	0.81	8.42	0.096		0.08	0.10	1.5		0.13
A-B	0.95								
A-C	6.38								

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-AC	1.13	7.23	0.157		0.26	0.19	2.9		0.16
C-A	8.06								
C-B	0.67	8.80	0.076		0.10	0.08	1.3		0.12
A-B	0.73								
A-C	4.87								

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-B

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	81.0	81.0	14.1	0.17	14.1	0.17
C-A	479.0	479.0				
C-B	40.0	40.0	5.0	0.12	5.0	0.12
A-B	51.2	51.2				
A-C	343.8	343.8				
ALL	995.0	995.0	19.1	0.02	19.1	0.02

* 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 RUN*******

========== end of file ==========

Printed at 16:48:45 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

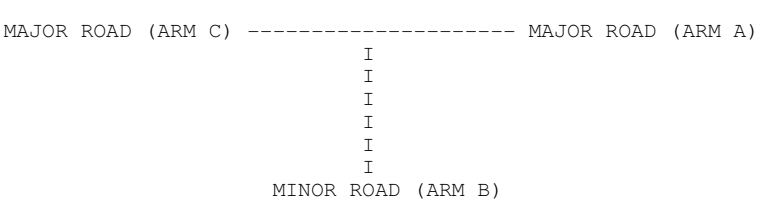
Run with file:- "C:\Program Files\PICADY 5\Offington Park PM 2022 wod.vpi" (drive-on-the-left) at 16:45:32 on Sunday, 24 Fe

RUN INFORMATION

RUN TITLE	: offington park howth road
LOCATION	:
DATE	: 24/02/19
CLIENT	:
ENUMERATOR	: martin.rogers [BST245-L-ROGERS]
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Howth road east
ARM B IS Offington Park
ARM C IS Howth road west

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) 7.30 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: offington park howth road

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
17.00 - 17.15				
	ENTRY	6.3	1.4	5.3
	EXIT	5.6	1.3	6.1
17.15 - 17.30				
	ENTRY	5.3	1.5	6.5
	EXIT	6.7	1.7	4.9
17.30 - 17.45				
	ENTRY	6.4	1.4	8.7
	EXIT	8.6	1.9	5.3
17.45 - 18.00				
	ENTRY	4.7	1.1	6.9
	EXIT	7.3	1.3	4.1

Demand set: offington park howth road

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 17.15	ARM A	0.000 (0.0)	0.162 (0.1)	0.838 (0.1)
	ARM B	0.622 (0.1)	0.000 (0.0)	0.378 (0.1)
	ARM C	0.909 (0.1)	0.091 (0.1)	0.000 (0.0)
17.15 - 17.30	ARM A	0.000 (0.0)	0.162 (0.1)	0.838 (0.1)
	ARM B	0.622 (0.1)	0.000 (0.0)	0.378 (0.1)
	ARM C	0.909 (0.1)	0.091 (0.1)	0.000 (0.0)
17.30 - 17.45	ARM A	0.000 (0.0)	0.162 (0.1)	0.838 (0.1)
	ARM B	0.622 (0.1)	0.000 (0.0)	0.378 (0.1)
	ARM C	0.909 (0.1)	0.091 (0.1)	0.000 (0.0)
17.45 - 18.00	ARM A	0.000 (0.0)	0.162 (0.1)	0.838 (0.1)
	ARM B	0.622 (0.1)	0.000 (0.0)	0.378 (0.1)
	ARM C	0.909 (0.1)	0.091 (0.1)	0.000 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
17.00-17.15									
B-AC	1.40	7.41	0.189		0.00	0.23	3.3		0.17
C-A	4.85								
C-B	0.48	8.66	0.056		0.00	0.06	0.9		0.12
A-B	1.02								
A-C	5.25								
17.15-17.30									
B-AC	1.47	7.48	0.196		0.23	0.24	3.6		0.17
C-A	5.88								
C-B	0.59	8.88	0.066		0.06	0.07	1.0		0.12
A-B	0.85								
A-C	4.41								
17.30-17.45									
B-AC	1.40	6.95	0.202		0.24	0.25	3.7		0.18
C-A	7.88								
C-B	0.79	8.63	0.091		0.07	0.10	1.5		0.13
A-B	1.04								
A-C	5.36								
17.45-18.00									
B-AC	1.13	7.54	0.150		0.25	0.18	2.8		0.16
C-A	6.30								
C-B	0.63	9.01	0.070		0.10	0.08	1.2		0.12
A-B	0.76								
A-C	3.91								

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-B

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	81.0	81.0	13.3	0.16	13.3	0.16
C-A	373.7	373.7				
C-B	37.3	37.3	4.5	0.12	4.5	0.12
A-B	55.0	55.0				
A-C	284.0	284.0				
ALL	831.0	831.0	17.8	0.02	17.8	0.02

* 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 RUN*******

========== end of file ==========

Printed at 16:45:49 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

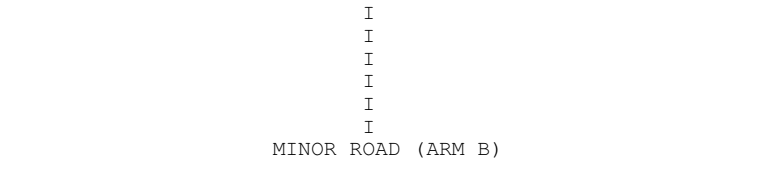
Run with file:-
"C:\Program Files\PICADY 5\techcrete entrance AM peak 2022 wdev.vpi"
(drive-on-the-left) at 14:59:48 on Sunday, 24 February 2019

RUN INFORMATION

RUN TITLE	: techcrete development entrance
LOCATION	:
DATE	: 23/02/19
CLIENT	:
ENUMERATOR	:
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Howth Road west
ARM B IS development entance
ARM C IS Howth Road east

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) 7.30 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: techcrete development entrance

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL		ARM A	ARM B	ARM C
08.00 - 08.15				
	ENTRY	4.1	1.5	6.1
	EXIT	6.7	0.7	4.2
08.15 - 08.30				
	ENTRY	3.9	1.5	6.5
	EXIT	7.1	0.7	4.0
08.30 - 08.45				
	ENTRY	6.5	1.5	8.0
	EXIT	8.6	0.7	6.7
08.45 - 09.00				
	ENTRY	7.4	1.5	9.6
	EXIT	10.2	0.7	7.5

Demand set: techcrete development entrance

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 08.15	ARM A	0.000	0.076	0.924
		(0.0)	(0.1)	(0.1)
	ARM B	0.578	0.000	0.422
		(0.1)	(0.0)	(0.1)
	ARM C	0.958	0.042	0.000
		(0.1)	(0.1)	(0.0)
08.15 - 08.30	ARM A	0.000	0.076	0.924
		(0.0)	(0.1)	(0.1)
	ARM B	0.578	0.000	0.422
		(0.1)	(0.0)	(0.1)
	ARM C	0.958	0.042	0.000
		(0.1)	(0.1)	(0.0)
08.30 - 08.45	ARM A	0.000	0.076	0.924
		(0.0)	(0.1)	(0.1)
	ARM B	0.578	0.000	0.422
		(0.1)	(0.0)	(0.1)
	ARM C	0.958	0.042	0.000
		(0.1)	(0.1)	(0.0)
08.45 - 09.00	ARM A	0.000	0.076	0.924
		(0.0)	(0.1)	(0.1)
	ARM B	0.578	0.000	0.422
		(0.1)	(0.0)	(0.1)
	ARM C	0.958	0.042	0.000
		(0.1)	(0.1)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
08.00-08.15									
B-AC	1.47	7.88	0.186		0.00	0.23	3.2		0.16
C-A	5.87								
C-B	0.26	9.13	0.028		0.00	0.03	0.4		0.11
A-B	0.31								
A-C	3.82								

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-AC	1.47	7.89	0.186		0.23	0.23	3.4		0.16
C-A	6.26								
C-B	0.28	9.19	0.030		0.03	0.03	0.5		0.11
A-B	0.29								
A-C	3.57								

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-AC	1.47	7.11	0.206		0.23	0.26	3.8		0.18
C-A	7.66								
C-B	0.34	8.60	0.039		0.03	0.04	0.6		0.12
A-B	0.50								
A-C	6.04								

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)
08.45-09.00									
B-AC	1.47	6.72	0.218		0.26	0.28	4.1		0.19
C-A	9.19								
C-B	0.41	8.41	0.048		0.04	0.05	0.7		0.12
A-B	0.56								
A-C	6.84								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.2
08.45	0.3
09.00	0.3

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.1

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-AC	88.0	88.0	14.5	0.16	14.5	0.16
C-A	434.8	434.8				
C-B	19.2	19.2	2.2	0.12	2.2	0.12
A-B	25.0	25.0				
A-C	304.0	304.0				
ALL	871.0	871.0	16.7	0.02	16.7	0.02

* 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 RUN*******

========== end of file ==========

Printed at 15:00:16 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

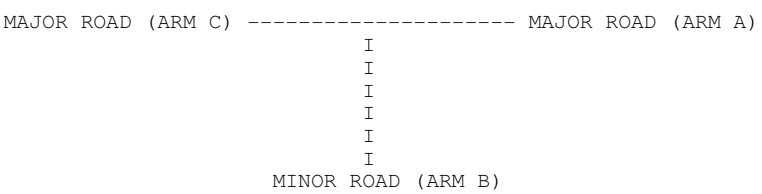
Run with file:-
"C:\Program Files\PICADY 5\techcrete entrance AM peak 2037 wdev.vpi"
(drive-on-the-left) at 15:02:57 on Sunday, 24 February 2019

RUN INFORMATION

RUN TITLE	: techcrete development entrance
LOCATION	:
DATE	: 23/02/19
CLIENT	:
ENUMERATOR	:
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Howth Road west
ARM B IS development entance
ARM C IS Howth Road east

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) 7.30 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: techcrete development entrance

TIME PERIOD BEGINS 08.00 AND ENDS 09.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL	ARM A	ARM B	ARM C
08.00 - 08.15			
ENTRY	4.7	1.5	6.9
EXIT	7.5	0.7	4.8
08.15 - 08.30			
ENTRY	4.3	1.5	7.4
EXIT	8.0	0.7	4.5
08.30 - 08.45			
ENTRY	7.5	1.5	9.1
EXIT	9.7	0.7	7.6
08.45 - 09.00			
ENTRY	8.5	1.5	10.9
EXIT	11.5	0.7	8.6

Demand set: techcrete development entrance

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.00 - 08.15	ARM A	0.000	0.066	0.934
		(0.0)	(0.1)	(0.1)
	ARM B	0.568	0.000	0.432
		(0.1)	(0.0)	(0.1)
	ARM C	0.962	0.038	0.000
		(0.1)	(0.1)	(0.0)
08.15 - 08.30	ARM A	0.000	0.066	0.934
		(0.0)	(0.1)	(0.1)
	ARM B	0.568	0.000	0.432
		(0.1)	(0.0)	(0.1)
	ARM C	0.962	0.038	0.000
		(0.1)	(0.1)	(0.0)
08.30 - 08.45	ARM A	0.000	0.066	0.934
		(0.0)	(0.1)	(0.1)
	ARM B	0.568	0.000	0.432
		(0.1)	(0.0)	(0.1)
	ARM C	0.962	0.038	0.000
		(0.1)	(0.1)	(0.0)
08.45 - 09.00	ARM A	0.000	0.066	0.934
		(0.0)	(0.1)	(0.1)
	ARM B	0.568	0.000	0.432
		(0.1)	(0.0)	(0.1)
	ARM C	0.962	0.038	0.000
		(0.1)	(0.1)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
08.00-08.15									
B-AC	1.47	7.69	0.191		0.00	0.23	3.3		0.16
C-A	6.67								
C-B	0.26	9.01	0.029		0.00	0.03	0.4		0.11
A-B	0.31								
A-C	4.36								

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-AC	1.47	7.71	0.190		0.23	0.23	3.5		0.16
C-A	7.12								
C-B	0.28	9.08	0.031		0.03	0.03	0.5		0.11
A-B	0.29								
A-C	4.05								

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									
B-AC	1.47	6.79	0.216		0.23	0.27	4.0		0.19
C-A	8.79								
C-B	0.35	8.39	0.041		0.03	0.04	0.6		0.12
A-B	0.49								
A-C	6.97								

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)
08.45-09.00									
B-AC	1.47	6.32	0.232		0.27	0.30	4.4		0.21
C-A	10.52								
C-B	0.41	8.16	0.051		0.04	0.05	0.8		0.13
A-B	0.56								
A-C	7.97								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.2
08.45	0.3
09.00	0.3

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	88.0	88.0	15.2	0.17	15.2	0.17
C-A	496.5	496.5				
C-B	19.5	19.5	2.3	0.12	2.3	0.12
A-B	24.7	24.7				
A-C	350.3	350.3				
ALL	979.0	979.0	17.5	0.02	17.5	0.02

* 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 RUN*******

========== end of file ==========

Printed at 15:03:12 on 24/02/2019]

TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

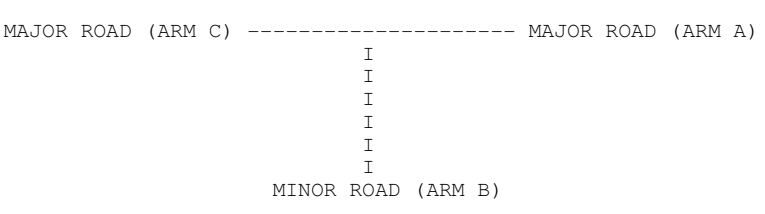
Run with file:- "C:\Program Files\PICADY 5\techcrete entrance PM peak 2022.vpi" (drive-on-the-left) at 15:08:00 on Sunday,

RUN INFORMATION

RUN TITLE	: techcrete development entrance
LOCATION	:
DATE	: 23/02/19
CLIENT	:
ENUMERATOR	:
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Howth Road west
ARM B IS development entance
ARM C IS Howth Road east

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) 7.30 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: techcrete development entrance

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL	ARM A	ARM B	ARM C
17.00 - 17.15			
ENTRY	10.9	1.2	5.7
EXIT	5.7	1.6	10.4
17.15 - 17.30			
ENTRY	8.1	1.2	6.1
EXIT	6.2	1.6	7.6
17.30 - 17.45			
ENTRY	8.4	1.2	5.5
EXIT	5.6	1.6	7.9
17.45 - 18.00			
ENTRY	8.5	1.2	5.2
EXIT	5.3	1.6	8.1

Demand set: techcrete development entrance

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 17.15	ARM A	0.000	0.100	0.900
		(0.0)	(0.1)	(0.1)
	ARM B	0.577	0.000	0.423
		(0.1)	(0.0)	(0.1)
	ARM C	0.876	0.124	0.000
		(0.1)	(0.1)	(0.0)
17.15 - 17.30	ARM A	0.000	0.100	0.900
		(0.0)	(0.1)	(0.1)
	ARM B	0.577	0.000	0.423
		(0.1)	(0.0)	(0.1)
	ARM C	0.876	0.124	0.000
		(0.1)	(0.1)	(0.0)
17.30 - 17.45	ARM A	0.000	0.100	0.900
		(0.0)	(0.1)	(0.1)
	ARM B	0.577	0.000	0.423
		(0.1)	(0.0)	(0.1)
	ARM C	0.876	0.124	0.000
		(0.1)	(0.1)	(0.0)
17.45 - 18.00	ARM A	0.000	0.100	0.900
		(0.0)	(0.1)	(0.1)
	ARM B	0.577	0.000	0.423
		(0.1)	(0.0)	(0.1)
	ARM C	0.876	0.124	0.000
		(0.1)	(0.1)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
17.00-17.15									
B-AC	1.20	6.38	0.188		0.00	0.23	3.2		0.19
C-A	4.97								
C-B	0.70	7.64	0.092		0.00	0.10	1.4		0.14
A-B	1.09								
A-C	9.78								

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-AC	1.20	6.95	0.173		0.23	0.21	3.2		0.17
C-A	5.37								
C-B	0.76	8.26	0.092		0.10	0.10	1.5		0.13
A-B	0.81								
A-C	7.26								

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)
17.30-17.45									
B-AC	1.20	6.95	0.173		0.21	0.21	3.2		0.17
C-A	4.85								
C-B	0.69	8.19	0.084		0.10	0.09	1.4		0.13
A-B	0.84								
A-C	7.56								

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-AC	1.20	6.96	0.172		0.21	0.21	3.1		0.17
C-A	4.56								
C-B	0.64	8.16	0.079		0.09	0.09	1.3		0.13
A-B	0.86								
A-C	7.68								

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-B

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	72.0	72.0	12.8	0.18	12.8	0.18
C-A	296.2	296.2				
C-B	41.8	41.8	5.7	0.14	5.7	0.14
A-B	54.0	54.0				
A-C	484.0	484.0				
ALL	948.0	948.0	18.4	0.02	18.4	0.02

* 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 RUN*******

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TRL LIMITED

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

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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FOR SALES AND DISTRIBUTION INFORMATION,
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TRL SOFTWARE BUREAU
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EMAIL: Software@trl.co.uk

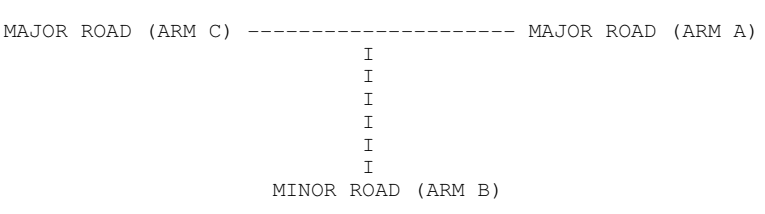
Run with file:- "C:\Program Files\PICADY 5\techcrete entrance PM peak 2037.vpi" (drive-on-the-left) at 15:10:42 on Sunday,

RUN INFORMATION

RUN TITLE	: techcrete development entrance
LOCATION	:
DATE	: 23/02/19
CLIENT	:
ENUMERATOR	:
JOB NUMBER	:
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Howth Road west
ARM B IS development entance
ARM C IS Howth Road east

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) 7.30 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 50.00 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) 3.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.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
655.41	0.24	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
518.51	0.23	0.09	0.14	0.32

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
602.92	0.22	0.22

(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: techcrete development entrance

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.
DEMAND FLOW PROFILES ARE INPUT DIRECTLY

FLOW DATA USED IN THE ESTIMATION OF TURNING PROPORTIONS (VEH/MIN):

TIME INTERVAL	ARM A	ARM B	ARM C
17.00 - 17.15			
ENTRY	12.3	1.2	6.5
EXIT	6.5	1.6	11.9
17.15 - 17.30			
ENTRY	9.1	1.2	6.9
EXIT	7.0	1.6	8.6
17.30 - 17.45			
ENTRY	9.5	1.2	6.3
EXIT	6.3	1.6	9.1
17.45 - 18.00			
ENTRY	9.7	1.2	5.9
EXIT	6.0	1.6	9.2

Demand set: techcrete development entrance

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
17.00 - 17.15	ARM A	0.000 (0.0)	0.088 (0.1)	0.912 (0.1)
	ARM B	0.569 (0.1)	0.000 (0.0)	0.431 (0.1)
	ARM C	0.890 (0.1)	0.110 (0.1)	0.000 (0.0)
17.15 - 17.30	ARM A	0.000 (0.0)	0.088 (0.1)	0.912 (0.1)
	ARM B	0.569 (0.1)	0.000 (0.0)	0.431 (0.1)
	ARM C	0.890 (0.1)	0.110 (0.1)	0.000 (0.0)
17.30 - 17.45	ARM A	0.000 (0.0)	0.088 (0.1)	0.912 (0.1)
	ARM B	0.569 (0.1)	0.000 (0.0)	0.431 (0.1)
	ARM C	0.890 (0.1)	0.110 (0.1)	0.000 (0.0)
17.45 - 18.00	ARM A	0.000 (0.0)	0.088 (0.1)	0.912 (0.1)
	ARM B	0.569 (0.1)	0.000 (0.0)	0.431 (0.1)
	ARM C	0.890 (0.1)	0.110 (0.1)	0.000 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM ENTRY AND EXIT FLOWS
THE PERCENTAGE OF HEAVY VEHICLES VARIES BETWEEN TIME SEGMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
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)
17.00-17.15									
B-AC	1.20	5.96	0.201		0.00	0.25	3.5		0.21
C-A	5.75								
C-B	0.71	7.32	0.098		0.00	0.11	1.5		0.15
A-B	1.08								
A-C	11.25								

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)
17.15-17.30									
B-AC	1.20	6.64	0.181		0.25	0.22	3.4		0.18
C-A	6.17								
C-B	0.77	8.04	0.095		0.11	0.11	1.6		0.14
A-B	0.80								
A-C	8.27								

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-AC	1.20	6.63	0.181		0.22	0.22	3.3		0.18
C-A	5.57								
C-B	0.69	7.95	0.087		0.11	0.10	1.5		0.14
A-B	0.83								
A-C	8.64								

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-AC	1.20	6.63	0.181		0.22	0.22	3.3		0.18
C-A	5.28								
C-B	0.66	7.91	0.083		0.10	0.09	1.4		0.14
A-B	0.85								
A-C	8.82								

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-B

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	72.0	72.0	13.6	0.19	13.6	0.19
C-A	341.6	341.6				
C-B	42.4	42.4	6.0	0.14	6.0	0.14
A-B	53.4	53.4				
A-C	554.6	554.6				
ALL	1064.0	1064.0	19.6	0.02	19.6	0.02

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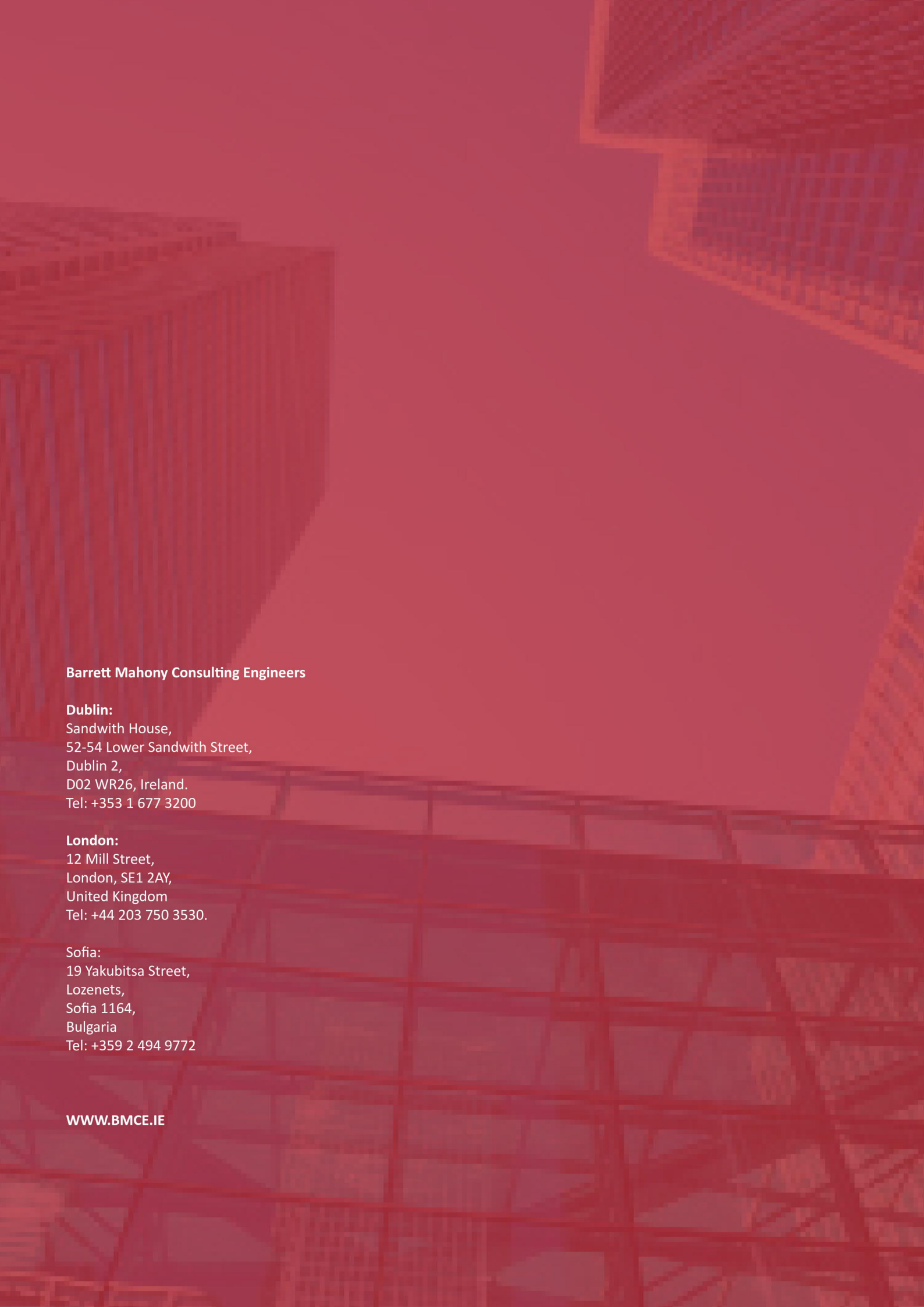
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

========== end of file ==========

Printed at 15:10:55 on 24/02/2019]



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