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Kildare County Council

Proposed Development of 74 no. Residential Units at Craddockstown Road, Cradockstown Demesne, Naas, Co. Kildare.

TRAFFIC IMPACT ASSESSMENT

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Contents Amendment Record

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Title: Proposed Development of 74 no. Residential Units at Craddockstown Road, Cradockstown Demesne, Naas, Co. Kildare.
Traffic Impact Assessment

Job Number: SHB1-CRA-CS-MOR-DOC- Traffic Impact Assessment

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1 INTRODUCTION

1.1 Introduction

Malone O'Regan have been commissioned by the applicant, Kildare County Council to prepare a planning submission in respect of a proposed housing scheme in Craddockstown, Naas, Co Kildare.

The purpose of this report is to determine the impact of the proposed development on the surrounding road network and to assess the capacity of the surrounding road network to accommodate any increases in traffic numbers which may arise as a consequence of the proposed development. This assessment has been based on recently measured traffic count information at key junctions in the vicinity of the proposed development.

This assessment is based on the proposed works to the subject site being completed in their entirety i.e. all road infrastructure works are completed as shown on drawing SHB1-CRA-CS-MOR-DR-101 in Appendix A. The assessment therefore considers the point at which the development will have the most significant impact on the surrounding road network**.**

1.2 Aims & Objectives

Aims - Provide a detailed assessment of the effect of the proposed development on the local transport network.

*Objective*s - Examine the traffic implications associated with the proposed development and examine how it can be integrated with existing traffic in the local area. The report will determine and quantify the extent of the additional trips generated by the development, and the impact on operational performance of such trips on the local road network.

1.3 Methodology

This traffic and transport assessment has been carried out in accordance with the NRA Traffic and Transport Assessment Guidelines (2014). The methodology utilised in preparing this Traffic and Transport Assessment is as follows:

- Collect data on existing traffic flows through the junctions in the vicinity of the proposed development by surveying the junctions in question.
- Determine the estimated future base traffic volumes for the area for the opening year of 2019 and the design year of 2034 by applying the relevant NRA growth factors to the results of the traffic surveys.
- Trip rates for the proposed development will be estimated using the Trip Rate Information Computer System (TRICS) database of trip rates. Estimates of the traffic that will be generated by the proposed development can then be made.
- The estimated generated traffic will then be assigned onto the estimated future background traffic figures for the opening year of 2019 and the design year of 2034.

- The operation of the junctions and the impact of the proposed development will then be assessed for the relevant design years.

The following documents have been reviewed in the preparation of this transport assessment:

- Department of Transport *'Design Manual for Urban Roads and Streets'* (2013).
- The National Roads Authority (NRA) Traffic and Transport Assessment Guidelines (2014).
- The Institute of Transportation Engineers (ITE) '*Trip Generation Manual 7th Edition'* (2003).
- The TRICS database managed by JMP Consultants Limited on behalf of the TRICS® Consortium.
- The National Roads Authority (NRA) PAG Unit 5.5 Link-Based Traffic Growth Forecasting.
- The DoEHLG's National Spatial Strategy for integrating sustainable approaches to transport and land use.

1.4 Traffic Counts

Traffic counts were undertaken by Tracsis at the following locations in the vicinity of the proposed development site.

Junction 1 – Roundabout junction at the Ballycane Rd / R411

Junction 2 – Signal controlled junction at the Ballycane Rd / Craddockstown Rd

Junction 3 – Signal controlled junction at the R410 (Blessington Rd) / Ballycane Rd

Junction 4 – Signal controlled junction at the R445 (Dublin Rd) / R410 (Blessington Rd)

These junctions are indicated in Figure 1.1 overleaf:

Figure 1.1 Traffic Count Locations

Traffic Counts were obtained for the junctions on Tuesday, 29th of November 2016. A 12 hour survey was undertaken between 07:00 and 19:00 on Tuesday 29th in 15 min intervals.

Junction capacities were analysed using the industry standard software package, OSCADY. The outputs of the assessment are the degree of saturation of the junction. The degree of saturation value indicates the extent to which traffic flows on a junction arm approach capacity. Typically a junction is said to be working satisfactorily when the degree of saturation of each arm/movement does not exceed 0.90 (90%) for signal controlled junctions, with a threshold of 0.85 (85%) for roundabout and priority controlled junctions. Sensible degree of saturation values are considered to be in the range of 80% to 100% with higher values indicating restrained movements.

1.5 Structure of Report

A description of the site, the receiving environment and existing public transport services is provided in Section 2. Section 3 describes the proposed development. The traffic that will be generated by the proposed development and the impact of the proposed development on the local road network is assessed in Section 4. The effect of construction traffic is also considered in Section 4. Mitigation measures are addressed in Section 5. Conclusions are presented in Section 6.

This report should be read in conjunction with Malone O'Regan's Engineering Report and planning drawings.

2 EXISTING CONDITIONS

2.1 Existing Road Network

The main vehicle routes surrounding the site of the proposed development are as follows:

- The Craddockstown Road which is a regional road with a 50 km/h speed limit on the road.
- The Ballycane Road (R447) which is part of the South Ring Road around Naas town. This road links up with the R445 to allow access to the M7 Motorway.
- The Blessington Road (R410) which is a regional road linking Naas to Blessington. It has a speed limit of 50 km/h.

2.2 Future Link Road

The Naas Town Development Plan (2017-2023) identifies an inner relief road to the east of Naas town centre (objective RP04). This proposed road will link the Dublin Road to the Blessington Road. The planned route is shown below (figure 2.1) in an extract from the development plan. This route has been identified as being a priority road project in Kildare County Councils County Development Plan 2017-2023 (Chapter 6, Table-6.1 Priority Road and Bridge Projects).

Figure 2.1 Extract from Naas Town Development Plan (2011-2017)

2.3 Existing Public Transport Facilities – Bus Services

Currently, there are a number of bus routes that operate in the vicinity of the proposed development. As figure 2.2 below shows, there are numerous bus stops in close proximity to the proposed development site and a number of bus services that operate from Naas town centre which is approximately 2 km away from the development. Bus Éireann operate numerous local and national services from Naas such as the123 (Nass to Dublin via Clane), 124 (Dublin to Portlaoise), 126/N (Dublin to Newbridge to Naas to Kildare town) and 130 (Dublin to Kilcullen). Private operators such as JJ Kavanagh and Glen Whelan (K Coach) also provide a number of services daily to and from Dublin and also services to the local towns such as Monasterevin and Clane. Dublin Coach also provide Naas to Dublin services which run on a daily basis.

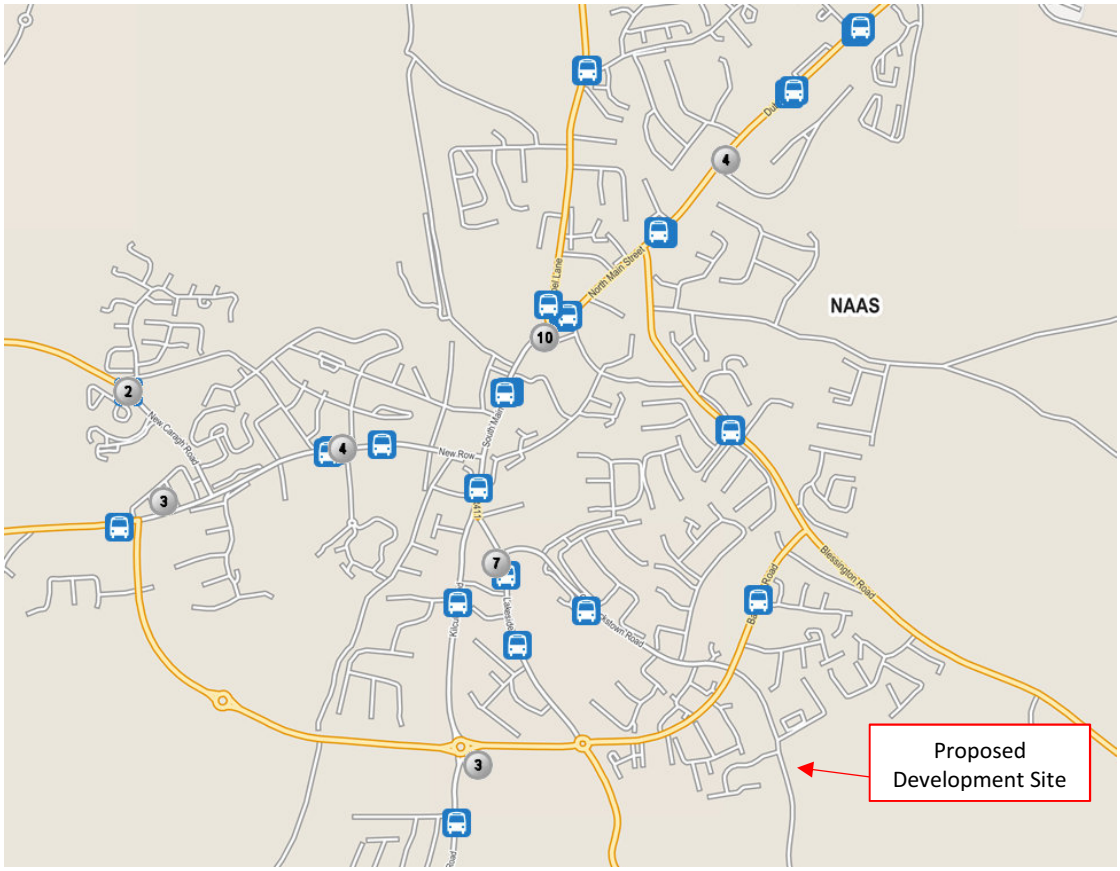

Figure 2.2 Naas town - Existing Bus Service Stops

2.4 Existing Public Transport Facilities – Rail

The nearest train station to the proposed development is the Sallins / Naas station which is located 5 km to the north of the proposed development location. The services that operate out of the station include the Dublin – Portlaoise service, the Dublin – Galway service and the Dublin - Limerick service. The Dublin - Waterford and Dublin - Carlow services also utilise the station. A number of services are available daily to and from Dublin.

3 PROPOSED DEVELOPMENT

3.1 Description of Development

The proposed development includes the construction of 74 residential properties as well as access roads, car parking bays and other ancillary utility services. Details of the proposed development are indicated on Malone O'Regan drawing SHB1-CRA-CS-MOR-DR-101. It is proposed that access to the site will be via a new priority junction on the Craddockstown Road.

3.2 Site Location

The proposed site is located along the Craddockstown Road (L6043) approximately 1.5km to the southeast of Naas town centre. The site is located at the southern edge of an established residential area. Naas Community College is located immediately to the north of the site and the Oak Glade residential estate lies to the north of the college. The Ban na Greinne residential development is located to the west of the Craddockstown Road, across from Naas Community National School. 2 no. detached residential properties fronting onto the Craddockstown Road are located to the west of the site. There is further undeveloped, residential zoned land to the north and northeast of the site.

The lands to the south of the site are principally used for agricultural purposes. Craddockstown Golf Course is located to the southeast of the site. The site has an overall area of 3.58 hectares.

Figure 3.1 Location of the proposed development.

4 TRAFFIC GENERATION

4.1 Existing Traffic Flows

As part of this Traffic Assessment, traffic flows have been collected for the junctions surrounding the proposed development site. This traffic flow data will then be used to determine the base year scenario which will provide the basis for all subsequent assessment and operational testing of the junctions.

As previously noted in section 1.4, traffic counts were obtained for the junctions on Tuesday, 29th of November 2016. A 12 hour survey was undertaken between 07:00 and 19:00 on Tuesday 29th in 15 min intervals.

The selection of a peak hour period for the AM and PM peaks was required so that the highest peak hours for the assessment could be determined. This would be selected as the highest sequential pair of 30-minute periods of net traffic movements at the junctions, and would allow a more robust assessment to be undertaken over that, which would result from the adoption of a predetermined period. From the traffic count data, the AM and PM peak periods for the road network were found to be 8:15 to 9:15 and 16:45 to 17:45 respectively.

The assessment has focused solely on the AM and PM peak periods. Trip generation on the site does occur during the remainder of the day, but this does not coincide with peak activity on the adjacent road network. As a result, the AM and PM peak hours have been examined in that they represent the critical periods for the traffic assessment.

4.2 Assessment Scenarios

This assessment will look at the following scenarios:

4.2.1 "Base" Scenario

The "Base" scenarios assume that the proposed development will not be constructed. An operational assessment is then carried out on the local road network for the assessment years which is based on the existing traffic levels which are factored (using the NRA's PAG Unit 5.5 Link-Based Traffic Growth Forecasting) to the relevant assessment year.

4.2.2 "With Development" Scenario

For the "With Development" scenarios is anticipated that the proposed development works are completed in 2019. The trips generated by the proposed development are determined by using the TRICS database. These are then added to the "Base" traffic data to establish the "With Development" traffic to allow an operational assessment of the junctions to be carried out.

4.2.3 Traffic Assessment Scenarios

In total 6 traffic scenarios have been established and will be assessed:

1. 2019 Base Traffic Flows
2. 2034 Base Traffic Flows
3. 2019 Base Traffic Flows + proposed Development Trips
4. 2034 Base Traffic Flows + proposed Development Trips
5. 2019 Base Traffic Flows + proposed Development Trips + 3rd Party Development Trips
6. 2034 Base Traffic Flows + proposed Development Trips + 3rd Party Development Trips

4.3 Future Years Assessment

The estimated impact of the traffic generated by proposed development will be determined by comparing the "Base" and "With Development" conditions for each junction. It is anticipated that the proposed development works will be completed in 2019. The junctions will therefore be assessed for the opening year and the future year 2034 (fifteen years after the opening year). The 2016 traffic count data has been utilised to provide the base model for all future years (with and without development).

4.3.1 Background Traffic Growth

The growth in background traffic has been estimated from the NRA's PAG Unit 5.5 Link-Based Traffic Growth Forecasting. Medium growth rates were assumed for the assessment period to 2034. Region 3 – East from "Table 5.5.1: National Traffic Growth Forecasts: Annual Growth Factors" was used to estimate the growth rates and the medium growth rate for light vehicles was applied to all classifications due to the predominance of light vehicles in the traffic survey data. Based on this methodology the growth rates for the background traffic are as shown in the table below:

Year	2019	2034
Growth Factor	1.033	1.196

Table 4.1 Background Traffic Growth Factors

4.4 Development Traffic Generation

The future trips generated by the proposed development have been estimated using the TRICS database. The output from the database for the peak AM and PM hours is shown in table 4.2 below.

Land Use	AM Peak Hr		PM Peak Hr	
	Arrive	Depart	Arrive	Depart
Residential/B: Affordable/Local Authority Houses	0.147	0.294	0.319	0.208

Table 4.2 Proposed Development Trip Rates (calculated from TRICS Database)

These trip rates were then used to calculate the estimated trips generated by the proposed development. Table 4.3 presents the trips for the peak AM and PM hours.

Component	AM Peak Hr		PM Peak Hr	
	Arrive	Depart	Arrive	Depart
Proposed Development	11	22	24	15

Table 4.3 Proposed Trips (AM/PM Peak Hour)

4.5 Potential Third Party Developments

As part of the assessment, the impact of traffic generated by two third party developments in the vicinity of the proposed development has also been included. Development 'A' (Planning Ref 15/176) consists of 283 units on a site to the east of the proposed development site. Access/egress to this development will be off the Blessington Road (R410). Development 'B' (Planning Ref 15/1060) consists of 395 units and a Neighbourhood Centre also to the east of the proposed development. The development will have 2 access/egress points to the site, one off the Blessington Road (R410) and one off the Tipper Rd.

Although phase 1 of both developments was projected to be completed in 2017, neither has started construction onsite. For the purposes of this assessment, it is assumed that phase 1 of both developments is completed in 2019. For the future assessment years it is assumed that both developments are fully completed. The estimated traffic generated by both developments that will use the road network is summarised in table 4.4.

Year	Development A				Development B			
	AM		PM		AM		PM	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
2019	13	20	18	13	9	15	13	10
2034	49	76	74	56	53	72	77	63

Table 4.4 Traffic Generated by 3rd Party Developments which impacts Junctions 3 & 4

4.6 Junction selection for assessment.

As noted previously, traffic counts were obtained for four junctions along the road network which will potentially be affected by the proposed development. These counts are included in Appendix B of this report. Queueing data for each of the junctions was also obtained. The projected number of trips for each junction were then calculated from the TRICS data (Table 4.3). The estimated trip destination is based on the current junction traffic flows. The results are outlined in the junction diagrams below (fig 4.1 & fig 4.2)

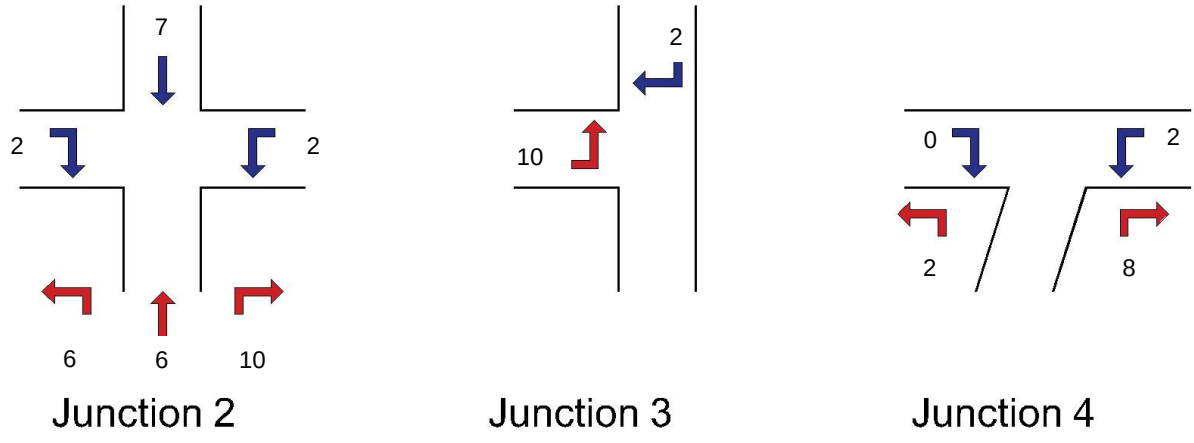

Figure 4.1 Proposed Development Generated Traffic Stream Estimate - AM Peak Hour

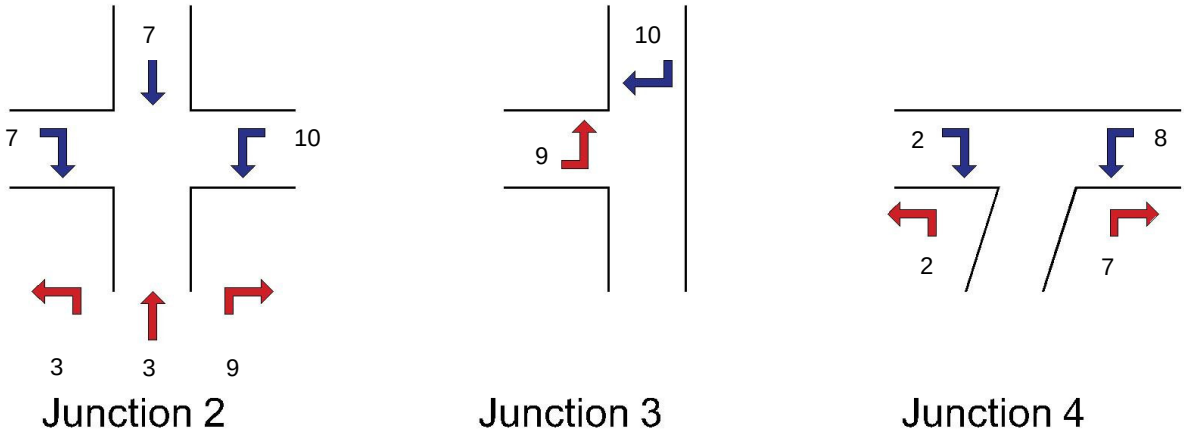

Figure 4.2 Proposed Development Generated Traffic Stream Estimate - PM Peak Hour

From the data we can see that the estimated number of trips generated by the proposed development is relatively low. The following key junctions are to be analysed as part of the assessment as it is deemed that these will be most affected by the traffic generated by the proposed development:

- Junction 2 [Signal controlled junction at the Ballycane Rd / Craddockstown Rd] which is the main junction through which all development traffic will access/egress
- Junction 3 [Signal controlled junction at the R410 (Blessington Rd) / Ballycane Rd] which is the next closest main junction which

At present, Junction 1 [Roundabout at the Ballycane Rd / R411] works well within capacity with zero queueing on all approaches to the roundabout at the peak hour periods (or at any stage during the survey). The estimated impact on Junction 1 from the proposed development will be minimal as it is estimated that there will only be 2 trips in/6 trips out in the AM Peak hour and 7 trips in/3 trips out in the PM Peak hour.

Junction 4 [Signal controlled junction at the R445 (Dublin Rd) / R410 (Blessington Rd)] was one of the main junctions analysed in the assessments which were carried out for both 3rd Party development Planning Applications mentioned previously in section 4.5. The RPS Engineer's assessment carried out for development "B" looked at a "best case" scenario for the junction which included the proposed link road (refer to section 2.2 of this report) while the DBFL Consulting Engineers assessment looked at a "worst case" scenario for the junction.

Both traffic assessments concluded that the junction would work within capacity for the 'With Development' (15 years post development) by the implementation of the following mitigation measures:

- Update the existing Vehicle Actuated controls on Junction 4 to MOVA based controls

- Extend the cycle time of the lights from 90 sec to 120 sec.

Both Assessments agree that with the construction of the proposed Link Road (RP04 - refer to section 2.2 of this report) the performance of Junction 4 would improve considerably and would be of significant benefit to the operation of the junction. The RPS Engineer's assessment noted that with the implementation of the measures previously outlined the junction would operate well within capacity for the "opening plus 15 years" design year with a maximum degree of saturation of 0.64%.

As figures 4.1 and 4.2 show, the estimated generated trips from the proposed development will be 2 trips in/10 trips out in the AM Peak hour and 10 trips in/9 trips out in the PM Peak hour for Junction 4. This level of estimated trips is relatively small with maximum 2.5 trips occurring in any 15 minute time period. With this low trip rate, combined with the reserve capacity of the junction, we can conclude that the estimated traffic generated by the proposed development will have a minimal effect on the operation of the junction. Junction 3 (on which the development will have a similar impact) will be assessed to validate these conclusions.

4.7 Junction 2: Base Year – 2019

The table below outlines the performance of the junction in 2019 for the three scenarios of the Base Year and Base Year plus the proposed development generated trips.

Junction Arm	AM Peak Base 2019		PM Peak Base 2019	
	RFC	Queue (PCU)	RFC	Queue (PCU)
1: Ballycane Rd (N)	73.04	10.14	56.89	10.56
2: Ballycane Rd (N) to Arm 4	71.13	5.51	28.78	2.92
2: Craddockstown Rd (E)	73.04	6.81	62.38	3.78
3: Ballycane Rd (N)	73.20	13.45	57.41	8.66
3: Ballycane Rd (N) to Arm 2	41.08	1.82	17.38	0.71
4: Craddockstown Rd (E)	74.54	13.37	57.14	8.70
	AM Peak Base + Development 2019		PM Peak Base + Development 2019	
	RFC	Queue (PCU)	RFC	Queue (PCU)
1: Ballycane Rd (N)	73.25	11.61	59.10	10.97
2: Ballycane Rd (N) to Arm 4	71.13	5.51	28.78	2.92
2: Craddockstown Rd (E)	74.35	7.62	57.12	3.83
3: Ballycane Rd (N)	77.10	14.17	59.23	8.81
3: Ballycane Rd (N) to Arm 2	42.66	1.90	22.91	0.95
4: Craddockstown Rd (E)	75.61	13.67	60.00	9.09

Table 4.5 Junction 2: 2019 Model Output

The tables above show that the ratio of flow to capacity (RFC) is well below the threshold figure of 0.90 (90%) at which the performance of the junction would suffer. Therefore, the output suggests that the inclusion of the additional traffic created by the proposed development will have a minimal effect on Junction 2 and that it will operate well within capacity for the AM and PM time periods for the design year of 2019. The model also assumes that a pedestrian phase is included in every traffic light cycle.

4.8 Junction 2: Design Year – 2034

The table below outlines the performance of the junction in 2034 for the two scenarios of the Base Year, and Base Year plus the proposed development generated trips.

Junction Arm	AM Peak Base 2034		PM Peak Base 2034	
	RFC	Queue (PCU)	RFC	Queue (PCU)
1: Ballycane Rd (N)	84.34	15.03	65.83	12.71
2: Ballycane Rd (N) to Arm 4	88.64	8.93	39.19	4.08
2: Craddockstown Rd (E)	89.87	10.93	68.62	4.40
3: Ballycane Rd (N)	86.86	18.35	66.58	10.45
3: Ballycane Rd (N) to Arm 2	47.40	2.16	19.75	0.81
4: Craddockstown Rd (E)	86.30	17.74	66.17	10.48
	AM Peak Base + Development 2034		PM Peak Base + Development 2034	
	RFC	Queue (PCU)	RFC	Queue (PCU)
1: Ballycane Rd (N)	84.72	11.95	68.23	13.22
2: Ballycane Rd (N) to Arm 4	88.64	5.10	40.86	4.14
2: Craddockstown Rd (E)	89.31	7.15	64.98	4.59
3: Ballycane Rd (N)	89.18	14.48	66.58	10.45
3: Ballycane Rd (N) to Arm 2	48.98	1.94	25.28	1.05
4: Craddockstown Rd (E)	89.53	14.26	69.28	10.98

Table 4.6 Junction 2: 2034 Model Output

The tables above show that the ratio of flow to capacity (RFC) is approaching the threshold figure of 0.90 (90%) in the AM peak hour (but is well below the figure for the PM peak hour) for the “Base” scenario. The ”With Development” results show a minimal impact on the 2034 “Base” figures. Therefore, the output suggests that the inclusion of the additional traffic created by the proposed development will have a minimal effect on Junction 2 and that it will operate within the capacity threshold for the AM and PM time periods for the design year of 2034. The model also assumes that a pedestrian phase is included in every single traffic light cycle which may overestimate the pedestrian demand i.e. the model assumes that the pedestrian phase is called on each cycle of the traffic lights when in reality this may be potentially a much lower figure. This would further improve the performance of the junction

as more green time would be allocated to the vehicular phases of the cycle thus allowing more vehicles to pass through the junction.

4.9 Junction 3: Base Year – 2019

The table below outlines the performance of the junction in 2019 for the three scenarios of the Base Year, Base Year plus the proposed development generated trips and Base Year plus the proposed development and 3rd Party developments generated trips.

Junction Arm	AM Peak Base 2019		PM Peak Base 2019	
	RFC	Queue (PCU)	RFC	Queue (PCU)
1: Blessington Rd (S)	76.25	9.69	64.50	6.53
2: Ballycane Rd to Arm 1	75.72	11.14	64.10	7.34
2: Ballycane Rd to Arm 3	72.60	4.80	29.12	2.93
3: Blessington Rd (N)	8.13	0.75	11.14	1.45
3: Blessington Rd (N) to Arm 2	80.13	9.11	63.44	8.32
	AM Peak Base + Development 2019		PM Peak Base + Development 2019	
	RFC	Queue (PCU)	RFC	Queue (PCU)
1: Blessington Rd (S)	76.25	9.69	64.50	6.53
2: Ballycane Rd to Arm 1	77.34	11.57	65.75	7.60
2: Ballycane Rd to Arm 3	76.81	5.39	29.12	2.93
3: Blessington Rd (N)	8.13	0.75	11.14	1.45
3: Blessington Rd (N) to Arm 2	80.61	9.23	64.58	8.53
	AM Peak Base + Development+ 3rd Party Developments 2019		PM Peak Base + Development + 3rd Party Developments 2019	
	RFC	Queue (PCU)	RFC	Queue (PCU)
1: Blessington Rd (S)	83.36	11.67	67.35	7.19
2: Ballycane Rd to Arm 1	83.95	13.63	65.75	7.60
2: Ballycane Rd to Arm 3	84.90	6.67	29.12	2.93
3: Blessington Rd (N)	9.57	0.86	13.57	1.78
3: Blessington Rd (N) to Arm 2	81.20	9.67	66.50	8.77

Table 4.7 Junction 3: 2019 Model Output

The tables above show that the ratio of flow to capacity (RFC) is below the threshold figure of 0.90 (90%) in the AM peak hour (and well below the figure for the PM peak hour) for the all scenarios in 2019. The Base plus Development results show a minimal impact on the 2019 "Base" figures. Even with the inclusion of the 3rd Party development figures, the junction will operate within capacity for the AM and PM time periods for the design year of 2019. The

model assumes that a pedestrian phase is included in every single traffic light cycle which may overestimate the pedestrian demand i.e. the model assumes that the pedestrian phase is called on each cycle of the traffic lights when in reality this may be potentially a much lower figure. This would further improve the performance of the junction as more green time would be allocated to the vehicular phases of cycle thus allowing more vehicles to pass through the junction.

4.10 Junction 3: Design Year – 2034

The table below outlines the performance of the junction in 2034 for the three scenarios of the Base Year, Base Year plus the proposed development generated trips and Base Year plus the proposed development and 3rd Party developments generated trips.

Junction Arm	AM Peak Base 2034		PM Peak Base 2034	
	RFC	Queue (PCU)	RFC	Queue (PCU)
1: Blessington Rd (S)	87.88	16.75	74.78	8.22
2: Ballycane Rd to Arm 1	86.24	18.59	74.36	9.19
2: Ballycane Rd to Arm 3	87.43	9.06	33.70	3.43
3: Blessington Rd (N)	9.06	1.01	12.87	1.69
3: Blessington Rd (N) to Arm 2	85.80	13.99	73.27	10.29
	AM Peak Base + Development 2034		PM Peak Base + Development 2034	
	RFC	Queue (PCU)	RFC	Queue (PCU)
1: Blessington Rd (S)	87.88	16.75	74.78	8.22
2: Ballycane Rd to Arm 1	87.83	19.54	73.34	9.16
2: Ballycane Rd to Arm 3	87.43	9.06	32.52	3.37
3: Blessington Rd (N)	9.06	1.01	13.11	1.73
3: Blessington Rd (N) to Arm 2	86.25	14.18	76.63	10.97
	AM Peak Base + Development+ 3rd Party Developments 2034		PM Peak Base + Development + 3rd Party Developments 2034	
	RFC	Queue (PCU)	RFC	Queue (PCU)
1: Blessington Rd (S)	92.63	23.01	81.65	11.30
2: Ballycane Rd to Arm 1	93.50	24.21	81.96	10.69
2: Ballycane Rd to Arm 3	25.38	3.87	36.34	3.56
3: Blessington Rd (N)	22.03	4.07	23.69	3.16
3: Blessington Rd (N) to Arm 2	92.52	17.44	81.50	12.04

Table 4.8 Junction 3: 2034 Model Output

The tables above show that the ratio of flow to capacity (RFC) is below the threshold figure of 0.90 (90%) in the "Base" scenario for the AM and PM peak hours for the design year 2034. The Base plus Development results show a minimal impact on the 2034 "Base" figures. With the inclusion of the 3rd Party development figures, the RFC for the AM and PM time periods will exceed the threshold figure. However, these figures represent the worst case scenario as the model assumes that the Link Road (RP04) has not been constructed. Also, the proposed mitigation measures outlined in the 3rd party Assessments have not been included.

Again, as with the 2019 model, it is assumed that a pedestrian phase is included in every single traffic light cycle which may overestimate the pedestrian demand i.e. the model assumes that the pedestrian phase is called on each cycle of the traffic lights when in reality this may be potentially a much lower figure. This would further improve the performance of the junction as more green time would be allocated to the vehicular phases of cycle thus allowing more vehicles to pass through the junction.

4.11 Construction Traffic

The target programme for the construction of the facility is 15 months. It is estimated that construction labour on site could peak at 30 persons although this will vary depending on the period of construction works, with the peak occurring in the middle of the construction phase. Allowing for 1.5 persons per vehicle, this equates to 20 vehicles arriving at the site during the AM peak and leaving the site between 4:00PM and 6:00PM.

All suitable excavated material will be reused for construction and fill activities where possible and appropriate. All surplus excavated materials, including tarmacadam will be sent for offsite recycling or disposal in accordance with all relevant waste legislation. In addition to the traffic generated by the disposal of surplus subsoil from the site, there will be traffic generated from deliveries of construction materials and equipment. In overall terms there will be a maximum of 25 – 30 truck movements in and out of the site per day during the earthworks phase of the works.

In general, most of the construction traffic generated during the development works will be in off-peak hours. Such trips will generally be spread out over the full working day. Based on an assumed 6-day week and 8-hour day, it is estimated that works will generate a maximum of 50 construction vehicle trips to the site per day. Assuming a constant arrival rate this would equate to a total of 5 trips in and out during the peak

5 MITIGATION MEASURES

5.1 Construction Traffic

A detailed Construction Traffic Management Plan will be developed prior to work commencement. This report will propose measures to minimise construction vehicles and construction vehicle movements on site as well as personnel parking and movement.

The Construction Traffic management Plan will be forwarded to Kildare County Council at their request and will outline the required traffic management and monitoring measures which will include but not necessarily be limited to the measures below:

- Construction fencing and hoarding will be erected as required.
- The surrounding road network will be signed to define the access and egress routes for construction vehicles
- The traffic generated by the construction phase of the development will be strictly controlled in order to minimise the impact of this traffic on the surrounding road network
- A dust minimisation plan will be developed incorporating truck wheel washes at the construction site entrance and / or a programme of road sweeping.

5.2 Operational Traffic

The analysis contained in Section 4 of this report has identified that the impact of the proposed development on the surrounding road network is relatively low. However, with the inclusion of the 3rd Party Developments, the measures outlined in both previous 3rd Party Traffic Assessments should be implemented to ensure the performance of the junctions is maintained.

6 ROAD NETWORK

6.1 Internal Road Network

The internal road layout is indicated on drawing SHB1-CRA-CS-MOR-DR-101 which also shows the proposed road levels. The proposed layout includes for a vehicular entrance off the Craddockstown Road (L6043).

6.2 Visibility

Drawing SHB1-CRA-CS-MOR-DR-105 has been produced in order to demonstrate that cars exiting the site will have adequate lines of visibility along the Craddockstown Road. In accordance with the Design Manual for Urban Roads and Streets, a 70m sightline has been indicated with a set-back distance from the carriageway edge of 2.4m.

6.3 Manoeuvrability

A swept path analysis has been conducted and is shown on drawing SHB1-CRA-CS-MOR-DR-107. When completing the analysis it was assumed that the largest vehicle which would realistically require access to the site was a refuse truck. It is noted that both ambulances and fire tenders have tighter turning circles and the refuse truck is therefore considered to be representative of the “worst case”. It can be seen that the refuse truck, and consequently emergency vehicles such as ambulances and fire tenders, are able to safely manoeuvre around the proposed site layout.

6.4 Facilities for Pedestrians and Cyclists

It is proposed to provide footpaths throughout the development Dropped kerbs and tactile paving will be provided at all pedestrian road crossing points. It is also proposed to extend the existing combined footpath and cycletrack on Craddockstown Road as far as the entrance into the site. This will help to promote walking and cycling as sustainable alternatives to car use.

7 CONCLUSIONS

- The estimated volume of additional traffic generated by the proposed development is relatively small (verified by calculation with the TRICS database).
- As demonstrated in section 4 of this report, the predicted impact of the proposed development will be minimal. The “with Development” scenarios for the junctions in the “Base” and “Base plus Development” design year’s show that the junctions will operate within the capacity threshold.
- It is advisable that the improvements and upgrades which have been outlined in the previous Traffic Assessments by RPS Engineers and DBFL Consulting Engineers would be implemented before construction of the 3rd Party Developments was completed to ensure the performance of the junctions was not adversely effected by the traffic which would be generated by said 3rd Party developments.

APPENDIX A

SITE LAYOUT FOLLOWING COMPLETION OF ALL PROPOSED INFRASTRUCTURE WORKS

A. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS, ARCHITECTS AND SPECIALISTS DRAWINGS.

B. ALL DIMENSIONS IN mm UNLESS NOTED.

C. DO NOT SCALE DIMENSIONS.

D. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION. DISCREPANCIES SHALL BE REPORTED TO THIS OFFICE IN WRITING.

BY	DRAWING No. & REFERENCE	DATE
SURVEY	SHB1-CRA-TOP-SUR-2244-100 2d Rec 2016-10-25	11/01/17
ARCH	COADYS DWG_SHB1-CRA-AR-COA-DR-0502_SITE	23/03/17

LEGEND

- PROPOSED FOOTPATH
- GRASSED AREA
- PROPOSED ROAD
- PROPOSED BUILDING
- PROPOSED PROPERTY AREA
- TACTILE PAVING
- EXISTING ROAD
- EXISTING BUILDING

NOTE

ALL LINE MARKING AND SIGNAGE AS PER THE DEPARTMENT OF TRANSPORT TRAFFIC SIGNS MANUAL (NOV. 2010)

CYCLE TRACK MARKINGS TYPICALLY (RRM022) (RRM023) (M116) END OF CYCLE TRACK SIGN

CYCLE/PEDESTRIAN (RUS 058CL)

STOP SIGN (RUS 027)

SIDE ROAD (W 002R)

CUT LINE

DON'T SCALE DIMENSIONS

DON'T FORGET SAFETY

PLAN CONT.

SCALE; 1:500

REV	DESCRIPTION	DATE	DRWN BY	CHKD BY
P	PART 8 PLANNING ISSUE	06.04.17	KD	ND

STATUS: P — PURPOSE OF ISSUE: PART 8 PLANNING

MALONE O'REGAN CONSULTING ENGINEERS

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CLIENT NAME: KILDARE COUNTY COUNCIL					DRAWING NAME: SITE LAYOUT	
JOB NAME: PROPOSED DEVELOPMENT OF 74 NO. RESIDENTIAL UNITS AT CRADDOCKSTOWN ROAD, CRADOCKSTOWN DEMESNE, NAAS, CO. KILDARE						
JOB NUMBER	DWG NO	REVISION	SHEET SIZE	SCALE	DATE	DRAWN BY / ENGINEER
SHB1-CRA-CS-MOR-DR-101		P	A1	1:500	JAN '17	KD / ND

APPENDIX B

TRAFFIC COUNTS

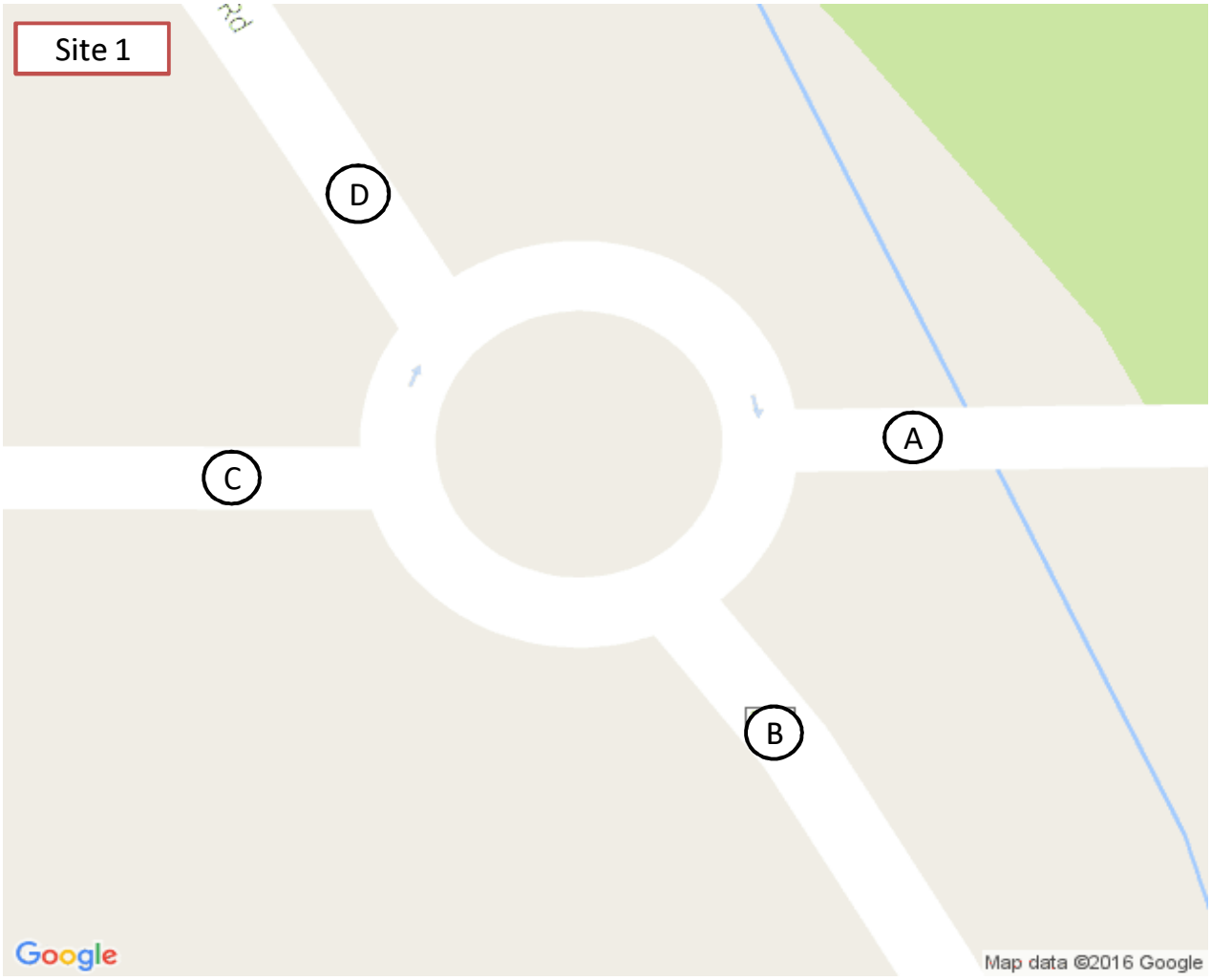
Tracsis plc
Traffic and Data Services

Client:	**Malone O'Reagan**
Project:	**3137-IRE 16027 NDFA Social Housing Bundle**
Site:	**1-3**
Survey Date:	**Tuesday 29 November 2016**
Survey Period:	**0700-1900**
Method:	**Snap Queue Lengths**

Incidents / Observations:

Tracsis plc
Traffic and Data Services

Client :	Malone O'Reagan	**Site plan for :**	1-3
Project :	3137-IRE 16027 NDFA, Social Housing Bundle	**Date :**	29/11/2016

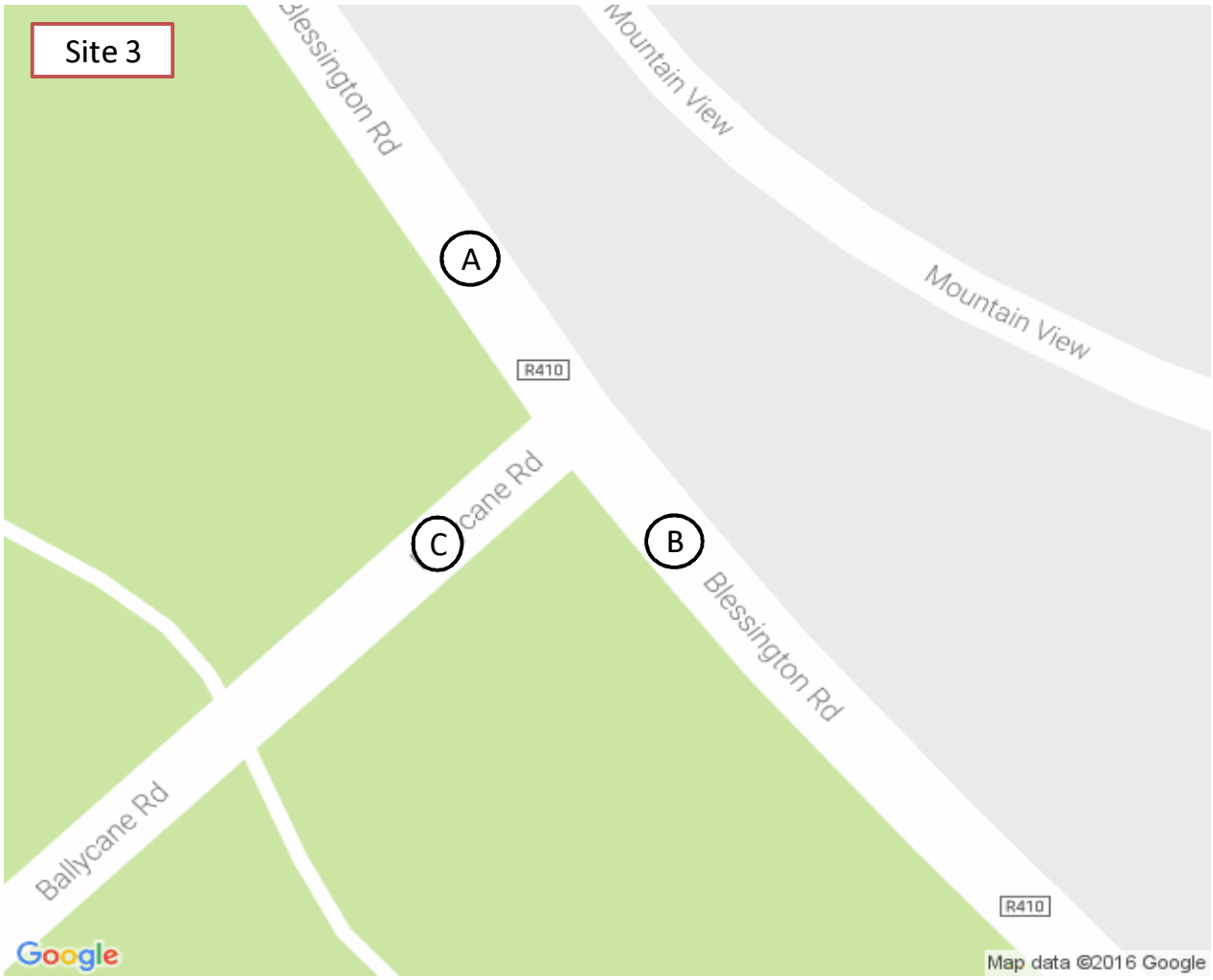


Tracsis plc
Traffic and Data Services

Client :	Malone O'Reagan	**Site plan for :**	1-3
Project :	3137-IRE 16027 NDFA, Social Housing Bundle	**Date :**	29/11/2016

Tracsis plc
Traffic and Data Services

Client :	Malone O'Reagan	**Site plan for :**	1-3
Project :	3137-IRE 16027 NDFA, Social Housing Bundle	**Date :**	29/11/2016



Tracsis plc
Traffic and Data Services

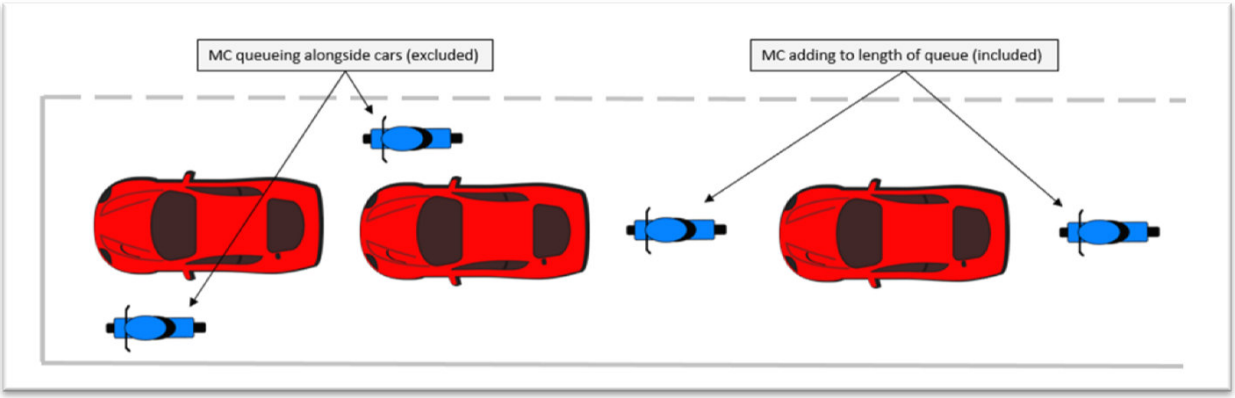
Client :	Malone O'Reagan	**Site plan for :**	1-3
Project :	3137-IRE 16027 NDFA, Social Housing Bundle	**Date :**	29/11/2016

Queue Methodology

A queue is defined as those vehicles at a junction which are stationary or which have slowed down to walking speed or less. Queues are counted according to the weighting system defined below.

Vehicle	Number	Metres
PC, MC	0.5	2.5
LV	1	5
OGV1	2	10
OGV2	3	15
Bus	3	15

Please note that PC or MC are only recorded as queueing when adding to the length of the queue and those that are stopped abreast with another vehicle will not be counted.



Instances in which there are "+" figures in the queue data represent the longest queue that can be accurately seen. These queues were longer than reported but would have to be estimated if any further vehicles exceeding these limits were reported.

Each lane is labelled from inside to outside; NS = Nearside, OS = Offside. Nearside is defined as the driver's nearside which is closest to kerb (inside lane).

Tracsis plc
Traffic and Data Services

Client : Malone O'Reagan
Project : 3137-IRE 16027 NDFA Social Housing Bundle
Site : 1
Date : 29/11/2016
Queue Method: Snap
Queue Lengths: Vehicle Numbers

Vehicle	Number	Metres
PC, MC	0.5	2.5
LV	1	5
OGV1	2	10
OGV2	3	15
Bus	3	15

	Arm A		Arm B	Arm C	Arm D	
	Lane 1	Lane 2			Lane 1	Lane 2
07:00	0	0	0	0	0	0
07:05	0	0	0	0	0	0
07:10	0	0	0	0	0	0
07:15	0	0	0	0	0	0
07:20	0	0	0	0	0	0
07:25	0	0	0	0	0	0
07:30	0	0	0	0	0	0
07:35	0	0	0	0	0	0
07:40	0	0	0	0	0	0
07:45	0	0	0	0	0	0
07:50	0	0	0	0	0	0
07:55	0	0	0	0	0	0
08:00	0	0	0	1	0	0
08:05	0	0	0	0	0	0
08:10	0	0	0	0	0	0
08:15	0	0	0	0	0	0
08:20	0	0	0	0	0	0
08:25	0	0	0	0	0	0
08:30	0	0	0	1	0	0
08:35	0	0	0	0	0	0
08:40	0	0	0	0	0	0
08:45	0	0	0	0	0	0
08:50	0	0	0	0	0	0
08:55	0	0	0	0	0	0
09:00	0	0	0	0	0	0
09:05	0	0	0	0	0	0
09:10	0	0	0	0	0	0
09:15	0	0	0	0	0	0
09:20	0	0	0	0	0	0
09:25	0	0	0	0	0	0
09:30	0	0	0	0	0	0
09:35	0	0	0	0	0	0
09:40	0	0	0	0	0	0
09:45	0	0	0	0	0	0
09:50	1	0	0	0	0	0
09:55	0	0	0	0	0	0
10:00	0	0	0	0	0	0
10:05	0	0	0	0	0	0
10:10	0	0	0	0	0	0
10:15	0	0	0	0	0	0
10:20	0	0	0	0	1	0
10:25	0	0	0	0	0	0
10:30	0	0	0	0	0	0
10:35	0	0	0	0	0	0
10:40	0	0	0	0	0	0
10:45	0	0	0	0	0	0
10:50	0	0	0	0	0	0
10:55	0	0	0	0	0	0
11:00	0	0	0	0	0	0
11:05	0	0	0	0	0	0
11:10	0	0	0	0	0	0
11:15	0	0	0	0	0	0
11:20	0	0	0	0	0	0
11:25	0	0	0	0	0	0
11:30	0	0	0	0	0	0
11:35	0	0	0	0	0	0
11:40	0	0	0	0	0	0
11:45	0	0	0	0	0	0
11:50	0	0	0	0	0	0
11:55	0	0	0	0	0	0
12:00	0	0	0	0	0	0
12:05	0	0	0	0	0	0
12:10	0	0	0	0	0	0
12:15	0	0	0	0	1	1
12:20	0	0	0	0	0	0
12:25	0	0	0	0	0	0
12:30	0	0	0	0	0	0

Tracsis plc
Traffic and Data Services

Client : Malone O'Reagan
Project : 3137-IRE 16027 NDFA Social Housing Bundle
Site : 1
Date : 29/11/2016
Queue Method: Snap
Queue Lengths: Vehicle Numbers

Vehicle	Number	Metres
PC, MC	0.5	2.5
LV	1	5
OGV1	2	10
OGV2	3	15
Bus	3	15

12:35	0	0	0	0	0	0
12:40	0	0	0	0	0	0
12:45	0	0	0	0	0	0
12:50	0	0	0	0	0	0
12:55	0	0	0	0	0	0
13:00	0	0	0	0	0	0
13:05	0	0	0	0	0	0
13:10	0	0	0	0	0	0
13:15	0	0	0	0	0	0
13:20	0	0	0	0	0	0
13:25	0	0	0	0	0	0
13:30	0	0	0	0	0	0
13:35	0	0	0	0	0	0
13:40	0	0	0	0	0	0
13:45	0	0	0	0	0	0
13:50	0	0	0	0	0	0
13:55	0	0	0	0	0	0
14:00	0	0	0	0	0	0
14:05	0	0	0	0	0	0
14:10	0	0	0	1	0	0
14:15	0	0	0	0	0	0
14:20	0	0	0	0	0	0
14:25	0	0	0	0	0	0
14:30	0	0	0	0	0	0
14:35	0	0	0	0	0	0
14:40	0	0	0	0	0	0
14:45	1	0	0	0	0	0
14:50	0	0	0	0	0	0
14:55	0	0	0	0	0	0
15:00	0	0	0	0	0	0
15:05	1	0	0	0	0	0
15:10	0	0	0	0	0	0
15:15	0	0	0	0	0	0
15:20	0	0	0	0	0	0
15:25	0	0	0	0	0	0
15:30	0	0	0	0	0	0
15:35	0	0	0	0	0	0
15:40	0	0	0	0	0	0
15:45	0	0	2	0	0	0
15:50	0	0	0	0	0	0
15:55	0	0	0	0	0	0
16:00	0	0	0	0	0	0
16:05	0	0	0	0	0	0
16:10	0	0	0	0	0	0
16:15	0	0	0	0	0	0
16:20	0	0	0	0	0	0
16:25	0	0	0	0	0	0
16:30	0	1	0	0	0	0
16:35	0	0	0	0	0	0
16:40	0	0	0	0	0	0
16:45	0	0	0	0	0	0
16:50	0	0	0	0	0	0
16:55	0	0	0	0	0	0
17:00	0	0	0	0	0	0
17:05	1	0	0	0	0	0
17:10	0	0	0	0	2	1
17:15	0	1	0	0	0	0
17:20	0	0	0	0	1	0
17:25	0	0	0	0	0	0
17:30	0	0	0	0	0	0
17:35	0	0	0	0	0	0
17:40	0	0	0	0	0	0
17:45	0	0	0	0	0	0
17:50	0	0	3	0	0	0
17:55	0	0	0	0	0	0
18:00	0	0	0	0	0	0
18:05	0	0	0	0	0	0
18:10	0	0	0	0	0	0
18:15	1	0	0	0	0	0
18:20	0	0	0	0	0	0
18:25	3	0	0	0	0	0
18:30	0	0	0	0	0	0
18:35	0	0	0	0	0	0
18:40	0	0	0	0	0	0
18:45	0	0	0	0	0	0
18:50	0	0	0	0	0	0
18:55	0	0	0	0	2	0

Tracsis plc
Traffic and Data Services

Client : Malone O'Reagan
Project : 3137-IRE 16027 NDFA Social Housing Bundle
Site : 2
Date : 29/11/2016
Queue Method: Snap
Queue Lengths: Vehicle Numbers

Vehicle	Number	Metres
PC, MC	0.5	2.5
LV	1	5
OGV1	2	10
OGV2	3	15
Bus	3	15

	Arm A	Arm B	Arm C		Arm D	
			NS	OS	NS	OS
07:00	0	1	0	0	1	0
07:05	0	2	1	0	0	0
07:10	1	1	1	0	0	4
07:15	0	1	1	0	1	0
07:20	1	1	0	0	0	0
07:25	1	1	2	0	1	0
07:30	0	1	1	0	1	0
07:35	0	1	0	0	3	0
07:40	1	1	3	0	1	0
07:45	0	2	2	0	2	1
07:50	0	2	1	0	0	2
07:55	2	2	1	0	2	1
08:00	0	1	2	0	0	1
08:05	1	1	7	3	5	0
08:10	0	1	1	0	5	0
08:15	1	1	3	0	0	3
08:20	2	2	5	0	0	6
08:25	3	3	12+	0	4	0
08:30	3	3	13+	2	5	0
08:35	4	4	12+	0	15+	1
08:40	8	8	13+	2	0	10
08:45	9	7	13+	1	15+	0
08:50	8	7	12+	1	11	1
08:55	3	3	13+	0	15+	0
09:00	5	4	12+	0	14	2
09:05	10	12+	13+	0	15+	0
09:10	12	14+	15+	2	15+	0
09:15	10	13+	13	3	10	0
09:20	10+	12	3	0	5	3
09:25	3	3	3	1	4	0
09:30	2	2	6	0	0	4
09:35	0	1	2	0	1	1
09:40	0	1	3	0	0	1
09:45	2	2	2	0	1	0
09:50	0	2	1	0	2	0
09:55	0	1	0	0	1	0
10:00	1	1	2	0	2	0
10:05	0	1	1	0	1	0
10:10	0	0	0	0	1	0
10:15	1	1	0	0	0	4
10:20	0	0	4	0	1	0
10:25	0	1	1	0	3	0
10:30	0	1	5	0	0	2
10:35	1	1	2	0	1	0
10:40	0	1	0	0	2	0
10:45	0	1	1	0	0	1
10:50	1	1	1	0	4	0
10:55	0	4	1	0	1	0
11:00	0	1	0	0	1	0
11:05	1	1	1	0	2	0
11:10	0	1	4	1	2	0
11:15	0	2	0	1	2	0
11:20	2	2	3	1	0	3
11:25	1	1	1	0	1	1
11:30	0.5	0	3	0	1	0
11:35	0	2	6	0	0.5	1
11:40	0	1	2	0	1	0
11:45	2	2	2	0	2	1
11:50	0	1	1	0	1	0
11:55	2	2	1	0	2	0
12:00	0	3.5	4	2	0	6
12:05	1	1	5	0	3	0
12:10	0	2	1	1	3	1
12:15	2	2	2	0	6	0
12:20	1	1	3	0	0	4
12:25	1	1	2	0	5	0
12:30	0	1	2	0	0	4
12:35	0	2	5	0	3	0

Tracsis plc
Traffic and Data Services

Client : Malone O'Reagan
Project : 3137-IRE 16027 NDFA Social Housing Bundle
Site : 2
Date : 29/11/2016
Queue Method: Snap
Queue Lengths: Vehicle Numbers

Vehicle	Number	Metres
PC, MC	0.5	2.5
LV	1	5
OGV1	2	10
OGV2	3	15
Bus	3	15

12:40	0	2	1	0	4	0
12:45	0	1	1	0	3	1
12:50	0	1	0	0	1	1
12:55	0	0	1	0	2	0
13:00	0	3	5	0	5	0
13:05	1	1	4	0	5	0
13:10	0	3	1	0	5	0
13:15	1	1	5	0	2	0
13:20	3	3	11	0	7	0
13:25	3	3	13	0	15+	0
13:30	0	1	1	0	0	1
13:35	2	2	8	0	1	5
13:40	0	2	4	0	0	4
13:45	1	1	8	0	10	0
13:50	1	1	6	0	5	1
13:55	3	3	10	2	1	2
14:00	1	1	4	2	1	0
14:05	5	4	1	2	6	0
14:10	0	2	2	0	2	0
14:15	2	2	1	1	4	0
14:20	2	2	3	1	5	0
14:25	3	3	14+	0	0	8
14:30	0	2	2	0	1	0
14:35	1	1	5	1	15+	0
14:40	0	4	11	0	4	0
14:45	1	1	2	0	4	0
14:50	1	1	1	0	1	0
14:55	5	6	4	0	4	0
15:00	9	13	6	0	6	0
15:05	3	3	3	1	3	10
15:10	6	6	11+	0	15+	1
15:15	1	1	5	0	9	0
15:20	0	1	0	0	2	0
15:25	2	2	0	0	7	1
15:30	1	1	4	3	1	0
15:35	0	1	3	2	1	0
15:40	3	3	4	0	3	1
15:45	3	3	8	1	3	0
15:50	0	1	1	1	0	5
15:55	0	3	2	0	4	0
16:00	6	2	6	0	6	0
16:05	10+	15+	13+	0	8	0
16:10	11	15	13+	1	10	0
16:15	3	3	2	1	9	0
16:20	0	1	14+	2	0	16
16:25	4	4	8	0	6	0
16:30	2	2	1	0	0	5
16:35	0	2	3	0	1	1
16:40	2	2	9	0	12	0
16:45	5	4	11	0	7	0
16:50	1	1	2	0	3	4
16:55	3.5	3.5	3	0	1	0
17:00	1	1	11	0	6	1
17:05	3	3	8	0	10	0
17:10	2	2	12+	0	8	0
17:15	2	2	13+	0	12	0
17:20	2	2	8	2	15	0
17:25	0	1	2	0	4	0
17:30	5	5	6	1	7	0
17:35	2	2	1	0	6	0
17:40	3	3	5	0	4	0
17:45	3	3	6	0	4.5	0
17:50	3	3	3	1	6	0
17:55	1	1	1	1	6	0
18:00	3	3	6	0	1	0
18:05	1	1	5	0	0	4
18:10	1	1	2	0	1	0
18:15	2	2	4	0	2	0
18:20	0	0	2	0	0	3
18:25	2	2	5	0	2	0
18:30	2	2	6	0	7	0
18:35	0	1	0	0	4	0
18:40	0	0	3	1	2	0
18:45	0	1	1	0	4	0
18:50	2	2	3	0	0	1
18:55	2	2	0	0	5	0

Tracsis plc
Traffic and Data Services

Client : Malone O'Reagan
Project : 3137-IRE 16027 NDFA Social Housing Bundle
Site : 3
Date : 29/11/2016
Queue Method: Snap
Queue Lengths: Vehicle Numbers

Vehicle	Number	Metres
PC, MC	0.5	2.5
LV	1	5
OGV1	2	10
OGV2	3	15
Bus	3	15

	Arm A		Arm B		Arm C	
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2
07:00	0	1	1	0	1	0
07:05	0	0	0	0	0	1
07:10	0	1	0	0	1	0
07:15	1	0	2	0	3	0
07:20	0	0	2	0	1	0
07:25	1	0	0	0	1	0
07:30	0	0	1	0	1	0
07:35	0	1	1	0	0	0
07:40	2	2	1	0	1	2
07:45	0	1	0	0	1	1
07:50	2	2	0	0	2	2
07:55	0	0	1	0	5	1
08:00	0	1	3	0	0	1
08:05	0	1	2	0	3	4
08:10	3	0	5	0	4	3
08:15	1	1	1	0	2	1
08:20	4	4	7	0	2	1
08:25	0	2	0	0	3	1
08:30	4	4	2	0	5	5
08:35	4	2	4	0	9	3
08:40	0	0	2	0	10	2
08:45	1	7	7	0	4	2
08:50	1	2	3	0	5	1
08:55	9	4	11	0	6	5
09:00	0	0	8	0	4	1
09:05	7	1	5	0	3	0
09:10	0	0	8	0	1	0
09:15	0	2	0	0	1	1
09:20	0	0	6	0	2	4
09:25	1	1	6	0	3	0
09:30	0	2	0	0	1	0
09:35	0	3	4	0	2	1
09:40	0	2	2	0	6	0
09:45	0	3	3	0	3	0
09:50	0	0	2	0	0	3
09:55	4	1	1	0	2	0
10:00	1	0	2	0	0	3
10:05	2	0	2	0	0	2
10:10	0	1	2	0	1	1
10:15	1	1	4	0	1	2
10:20	0	1	2	0	1	1
10:25	0	2	4	0	7	2
10:30	0	1	8	0	2	0
10:35	0	1	0	0	2	2
10:40	1	1	0	0	1	1
10:45	2	0	0	0	1	0
10:50	0	5	7	0	5	3
10:55	1	3	0	0	1	0
11:00	0	1	7	0	1	0
11:05	0	0	1	0	3	0
11:10	0	1	10	0	1	1
11:15	0	0	4	0	1	0
11:20	0	0	1	0	1	0
11:25	1	0	0	0	1	1
11:30	0	0	0	0	1	0
11:35	0	0	0	0	1	0
11:40	3	1	7	0	6	0
11:45	0	0	1	0	2	1
11:50	0	0	2	0	2	0
11:55	2	0	2	0	3	0
12:00	0	0	0	0	0	0
12:05	1	2	1	0	3	0
12:10	0	0	0	0	0	1
12:15	0	0	4	0	0	2
12:20	0	2	1	0	2	0

Tracsis plc
Traffic and Data Services

Client : Malone O'Reagan
Project : 3137-IRE 16027 NDFA Social Housing Bundle
Site : 3
Date : 29/11/2016
Queue Method: Snap
Queue Lengths: Vehicle Numbers

Vehicle	Number	Metres
PC, MC	0.5	2.5
LV	1	5
OGV1	2	10
OGV2	3	15
Bus	3	15

12:25	0	3	0	0	1	2
12:30	0	0	0	0	3	0
12:35	3	0	0	0	1	0
12:40	4	2	3	0	0	1
12:45	2	1	0	0	3	0
12:50	1	0	1	0	2	0
12:55	0	1	1	0	4	0
13:00	1	1	2	0	3	2
13:05	0	3	0	0	3	1
13:10	1	2	0	0	6	0
13:15	0	1	0	0	2	1
13:20	5	7	5	0	3	0
13:25	0	0	4	0	2	1
13:30	1	9	4	0	0	1
13:35	0	0	3	0	1	1
13:40	0	7	4	0	8	0
13:45	1	0	0	0	1	1
13:50	2	2	4	0	9	0
13:55	0	3	2	0	2	0
14:00	0	6	5	0	0	0
14:05	0	0	0	0	0	0
14:10	0	0	0	0	0	0
14:15	0	1	1	0	3	0
14:20	5	1	2	0	2	0
14:25	3	4.5	1	0	7	0
14:30	0	2	3	0	3	4
14:35	6	9	1	0	6	1
14:40	1	4	1	0	1	1
14:45	0	1	1	0	2	0
14:50	1	0	4	0	2	0
14:55	1	10	3	0	2	0
15:00	0	2	4	0	0	0
15:05	0	6	12	0	3	2
15:10	0	3	6	0	1	0
15:15	0	1	5	0	10	1
15:20	0	3	3	0	3	0
15:25	0	1	1	0	4	0
15:30	1	2	1	0	6	0
15:35	0	3	2	0	3	0
15:40	2	1	1	0	3	1
15:45	3	2	2	0	2	2
15:50	1	1	1	0	10	1
15:55	4	2	1	0	2	3
16:00	0	1	0	0	2	0
16:05	2	3	4	0	4	3
16:10	1	0	5	0	8	3
16:15	0	3	4	0	2	0
16:20	2	4	1	0	5	1
16:25	1	3	5	0	10	1
16:30	3	3	3	0	7	1
16:35	1	2	0	0	2	0
16:40	0	5	3	0	8	1
16:45	1	1	1	0	5	1
16:50	0	1	1	0	0	0
16:55	3	2	0	0	5	0
17:00	0	6	1	0	4	0
17:05	1	5	4	0	2	2
17:10	0	6	1	0	6	2
17:15	0	3	8	0	7	3
17:20	3	2	3	0	8	6
17:25	0	2	6	0	2	2
17:30	1	1	1	0	6	3
17:35	1	3	1	0	9	9
17:40	0	1	2	0	0	1
17:45	2	3	3	0	2	2
17:50	0	3	3	0	2	5
17:55	2	3	0	0	0	0
18:00	1	5	0	0	5	1
18:05	0	1	3	0	1	0
18:10	1	7	4	0	6	3
18:15	0	5	6	0	0	0
18:20	0	9	5	0	5	1
18:25	1	0	0	0	3	1
18:30	1	4	1	0	2	0
18:35	0	1	1	0	1	0
18:40	0	0	4	0	2	0
18:45	0	5	1	0	2	2
18:50	0	5	0	0	3	0
18:55	0	1	2	0	0	2

Tracsis plc
Traffic and Data Services

Client : Malone O'Reagan
Project : 3137-IRE 16027 NDFA Social Housing Bundle
Site : 4
Date : 29/11/2016
Queue Method: Snap
Queue Lengths: Vehicle Numbers

Vehicle	Number	Metres
PC, MC	0.5	2.5
LV	1	5
OGV1	2	10
OGV2	3	15
Bus	3	15

	Arm A		Arm B		Arm C	
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2
07:00	3	1	0	2	1	0
07:05	0	0	0	1	0	0
07:10	0	0	0	6	7	0
07:15	1	1	0	1	0	0
07:20	0	0	0	3	5	0
07:25	1	7	0	5	8	0
07:30	2	3	1	4	10	1
07:35	0	0	1	1	4	0
07:40	0	0	3	1	7	0
07:45	5	5	3	14	4	1
07:50	0	2	2	1	11	0
07:55	1	6	2	1	7	0
08:00	1	1	1	3	8	2
08:05	2	1	2	5	5	2
08:10	1	6	0	3	1	1
08:15	5	5	2	2	0	0
08:20	1	15+	1	6	7	4
08:25	7	14+	4	9	7	3
08:30	3	15+	5	10	4	8
08:35	8	16+	5	6	3	0
08:40	8	15+	6	8	14	1
08:45	10	15+	4	2	8	6
08:50	15+	7	2	9	13	7
08:55	10	12	5	15	16	6
09:00	6	14+	1	18	10	3
09:05	3	15+	3	16	10	3
09:10	7	15+	0	15	10	2
09:15	6	0	3	12	7	1
09:20	4	4	3	4	6	0
09:25	4	9	3	15	14	2
09:30	8	14+	0	13	0	4
09:35	0	15+	3	11	5	0
09:40	2	6	4	3	6	4
09:45	3	13	1	13	3	0
09:50	10	16+	0	6	6	3
09:55	0	7	0	4	1	0
10:00	3	10	5	3	7	2
10:05	2	6	0	5	7	1
10:10	7	7	0	2	3	1
10:15	3	10	0	8	2	0
10:20	0	3	0	3	1	2
10:25	4	6	2	5	1	0
10:30	5	6	2	1	4	0
10:35	0	8	4	3	6	0
10:40	3	0	1	0	2	0
10:45	1	5	1	2	0	1
10:50	10	5	0	4	7	1
10:55	6	2	0	7	5	1
11:00	2	7	4	3.5	7	1
11:05	5	7	1	5	1	0
11:10	6	4	3	7	13	0
11:15	4	8	0	16	15	0
11:20	4	5	1	16	9	0
11:25	3	10	1	17	15	2
11:30	5	14+	3	18	7	2
11:35	0	0	1	4	1	1
11:40	12	3	1	3	1	2
11:45	3	8	3	3	15	5
11:50	6	7	6	3	4	0
11:55	9	12	5	15.5	5	1
12:00	0	8	0	0	1	0
12:05	0	1	3	9	3	2
12:10	11	5	4	7	15.5	0
12:15	9	4	1	2	11	3
12:20	1	2	1	6	3	0
12:25	8	5	0	9	2	2
12:30	8	3	0	6	10	1

Tracsis plc
Traffic and Data Services

Client : Malone O'Reagan
Project : 3137-IRE 16027 NDFA Social Housing Bundle
Site : 4
Date : 29/11/2016
Queue Method: Snap
Queue Lengths: Vehicle Numbers

Vehicle	Number	Metres
PC, MC	0.5	2.5
LV	1	5
OGV1	2	10
OGV2	3	15
Bus	3	15

12:35	9	17	3	11	6	3
12:40	1	11	0	2	4	2
12:45	7	1	2	17	8	2
12:50	1	1	3	3	3	2
12:55	11	6	0	16	4	3
13:00	5	15+	4	12	2	4
13:05	8	9	2	15	9	6
13:10	4	15+	3	5	7	1.5
13:15	4	2	1	8	10	1
13:20	8	9	4	7	5	2
13:25	3	12	3	2	2	2
13:30	4	3	2	6	3	3
13:35	2	10	0	9	8	5
13:40	2	3	2	7	3	2
13:45	3	6	3	15	13	2.5
13:50	8	8	3	9	10	0
13:55	2	16	3	4	14	2
14:00	8	4	2	8	10	3
14:05	1	5	3	6	2	2
14:10	3	11	1	7	3	0
14:15	7	8	3	4	8	6
14:20	6	10	1	8	8	2
14:25	10	7	5	4	4	1
14:30	10	9	0	15	2	4
14:35	1	16+	4	16	11	4
14:40	3	14+	2	16	10	9
14:45	12	13	4	15	3	3
14:50	15+	9	2	7	10	3
14:55	5	15+	2	12	5	7
15:00	11	14	2	16	9	4
15:05	15+	6	2	16	13	1
15:10	10	16+	0	14	6	3
15:15	10	14	3	16	11	1
15:20	6	0	2	16	7	5
15:25	14+	7	2	16	13	0
15:30	17	10	3	16	2	1
15:35	9	8	3	5	4	1
15:40	7	11	3	2	5	5
15:45	7	11	3	16	15	4
15:50	8	8	2	16	3	4
15:55	10	14+	6	13	15	1
16:00	4	12+	0	10	6	3
16:05	8	18+	0	16	1	3
16:10	4	15+	0	16	15	1
16:15	15	8	3	11	12	4
16:20	10	14+	2	16	14	5
16:25	9	12	6	16	13	3
16:30	7	15+	4	13	15	3
16:35	14+	8	1	12	9	2
16:40	7	14+	2	16	7	3
16:45	12	7.5	3	15	4	0
16:50	3	14.5+	0	16	7	2
16:55	12	16+	2	18	15	0
17:00	11	14+	4	14	3	5
17:05	5	3.5	6	15	15	1
17:10	5	14+	0	8	1	3
17:15	2	14.5+	5	11	11	6
17:20	7	7	3	9	15	4
17:25	7	13	5	15	7	4
17:30	4	6	2	1	9	4
17:35	1	12	6	11	7	3
17:40	9	14+	4	8	3	4
17:45	4	4	2	4	0	4
17:50	10	7	3	5	4	0
17:55	6	4	1	6	15	3
18:00	1	12	0	11	0	0
18:05	3	6	3	3	4	3
18:10	9	11	0	2	3	2
18:15	2	8	0	0	8	6
18:20	9	9	0	0	6	0
18:25	6	13	0	0	12	2
18:30	10	10.5	0	0	14	0
18:35	8	15+	0	0	5	7
18:40	6	10	0	0	5	0
18:45	7	14	0	0	5	5
18:50	14+	7	0	0	2	0
18:55	9	8	0	0	2	2

Tracsis plc
Traffic and Data Services

Client :	Malone O Reagan
Project :	3137-IRE
Site :	Craddockstown
Date :	14/02/2017
Queue Method:	Snap
Queue Lengths:	Vehicle Numbers

Vehicle	Number	Metres
PC, MC	0.5	2.5
LV	1	5
OGV1	2	10
OGV2	3	15
Bus	3	15

	Arm A		Arm B		Arm C	
	NS	OS	NS	OS	NS	OS
16:00	9	15+	2	9	14	8
16:05	8	15+	2	15+	6	2
16:10	11	15+	1	15+	6	5
16:15	8	15+	4	15+	15+	2
16:20	11	13	3	14	18+	2
16:25	9	11.5	4	15+	6	2
16:30	8	14	1	15+	14	4
16:35	8	8	4	15+	0	2
16:40	7	15+	5	15+	5	6
16:45	5	13	0	15+	3	2
16:50	8	12	1	12	8	3
16:55	17+	7.5	1	9	11	1
17:00	4	10	1	15+	8	5
17:05	2	15+	5	15+	6	2
17:10	2	12	11	4	7	2
17:15	8	11	0	15+	8	3
17:20	6	7	4	15+	16+	5
17:25	3	15+	2	15+	5	6
17:30	12	10	4	9	7	3
17:35	4	13	2	15+	0	0
17:40	4	5	2	5	2	1
17:45	7	15+	6	15+	1	2
17:50	9	15+	3	11	9	5
17:55	10	15+	5	2	5	0
18:00	7	10	4	3	4	1
18:05	1	13	1	5	6	1
18:10	9	15+	2	7	3	7
18:15	3	14	0	14	5	4
18:20	8	15+	5	11	5	5
18:25	3	6	3	2	6	4
18:30	5	15+	2	14	4	4
18:35	8	12	3	15+	4	2
18:40	5	15+	2	15+	5	3
18:45	12+	8	3	1	4	2
18:50	5	5	3	2	4	4
18:55	8	14	1	7	13	0

APPENDIX C

OSCADY ANALYSIS FOR FUTURE YEAR 2034

OSCADY PRO

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

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

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Nine Mile Ride
Wokingham, Berks.
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E-mail: software@trl.co.uk
Web: www.trlsoftware.co.uk

File: \\HP-Z230-MOR1\Users\Public\MOR shared folder\DUBLIN JOBS\16027 NDFA PPP Social Housing\Craddockstown\OSCADY FILES\Site 2\2034 AM Base.osc
Report generation date: 23/02/2017 10:08:37

Summary

File Description

Title	Craddockstown
Date	21/02/2017
Location	Site 2
Driving Side	Left
Identifier	Site 2 AM Base 2034
Client	
Jobnumber	16027
Enumerator	M GERAGHTY
Status	(new file)
Description	

Run Options

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

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	Ballycane Rd (N)	50.0	10	10	50	0
2	Craddockstown Rd (E)	50.0	10	10	50	0
3	Ballycane Rd (S)	50.0	10	10	50	0
4	Craddockstown Rd (W)	50.0	10	10	50	0

Traffic Streams

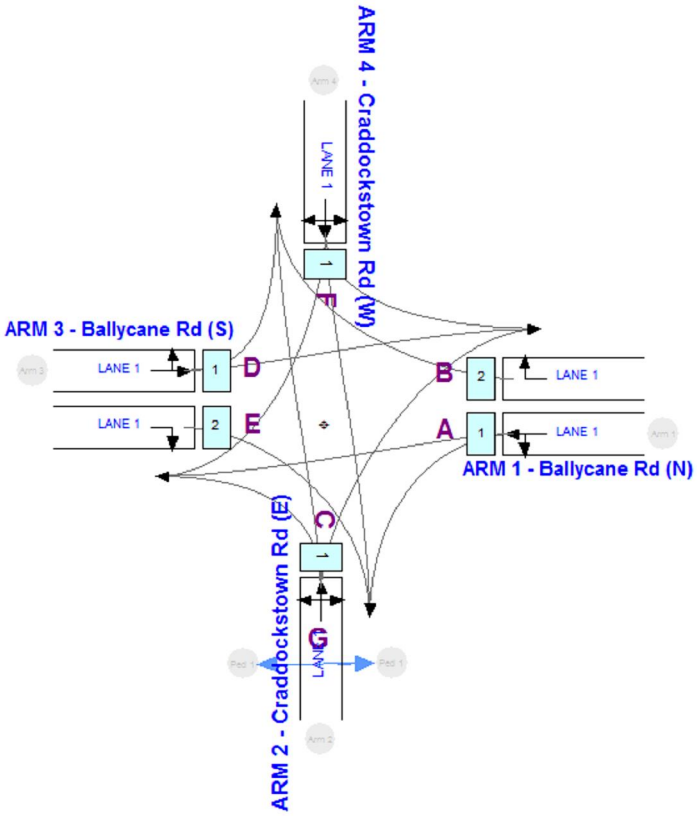
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1992	Yes	0	A	-
1	**2**	Traffic		1787	Yes	0	B	-
2	**1**	Traffic		1835	Yes	0	C	-
3	**1**	Traffic		2013	Yes	0	D	-
3	**2**	Traffic		1787	Yes	0	E	-
4	**1**	Traffic		1893	Yes	0	F	-
(Ped)	**1**	Pedestrian		10000	Yes	0	G	-

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

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3		0.21	10	No	3.00	0.0	0
1	**2**	**1**				4	1.00	10	No	3.00	0.0	0
2	**1**	**1**		3	4	1	0.80	10	No	3.00	0.0	0
3	**1**	**1**		4	1		0.14	10	No	3.00	0.0	0
3	**2**	**1**				2	1.00	10	No	3.00	0.0	0
4	**1**	**1**		1	2	3	0.57	10	No	3.00	0.0	0

Junction Diagram


ARM 4 - Craddockstown Rd (W)
LANE 1
1
F
ARM 3 - Ballycane Rd (S)
LANE 1
1
D
LANE 1
2
E
B
2
LANE 1
A
1
LANE 1
ARM 1 - Ballycane Rd (N)
C
1
G
LANE 1
ARM 2 - Craddockstown Rd (E)

Signals

Signals

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

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	30.0	No
B	(Name)	Traffic	-	7.0	15.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	20.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No

Intergreen Matrix

		To						
		A	**B**	**C**	**D**	**E**	**F**	**G**
From	**A**	-		3		3	3	1
	B		-	3	3			1
	C	3	3	-	3	3	3	1
	D		3	3	-		3	1
	E	3		3		-	3	1
	F	3		3	3	3	-	1
	G	1	1	1	1	1	1	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D	Yes
2	-1	B,E	Yes
3	-1	C	Yes
4	-1	F	Yes
5	-1	G	Yes
6	-1	D,E	Yes
7	-1	A,B	Yes

Sequences

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

Constraints

(No constraints)

Traffic

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

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	60
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
(Default Demand Set)	Yes	08:15	09:15	DIRECT	No	D1

Results

Note:Duplicate solutions are not shown.

Sequence1; Objective: CRITICAL CYCLE TIME

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
98.0	-1.10	36.91	36.91	41.3

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	29.0	30.0
2	34.0	8.0	42.0
3	45.0	11.0	56.0
4	59.0	31.0	90.0
5	91.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	30.0	31						
B	33	9.0	42						
C	45	11.0	56						
D	1	29.0	30						
E	34	8.0	42						
F	59	31.0	90						
G	91	7.0	0						

Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	1	2	1.00	

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	441	A	31.50	37.04	4.54	68.88	30.67	1.09	10.03	8.93	15.10
1	**2**	165	B	10.50	102.92	4.72	86.18	4.44	3.17	7.31	4.15	1.90
2	**1**	213	C	12.50	110.78	6.55	91.00	-1.10	4.95	10.24	5.28	2.40
3	**1**	561	D	30.50	60.04	9.36	89.55	0.51	5.24	17.08	11.85	10.10
3	**2**	60	E	9.50	48.54	0.81	34.64	159.84	0.12	1.61	1.49	1.30
4	**1**	565	F	32.50	60.03	9.42	90.00	0.00	5.50	17.09	11.59	10.50
Ped	**1**	130	G	8.50	41.85	1.51	14.99	500.47	0.02	3.25	3.23	0.00

Sequence1; Objective: MAXIMUM CAPACITY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	0.15	41.82	41.82	38.0

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	12.0	26.0	38.0
7	41.0	1.0	42.0
2	45.0	7.0	52.0
3	55.0	14.0	69.0
4	72.0	40.0	112.0
5	113.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	12	30.0	42						
B	41	11.0	52						
C	55	14.0	69						
D	1	37.0	38						
E	45	7.0	52						
F	72	40.0	112						
G	113	7.0	0						

Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Gaining	A	5	1	12.00	11.00

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	441	A	31.50	64.28	7.87	84.34	6.71	3.14	15.03	11.89	8.50
1	**2**	165	B	12.50	123.49	5.66	88.64	1.53	3.84	8.93	5.10	1.80
2	**1**	213	C	15.50	114.61	6.78	89.87	0.15	4.48	10.93	6.46	2.50
3	**1**	561	D	38.50	60.33	9.40	86.86	3.61	4.04	18.35	14.31	11.50
3	**2**	60	E	8.50	70.07	1.17	47.40	89.87	0.28	2.16	1.88	1.00
4	**1**	565	F	41.50	57.43	9.01	86.30	4.28	3.85	17.74	13.89	12.70
Ped	**1**	130	G	8.50	53.17	1.92	18.35	390.38	0.02	4.05	4.03	0.00

Sequence1; Objective: MINIMUM DELAY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
97.0	-4.54	37.59	37.59	42.4

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	29.0	30.0
2	34.0	7.0	41.0
3	44.0	11.0	55.0
4	58.0	31.0	89.0
5	90.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	30.0	31						
B	33	8.0	41						
C	44	11.0	55						
D	1	29.0	30						
E	34	7.0	41						
F	58	31.0	89						
G	90	7.0	0						

Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	1	2	1.00	

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	441	A	31.50	36.13	4.43	68.17	32.02	1.05	9.85	8.80	15.50
1	**2**	165	B	9.50	146.06	6.69	94.28	-4.54	6.17	10.32	4.15	1.60
2	**1**	213	C	12.50	105.74	6.26	90.08	-0.08	4.56	9.78	5.22	2.50
3	**1**	561	D	30.50	57.20	8.91	88.63	1.54	4.78	16.45	11.67	10.60
3	**2**	60	E	8.50	51.07	0.85	38.32	134.89	0.16	1.65	1.49	1.20
4	**1**	565	F	32.50	57.06	8.95	89.08	1.03	5.00	16.42	11.41	11.00
Ped	**1**	130	G	8.50	41.33	1.49	14.84	506.66	0.02	3.21	3.20	0.00

OSCADY PRO

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

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File: \\HP-Z230-MOR1\Users\Public\MOR shared folder\DUBLIN JOBS\16027 NDFA PPP Social Housing\Craddockstown\OSCADY FILES\Site 2\2034 AM With Development.osc
Report generation date: 23/02/2017 10:08:10

Summary

File Description

Title	Craddockstown
Date	21/02/2017
Location	Site 2
Driving Side	Left
Identifier	Site 2 AM 2034 With Dev
Client	
Jobnumber	16027
Enumerator	M GERAGHTY
Status	(new file)
Description	

Run Options

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

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	Ballycane Rd (N)	50.0	10	10	50	0
2	Craddockstown Rd (E)	50.0	10	10	50	0
3	Ballycane Rd (S)	50.0	10	10	50	0
4	Craddockstown Rd (W)	50.0	10	10	50	0

Traffic Streams

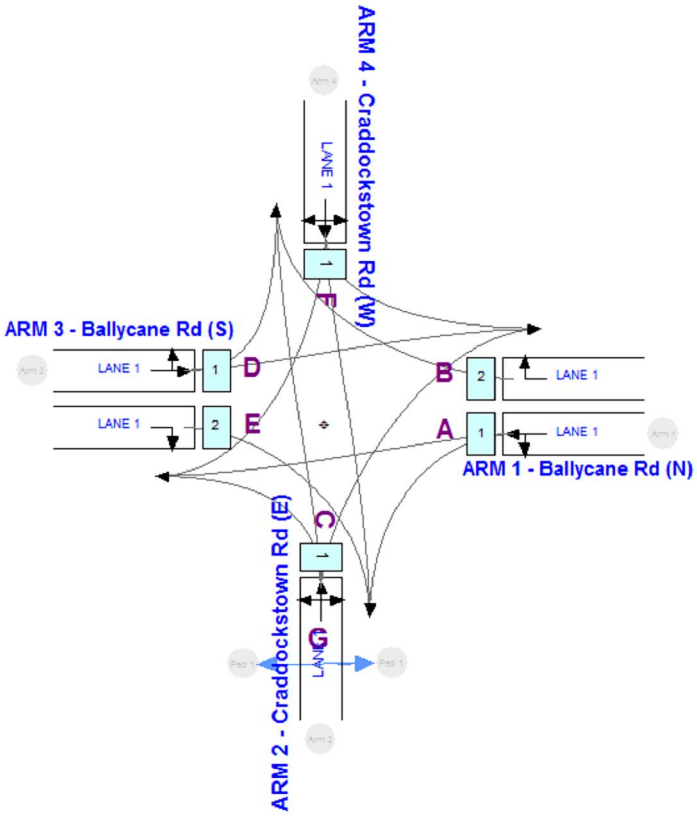
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1992	Yes	0	A	-
1	**2**	Traffic		1787	Yes	0	B	-
2	**1**	Traffic		1835	Yes	0	C	-
3	**1**	Traffic		2013	Yes	0	D	-
3	**2**	Traffic		1787	Yes	0	E	-
4	**1**	Traffic		1893	Yes	0	F	-
(Ped)	**1**	Pedestrian		10000	Yes	0	G	-

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

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3		0.21	10	No	3.00	0.0	0
1	**2**	**1**				4	1.00	10	No	3.00	0.0	0
2	**1**	**1**		3	4	1	0.80	10	No	3.00	0.0	0
3	**1**	**1**		4	1		0.14	10	No	3.00	0.0	0
3	**2**	**1**				2	1.00	10	No	3.00	0.0	0
4	**1**	**1**		1	2	3	0.57	10	No	3.00	0.0	0

Junction Diagram


ARM 4 - Craddockstown Rd (W)
LANE 1
1
F
ARM 3 - Ballycane Rd (S)
LANE 1
1
D
LANE 1
2
E
B
2
LANE 1
A
1
LANE 1
ARM 1 - Ballycane Rd (N)
C
1
G
LANE 1
ARM 2 - Craddockstown Rd (E)

Signals

Signals

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

Phases

Phase	Name	Type	Associated Phase	Phase Min Green (s)	Phase Max Green (s)	Double Green
A	(Name)	Traffic	-	7.0	30.0	No
B	(Name)	Traffic	-	7.0	15.0	No
C	(Name)	Traffic	-	7.0	0.0	No
D	(Name)	Traffic	-	7.0	0.0	No
E	(Name)	Traffic	-	7.0	0.0	No
F	(Name)	Traffic	-	20.0	0.0	No
G	(Name)	Pedestrian	-	7.0	0.0	No

Intergreen Matrix

		To						
		A	**B**	**C**	**D**	**E**	**F**	**G**
From	**A**	-		3		3	3	1
	B		-	3	3		3	1
	C	3	3	-	3	3	3	1
	D		3	3	-		3	1
	E	3		3		-	3	1
	F	3	3	3	3	3	-	1
	G	1	1	1	1	1	1	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D	Yes
2	-1	B,E	Yes
3	-1	C	Yes
4	-1	F	Yes
5	-1	G	Yes
6	-1	D,E	Yes
7	-1	A,B	Yes

Sequences

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

Constraints

(No constraints)

Traffic

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

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	60
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
(Default Demand Set)	Yes	08:15	09:15	DIRECT	No	D1

Results

Note:Duplicate solutions are not shown.

Sequence1; Objective: CRITICAL CYCLE TIME

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
116.0	-1.17	43.15	43.15	35.2

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	8.0	27.0	35.0
2	41.0	8.0	49.0
3	52.0	16.0	68.0
4	71.0	37.0	108.0
5	109.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	8	30.0	38						
B	38	11.0	49						
C	52	16.0	68						
D	1	34.0	35						
E	41	8.0	49						
F	71	37.0	108						
G	109	7.0	0						

Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	A	1	2	3.00	
Gaining	A	5	1	8.00	7.00

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	443	A	31.50	58.17	7.16	81.90	9.90	2.59	14.00	11.41	9.40
1	**2**	165	B	12.50	108.86	4.99	85.69	5.04	3.05	7.96	4.91	2.00
2	**1**	239	C	17.50	92.67	6.15	86.33	4.25	3.39	10.26	6.87	3.20
3	**1**	561	D	35.50	70.81	11.03	91.06	-1.17	6.15	20.28	14.13	9.30
3	**2**	62	E	9.50	62.37	1.07	42.36	112.44	0.21	2.06	1.86	1.10
4	**1**	572	F	38.50	68.60	10.90	91.04	-1.14	6.17	20.07	13.90	10.20
Ped	**1**	130	G	8.50	51.10	1.85	17.74	407.29	0.02	3.90	3.88	0.00

Sequence1; Objective: MAXIMUM CAPACITY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	0.52	44.47	44.47	35.5

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	11.0	26.0	37.0
7	40.0	1.0	41.0
2	44.0	7.0	51.0
3	54.0	16.0	70.0
4	73.0	39.0	112.0
5	113.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	11	30.0	41						
B	40	11.0	51						
C	54	16.0	70						
D	1	36.0	37						
E	44	7.0	51						
F	73	39.0	112						
G	113	7.0	0						

Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Gaining	A	5	1	11.00	10.00

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	443	A	31.50	64.90	7.99	84.72	6.23	3.24	15.19	11.95	8.40
1	**2**	165	B	12.50	123.49	5.66	88.64	1.53	3.84	8.93	5.10	1.80
2	**1**	239	C	17.50	105.76	7.02	89.31	0.77	4.36	11.51	7.15	3.00
3	**1**	561	D	37.50	66.21	10.32	89.18	0.92	5.05	19.53	14.48	10.30
3	**2**	62	E	8.50	71.17	1.23	48.98	83.74	0.31	2.25	1.94	1.00
4	**1**	572	F	40.50	65.04	10.33	89.53	0.52	5.25	19.51	14.26	11.00
Ped	**1**	130	G	8.50	53.17	1.92	18.35	390.38	0.02	4.05	4.03	0.00

Sequence1; Objective: MINIMUM DELAY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
112.0	-0.52	42.19	42.19	37.2

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	30.0	31.0
2	37.0	10.0	47.0
3	50.0	15.0	65.0
4	68.0	36.0	104.0
5	105.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	30.0	31						
B	37	10.0	47						
C	50	15.0	65						
D	1	33.0	34						
E	34	13.0	47						
F	68	36.0	104						
G	105	7.0	0						

Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	D	1	2	3.00	

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	443	A	31.50	52.47	6.46	79.07	13.82	2.11	12.98	10.87	10.50
1	**2**	165	B	11.50	126.41	5.79	89.92	0.08	4.26	9.02	4.76	1.80
2	**1**	239	C	16.50	98.66	6.55	88.41	1.80	4.03	10.69	6.66	3.00
3	**1**	561	D	34.50	67.50	10.52	90.47	-0.52	5.77	19.37	13.60	9.60
3	**2**	62	E	14.50	47.71	0.82	26.80	235.83	0.07	1.77	1.70	1.70
4	**1**	572	F	37.50	64.70	10.28	90.25	-0.27	5.66	19.02	13.37	10.60
Ped	**1**	130	G	8.50	49.04	1.77	17.13	425.41	0.02	3.76	3.74	0.00

OSCADY PRO

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

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File: \\HP-Z230-MOR1\Users\Public\MOR shared folder\DUBLIN JOBS\16027 NDFA PPP Social Housing\Craddockstown\OSCADY FILES\Site 2\2034 PM Base.osc
Report generation date: 23/02/2017 10:49:27

Summary

File Description

Title	Craddockstown
Date	21/02/2017
Location	Site 2
Driving Side	Left
Identifier	Site 2 PM Base 2034
Client	
Jobnumber	16027
Enumerator	M GERAGHTY
Status	(new file)
Description	

Run Options

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

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	Ballycane Rd (N)	50.0	10	10	50	0
2	Craddockstown Rd (E)	50.0	10	10	50	0
3	Ballycane Rd (S)	50.0	10	10	50	0
4	Craddockstown Rd (W)	50.0	10	10	50	0

Traffic Streams

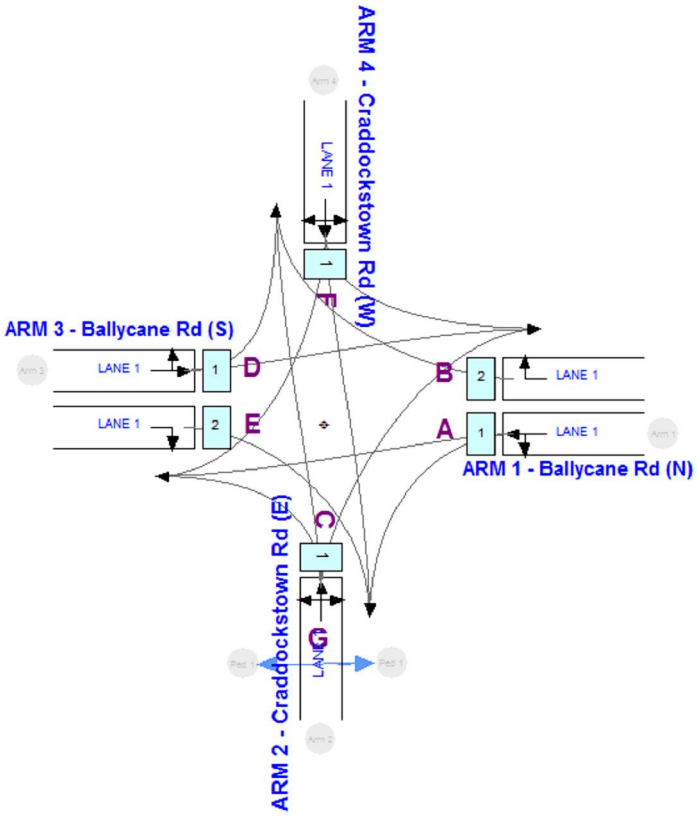
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1992	Yes	0	A	-
1	**2**	Traffic		1787	Yes	0	B	-
2	**1**	Traffic		1832	Yes	0	C	-
3	**1**	Traffic		2013	Yes	0	D	-
3	**2**	Traffic		1787	Yes	0	E	-
4	**1**	Traffic		1893	Yes	0	F	-
(Ped)	**1**	Pedestrian		10000	Yes	0	G	-

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

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3		0.21	10	No	3.00	0.0	0
1	**2**	**1**				4	1.00	10	No	3.00	0.0	0
2	**1**	**1**		3	4	1	0.81	10	No	3.00	0.0	0
3	**1**	**1**		4	1		0.14	10	No	3.00	0.0	0
3	**2**	**1**				2	1.00	10	No	3.00	0.0	0
4	**1**	**1**		1	2	3	0.57	10	No	3.00	0.0	0

Junction Diagram


ARM 4 - Craddockstown Rd (W)
LANE 1
1
F
ARM 3 - Ballycane Rd (S)
LANE 1
1
D
LANE 1
2
E
B
2
LANE 1
A
1
LANE 1
ARM 1 - Ballycane Rd (N)
C
1
G
LANE 1
ARM 2 - Craddockstown Rd (E)

Signals

Signals

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

Phases

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

Intergreen Matrix

		To						
		A	**B**	**C**	**D**	**E**	**F**	**G**
From	**A**	-		3		3	3	3
	B		-	3	3		3	3
	C	3	3	-	3	3	3	3
	D		3	3	-		3	3
	E	3		3		-	3	3
	F	3	3	3	3	3	-	3
	G	3	3	3	3	3	3	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D	Yes
2	-1	B,E	Yes
3	-1	C	Yes
4	-1	F	Yes
5	-1	G	Yes
6	-1	D,E	Yes
7	-1	A,B	Yes

Sequences

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

Constraints

(No constraints)

Traffic

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

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	60
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
(Default Demand Set)	Yes	16:45	17:45	DIRECT	No	D1

Results

Note:Duplicate solutions are not shown.

Sequence1; Objective: CRITICAL CYCLE TIME

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
69.0	0.45	21.77	21.77	34.1

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	3.0	19.0	22.0
2	25.0	7.0	32.0
3	35.0	7.0	42.0
4	45.0	14.0	59.0
5	62.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	3	19.0	22						
B	25	7.0	32						
C	35	7.0	42						
D	3	19.0	22						
E	25	7.0	32						
F	45	14.0	59						
G	62	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	530	A	20.50	52.46	7.72	89.55	0.50	5.18	13.17	7.99	9.20
1	**2**	143	B	8.50	48.03	1.91	64.96	38.55	0.80	3.28	2.47	2.60
2	**1**	110	C	8.50	38.07	1.16	48.74	84.65	0.31	2.20	1.89	2.40
3	**1**	363	D	20.50	26.86	2.71	60.70	48.28	0.66	5.94	5.27	13.50
3	**2**	25	E	8.50	28.28	0.20	11.36	692.50	0.01	0.43	0.42	0.80
4	**1**	381	F	15.50	64.81	6.86	89.60	0.45	4.88	11.01	6.13	5.60
Ped	**1**	160	G	8.50	27.22	1.21	12.99	592.93	0.01	2.70	2.69	0.00

Sequence1; Objective: MAXIMUM CAPACITY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	31.15	21.70	21.70	55.9

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	3.0	31.0	34.0
7	37.0	13.0	50.0
2	53.0	7.0	60.0
3	63.0	9.0	72.0
4	75.0	35.0	110.0
5	113.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	3	47.0	50						
B	37	23.0	60						
C	63	9.0	72						
D	3	31.0	34						
E	53	7.0	60						
F	75	35.0	110						
G	113	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	530	A	48.50	34.64	5.10	65.83	36.72	0.93	12.71	11.77	24.50
1	**2**	143	B	24.50	45.48	1.81	39.19	129.62	0.17	4.08	3.91	5.10
2	**1**	110	C	10.50	83.38	2.55	68.62	31.15	0.98	4.40	3.42	1.60
3	**1**	363	D	32.50	47.44	4.78	66.58	35.17	0.94	10.45	9.51	11.10
3	**2**	25	E	8.50	57.13	0.40	19.75	355.69	0.03	0.81	0.78	0.50
4	**1**	381	F	36.50	44.30	4.69	66.17	36.01	0.92	10.48	9.57	13.10
Ped	**1**	160	G	8.50	53.53	2.38	22.59	298.44	0.04	5.00	4.96	0.00

Sequence1; Objective: MINIMUM DELAY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
84.0	14.45	18.21	18.21	45.4

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	3.0	24.0	27.0
7	30.0	1.0	31.0
2	34.0	7.0	41.0
3	44.0	7.0	51.0
4	54.0	20.0	74.0
5	77.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	3	28.0	31						
B	30	11.0	41						
C	44	7.0	51						
D	3	24.0	27						
E	34	7.0	41						
F	54	20.0	74						
G	77	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	530	A	29.50	34.40	5.06	75.76	18.80	1.72	10.70	8.97	16.90
1	**2**	143	B	12.50	43.29	1.72	53.78	67.36	0.42	3.34	2.92	3.40
2	**1**	110	C	8.50	54.16	1.65	59.34	51.68	0.57	2.93	2.36	1.90
3	**1**	363	D	25.50	30.48	3.07	59.40	51.51	0.62	6.98	6.36	14.00
3	**2**	25	E	8.50	36.51	0.25	13.83	550.98	0.01	0.54	0.53	0.70
4	**1**	381	F	21.50	46.22	4.89	78.63	14.45	2.01	9.17	7.16	8.50
Ped	**1**	160	G	8.50	34.88	1.55	15.81	469.20	0.02	3.37	3.36	0.00

OSCADY PRO

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

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File: \\HP-Z230-MOR1\Users\Public\MOR shared folder\DUBLIN JOBS\16027 NDFA PPP Social Housing\Craddockstown\OSCADY FILES\Site 2\2034 PM With Development.osc
Report generation date: 23/02/2017 10:49:17

Summary

File Description

Title	Craddockstown
Date	21/02/2017
Location	Site 2
Driving Side	Left
Identifier	Site 2 PM 2034 With Dev
Client	
Jobnumber	16027
Enumerator	M GERAGHTY
Status	(new file)
Description	

Run Options

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

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	Ballycane Rd (N)	50.0	10	10	50	0
2	Craddockstown Rd (E)	50.0	10	10	50	0
3	Ballycane Rd (S)	50.0	10	10	50	0
4	Craddockstown Rd (W)	50.0	10	10	50	0

Traffic Streams

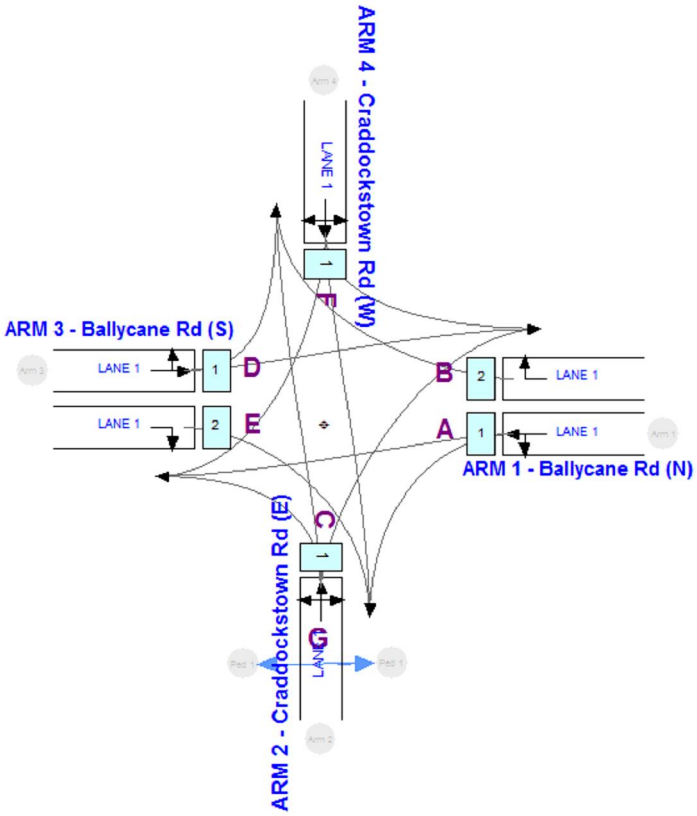
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	**1**	Traffic		1992	Yes	0	A	-
1	**2**	Traffic		1787	Yes	0	B	-
2	**1**	Traffic		1832	Yes	0	C	-
3	**1**	Traffic		2013	Yes	0	D	-
3	**2**	Traffic		1787	Yes	0	E	-
4	**1**	Traffic		1893	Yes	0	F	-
(Ped)	**1**	Pedestrian		10000	Yes	0	G	-

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

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	**1**	**1**		2	3		0.21	10	No	3.00	0.0	0
1	**2**	**1**				4	1.00	10	No	3.00	0.0	0
2	**1**	**1**		3	4	1	0.81	10	No	3.00	0.0	0
3	**1**	**1**		4	1		0.14	10	No	3.00	0.0	0
3	**2**	**1**				2	1.00	10	No	3.00	0.0	0
4	**1**	**1**		1	2	3	0.57	10	No	3.00	0.0	0

Junction Diagram


ARM 4 - Craddockstown Rd (W)
LANE 1
1
F
ARM 3 - Ballycane Rd (S)
LANE 1
1
D
LANE 1
2
E
B
2
LANE 1
A
1
LANE 1
ARM 1 - Ballycane Rd (N)
C
1
G
LANE 1
ARM 2 - Craddockstown Rd (E)

Signals

Signals

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

Phases

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

Intergreen Matrix

		To						
		A	**B**	**C**	**D**	**E**	**F**	**G**
From	**A**	-		3		3	3	3
	B		-	3	3		3	3
	C	3	3	-	3	3	3	3
	D		3	3	-		3	3
	E	3		3		-	3	3
	F	3	3	3	3	3	-	3
	G	3	3	3	3	3	3	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,D	Yes
2	-1	B,E	Yes
3	-1	C	Yes
4	-1	F	Yes
5	-1	G	Yes
6	-1	D,E	Yes
7	-1	A,B	Yes

Sequences

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

Constraints

(No constraints)

Traffic

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

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	60
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
(Default Demand Set)	Yes	16:45	17:45	DIRECT	No	D1

Results

Note:Duplicate solutions are not shown.

Sequence1; Objective: CRITICAL CYCLE TIME

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
71.0	0.91	21.95	21.95	35.5

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	3.0	20.0	23.0
2	26.0	7.0	33.0
3	36.0	7.0	43.0
4	46.0	15.0	61.0
5	64.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	3	20.0	23						
B	26	7.0	33						
C	36	7.0	43						
D	3	20.0	23						
E	26	7.0	33						
F	46	15.0	61						
G	64	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	538	A	21.50	51.56	7.71	89.19	0.91	5.01	13.30	8.29	9.60
1	**2**	143	B	8.50	51.25	2.04	66.84	34.65	0.89	3.45	2.56	2.50
2	**1**	124	C	8.50	43.25	1.49	56.54	59.19	0.49	2.70	2.21	2.40
3	**1**	363	D	21.50	26.73	2.70	59.55	51.13	0.62	6.00	5.38	14.00
3	**2**	32	E	8.50	29.96	0.27	14.96	501.70	0.02	0.58	0.56	0.90
4	**1**	388	F	16.50	60.35	6.50	88.20	2.04	4.29	10.66	6.37	6.10
Ped	**1**	160	G	8.50	28.23	1.25	13.36	573.42	0.01	2.79	2.78	0.00

Sequence1; Objective: MAXIMUM CAPACITY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	29.90	22.57	22.57	53.9

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	3.0	31.0	34.0
7	37.0	12.0	49.0
2	52.0	7.0	59.0
3	62.0	11.0	73.0
4	76.0	34.0	110.0
5	113.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	3	46.0	49						
B	37	22.0	59						
C	62	11.0	73						
D	3	31.0	34						
E	52	7.0	59						
F	76	34.0	110						
G	113	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	538	A	47.50	36.38	5.44	68.23	31.91	1.08	13.22	12.14	23.20
1	**2**	143	B	23.50	46.83	1.86	40.86	120.25	0.19	4.14	3.95	4.80
2	**1**	124	C	12.50	73.68	2.54	64.98	38.51	0.80	4.59	3.80	2.00
3	**1**	363	D	32.50	47.44	4.78	66.58	35.17	0.94	10.45	9.51	11.10
3	**2**	32	E	8.50	59.04	0.52	25.28	256.00	0.06	1.05	1.00	0.60
4	**1**	388	F	35.50	46.78	5.04	69.28	29.90	1.11	10.98	9.87	12.20
Ped	**1**	160	G	8.50	53.53	2.38	22.59	298.44	0.04	5.00	4.96	0.00

Sequence1; Objective: MINIMUM DELAY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
84.0	12.39	19.18	19.18	45.1

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	3.0	24.0	27.0
7	30.0	1.0	31.0
2	34.0	7.0	41.0
3	44.0	7.0	51.0
4	54.0	20.0	74.0
5	77.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	3	28.0	31						
B	30	11.0	41						
C	44	7.0	51						
D	3	24.0	27						
E	34	7.0	41						
F	54	20.0	74						
G	77	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	538	A	29.50	35.17	5.26	76.90	17.03	1.86	10.99	9.13	16.60
1	**2**	143	B	12.50	43.29	1.72	53.78	67.36	0.42	3.34	2.92	3.40
2	**1**	124	C	8.50	60.91	2.10	66.89	34.55	0.89	3.56	2.67	1.90
3	**1**	363	D	25.50	30.48	3.07	59.40	51.51	0.62	6.98	6.36	14.00
3	**2**	32	E	8.50	37.36	0.33	17.70	408.58	0.03	0.70	0.68	0.80
4	**1**	388	F	21.50	47.79	5.15	80.08	12.39	2.23	9.53	7.30	8.40
Ped	**1**	160	G	8.50	34.88	1.55	15.81	469.20	0.02	3.37	3.36	0.00

OSCADY PRO

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

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File: \\HP-Z230-MOR1\Users\Public\MOR shared folder\DUBLIN JOBS\16027 NDFA PPP Social Housing\Craddockstown\OSCADY FILES\Site 3\2034 AM Base.osc
Report generation date: 27/02/2017 15:55:29

Summary

File Description

Title	Craddockstown
Date	21/02/2017
Location	Site 3
Driving Side	Left
Identifier	Site 3 Base 2019
Client	
Jobnumber	16027
Enumerator	M GERAGHTY
Status	(new file)
Description	

Run Options

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

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R410 (S)	50.0	10	10	50	0
2	Ballycane Rd	50.0	10	10	50	0
3	R410 (N)	50.0	10	10	50	0

Traffic Streams

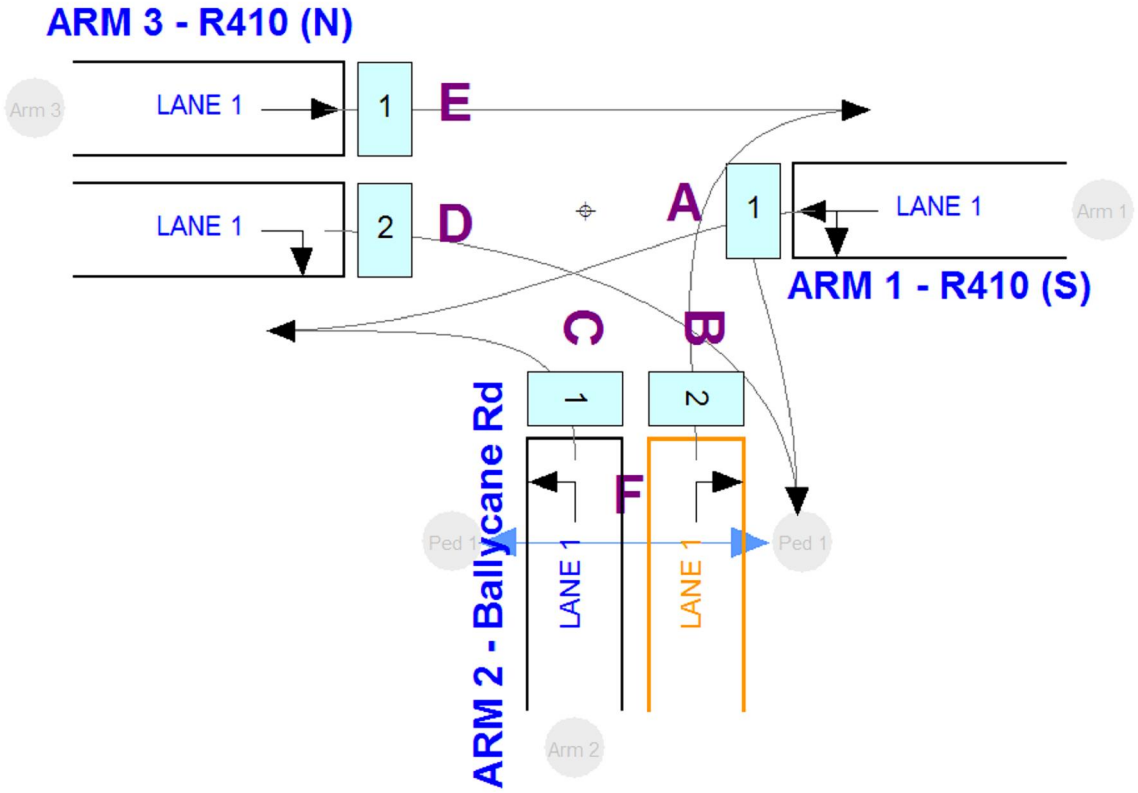
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	1	Traffic		1994	Yes	0	A	-
2	1	Traffic		1830	Yes	0	C	-
2	2	Traffic		1830	Yes	0	B	-
3	1	Traffic		2105	Yes	0	E	-
3	2	Traffic		1830	Yes	0	D	-
(Ped)	1	Pedestrian		10000	Yes	0	F	-

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

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	1	1		2	3		0.37	10	No	3.50	0.0	0
2	1	1		3			1.00	10	No	3.50	0.0	0
2	2	1				1	1.00	10	No	3.50	0.0	0
3	1	1			1		0.00	10	No	3.50	0.0	0
3	2	1				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

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

Phases

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

Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	2	2	2		2
	B	1	-		2	2	2
	C	1		-	1		2
	D	1	1	1	-		2
	E		1			-	2
	F	2	2	2	2	2	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,E	Yes
2	-1	D,E	Yes
3	-1	B,C	Yes
4	-1	F	Yes
5	-1	C,E	Yes

Sequences

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

Constraints

(No constraints)

Traffic

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

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	60
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
(Default Demand Set)	Yes	08:15	09:15	DIRECT	No	D1

Results

Note:Duplicate solutions are not shown.

Sequence1; Objective: CRITICAL CYCLE TIME

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
87.0	0.33	28.80	28.80	55.0

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	2.0	21.0	23.0
2	25.0	19.0	44.0
5	45.0	22.0	67.0
3	68.0	10.0	78.0
4	80.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	2	21.0	23						
B	68	10.0	78						
C	45	33.0	78						
D	25	19.0	44						
E	2	65.0	67						
F	80	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	460	A	22.50	63.09	8.06	89.20	0.90	4.87	13.94	9.08	7.50
2	**1**	651	C	34.50	49.37	8.93	89.71	0.33	5.49	16.41	10.91	14.20
2	**2**	180	B	11.50	62.92	3.15	74.41	20.95	1.43	5.34	3.92	2.90
3	**1**	155	E	66.50	2.76	0.12	9.63	834.25	0.01	0.92	0.91	24.60
3	**2**	386	D	20.50	70.37	7.55	89.52	0.54	4.86	12.59	7.73	5.80
Ped	**1**	100	F	8.50	36.02	1.00	10.24	779.31	0.01	2.19	2.18	0.00

Sequence1; Objective: MAXIMUM CAPACITY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	2.41	33.07	33.07	60.3

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	2.0	30.0	32.0
2	34.0	28.0	62.0
5	63.0	35.0	98.0
3	99.0	12.0	111.0
4	113.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	2	30.0	32						
B	99	12.0	111						
C	63	48.0	111						
D	34	28.0	62						
E	2	96.0	98						
F	113	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	460	A	31.50	71.01	9.07	87.88	2.41	4.29	16.75	12.45	7.90
2	**1**	651	C	49.50	50.32	9.10	86.24	4.36	3.93	18.59	14.66	17.30
2	**2**	180	B	13.50	113.13	5.66	87.43	2.94	3.54	9.06	5.52	2.10
3	**1**	155	E	97.50	2.42	0.10	9.06	893.08	0.01	1.01	1.00	26.20
3	**2**	386	D	29.50	71.49	7.67	85.80	4.89	3.47	13.99	10.52	6.80
Ped	**1**	100	F	8.50	52.83	1.47	14.12	537.50	0.01	3.11	3.10	0.00

Sequence1; Objective: MINIMUM DELAY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	2.25	29.07	29.07	61.5

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	2.0	31.0	33.0
2	35.0	28.0	63.0
3	64.0	47.0	111.0
4	113.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	2	31.0	33						
B	64	47.0	111						
C	64	47.0	111						
D	35	28.0	63						
E	2	61.0	63						
F	113	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	460	A	32.50	64.43	8.23	85.18	5.66	3.38	15.69	12.31	8.90
2	**1**	651	C	48.50	54.27	9.81	88.02	2.25	4.63	19.50	14.87	15.60
2	**2**	180	B	48.50	24.66	1.23	24.34	269.81	0.05	3.76	3.71	13.80
3	**1**	155	E	62.50	15.23	0.66	14.14	536.59	0.02	2.57	2.55	16.40
3	**2**	386	D	29.50	71.49	7.67	85.80	4.89	3.47	13.99	10.52	6.80
Ped	**1**	100	F	8.50	52.83	1.47	14.12	537.50	0.01	3.11	3.10	0.00

OSCADY PRO

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

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File: \\HP-Z230-MOR1\Users\Public\MOR shared folder\DUBLIN JOBS\16027 NDFA PPP Social Housing\Craddockstown\OSCADY FILES\Site 3\2034 AM With Dev + 3rd Party.osc
Report generation date: 28/02/2017 09:53:31

Summary

File Description

Title	Craddockstown
Date	21/02/2017
Location	Site 3
Driving Side	Left
Identifier	Site 3 2034 AM Post Dev only
Client	
Jobnumber	16027
Enumerator	M GERAGHTY
Status	(new file)
Description	

Run Options

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

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R410 (S)	50.0	10	10	50	0
2	Ballycane Rd	50.0	10	10	50	0
3	R410 (N)	50.0	10	10	50	0

Traffic Streams

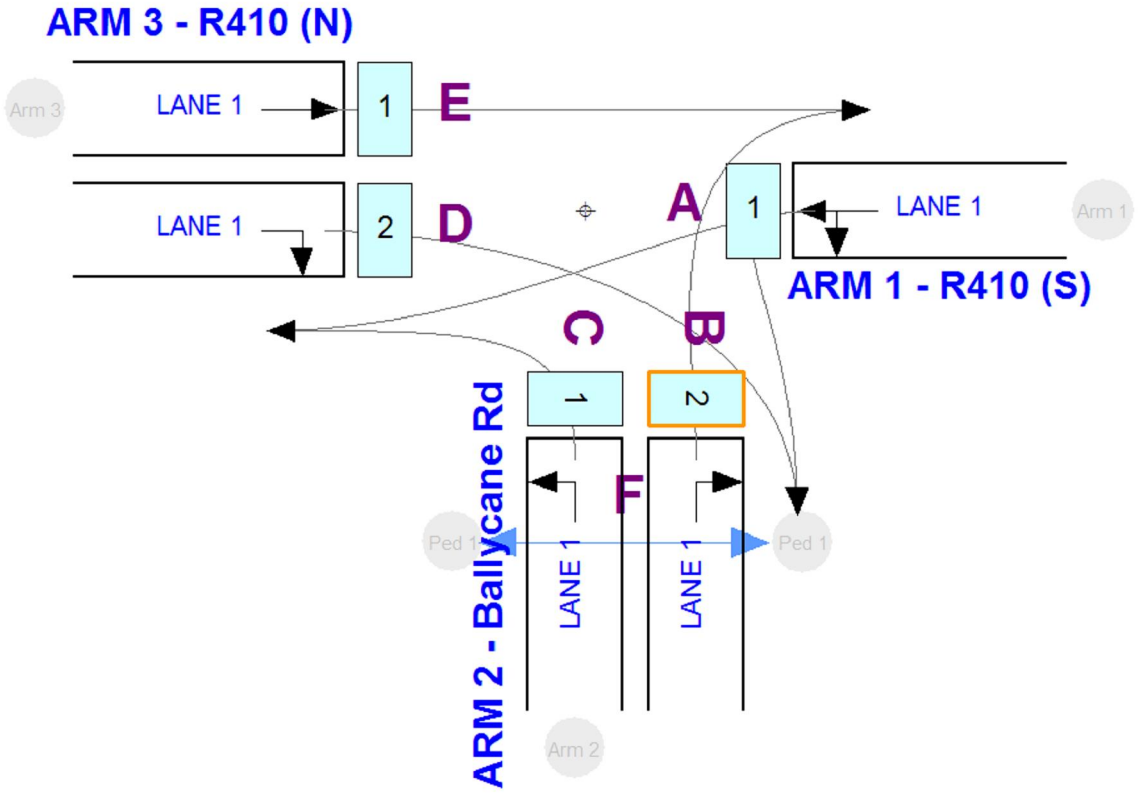
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	1	Traffic		1994	Yes	0	A	-
2	1	Traffic		1830	Yes	0	C	-
2	2	Traffic		1830	Yes	0	B	-
3	1	Traffic		2105	Yes	0	E	-
3	2	Traffic		1830	Yes	0	D	-
(Ped)	1	Pedestrian		10000	Yes	0	F	-

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

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	1	1		2	3		0.37	10	No	3.50	0.0	0
2	1	1		3			1.00	10	No	3.50	0.0	0
2	2	1				1	1.00	10	No	3.50	0.0	0
3	1	1			1		0.00	10	No	3.50	0.0	0
3	2	1				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

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

Phases

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

Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	1	1	1		1
	B	1	-		1	1	1
	C	1		-	1		1
	D	1	1	1	-		1
	E		1			-	1
	F	1	1	1	1	1	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,E	Yes
2	-1	D	Yes
3	-1	B,C	Yes
4	-1	F	Yes
5	-1	D,E	Yes
6	-1	C,E	Yes

Sequences

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

Constraints

(No constraints)

Traffic

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

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	60
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
(Default Demand Set)	Yes	08:15	09:15	DIRECT	No	D1

Results

Note:Duplicate solutions are not shown.

Sequence1; Objective: CRITICAL CYCLE TIME

Errors and Warnings

Code	Describtion
W23	Flows must be reduced by 4 percent.

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
286.0	-0.41	63.70	63.70	74.3

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	95.0	96.0
5	97.0	66.0	163.0
3	164.0	114.0	278.0
4	279.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	95.0	96						
B	164	114.0	278						
C	164	114.0	278						
D	97	66.0	163						
E	1	162.0	163						
F	279	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	608	A	96.50	118.34	19.99	90.37	-0.41	5.81	42.24	36.43	11.30
2	**1**	663	C	115.50	104.09	19.17	89.71	0.32	5.52	41.72	36.20	14.70
2	**2**	180	B	115.50	57.40	2.87	24.36	269.52	0.05	8.90	8.84	13.80
3	**1**	257	E	163.50	30.42	2.17	21.36	321.42	0.04	9.26	9.22	28.70
3	**2**	388	D	67.50	144.97	15.62	89.83	0.18	5.02	30.55	25.53	5.80
Ped	**1**	100	F	8.50	139.65	3.88	33.65	167.48	0.10	7.81	7.71	0.00

Sequence1; Objective: MAXIMUM CAPACITY

Errors and Warnings

Code	Describtion
W23	Flows must be reduced by 4 percent.

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	-3.74	39.60	39.60	67.4

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	38.0	39.0
5	40.0	26.0	66.0
3	67.0	45.0	112.0
4	113.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	38.0	39						
B	67	45.0	112						
C	67	45.0	112						
D	40	26.0	66						
E	1	65.0	66						
F	113	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	608	A	39.50	73.98	12.49	92.63	-2.84	7.53	23.01	15.48	10.00
2	**1**	663	C	46.50	71.24	13.12	93.50	-3.74	8.60	24.21	15.61	11.50
2	**2**	180	B	46.50	26.10	1.31	25.38	254.56	0.06	3.87	3.81	13.10
3	**1**	257	E	66.50	14.16	1.01	22.03	308.51	0.04	4.07	4.03	27.60
3	**2**	388	D	27.50	94.70	10.21	92.52	-2.72	6.64	17.44	10.81	5.20
Ped	**1**	100	F	8.50	52.83	1.47	14.12	537.50	0.01	3.11	3.10	0.00

Sequence1; Objective: MINIMUM DELAY

Errors and Warnings

Code	Describtion
W23	Flows must be reduced by 4 percent.

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	-3.74	39.60	39.60	67.6

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	38.0	39.0
5	40.0	26.0	66.0
3	68.0	44.0	112.0
4	113.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	38.0	39						
B	68	44.0	112						
C	67	45.0	112						
D	40	26.0	66						
E	1	66.0	67						
F	113	7.0	0						

Phase Delays

Type	Phase	Terminating Stage	Starting Stage	Absolute Delay (s)	Relative Delay (s)
Losing	E	5	3	1.00	

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	608	A	39.50	73.98	12.49	92.63	-2.84	7.53	23.01	15.48	10.00
2	**1**	663	C	46.50	71.24	13.12	93.50	-3.74	8.60	24.21	15.61	11.50
2	**2**	180	B	45.50	26.85	1.34	25.94	246.94	0.06	3.93	3.86	12.80
3	**1**	257	E	67.50	13.64	0.97	21.70	314.65	0.04	3.99	3.95	28.10
3	**2**	388	D	27.50	94.70	10.21	92.52	-2.72	6.64	17.44	10.81	5.20
Ped	**1**	100	F	8.50	52.83	1.47	14.12	537.50	0.01	3.11	3.10	0.00

OSCADY PRO

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

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File: \\HP-Z230-MOR1\Users\Public\MOR shared folder\DUBLIN JOBS\16027 NDFA PPP Social Housing\Craddockstown\OSCADY FILES\Site 3\2034 AM With Dev only.osc
Report generation date: 27/02/2017 15:55:49

Summary

File Description

Title	Craddockstown
Date	21/02/2017
Location	Site 3
Driving Side	Left
Identifier	Site 3 2034 AM Post Dev only
Client	
Jobnumber	16027
Enumerator	M GERAGHTY
Status	(new file)
Description	

Run Options

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

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R410 (S)	50.0	10	10	50	0
2	Ballycane Rd	50.0	10	10	50	0
3	R410 (N)	50.0	10	10	50	0

Traffic Streams

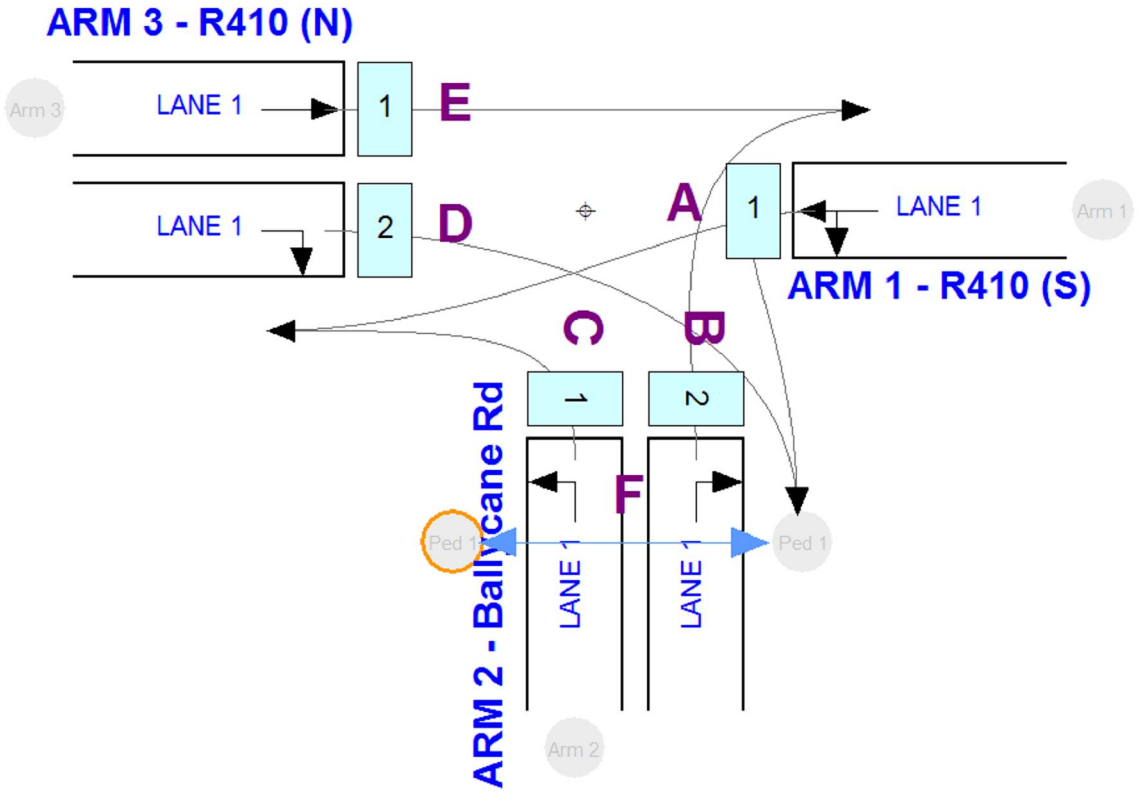
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	1	Traffic		1994	Yes	0	A	-
2	1	Traffic		1830	Yes	0	C	-
2	2	Traffic		1830	Yes	0	B	-
3	1	Traffic		2105	Yes	0	E	-
3	2	Traffic		1830	Yes	0	D	-
(Ped)	1	Pedestrian		10000	Yes	0	F	-

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

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	1	1		2	3		0.37	10	No	3.50	0.0	0
2	1	1		3			1.00	10	No	3.50	0.0	0
2	2	1				1	1.00	10	No	3.50	0.0	0
3	1	1			1		0.00	10	No	3.50	0.0	0
3	2	1				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

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

Phases

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

Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	2	2	2		2
	B	1	-		2	2	2
	C	1		-	1		2
	D	1	1	1	-		2
	E		1			-	2
	F	2	2	2	2	2	-

Stages

Stage	Stage Min Green (s)	Phases In This Stage	Use To Generate Sequences
1	-1	A,E	Yes
2	-1	D,E	Yes
3	-1	B,C	Yes
4	-1	F	Yes
5	-1	C,E	Yes

Sequences

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

Constraints

(No constraints)

Traffic

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

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	60
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
(Default Demand Set)	Yes	08:15	09:15	DIRECT	No	D1

Results

Note:Duplicate solutions are not shown.

Sequence1; Objective: CRITICAL CYCLE TIME

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
94.0	-0.90	31.96	31.96	55.1

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	2.0	23.0	25.0
2	27.0	21.0	48.0
5	49.0	26.0	75.0
3	76.0	9.0	85.0
4	87.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	2	23.0	25						
B	76	9.0	85						
C	49	36.0	85						
D	27	21.0	48						
E	2	73.0	75						
F	87	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	460	A	24.50	63.55	8.12	88.51	1.68	4.55	14.33	9.78	7.70
2	**1**	663	C	37.50	53.79	9.91	90.82	-0.90	6.22	18.22	12.00	13.70
2	**2**	180	B	10.50	104.47	5.22	88.06	2.21	3.72	8.05	4.33	2.10
3	**1**	155	E	74.50	2.33	0.10	9.29	868.70	0.01	0.87	0.87	25.50
3	**2**	388	D	22.50	69.63	7.51	88.58	1.61	4.45	12.80	8.35	6.10
Ped	**1**	100	F	8.50	39.57	1.10	11.06	713.83	0.01	2.38	2.37	0.00

Sequence1; Objective: MAXIMUM CAPACITY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	2.41	33.86	33.86	59.3

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	2.0	30.0	32.0
2	34.0	28.0	62.0
5	63.0	35.0	98.0
3	99.0	12.0	111.0
4	113.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	2	30.0	32						
B	99	12.0	111						
C	63	48.0	111						
D	34	28.0	62						
E	2	96.0	98						
F	113	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	460	A	31.50	71.01	9.07	87.88	2.41	4.29	16.75	12.45	7.90
2	**1**	663	C	49.50	52.99	9.76	87.83	2.47	4.57	19.54	14.97	16.40
2	**2**	180	B	13.50	113.13	5.66	87.43	2.94	3.54	9.06	5.52	2.10
3	**1**	155	E	97.50	2.42	0.10	9.06	893.08	0.01	1.01	1.00	26.20
3	**2**	388	D	29.50	72.41	7.80	86.25	4.35	3.61	14.18	10.57	6.70
Ped	**1**	100	F	8.50	52.83	1.47	14.12	537.50	0.01	3.11	3.10	0.00

Sequence1; Objective: MINIMUM DELAY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
120.0	2.41	29.98	29.98	61.2

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	2.0	30.0	32.0
2	34.0	28.0	62.0
3	63.0	48.0	111.0
4	113.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	2	30.0	32						
B	63	48.0	111						
C	63	48.0	111						
D	34	28.0	62						
E	2	60.0	62						
F	113	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	460	A	31.50	71.01	9.07	87.88	2.41	4.29	16.75	12.45	7.90
2	**1**	663	C	49.50	52.99	9.76	87.83	2.47	4.57	19.54	14.97	16.40
2	**2**	180	B	49.50	23.95	1.20	23.85	277.44	0.05	3.71	3.66	14.10
3	**1**	155	E	61.50	15.76	0.68	14.37	526.41	0.02	2.62	2.60	16.10
3	**2**	388	D	29.50	72.41	7.80	86.25	4.35	3.61	14.18	10.57	6.70
Ped	**1**	100	F	8.50	52.83	1.47	14.12	537.50	0.01	3.11	3.10	0.00

OSCADY PRO

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

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File: \\HP-Z230-MOR1\Users\Public\MOR shared folder\DUBLIN JOBS\16027 NDFA PPP Social Housing\Craddockstown\OSCADY FILES\Site 3\2034 PM Base.osc
Report generation date: 23/02/2017 11:51:51

Summary

File Description

Title	Craddockstown
Date	21/02/2017
Location	Site 3
Driving Side	Left
Identifier	Site 3 PM Base 2034
Client	
Jobnumber	16027
Enumerator	M GERAGHTY
Status	(new file)
Description	

Run Options

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

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R410 (S)	50.0	10	10	50	0
2	Ballycane Rd	50.0	10	10	50	0
3	R410 (N)	50.0	10	10	50	0

Traffic Streams

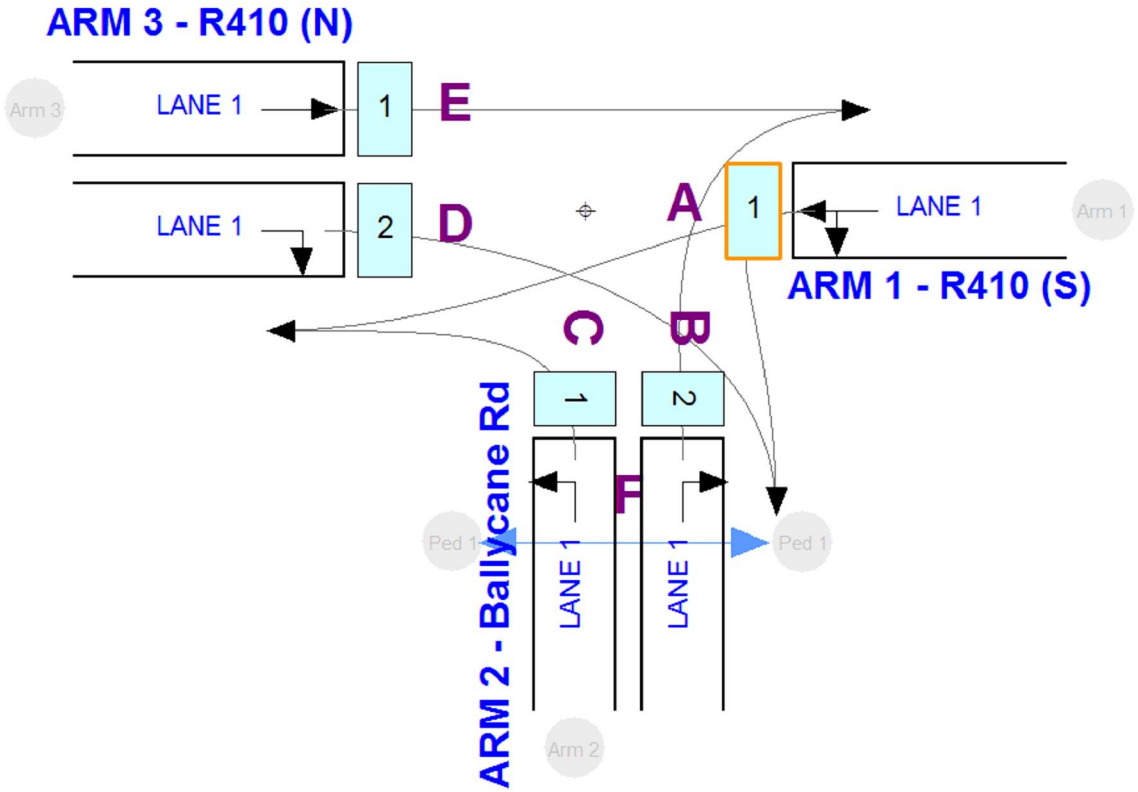
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	1	Traffic		1975	Yes	0	A	-
2	1	Traffic		1787	Yes	0	C	-
2	2	Traffic		1787	Yes	0	B	-
3	1	Traffic		2105	Yes	0	E	-
3	2	Traffic		1830	Yes	0	D	-
(Ped)	1	Pedestrian		10000	Yes	0	F	-

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

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	1	1		2	3		0.44	10	No	3.50	0.0	0
2	1	1		3			1.00	10	No	3.00	0.0	0
2	2	1				1	1.00	10	No	3.00	0.0	0
3	1	1			1		0.00	10	No	3.50	0.0	0
3	2	1				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	90
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

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

Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	2	2	2		1
	B	2	-		2	2	1
	C	2		-	2	2	1
	D	2	2	2	-		1
	E		2	2		-	1
	F	1	1	1	1	1	-

Stages

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

Sequences

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

Constraints

(No constraints)

Traffic

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

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	60
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
(Default Demand Set)	Yes	16:45	17:45	DIRECT	No	D1

Results

Note:Duplicate solutions are not shown.

Sequence1; Objective: CRITICAL CYCLE TIME

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
40.0	0.13	15.32	15.32	48.9

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	7.0	8.0
2	10.0	11.0	21.0
3	23.0	9.0	32.0
4	33.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	7.0	8						
B	23	9.0	32						
C	23	9.0	32						
D	10	11.0	21						
E	1	20.0	21						
F	33	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	320	A	8.50	32.09	2.85	76.25	18.04	1.68	4.67	2.99	6.60
2	**1**	406	C	10.50	42.71	4.82	86.55	3.98	3.73	7.35	3.62	7.30
2	**2**	184	B	10.50	15.38	0.79	39.23	129.44	0.17	1.74	1.57	8.10
3	**1**	164	E	21.50	5.00	0.23	14.49	520.91	0.02	0.89	0.87	17.80
3	**2**	514	D	12.50	44.07	6.29	89.88	0.13	5.32	9.70	4.38	9.10
Ped	**1**	100	F	8.50	12.58	0.35	4.71	9999.00	0.00	0.88	0.88	0.00

Sequence1; Objective: MAXIMUM CAPACITY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
90.0	20.35	16.32	16.32	67.9

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	18.0	19.0
2	21.0	33.0	54.0
3	56.0	26.0	82.0
4	83.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	18.0	19						
B	56	26.0	82						
C	56	26.0	82						
D	21	33.0	54						
E	1	53.0	54						
F	83	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	320	A	19.50	48.72	4.33	74.78	20.35	1.53	8.22	6.70	6.90
2	**1**	406	C	27.50	40.29	4.54	74.36	21.04	1.52	9.19	7.67	11.70
2	**2**	184	B	27.50	26.40	1.35	33.70	167.08	0.12	3.43	3.32	9.90
3	**1**	164	E	54.50	7.87	0.36	12.87	599.53	0.01	1.69	1.67	20.30
3	**2**	514	D	34.50	32.86	4.69	73.27	22.83	1.46	10.29	8.83	19.10
Ped	**1**	100	F	8.50	37.54	1.04	10.59	750.00	0.01	2.27	2.26	0.00

Sequence1; Objective: MINIMUM DELAY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
52.0	7.84	13.68	13.68	56.4

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	10.0	11.0
2	13.0	16.0	29.0
3	31.0	13.0	44.0
4	45.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	10.0	11						
B	31	13.0	44						
C	31	13.0	44						
D	13	16.0	29						
E	1	28.0	29						
F	45	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	320	A	11.50	33.18	2.95	73.26	22.84	1.39	5.23	3.85	7.30
2	**1**	406	C	14.50	37.08	4.18	81.48	10.46	2.48	7.09	4.60	9.00
2	**2**	184	B	14.50	17.85	0.91	36.93	143.73	0.15	2.14	1.99	8.80
3	**1**	164	E	29.50	5.60	0.25	13.73	555.34	0.01	1.07	1.06	18.90
3	**2**	514	D	17.50	34.07	4.86	83.46	7.84	2.99	8.48	5.49	12.40
Ped	**1**	100	F	8.50	18.46	0.51	6.12	9999.00	0.00	1.21	1.21	0.00

OSCADY PRO

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

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File: \\HP-Z230-MOR1\Users\Public\MOR shared folder\DUBLIN JOBS\16027 NDFA PPP Social Housing\Craddockstown\OSCADY FILES\Site 3\2034 PM With Dev + 3rd Party.osc
Report generation date: 23/02/2017 13:28:59

Summary

File Description

Title	Craddockstown
Date	21/02/2017
Location	Site 3
Driving Side	Left
Identifier	Site 3 PM 2034 With Dev only
Client	
Jobnumber	16027
Enumerator	M GERAGHTY
Status	(new file)
Description	

Run Options

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

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R410 (S)	50.0	10	10	50	0
2	Ballycane Rd	50.0	10	10	50	0
3	R410 (N)	50.0	10	10	50	0

Traffic Streams

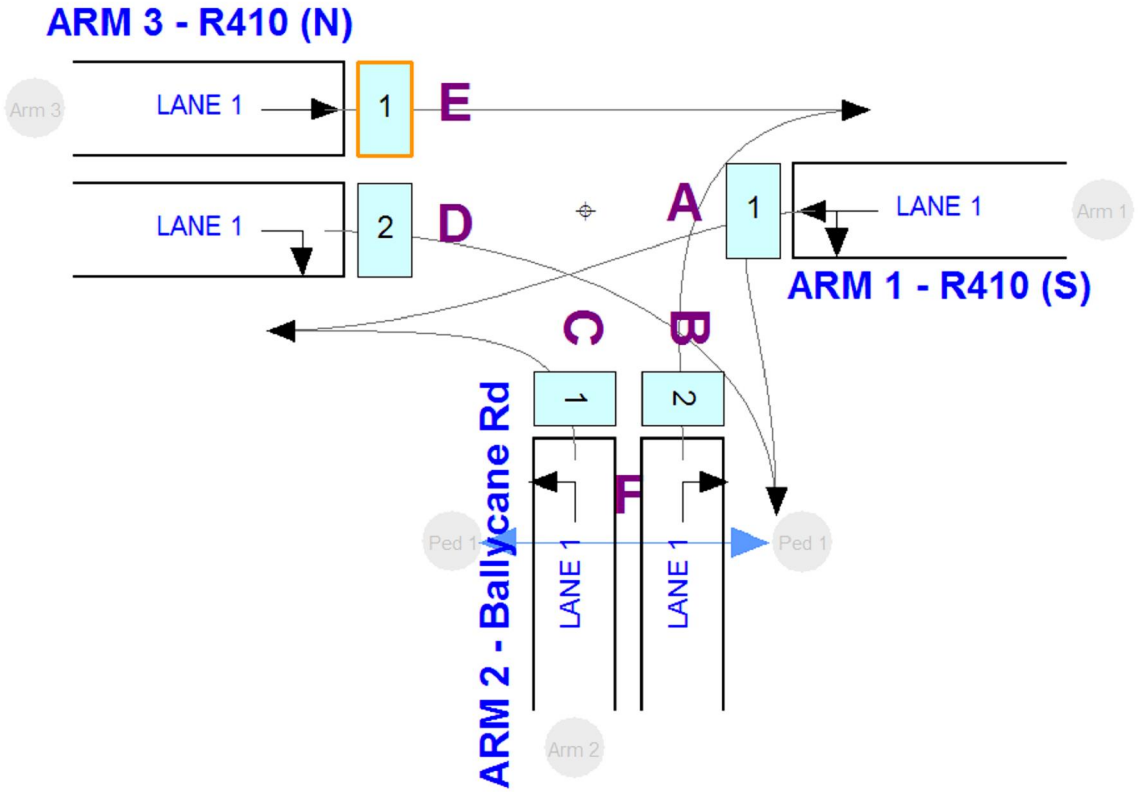
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	1	Traffic		1975	Yes	0	A	-
2	1	Traffic		1787	Yes	0	C	-
2	2	Traffic		1787	Yes	0	B	-
3	1	Traffic		2105	Yes	0	E	-
3	2	Traffic		1830	Yes	0	D	-
(Ped)	1	Pedestrian		10000	Yes	0	F	-

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

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	1	1		2	3		0.44	10	No	3.50	0.0	0
2	1	1		3			1.00	10	No	3.00	0.0	0
2	2	1				1	1.00	10	No	3.00	0.0	0
3	1	1			1		0.00	10	No	3.50	0.0	0
3	2	1				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	90
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

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

Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	2	2	2		1
	B	2	-		2	2	1
	C	2		-	2	2	1
	D	2	2	2	-		1
	E		2	2		-	1
	F	1	1	1	1	1	-

Stages

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

Sequences

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

Constraints

(No constraints)

Traffic

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

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	60
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
(Default Demand Set)	Yes	16:45	17:45	DIRECT	No	D1

Results

Note:Duplicate solutions are not shown.

Sequence1; Objective: CRITICAL CYCLE TIME

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
52.0	0.12	20.41	20.41	67.0

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	12.0	13.0
2	15.0	15.0	30.0
3	32.0	12.0	44.0
4	45.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	12.0	13						
B	32	12.0	44						
C	32	12.0	44						
D	15	15.0	30						
E	1	29.0	30						
F	45	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	439	A	13.50	43.12	5.26	85.62	5.12	3.48	8.63	5.15	8.10
2	**1**	415	C	13.50	54.28	6.26	89.45	0.61	4.89	9.73	4.84	6.60
2	**2**	184	B	13.50	19.24	0.98	39.66	126.92	0.18	2.22	2.04	8.00
3	**1**	313	E	30.50	5.87	0.51	25.35	255.02	0.06	2.05	1.99	35.00
3	**2**	522	D	16.50	47.52	6.89	89.90	0.12	5.35	11.10	5.75	9.30
Ped	**1**	100	F	8.50	18.46	0.51	6.12	9999.00	0.00	1.21	1.21	0.00

Sequence1; Objective: MAXIMUM CAPACITY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
90.0	9.80	21.03	21.03	79.7

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	23.0	24.0
2	26.0	30.0	56.0
3	58.0	24.0	82.0
4	83.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	23.0	24						
B	58	24.0	82						
C	58	24.0	82						
D	26	30.0	56						
E	1	55.0	56						
F	83	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	439	A	24.50	49.08	5.98	81.65	10.22	2.54	11.30	8.76	9.50
2	**1**	415	C	25.50	49.97	5.76	81.96	9.80	2.58	10.69	8.11	9.10
2	**2**	184	B	25.50	28.43	1.45	36.34	147.65	0.14	3.56	3.42	9.00
3	**1**	313	E	56.50	7.88	0.69	23.69	279.98	0.05	3.16	3.11	38.10
3	**2**	522	D	31.50	42.08	6.10	81.50	10.43	2.57	12.04	9.47	14.00
Ped	**1**	100	F	8.50	37.54	1.04	10.59	750.00	0.01	2.27	2.26	0.00

Sequence1; Objective: MINIMUM DELAY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
64.0	4.39	19.45	19.45	72.7

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	15.0	16.0
2	18.0	20.0	38.0
3	40.0	16.0	56.0
4	57.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	15.0	16						
B	40	16.0	56						
C	40	16.0	56						
D	18	20.0	38						
E	1	37.0	38						
F	57	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	439	A	16.50	48.67	5.93	86.22	4.39	3.67	10.02	6.35	7.90
2	**1**	415	C	17.50	46.74	5.39	84.93	5.97	3.26	9.11	5.85	8.10
2	**2**	184	B	17.50	21.76	1.11	37.66	139.01	0.16	2.62	2.47	8.60
3	**1**	313	E	38.50	6.58	0.57	24.72	264.11	0.06	2.42	2.37	36.10
3	**2**	522	D	21.50	39.76	5.76	84.91	5.99	3.37	10.25	6.88	12.00
Ped	**1**	100	F	8.50	24.44	0.68	7.53	9999.00	0.00	1.55	1.54	0.00

OSCADY PRO

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

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File: \\HP-Z230-MOR1\Users\Public\MOR shared folder\DUBLIN JOBS\16027 NDFA PPP Social Housing\Craddockstown\OSCADY FILES\Site 3\2034 PM With Dev only.osc
Report generation date: 23/02/2017 11:52:28

Summary

File Description

Title	Craddockstown
Date	21/02/2017
Location	Site 3
Driving Side	Left
Identifier	Site 3 PM 2034 With Dev only
Client	
Jobnumber	16027
Enumerator	M GERAGHTY
Status	(new file)
Description	

Run Options

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

Geometry

Arms

Arm	Name	Exit Width (m)	Approach Speed (kph)	Exit Speed (kph)	Speed Limit (kph)	Stagger Distance (m)
1	R410 (S)	50.0	10	10	50	0
2	Ballycane Rd	50.0	10	10	50	0
3	R410 (N)	50.0	10	10	50	0

Traffic Streams

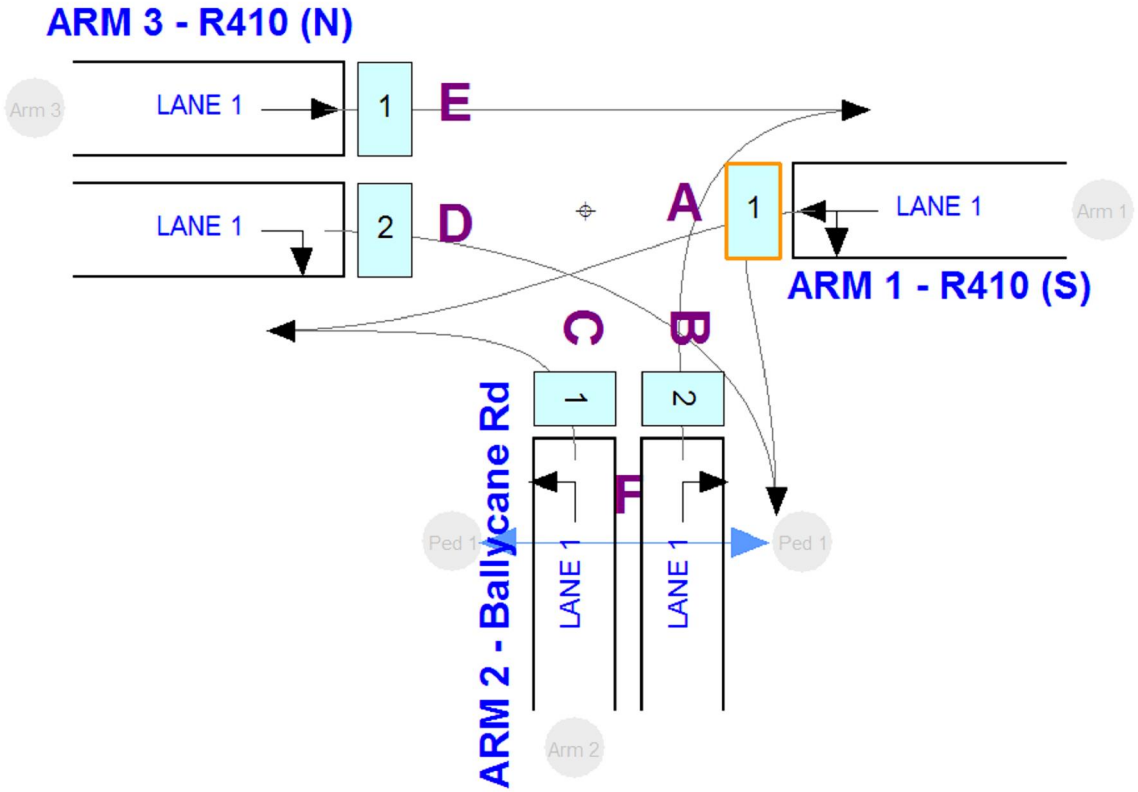
Arm	Traffic Stream	Type	Name	Sat Flow (PCU/hr)	Estimate Sat Flow	Sat Flow 2 (PCU/hr)	Green Phase	Arrow Phase
1	1	Traffic		1975	Yes	0	A	-
2	1	Traffic		1787	Yes	0	C	-
2	2	Traffic		1787	Yes	0	B	-
3	1	Traffic		2105	Yes	0	E	-
3	2	Traffic		1830	Yes	0	D	-
(Ped)	1	Pedestrian		10000	Yes	0	F	-

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

Lanes

Arm	Traffic Stream	Lane	Name	Nearside Dest Arm	Straight Dest Arm	Offside Dest Arm	Proportion That Turn	Turning Radius (m)	IsNearside Lane	Width (m)	Gradient (%)	Short Lane Storage (PCU)
1	1	1		2	3		0.44	10	No	3.50	0.0	0
2	1	1		3			1.00	10	No	3.00	0.0	0
2	2	1				1	1.00	10	No	3.00	0.0	0
3	1	1			1		0.00	10	No	3.50	0.0	0
3	2	1				2	1.00	10	No	3.50	0.0	0

Junction Diagram



Signals

Signals

Max Cycle Time (s)	90
Fixed Cycle Time (s)	0
Evaluation Cycle Time (s)	0
Start Displacement (s)	1.4
End Displacement (s)	2.9

Phases

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

Intergreen Matrix

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**	-	2	2	2		1
	B	2	-		2	2	1
	C	2		-	2	2	1
	D	2	2	2	-		1
	E		2	2		-	1
	F	1	1	1	1	1	-

Stages

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

Sequences

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

Constraints

(No constraints)

Traffic

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

Configuration

Traffic Scaling Factor	1.00
Time Period (min)	60
Time Segment Length (min)	15
Signal Optimiser Flows	Average
PCUs per Heavy Vehicle	2.00

Demand Sets

Name	Selected	Time Start	Time End	Profile Type	Use Relationship	Relationship
(Default Demand Set)	Yes	16:45	17:45	DIRECT	No	D1

Results

Note:Duplicate solutions are not shown.

Sequence1; Objective: CRITICAL CYCLE TIME

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
42.0	1.42	15.23	15.23	50.3

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	7.0	8.0
2	10.0	12.0	22.0
3	24.0	10.0	34.0
4	35.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	7.0	8						
B	24	10.0	34						
C	24	10.0	34						
D	10	12.0	22						
E	1	21.0	22						
F	35	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	320	A	8.50	38.13	3.39	80.06	12.42	2.18	5.36	3.18	5.90
2	**1**	415	C	11.50	38.95	4.49	84.82	6.11	3.23	7.07	3.83	8.10
2	**2**	184	B	11.50	15.26	0.78	37.60	139.33	0.15	1.77	1.62	8.60
3	**1**	164	E	22.50	5.27	0.24	14.54	518.85	0.02	0.94	0.92	17.80
3	**2**	522	D	13.50	41.08	5.96	88.74	1.42	4.76	9.38	4.61	9.90
Ped	**1**	100	F	8.50	13.55	0.38	4.94	9999.00	0.00	0.93	0.93	0.00

Sequence1; Objective: MAXIMUM CAPACITY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
90.0	17.44	16.70	16.70	67.1

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	18.0	19.0
2	21.0	32.0	53.0
3	55.0	27.0	82.0
4	83.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	18.0	19						
B	55	27.0	82						
C	55	27.0	82						
D	21	32.0	53						
E	1	52.0	53						
F	83	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	320	A	19.50	48.72	4.33	74.78	20.35	1.53	8.22	6.70	6.90
2	**1**	415	C	28.50	38.58	4.45	73.34	22.72	1.43	9.16	7.73	12.70
2	**2**	184	B	28.50	25.44	1.30	32.52	176.79	0.11	3.37	3.26	10.40
3	**1**	164	E	53.50	8.31	0.38	13.11	586.69	0.01	1.73	1.72	19.90
3	**2**	522	D	33.50	35.89	5.20	76.63	17.44	1.82	10.97	9.15	17.20
Ped	**1**	100	F	8.50	37.54	1.04	10.59	750.00	0.01	2.27	2.26	0.00

Sequence1; Objective: MINIMUM DELAY

Summary

Cycle Time (s)	Practical Reserve Capacity (%)	Rate of Delay (PCU)	Weighted Rate of Delay (PCU)	Geometric Delay (PCU-min)
53.0	6.03	14.34	14.34	56.8

- *Cycle Time is the minimum cycle time that meets all safety criteria whilst optimising this objective.*
- *PRC is the lowest value encountered over all streams.*
- *Rate of delay is the sum of each stream's rate of delay.*

Stage Timings

Stage	Start Time (s)	Duration (s)	End Time (s)
1	1.0	10.0	11.0
2	13.0	17.0	30.0
3	32.0	13.0	45.0
4	46.0	7.0	0.0

Phase Timings

Phase	Start Time (s)	Duration (s)	End Time (s)	Filter Arrow Time (s)	Indicative Arrow Start (s)	Indicative Arrow Duration (s)	Start Time (s) (2nd green)	Duration (s) (2nd green)	End Time (s) (2nd green)
A	1	10.0	11						
B	32	13.0	45						
C	32	13.0	45						
D	13	17.0	30						
E	1	29.0	30						
F	46	7.0	0						

Traffic Stream Details

Arm	Traffic Stream	Arrival Rate (PCU/hr)	Controlling Phase	Effective Green (s)	Average Delay (s)	Rate of Delay (PCU)	Degree of Saturation (%)	Practical Reserve Capacity (%)	Queue at End of Green (PCU)	Queue at End of Red (PCU)	Uniform Queue (PCU)	Geometric Delay (PCU-min)
1	**1**	320	A	11.50	35.05	3.12	74.67	20.53	1.52	5.46	3.94	7.00
2	**1**	415	C	14.50	42.87	4.94	84.89	6.03	3.25	8.09	4.84	8.10
2	**2**	184	B	14.50	18.51	0.95	37.64	139.13	0.16	2.20	2.04	8.60
3	**1**	164	E	30.50	5.49	0.25	13.54	564.78	0.01	1.07	1.06	19.20
3	**2**	522	D	18.50	31.43	4.56	81.72	10.13	2.62	8.20	5.59	13.90
Ped	**1**	100	F	8.50	18.96	0.53	6.24	9999.00	0.00	1.24	1.24	0.00