Planex

Clonmelsh Quarry, Co. Carlow

Traffic and Transport Assessment

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Clonmelsh Quarry

Traffic and Transport Assessment

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Executive Summary

This report addresses the traffic related impacts of the continuation of the existing traffic levels exiting Clonmelsh Quarry operation in Clonmelsh, Co. Carlow. The area the subject of the application that this TTA has been prepared for extends to 29.1 ha. and is in Powerstown townland. No access to the public road is proposed as part of the further quarry development. All traffic arising is to use the existing Clonmelsh quarry and plant area entrance, already the subject of an rEIAR prepared to support concurrent applications for substitute consent (ABP-300034-17 (Quarry Area) and ABP-300037-17 (Plant Area)). Aggregate extracted recovered from Powerstown will replace that currently recovered in the substitute consent areas. The existing Clonmelsh quarry and plant entrance is an existing access onto the L3050 Local Road.

Public road access to the site is to be provided directly from the L3050 Local Road, which extends from its junction with the R448 Regional Road, to the west of the site, to where it intersects with the N80 National Secondary Road to the east of the site.

Classified traffic counts were undertaken to obtain an accurate representation of the traffic movements in the vicinity of the development and Transport Infrastructure Ireland (TII) traffic growth factors were applied to the count data to estimate future year flows. The development flows to and from the site have been calculated following an inspection of the existing traffic being generated and discussions with the client on the current and proposed future level of activity at the site. The total daily trips associated with the quarry operation is 510, 399 of which relate to Goods Vehicles (78%).

The current extraciton rates are approximately 180,000 tonnes of raw material per annum and 270,000 tonnes is imported from external sources. It exports approximately 450,000 tonnes of product (concrete, asphalt and concrete products). These figures form the basis of the forecast development-generated traffic and of the link and junction capacity assessments for each of the assessment years.

To assess the impact of the development on the existing network, a conservative approach was taken. The existing traffic counts were taken as not including the existing development traffic and the forecasted development traffic was taken as additional.

The link capacity of the R448 Regional Road and the L3050 Local Road have been assessed and the junction capacity at the site access and R448 staggered junction. This was conducted for the assessment years of 2018, 2023 and 2033 in accordance with the “Traffic and Transport Assessment Guidelines” (September 2014) published by Transport Infrastructure Ireland. The assessment of the link capacities and the junction capacity indicate that they will operate within capacity for each of the assessment years.

The assessment indicates that the development will have a negligible impact on traffic flows on the existing road network as the proposed development traffic represents a continuation of the existing operation and the current level of traffic generated by the operation is not to be increased. The priority junction formed by the existing access to the site with the L3050 is capable of accommodating the generated traffic in both the opening and assessment years.

Currently the development employs 12 no. full time on-site staff working in the existing office, maintenance work station and with the existing plant. The staffing numbers during the continuation of the site will remain at 12 no. full time on-site staff. It was assumed that full time on-site staff will have morning arrivals, lunchtime departures & arrivals and evening departures.

The development also generates secondary employees in the form of hauliers, contractors and service employees. It is assumed that the number of secondary staff required will maintain as 20 no. full time staff.

Sightlines were assessed at the Clonmelsh site access along the L3050. Visibility of 160m was achieved both east and west of the site access.

Glossary of Terms

Road Network: The existing and proposed public and private roads within the study area.

Traffic Growth: The normal expected growth in traffic over time.

Trip: One movement, in or out of the study area by foot, cycle or vehicle.

Thresholds: Minimum intervention levels at which Transport and Traffic Assessments are to be conducted.

Generated Trips: Additional trips made as a result of the presence of a development.

Peak Time: Time of day at which the transport demands from a development are greatest.

Capacity Calculations: Standardised methods of estimating traffic capacity on links and at junctions.

Trip Distribution: The estimated directional distribution of the estimated traffic at each junction in the study area.

Trip Assignment: The final estimated flows of traffic for each direction of travel at each junction and along each link within the study area.

TRICS: A database containing empirically obtained trip generation data for a wide range of different types of developments.

AADT: Annual Average Daily Traffic – The mean daily traffic volume over the course of a year on a particular route.

Level of Service: Level of Service (LOS) is a measure of the capacity of a road related to the average vehicular speed and level of congestion on the road. It is ranges from LOS A to LOS F, with A representing free flow and F representing stop/start traffic. LOS C represents stable flow conditions

Table of Contents

1 Introduction 1
1.1 General 1
1.2 Information Reviewed 1
1.3 Scope 1
1.4 Methodology 1
1.5 Location plan 2
2 Existing Conditions 3
2.1 The Site 3
2.2 Existing Road Network 3
2.2.1 L3050 Local Road 3
2.2.2 R448 Regional Road 3
2.3 Traffic Volumes 4
2.3.1 General 4
2.3.2 Junction 1: Site Access to L3050 T-junction 5
Junction 2: L1003 to R448 6
3 Site Details 7
3.1 General - Quarry 7
3.2 Trip Generation and Assignment 7
3.2.1 General 7
3.2.2 Exported material 7
3.2.3 Imported Material 8
3.2.4 Staff Trips 8
3.2.5 Miscellaneous Trips 8
3.2.6 Derived Trip Rate 8
3.3 Trip Distribution and Assignment 9
3.3.1 Trip Distribution 9
3.3.2 Trip Assignment 9
4 Road Impacts 10
4.1 Assessment Years 10
4.2 Traffic Growth 10
4.3 Link Capacity Assessment 11
4.3.1 L3050 Local Road 11
4.3.2 R448 Regional Road 11
4.4 Junction Capacity Analysis 12
4.4.1 Junction 1 – Site Access to L3050. 12
4.4.2 Junction 2 (R448 staggered junction) 12
5 Road Safety 14
5.1 Site Access 14
5.2 Sightlines 14
5.3 Parking 14
5.4 Pedestrians & Cyclists 14
6 Conclusions 14

Appendix A – TRICS Output **15**

Appendix B – Traffic Survey Data **16**

Appendix C – PICADY/ARCADY/OSCADY Outputs **17**

Index of Tables

Table 2-1: Junction 1 - (Site Access/L3050) 5

Table 2-2: Junction 2 - (L3050/R448) 6

Table 3-1: Exported Material 7

Table 3-2: Imported Material 8

Table 3-3: Summary of Predicted Daily Trips 8

Table 3-4: Summary of Predicted Daily Trips During Peak Hours at the Site Access 9

Table 3-5: Trip Distribution (Site Access) 9

Table 3-6: Trip Distribution (R448 Staggered junction) 10

Table 4-1: Future Year Traffic Growth Figures (South-East) 10

Table 4-2: Combined AADT for each Assessment Year (L3050) 11

Table 4-3: Combined AADT for each Assessment Year (R448) 11

Table 4-4: Junction 1 – (Site Access/L3050) 12

Table 4-5: Junction 2 – (Site Access/L3050) 13

1 Introduction

1.1 General

PMCE Ltd were commissioned by Ms. Cliona Ryan of Planex to undertake a review of the traffic impacts associated with the Clonmelsh Quarry in Clonmelsh, Co. Carlow.

1.2 Information Reviewed

In preparing this report reference has been made to the following documents:-

- "Traffic and Transport Assessment Guidelines" (September 2014) published by the National Roads Authority;
- Unit 5.3 (Travel Demand Projections) of the "Project Appraisal Guidelines" (2016) published by Transport Infrastructure Ireland;
- Traffic Count Survey Data, collected by Abacus Transportation Surveys;
- Topographical Survey Data/Mapping provided by Planex; and
- "Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections;

1.3 Scope

The objective of the TTA is to examine the traffic implications associated with the continuation of existing extraction works at Clonmelsh quarry into lands at Powerstown in terms of its integration with existing traffic in the area. The TTA determines and quantifies the extent of trips generated by the development, and the impact of n operational performance of such trips on the local road network.

1.4 Methodology

The methodology adopted for this appraisal and report involved, in brief:-

- A site visit on the 19th October 2017, the weather was dry, and the ground surface was wet.;
- Trip Generation and Trip Assignment – This is used to derive trip rates for both the AM and PM Peaks and to provide information as to which direction of travel vehicles will travel to/from the Clonmelsh Quarry;
- Link Capacity Assessment - To obtain an AADT value for the main road linking the Clonmelsh Quarry to the surrounding network;
- Existing Traffic Assessment – The traffic count data was used to develop a PICADY/OSCADY/ARCADY model for the site access junction to L3050 junction R448 junction; and
- Future Year Assessments – The estimated future year volumes on the study area network, as a result of the continuation of site related traffic, was used to assess the future operational performance of the junctions and surrounding road network for 2018 (assumed year of opening) and at two future assessment years, the opening year +5 (2023) and the opening year +15 (2033).

1.5 Location plan

Figure 1-1 shows the proposed development of the Clonmelsh quarry and surrounding area.

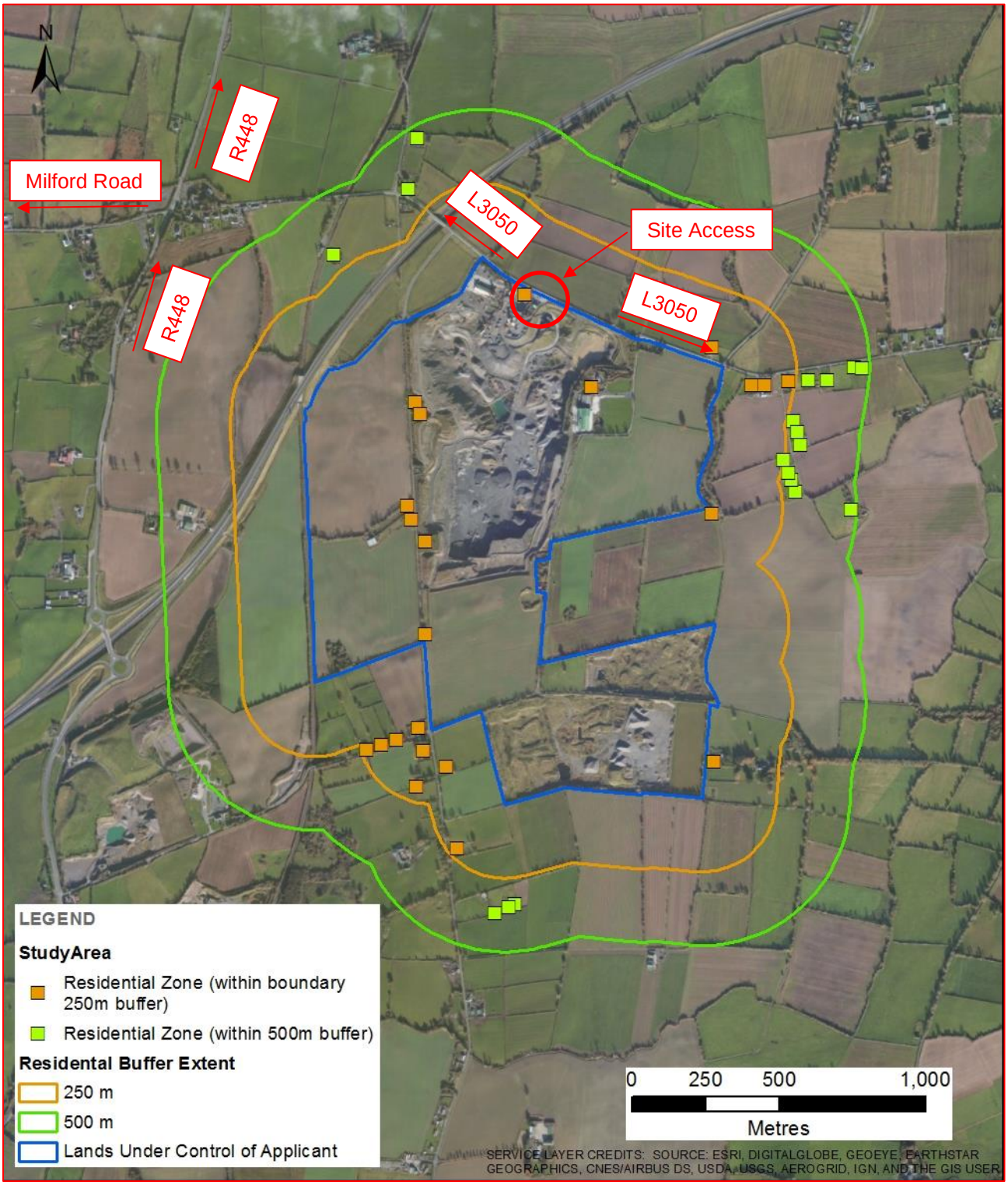


FIGURE 1-1: LOCATION PLAN

2 Existing Conditions

2.1 The Site

An existing Aggregate Processing Facility is located at Clonmelsh, Co. Carlow, and is accessed directly from the L3050 Local Road which, in the vicinity of the entrance, runs from east to west.

The proposed further quarry development is on lands at Powerstown south of Clonmelsh and are to extract aggregate for onward sale and / or processing at the Clonmelsh plant area. Staff will use the existing welfare facilities at the Clonmelsh plant area.

The exsitng main activities at Clonmelsh plant -site take place approximately 200m from the access onto the L3050 and are accessed via an internal road. A reception building and offices are located close to the site entrance along with associated parking. The surrounding land use is comprised primarily of agricultural use, with some residential properties.

2.2 Existing Road Network

2.2.1 L3050 Local Road

In the vicinity of the site the L3050 Local Road extends in an east to west direction, from its junction with the R448 (to the west) to its junction with the N80 National Secondary Road (to the east).

The L3050 is a two-lane single carriageway road with no hard shoulders and a continuous centreline extending towards the R448 and. In the vicinity of the site access the L3050 varies in width between 5.6m and 6.1m.

There are a number of local road junctions and private accesses along the L3050. There are no pedestrian or cyclist provisions along the route.

FIGURE 2-1: L3050 TO THE WEST (LEFT) AND EAST (RIGHT) AT SITE ACCESS

2.2.2 R448 Regional Road

The nearby R448 Regional Road is a single carriageway road which runs south from Carlow to Leighlinbridge. It has a speed limit of 100kph and forms a staggered t-junction with the L3050 to the east and the Milford Road to the west.

At its junction with the L3050 the R448 includes two 3.7m wide lanes, a 3.1m wide right-turning lane, a 2.9m wide left-turning filter lane and hard shoulders on each side with a width of between 1.3m and 2.2m.

Vehicular speeds on the R448 during the site visit, in the vicinity of the junction with the L3050, were noted as being at, or above, the posted speed limit. This can largely be attributed to the relatively straight horizontal alignment of the road at this location.

The L3050 forms the eastern arm of the junction and consists of a single two-way carriageway 7m wide. The development site is located approximately 1.3km to the east of this junction. The western arm of the junction is Milford Road, which consists of a single two-way carriageway 6m wide.

FIGURE 2-2 R448 AT MILFORD ROAD JUNCTION (LEFT) AND L3050 JUNCTION (RIGHT)

2.3 Traffic Volumes

2.3.1 General

Twelve-hour classified turning counts were carried out on Tuesday 7th of November by Abacus Transportation at the junctions shown in Figure 2-3 below. The counts were carried out between 7:00am and 7:00pm, this time period encompasses the main operating hours of the quarry. The time period also includes the peak hours on the adjacent Regional and County Roads. Surveyed vehicles were broken down into the categories as follows: --

- Cars;
- LGV's (Light Goods Vehicles);
- OGV1 (Two and three axle goods vehicles);
- OGV2 (Four and five axle goods vehicles); and
- Buses.

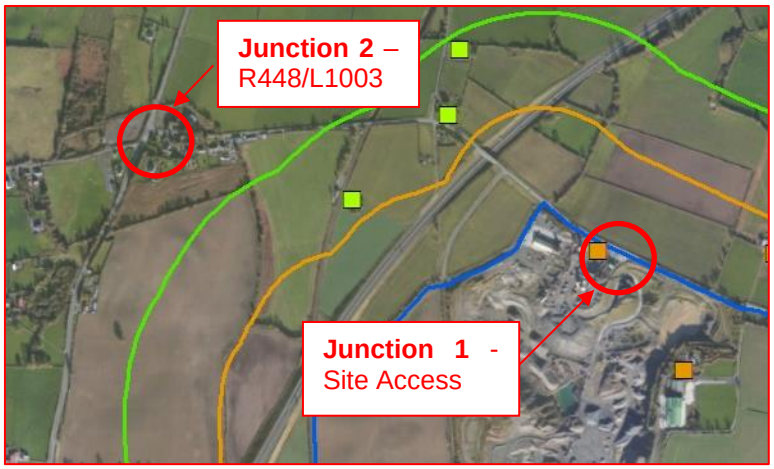


FIGURE 2-3: TRAFFIC COUNT LOCATIONS

The traffic count data has been converted to Annual Average Daily Traffic (AADT) values using the methods described in "Expansion Factors for Short Period Traffic Counts" (Unit 16.1 "Project Appraisal Guidelines" 2016). Annexes A to C of the above document were used in the expansion of traffic counts to AADT's

A combined factor of 0.851 was arrived at by combining the individual hourly factors for the count duration. This factor was then used to determine the 24-hour traffic flow. This was then converted to a Weekly Average Daily Traffic (WADT) using an index of 0.98 for the Tuesday traffic count. Finally, this was converted to AADT using an index of 1.01 for the month of November. These factors were used to calculate the AADT for each of the two junctions.

During the site inspection a significant number of Light Goods Vehicles were noted entering/exiting the existing access which was confirmed by the traffic count data. A conservative approach was taken and it was assumed that 70% of all imports/exports were conducted using 20 tonne HGV vehicles and 30% conducted using 3.5 tonne LGV. Therefore, an average of 15 tonne per load is assumed for all imports and exports to reflect the traffic count data and the site inspection observations.

2.3.2 Junction 1: Site Access to L3050 T-junction

The detailed results of the traffic survey are summarised in Table 2-1. From the survey data, the peak hours at the junction of the Site Access/L3050 T-junction have been established as follows: -

- 08:15hrs to 09:15hrs – Weekday AM Peak Hour; and
- 16:45hrs to 18:45hrs – Weekday PM Peak Hour.

TABLE 2-1: JUNCTION 1 - (SITE ACCESS/L3050)

Hour Ending	L3050 (East of Site Access)	Site Access	L3050 (West of site access)
08:00	129	54	123
09:00	205	55	218
10:00	117	48	117
11:00	69	39	74
12:00	86	41	87
13:00	98	34	104
14:00	105	34	99
15:00	112	40	116
16:00	128	43	125
17:00	147	49	146
18:00	192	57	195
19:00	114	16	114
Period Total	1502	510	1518
Period Total HGVs	*468*	*399*	*511*
% HGVs	*31%*	*78%*	*34%*
Total AADT	1747	593	1766

Junction 2: L1003 to R448

The detailed results of the traffic survey are summarised in. From the survey data, the peak hours at the junction of the L1003/R448 T-junction have been established as follows: -

- 08:00hrs to 09:00hrs – Weekday AM Peak Hour; and
- 17:00hrs to 18:00hrs – Weekday PM Peak Hour.

TABLE 2-2: JUNCTION 2 - (L3050/R448)

Hour Ending	R448 (North)	L3050 (From Site Access)	R448 (South)	Milford Road
08:00	469	121	485	95
09:00	961	138	923	192
10:00	646	109	604	147
11:00	499	74	485	76
12:00	535	87	505	75
13:00	543	103	525	97
14:00	573	97	543	101
15:00	604	114	566	108
16:00	678	108	626	122
17:00	816	146	788	156
18:00	916	185	910	187
19:00	650	134	615	153
Period Total	7890	1416	7575	1509
Period Total HGVs	*1257*	*516*	*1294*	*249*
% HGVs	*16%*	*36%*	*17%*	*16.5%*
Total AADT	9177	1647	8810	*1755*

3 Site Details

3.1 General - Quarry

There is an existing quarry and plant area located in Clonmelsh, Co. Carlowthat access directly to/from the L3050 Local Road. The current proposal is for the further quarrying of aggregate in lands at Powerstown, Co. Carlow for processing and access to the pubic road via the extant Clonmelsh quarry and plant area unit entrance.

The site currently extracts approximately 180,000 tonnes of raw material per annum and 270,000 tonnes is imported from external sources. It exports approximately 450,000 tonnes of product (concrete, asphalt and concrete products). These figures form the basis of the forecast development-generated traffic and of the link and junction capacity assessments for each of the assessment years.

3.2 Trip Generation and Assignment

3.2.1 General

Over the course of the life of the development it is proposed to extract approximately 180,000 tonnes of materials/product per annum, creating 450,000 tonne of product using imported material. This equates to approximately 95 loads per day (see Table 3-2) based on the following assumptions:-

- The facility will operate for 50 weeks per year;
- Material will be transported in average load of approximately 15 tonne. (Please refer to section 2.3.1);
- The facility will operate for six days per week (Monday to Saturday) inclusive;
- The facility will not operate on Sundays or Public Holidays ; and
- The facility opening times will be 06:00 to 19:00 Monday to Friday and 06:00 to 17:00 on Saturday.

3.2.2 Exported material

The items produced on site comprises a range of precast concrete products (sills, kerbs, blocks), ready-mixed concrete and asphalt. The extraction rates of the existing quarry from 1997 to 2017 show an average of 180,000 tonnes per annum. The future extractions of the quarry are assumed to continue as 180,000 tonnes per annum.

The items produced on site require the importation of 270,00 tonne of material. Therefore, the development exports approximately 450,000 tonnes of product (concrete, asphalt and concrete products).

TABLE 3-1: EXPORTED MATERIAL

Exported Quantities of Material (based upon historical extraction rate / annum)	
Quantity per annum	450, 000
Quantity per week (50 operational weeks / year)	9,000
Loads per week (15 tonnes / load avg.)	600
Loads per Hour (76 working hours / week)	8 (7.89)
Loads per Day (12 working hours / weekday)	95 (94.73)

3.2.3 Imported Material

Aggregates will be imported to the site for the production of concrete, concrete products and asphalt. In calculating the likely traffic volumes from the importing of aggregates, it has been assumed that the existing quarry will generate 40% of the required material relative to the exported material. Therefore, 60% of the exported material will be required from imported material. With extraction rates of 180,000 tonnes per annum, 270,000 tonnes will be required to produce the products as illustrated in Table 3-2 .

TABLE 3-2: IMPORTED MATERIAL

Imported Quantities of Material (based upon exported material)	
Quantity per annum	270,000
Quantity per week (50 operational weeks / year)	5,400
Loads per week (15 tonnes / load)	360
Loads per Hour (76 working hours / week)	5 (4.7)
Loads per Day (12 working hours / weekday)	57 (56.8)

3.2.4 Staff Trips

Currently the development employs 12 no. full time on-site staff working in the existing office, maintenance work station and with the existing plant. The number of staff required will remain at 12 no. full time on-site staff. It was assumed that full time on-site staff will have morning arrivals, lunchtime departures & arrivals and evening departures.

The development also generates secondary employees in the form of hauliers, contractors and service employees. It is assumed that the number of secondary staff required will maintain as 20 no. full time staff..

3.2.5 Miscellaneous Trips

10 trips per day have been assumed to have occurred daily to cater for miscellaneous trips associated with the site. These miscellaneous trips allow for the importation of additives for the production outputs, operations meetings, site inspections, maintenance operations for plant and machinery, additional hauliers etc.

3.2.6 Derived Trip Rate

Table 3-3 contains a summary of trips associated with the proposed development. The figure of 95 loads per day was used to calculate the total predicted daily trips for exported material with additional 57 loads per day for imported material. Using these figures (with staff and miscellaneous trips), the total number of trips is expected to be in the order of 412 based on the figures used in Table 3-3.

TABLE 3-3: SUMMARY OF PREDICTED DAILY TRIPS

	Daily Trips 2017		
	Arrivals	Departures	Total
Exported Material	95	95	190
Imported Material	57	57	114
Staff	44	44	88
Miscellaneous	10	10	20
Total	206	206	412

3.3 Trip Distribution and Assignment

3.3.1 Trip Distribution

Appendix A contains extracts from the TRICS database giving the forecast arrivals/departures distribution for quarry sites. This was considered the most relevant site type to depict movements at the site access. By inspection it can be seen that the pattern of arrivals/departures is consistent with a short turn around within the sites, e.g. that vehicles generally arrive and depart within a short time period, likely to be less than an hour.

The TRICS database indicates that the AM peak accounts for 10.78% of total daily arrivals and 9.6% of the total departures at the site.

The TRICS database indicates that the PM peak accounts for 3.53% of total daily arrivals and 8.05% of the total departures at the site.

TABLE 3-4: SUMMARY OF PREDICTED DAILY TRIPS DURING PEAK HOURS AT THE SITE ACCESS

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Exported Material	10.2 (95 x 10.78%)	9.12 (95 x 9.6%)	3.35 (95 x 3.53%)	7.65 (95 x 8.05%)
Imported Material	6.14 (57 x 10.78%)	5.47 (57 x 9.6%)	2.01 (57 x 3.53%)	4.59 (57 x 8.05%)
Staff	34 (12+20)	0	0	34 (12+20)
Miscellaneous	10	10	10	10
Total	60.34	24.59	15.36	56.24

3.3.2 Trip Assignment

The distribution of the development traffic on the adjacent road network is based on an assessment of the existing traffic flows at the site access and at the R448 staggered junction derived from the traffic count data. Table 3-5 details the trip assignment that has been applied to the development traffic as part of the junction capacity analysis. Additionally, the trip distribution has been examined for: -

- Cars and Light Goods Vehicles; and
- Heavy Goods Vehicles.

TABLE 3-5: TRIP DISTRIBUTION (SITE ACCESS)

Arm From	Arm To		
	L3050 East	Site Access	L3050 West
L3050 East		125 (84)	638 (128)
Site Access	122 (94)		134 (108)
L3050 West	617 (162)	129 (113)	

Note: Total number of vehicles (Total number of HGV)

TABLE 3-6: TRIP DISTRIBUTION (R448 STAGGERED JUNCTION)

Arm From	Arm To			
	R448 (North)	L3050	R448 (South)	Milford Road
R448 (North)		271 (99)	3135 (454)	369 (46)
L3050	237 (85)		287 (122)	166 (41)
R448 (South)	3510 (534)	246 (115)		188 (35)
Milford Road	368 (39)	209 (54)	209 (34)	

Note: Total number of vehicles (Total number of HGV)

4 Road Impacts

4.1 Assessment Years

The “Traffic and Transport Assessment Guidelines” published by Transport Infrastructure Ireland recommend the assessment of traffic in the Opening Year, for the Opening Year +5 years and the Opening Year +15 years. The assessment years for the impact assessment are therefore 2018 for the Opening Year, 2023 and 2033 for the Future Assessment Years.

4.2 Traffic Growth

The "Project Appraisal Guidelines - Unit 5" published by the National Roads Authority has been used to determine future year traffic flows on the network from the 2017 traffic count data. Table 4-1 contains a summary of the traffic growth factors published in the "Project Appraisal Guidelines". For this assessment, a medium growth scenario has been adopted (a ‘medium’ growth scenario was assumed given the site location and scale).

TABLE 4-1: FUTURE YEAR TRAFFIC GROWTH FIGURES (SOUTH-EAST)

Year	Low Growth		Medium Growth		High Growth	
	LV	HV	LV	HV	LV	HV
2013-2030	1.0076	1.0221	**1.0106**	**1.0237**	1.0118	1.0242
2030-2050	0.9996	1.0135	**1.0022**	**1.0176**	1.0038	1.0195

4.3 Link Capacity Assessment

4.3.1 L3050 Local Road

The TII Publications document reference DN-GEO-03031 provides guidance on recommended rural road layouts in Table 6/1. It advises that the capacity of a Type 3 single carriageway road with a 6m cross-section is 5,000 AADT for a Level of Service 'D' (LOS D). The L3050, adjacent to the quarry, is a two-way single carriageway with a width of approximately 6m. Therefore, the L3050 is considered to be most similar to the Type 3 single carriageway cross-section in this document with a capacity of 5,000 AADT for Level of Service D.

To assess the impact of the development on the existing network, a conservative approach was taken. The existing traffic counts were taken as not including the existing development traffic and the forecasted development traffic was taken as additional. The combined background and Site Traffic volumes, outlined in TABLE 4-2 in each of the assessment years is less than the LOS D capacity of 5,000 AADT for a Type 3 Single Carriageway. It is considered that the L3050 Road will operate within capacity for each of the assessment years. TABLE 4-2 indicates that the traffic associated with the proposed development represents between 16.8% and 18.9% of the total traffic on the L3050 during the assessment years 2018 to 2033.

TABLE 4-2: COMBINED AADT FOR EACH ASSESSMENT YEAR (L3050)

	Assessment Year			
	2017	**2018**	**2023**	**2033**
Background Traffic	1766	1785	1881	2039
Additional Development Traffic	412	412	412	412
Combined Traffic (Background + Additional Dev. Traffic)	2178	2197	2293	2451
Additional Traffic as % of Combined Traffic	18.9%	18.7%	18.0%	16.8%

4.3.2 R448 Regional Road

The TII Publications document reference DN-GEO-03031 provides guidance on recommended rural road layouts in its Table 6/1. It advises that the capacity of a Type 1 single carriageway road with a 7.3m cross-section is 11,600 AADT for a Level of Service 'D' (LOS D). The R448 Regional Road is a two-way single carriageway with an average width of 7.4m. Therefore, the R448 is considered to be most similar to the Type 1 Single Carriageway cross-section in this document with a capacity of 11,600 AADT for Level of Service D.

To assess the impact of the development on the existing network, a conservative approach was taken. The existing traffic counts were taken as not including the existing development traffic and the forecasted development traffic was taken as additional. Additionally, a worst case scenario was assessed where all development traffic travelled to/from the site by the R448.The combined background and Site Traffic volumes, outlined in TABLE 4-3 in each of the assessment years is less than the LOS D capacity of 11,600 AADT for a Type 1 Single Carriageway. It is considered that the R448 Road will operate within capacity for each of the assessment years. TABLE 4-3indicates that the traffic associated with the proposed development represents between 4.3% and 3.7% of the total traffic on the R448 during the assessment years 2018 to 2033

TABLE 4-3: COMBINED AADT FOR EACH ASSESSMENT YEAR (R448)

	Assessment Year			
	2017	**2018**	**2023**	**2033**
Background Traffic	9177	9278	9774	10595
Additional Development Traffic	412-	412	412	412
Combined Traffic (Background + Additional Dev. Traffic)	-9589	9690	10186	11007
Additional Traffic as % of Combined Traffic	4.3%	4.3%	4.0%	3.7%

4.4 Junction Capacity Analysis

The capacity of the surveyed junctions was assessed using the Transport Research Laboratory's (TRL) computer programme PICADY (Priority Intersection CApacity and DelaY) under two scenarios;

- The “without proposed development” scenario; and
- The “with proposed development” scenario.

Junction performance is measured as a ratio between the flow and capacity (RFC). The capacity analysis has been carried out for both the AM and PM Peaks for the current year and each of the assessment years (2017, 2018, 2023 and 2033). A rural junction with an RFC below 0.85 is considered to be operating within capacity, and an RFC of 0.85 indicates a junction operating at capacity.

To assess the impact of the development at the existing junctions, a conservative approach was taken. The existing traffic counts were taken as not including the existing development traffic and the forecasted development traffic was taken as additional.

The detailed junction capacity analysis outputs for all of the junctions for the final future forecast assessment year (2033), under the “with the proposed development” scenario, are contained within Appendix B to this report. Outputs for all other future forecast assessment years are available if required, including results for the “without the proposed development” scenario

4.4.1 Junction 1 – Site Access to L3050.

A summary of the junction capacity analysis result for the junction of the Site Access /L3050 Road is shown in Table 4-4. The results indicate that the junction will continue to operate within capacity for the current year and each of the assessment years 2018, 2023 and 2033 for both AM and PM peak periods.

TABLE 4-4: JUNCTION 1 – (SITE ACCESS/L3050)

Year	Peak	L3050 (East)			Site Access			L3050 (West)		
		Max RFC	Max Queue (Veh)	Queuing Delay (Min/Veh)	Max RFC	Max Queue (Veh)	Queuing Delay (Min/Veh)	Max RFC	Max Queue (Veh)	Queuing Delay (Min/Veh)
2017	AM Peak	0.146	0.17	0.2	0.146	0.17	0.2	0.146	0.17	0.2
	PM Peak	0.148	0.17	0.2	0.148	0.17	0.2	0.148	0.17	0.2
2018	AM Peak	0.331	0.48	0.2	0.331	0.48	0.2	0.331	0.48	0.2
	PM Peak	0.226	0.29	0.2	0.226	0.29	0.2	0.226	0.29	0.2
2023	AM Peak	0.359	0.54	0.3	0.359	0.54	0.3	0.359	0.54	0.3
	PM Peak	0.251	0.33	0.2	0.251	0.33	0.2	0.251	0.33	0.2
2033	AM Peak	0.405	0.66	0.3	0.405	0.66	0.3	0.405	0.66	0.3
	PM Peak	0.290	0.4	0.2	0.290	0.4	0.2	0.290	0.4	0.2

4.4.2 Junction 2 (R448 staggered junction)

A summary of the junction capacity analysis result for the junction of the R448 staggered junction Road is shown in Table 4.5 The results indicate that the junction will continue to operate within capacity for the current year and each of the assessment years 2018, 2023 and 2033 for both AM and PM peak periods.

TABLE 4-5: JUNCTION 2 – (SITE ACCESS/L3050)

Year	Peak	R448 (North)			L3050			R448 (South)			Milford Road		
		Max RFC	Max Queue (Veh)	Queuing Delay (Min/Veh)	Max RFC	Max Queue (Veh)	Queuing Delay (Min/Veh)	Max RFC	Max Queue (Veh)	Queuing Delay (Min/Veh)	Max RFC	Max Queue (Veh)	Queuing Delay (Min/Veh)
2017	AM Peak	0.523	1.04	0.2	0.523	1.04	0.2	0.523	1.04	0.2	0.523	1.04	0.2
	PM Peak	0.411	0.68	0.2	0.411	0.68	0.2	0.411	0.68	0.2	0.411	0.68	0.2
2018	AM Peak	0.552	1.16	0.3	0.552	1.16	0.3	0.552	1.16	0.3	0.552	1.16	0.3
	PM Peak	0.477	0.88	0.3	0.477	0.88	0.3	0.477	0.88	0.3	0.477	0.88	0.3
2023	AM Peak	0.608	1.44	0.3	0.608	1.44	0.3	0.608	1.44	0.3	0.608	1.44	0.3
	PM Peak	0.534	1.09	0.3	0.534	1.09	0.3	0.534	1.09	0.3	0.534	1.09	0.3
2033	AM Peak	0.766	2.67	0.5	0.766	2.67	0.5	0.766	2.67	0.5	0.766	2.67	0.5
	PM Peak	0.662	1.78	0.4	0.662	1.78	0.4	0.662	1.78	0.4	0.662	1.78	0.4

5 Road Safety

5.1 Site Access

In the vicinity of the site the L3050 Local Road has a relatively straight horizontal alignment with good forward visibility for drivers.

5.2 Sightlines

Sightlines were assessed at the Clonmelsh site access along the L3050. Visibility of 160m was achieved both east and west of the site access. Table 5.4 of TII document DN-GEO-03060 allows relaxations for sightlines to be set back to 2.4m for National roads and 2.0m for lightly trafficked accesses. The sightlines were achieved along the L3050 Local road for the site access with a setback of 2.4m from the carriageway edge.

5.3 Parking

There are 8 no. demarcated car parking spaces in the site adjacent to the office at Clonmelsh for visitors and office staff. Other parking for private staff vehicles is provided at the maintenance shed that holds sufficient turning and parking space for 10 no. cars and light vehicles.

5.4 Pedestrians & Cyclists

There are no pedestrian or cyclist provisions along the L3050, as the road consists of a single two-way carriageway with no hard shoulders. No pedestrians or cyclists were observed during the site inspection.

Along the R448, there are cycle lanes on each side of the carriageway in the vicinity of the Milford crossroads junction. There are no footpath provisions.

6 Conclusions

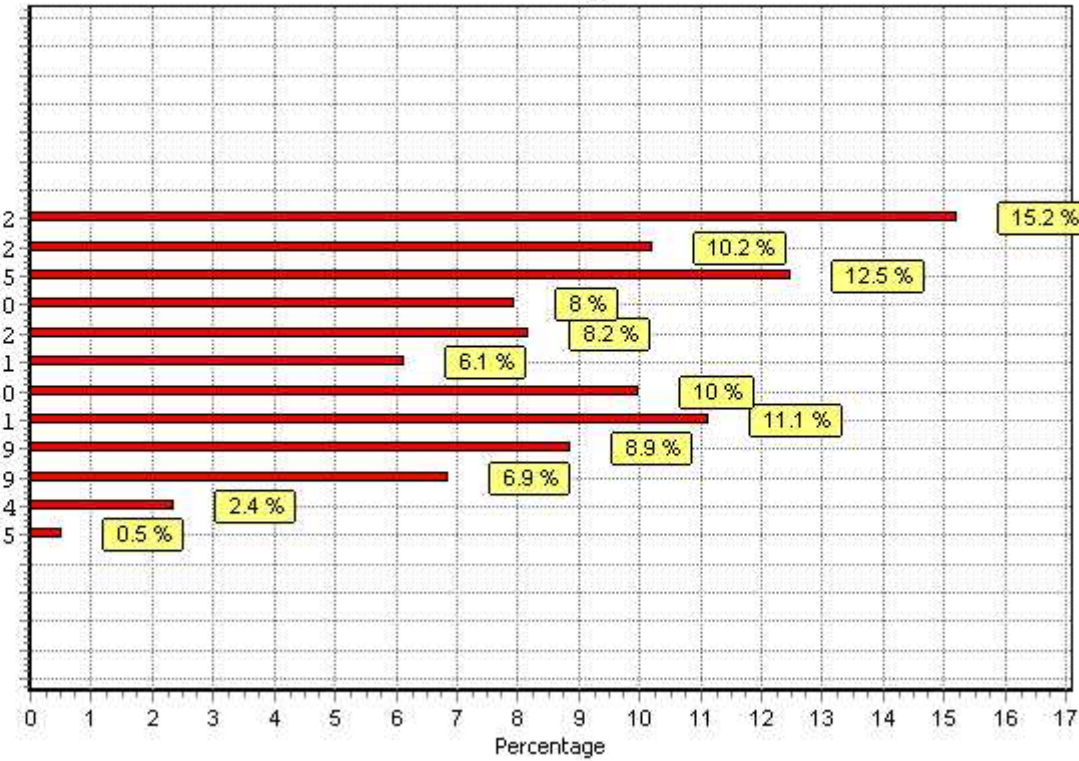
An assessment of both the link capacity and junction capacity for the L3050/Site Access junction and the R448 staggered junction were conducted. It was concluded that they will operate within capacity for each of the assessment years.

The assessment also indicates that the development will have a negligible impact on traffic flows on the existing road network as it represents the continuation of an existing operation and due to the low volumes of traffic to be generated.

Appendix A – TRICS Output

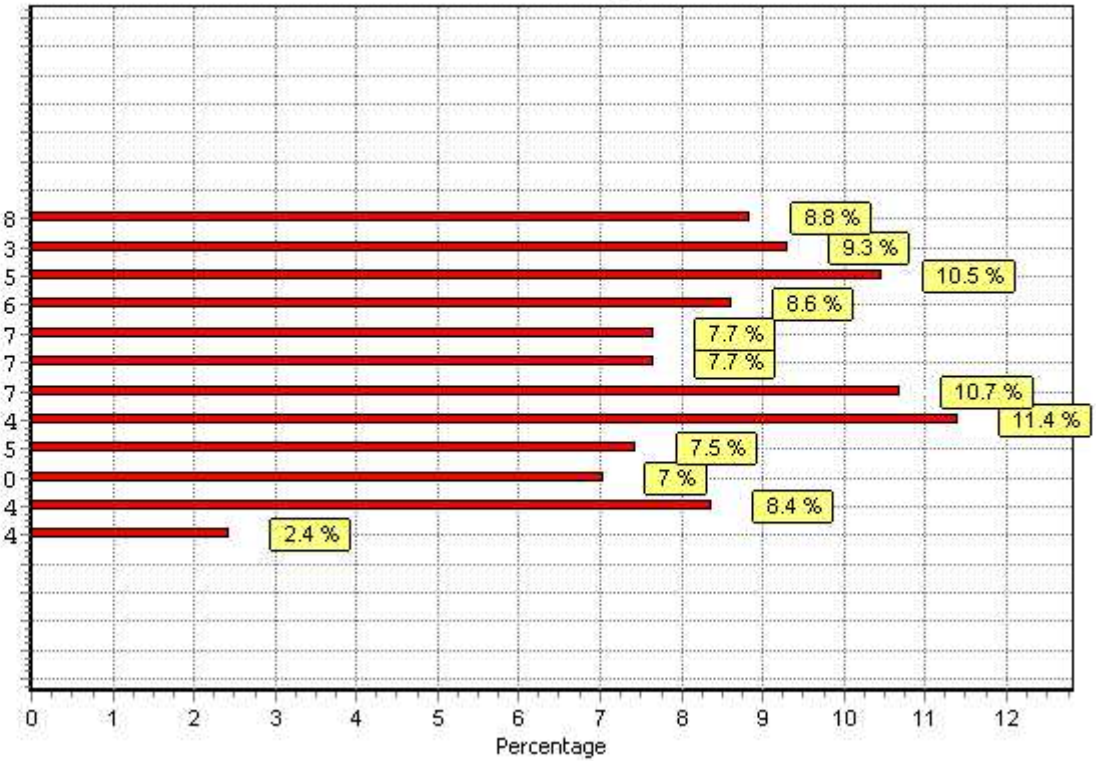
TRIP RATE GRAPH - ARRIVALS 02 - EMPLOYMENT H - QUARRY VEHICLES

TIME	DAYS	RATE	%
00:00-01:00			
01:00-02:00			
02:00-03:00			
03:00-04:00			
04:00-05:00			
05:00-06:00			
06:00-07:00			
07:00-08:00	5	0.642	15.2
08:00-09:00	5	0.431	10.2
09:00-10:00	5	0.527	12.5
10:00-11:00	5	0.336	8.0
11:00-12:00	5	0.345	8.2
12:00-13:00	5	0.259	6.1
13:00-14:00	5	0.422	10.0
14:00-15:00	5	0.470	11.1
15:00-16:00	5	0.374	8.9
16:00-17:00	4	0.290	6.9
17:00-18:00	4	0.100	2.4
18:00-19:00	4	0.022	0.5
19:00-20:00			
20:00-21:00			
21:00-22:00			
22:00-23:00			
23:00-24:00			



TRIP RATE GRAPH - DEPARTURES 02 - EMPLOYMENT H - QUARRY VEHICLES

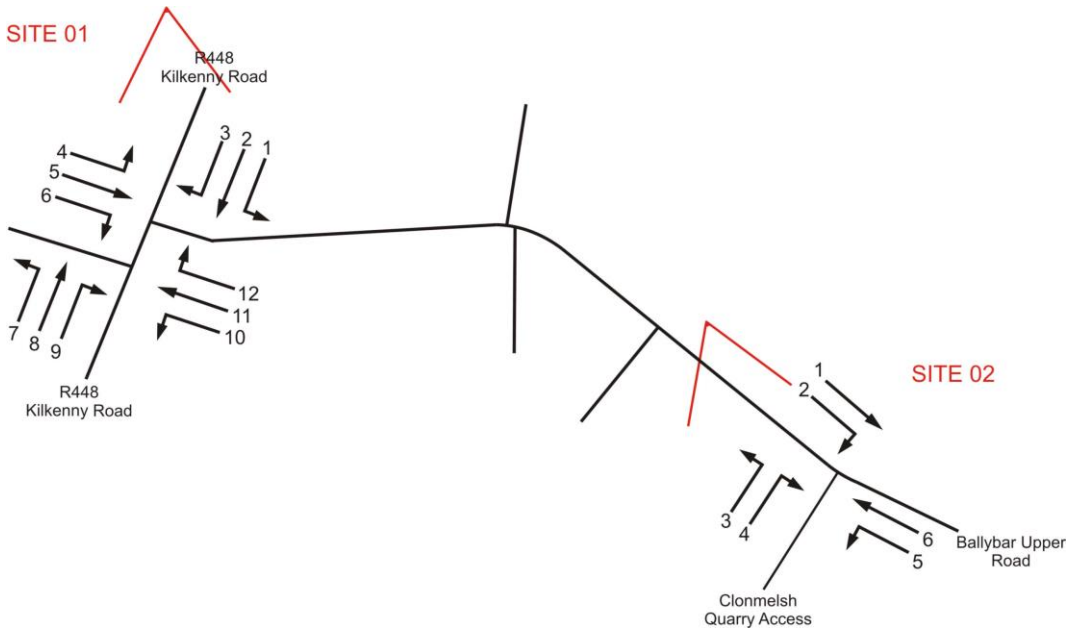
TIME	DAYS	RATE	%
00:00-01:00			
01:00-02:00			
02:00-03:00			
03:00-04:00			
04:00-05:00			
05:00-06:00			
06:00-07:00			
07:00-08:00	5	0.364	8.8
08:00-09:00	5	0.384	9.3
09:00-10:00	5	0.431	10.5
10:00-11:00	5	0.355	8.6
11:00-12:00	5	0.316	7.7
12:00-13:00	5	0.316	7.7
13:00-14:00	5	0.441	10.7
14:00-15:00	5	0.470	11.4
15:00-16:00	5	0.307	7.5
16:00-17:00	4	0.290	7.0
17:00-18:00	4	0.345	8.4
18:00-19:00	4	0.100	2.4
19:00-20:00			
20:00-21:00			
21:00-22:00			
22:00-23:00			
23:00-24:00			



Appendix B – Traffic Survey Data

Site Locations

Movement Numbering



	Job number: ATH/17/166	Job Date: 7th November 2017	Drawing No: ATH/17/166-01	abacus Transportation Surveys
	Client: PMCE	Job Day: Tuesday	Author: SPW	

ABACUS TRANSPORTATION SURVEYS

ABACUS TRANSPORTATION SURVEYS **ABACUS TRANSPORTATION SURVEYS** **ABACUS TRANSPORTATION SURVEYS**

CLONMELSH QUARRY TRAFFIC COUNTS **NOVEMBER 2017**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **ATH/17/166**

CLONMELSH QUARRY TRAFFIC COUNTS **NOVEMBER 2017** **CLONMELSH QUARRY TRAFFIC COUNTS** **NOVEMBER 2017** **CLONMELSH QUARRY TRAFFIC COUNTS** **NOVEMBER 2017**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **ATH/17/166** **MANUAL CLASSIFIED JUNCTION TURNING COUNTS** **ATH/17/166** **MANUAL CLASSIFIED JUNCTION TURNING COUNTS** **ATH/17/166**

SITE: 01 DATE: 7th November 2017

LOCATION: R448 Kilkenny Road/Ballybar Upper Road DAY: Tuesday

SITE: 01 DATE: 7th November 2017 SITE: 01 DATE: 7th November 2017 SITE: 01 DATE: 7th November 2017

LOCATION: R448 Kilkenny Road/Ballybar Upper Road DAY: Tuesday LOCATION: R448 Kilkenny Road/Ballybar Upper Road DAY: Tuesday LOCATION: R448 Kilkenny Road/Ballybar Upper Road DAY: Tuesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	1	0	0	0	1	1	26	2	2	1	0	31	33	2	0	0	0	0	2	2
07:15	1	0	0	0	0	1	1	36	4	1	1	0	42	44	2	0	0	0	0	2	2
07:30	1	2	0	0	1	4	5	55	13	1	0	2	71	74	2	1	0	0	0	3	3
07:45	0	0	0	1	0	1	2	48	2	0	0	0	50	50	1	1	0	0	1	3	4
H/TOT	2	3	0	1	1	7	9	165	21	4	2	2	194	201	7	2	0	0	1	10	11
08:00	1	0	0	1	0	2	3	59	9	1	2	1	72	76	1	0	0	0	1	2	3
08:15	2	0	0	1	0	3	4	45	13	1	0	3	62	66	3	1	0	0	0	4	4
08:30	2	1	0	1	0	4	5	53	7	1	1	0	62	64	5	2	0	0	0	7	7
08:45	3	1	1	0	0	5	6	46	7	3	1	0	57	60	6	0	0	0	0	6	6
H/TOT	8	2	1	3	0	14	18	203	36	6	4	4	253	265	15	3	0	0	1	19	20
09:00	3	2	0	1	0	6	7	42	7	0	1	4	54	59	12	1	0	0	1	14	15
09:15	2	0	0	1	0	3	4	42	6	1	1	1	51	54	6	1	0	0	0	7	7
09:30	2	0	0	2	0	4	7	37	6	4	2	0	49	54	2	1	0	0	0	3	3
09:45	3	0	0	0	1	4	5	47	6	0	0	1	54	55	5	1	0	0	0	6	6
H/TOT	10	2	0	4	1	17	23	168	25	5	4	6	208	222	25	4	0	0	1	30	31
10:00	3	0	0	0	0	3	3	41	11	0	0	0	52	52	0	0	0	0	0	0	0
10:15	3	0	0	0	0	3	3	30	3	1	0	0	34	35	0	0	0	0	0	0	0
10:30	1	0	0	0	0	1	1	48	4	4	1	1	58	62	5	1	1	0	0	7	8
10:45	3	1	2	2	0	8	12	37	5	3	1	0	46	49	4	0	0	0	0	4	4
H/TOT	10	1	2	2	0	15	19	156	23	8	2	1	190	198	9	1	1	0	0	11	12
11:00	2	0	0	0	0	2	2	46	5	3	0	3	57	62	4	1	0	0	0	5	5
11:15	3	2	1	1	0	7	9	40	2	1	1	1	45	48	2	1	0	0	0	3	3
11:30	3	1	1	0	0	5	6	49	2	5	0	1	57	61	3	3	0	0	0	6	6
11:45	4	0	0	2	0	6	9	45	0	3	0	0	48	50	8	0	0	0	0	8	8
H/TOT	12	3	2	3	0	20	25	180	9	12	1	5	207	219	17	5	0	0	0	22	22
12:00	4	3	0	2	0	9	12	49	4	3	0	0	56	58	9	0	0	0	0	9	9
12:15	3	2	0	1	0	6	7	50	10	1	0	2	63	66	2	0	0	0	0	2	2
12:30	2	1	0	2	0	5	8	41	9	1	1	0	52	54	10	0	0	0	0	10	10
12:45	2	1	0	0	0	3	3	55	5	3	1	0	64	67	5	3	0	0	0	8	8
H/TOT	11	7	0	5	0	23	30	195	28	8	2	2	235	244	26	3	0	0	0	29	29

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	1	0	0	0	0	1	1	1	2	0	0	0	3	3	4	1	0	0	0	5	5
07:15	2	0	0	0	0	2	2	3	1	0	0	0	4	4	3	1	0	0	0	4	4
07:30	5	0	0	0	0	5	5	4	2	0	0	1	7	8	8	2	0	0	0	10	10
07:45	10	2	0	0	1	13	14	8	2	0	0	1	11	12	11	0	0	0	0	11	11
H/TOT	18	2	0	0	1	21	22	16	7	0	0	2	25	27	26	4	0	0	0	30	30
08:00	11	1	0	0	0	12	12	5	2	0	0	0	7	7	9	0	0	0	0	9	9
08:15	25	0	0	0	1	26	27	3	0	0	0	0	3	3	12	3	0	0	0	15	15
08:30	16	1	0	0	0	17	17	4	2	0	0	0	6	6	15	1	0	0	0	16	16
08:45	16	1	1	0	0	18	19	7	2	0	0	0	9	9	3	1	0	0	0	4	4
H/TOT	68	3	1	0	1	73	75	19	6	0	0	0	25	25	39	5	0	0	0	44	44
09:00	15	1	0	0	0	16	16	0	1	0	0	0	1	1	7	1	0	0	0	8	8
09:15	18	1	0	0	0	19	19	8	0	0	0	0	8	8	8	0	0	0	1	9	10
09:30	10	1	0	0	0	11	11	0	1	0	0	0	1	1	3	2	0	0	0	5	5
09:45	4	0	0	0	0	4	4	5	3	0	0	0	8	8	6	1	0	0	0	7	7
H/TOT	47	3	0	0	0	50	50	13	5	0	0	0	18	18	24	4	0	0	1	29	30
10:00	5	0	0	0	0	5	5	2	0	0	0	0	2	2	2	0	0	0	0	2	2
10:15	6	1	0	0	0	7	7	1	1	0	0	0	2	2	2	1	0	0	0	3	3
10:30	8	0	0	0	0	8	8	2	3	1	0	0	6	7	3	0	0	0	0	3	3
10:45	5	0	0	0	0	5	5	0	0	0	0	0	0	0	2	0	0	0	0	2	2
H/TOT	24	1	0	0	0	25	25	5	4	1	0	0	10	11	9	1	0	0	0	10	10
11:00	4	0	0	0	0	4	4	0	0	0	0	0	0	0	1	0	1	0	0	2	3
11:15	4	0	0	0	0	4	4	3	1	0	0	0	4	4	5	0	0	0	0	5	5
11:30	2	1	0	0	0	3	3	0	0	0	0	0	0	0	2	1	0	0	0	3	3
11:45	3	0	2	0	0	5	6	2	1	1	0	0	4	5	0	0	0	0	0	0	0
H/TOT	13	1	2	0	0	16	17	5	2	1	0	0	8	9	8	1	1	0	0	10	11
12:00	2	1	0	0	0	3	3	2	0	0	0	0	2	2	6	1	0	0	0	7	7
12:15	6	1	0	0	0	7	7	1	1	0	0	0	2	2	1	1	0	0	0	2	2
12:30	7	2	0	0	0	9	9	4	0	0	0	0	4	4	0	1	0	0	0	1	1
12:45	3	0	0	0	0	3	3	1	0	0	0	0	1	1	3	1	0	0	0	4	4
H/TOT	18	4	0	0	0	22	22	8	1	0	0	0	9	9	10	4	0	0	0	14	14

	MOVEMENT 7							MOVEMENT 8							MOVEMENT 9						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	18	5	0	0	1	24	25	0	1	0	0	0	1	1
07:15	0	0	0	0	0	0	0	26	9	1	1	1	38	41	6	0	0	3	0	9	13
07:30	1	0	0	0	0	1	1	51	15	1	0	1	68	70	1	2	0	3	0	6	10
07:45	1	0	0	0	0	1	1	58	17	1	0	1	77	79	2	3	0	1	0	6	7
H/TOT	2	0	0	0	0	2	2	153	46	3	1	4	207	214	9	6	0	7	0	22	31
08:00	0	0	0	0	0	0	0	81	17	1	1	1	101	104	1	0	0	1	0	2	3
08:15	2	2	0	0	0	4	4	161	15	3	0	1	180	183	3	0	0	1	0	4	5
08:30	2	0	0	0	0	2	2	166	11	0	1	1	179	181	1	2	1	3	1	8	13
08:45	6	0	0	0	0	6	6	95	11	1	0	1	108	110	2	1	0	2	0	5	8
H/TOT	10	2	0	0	0	12	12	503	54	5	2	4	568	577	7	3	1	7	1	19	30
09:00	4	0	0	0	0	4	4	53	7	0	1	1	62	64	1	0	0	2	0	3	6
09:15	2	1	0	0	0	3	3	59	12	2	0	1	74	76	2	0	0	0	0	2	2
09:30	1	1	0	0	0	2	2	89	6	2	0	2	99	102	2	2	0	1	0	5	6
09:45	1	1	0	0	0	2	2	72	4	4	0	1	81	84	1	2	0	4	0	7	12
H/TOT	8	3	0	0	0	11	11	273	29	8	1	5	316	326	6	4	0	7	0	17	26
10:00	1	0	0	0	0	1	1	50	3	0	1	1	55	57	1	0	0	1	0	2	3
10:15	1	1	0	0	0	2	2	45	5	4	0	1	55	58	1	2	0	0	0	3	3
10:30	6	3	1	0	1	11	13	57	5	5	0	1	68	72	0	0	0	1	0	1	2
10:45	0	0	0	0	0	0	0	56	7	0	0	2	65	67	0	1	0	4	0	5	10
H/TOT	8	4	1	0	1	14	16	208	20	9	1	5	243	254	2	3	0	6	0	11	19
11:00	3	2	0	0	0	5	5	55	11	3	0	1	70	73	1	1	0	0	0	2	2
11:15	0	0	0	0	0	0	0	47	6	1	0	0	54	55	2	1	1	2	0	6	9
11:30	2	0	0	0	0	2	2	56	5	3	0	1	65	68	1	1	0	1	0	3	4
11:45	0	3	0	0	0	3	3	47	5	6	0	2	60	65	4	0	0	1	0	5	6
H/TOT	5	5	0	0	0	10	10	205	27	13	0	4	249	260	8	3	1	4	0	16	22
12:00	4	2	0	0	0	6	6	39	6	1	0	1	47	49	2	2	0	0	0	4	4
12:15	2	0	1	0	0	3	4	47	8	3	1	0	59	62	3	0	0	0	0	3	3
12:30	1	0	0	0	0	1	1	38	10	1	0	0	49	50	5	1	1	1	0	8	10
12:45	2	0	0	0	0	2	2	49	12	2	0	1	64	66	2	1	0	2	0	5	8
H/TOT	9	2	1	0	0	12	13	173	36	7	1	2	219	226	12	4	1	3	0	20	24

	MOVEMENT 10							MOVEMENT 11							MOVEMENT 12							
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	PCU's Through Junction
07:00	4	0	0	1	0	5	6	0	1	0	0	0	1	1	5	2	0	1	0	8	9	88
07:15	6	1	0	0	1	8	9	1	1	0	0	0	2	2	2	0	0	0	0	2	2	124
07:30	0	3	0	2	1	6	10	1	0	0	0	0	1	1	6	2	0	1	0	9	10	206
07:45	6	2	0	3	0	11	15	3	0	0	0	0	3	3	6	3	0	2	0	11	14	212
H/TOT	16	6	0	6	2	30	40	5	2	0	0	0	7	7	19	7	0	4	0	30	35	629
08:00	3	0	0	2	0	5	8	2	0	0	0	0	2	2	8	0	0	0	0	8	8	235
08:15	4	0	2	3	0	9	14	5	1	0	0	0	6	6	6	0	0	3	0	9	13	343
08:30	5	3	1	0	0	9	10	4	1	1	0	0	6	7	6	1	1	2	1	11	15	343
08:45	2	0	0	2	0	4	7	5	0	0	0	0	5	5	4	1	0	1	0	6	7	245
H/TOT	14	3	3	7	0	27	38	16	2	1	0	0	19	20	24	2	1	6	1	34	43	1166
09:00	3	1	2	1	1	8	11	4	1	0	0	0	5	5	4	1	0	0	0	5	5	202
09:15	4	1	1	3	0	9	13	2	0	0	0	0	2	2	7	2	0	0	0	9	9	208
09:30	1	1	0	0	0	2	2	0	0	0	0	0	0	0	5	3	0	0	0	8	8	201
09:45	1	1	0	2	0	4	7	1	1	0	0	0	2	2	2	0	0	0	1	3	4	196
H/TOT	9	4	3	6	1	23	33	7	2	0	0	0	9	9	18	6	0	0	1	25	26	806
10:00	3	0	0	2	0	5	8	0	1	0	0	0	1	1	0	0	0	1	0	1	2	137
10:15	2	0	0	2	0	4	7	1	1	0	0	0	2	2	4	0	0	0	0	4	4	125
10:30	2	1	0	0	0	3	3	1	0	0	0	0	1	1	3	1	1	1	0	6	8	186
10:45	3	2	0	0	0	5	5	1	0	1	0	0	2	3	2	0	0	2	0	4	7	163
H/TOT	10	3	0	4	0	17	22	3	2	1	0	0	6	7	9	1	1	4	0	15	21	611
11:00	3	2	0	0	0	5	5	2	0	0	0	0	2	2	2	1	0	1	0	4	5	167
11:15	0	0	1	2	0	3	6	3	1	0	0	0	4	4	3	0	0	2	0	5	8	154
11:30	1	0	0	2	0	3	6	0	2	1	0	0	3	4	5	2	0	2	0	9	12	173
11:45	1	1	0	0	0	2	2	0	0	0	0	0	0	0	1	2	0	0	0	3	3	156
H/TOT	5	3	1	4	0	13	19	5	3	1	0	0	9	10	11	5	0	5	0	21	28	649
12:00	4	1	1	2	0	8	11	2	1	0	0	0	3	3	2	0	1	2	0	5	8	171
12:15	4	0	0	1	0	5	6	4	1	0	0	0	5	5	2	1	0	2	0	5	8	173
12:30	5	0	0	1	0	6	7	1	1	0	0	0	2	2	0	1	0	1	0	2	3	158
12:45	6	0	0	0	0	6	6	0	1	0	0	0	1	1	3	0	0	0	0	3	3	171
H/TOT	19	1	1	4	0	25	31	7	4	0	0	0	11	11	7	2	1	5	0	15	22	674

ABACUS TRANSPORTATION SURVEYS **ABACUS TRANSPORTATION SURVEYS** **ABACUS TRANSPORTATION SURVEYS** **ABACUS TRANSPORTATION SURVEYS**

CLONMELSH QUARRY TRAFFIC COUNTS **NOVEMBER 2017** **CLONMELSH QUARRY TRAFFIC COUNTS** **NOVEMBER 2017** **CLONMELSH QUARRY TRAFFIC COUNTS** **NOVEMBER 2017** **CLONMELSH QUARRY TRAFFIC COUNTS** **NOVEMBER 2017**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **ATH/17/166** **MANUAL CLASSIFIED JUNCTION TURNING COUNTS** **ATH/17/166** **MANUAL CLASSIFIED JUNCTION TURNING COUNTS** **ATH/17/166** **MANUAL CLASSIFIED JUNCTION TURNING COUNTS** **ATH/17/166**

SITE: 01 DATE: 7th November 2017 SITE: 01 DATE: 7th November 2017 SITE: 01 DATE: 7th November 2017 SITE: 01 DATE: 7th November 2017

LOCATION: R448 Kilkenny Road/Ballybar Upper Road DAY: Tuesday LOCATION: R448 Kilkenny Road/Ballybar Upper Road DAY: Tuesday LOCATION: R448 Kilkenny Road/Ballybar Upper Road DAY: Tuesday LOCATION: R448 Kilkenny Road/Ballybar Upper Road DAY: Tuesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	5	1	1	0	0	7	8	55	4	1	3	1	64	69	6	0	0	0	0	6	6
13:15	9	1	0	0	0	10	10	50	6	2	0	1	59	61	6	0	0	0	0	6	6
13:30	5	0	0	2	0	7	10	48	3	3	0	1	55	58	4	0	0	0	0	4	4
13:45	1	1	0	1	0	3	4	45	7	2	1	0	55	57	4	0	0	0	0	4	4
H/TOT	20	3	1	3	0	27	31	198	20	8	4	3	233	245	20	0	0	0	0	20	20
14:00	3	0	0	0	0	3	3	46	11	1	0	0	58	59	9	0	0	0	0	9	9
14:15	2	1	0	1	0	4	5	43	4	0	0	0	47	47	6	1	1	0	0	8	9
14:30	7	1	0	1	0	9	10	57	4	1	0	5	67	73	7	2	0	0	0	9	9
14:45	2	2	1	2	0	7	10	49	7	1	1	0	58	60	8	1	0	0	0	9	9
H/TOT	14	4	1	4	0	23	29	195	26	3	1	5	230	238	30	4	1	0	0	35	36
15:00	4	1	1	0	0	6	7	54	9	0	2	0	65	68	14	0	0	0	0	14	14
15:15	2	0	0	1	1	4	6	73	6	1	0	3	83	87	5	1	0	0	1	7	8
15:30	2	0	0	3	0	5	9	71	4	0	0	0	75	75	10	1	0	0	0	11	11
15:45	5	2	0	1	1	9	11	58	14	2	0	1	75	77	11	2	0	0	0	13	13
H/TOT	13	3	1	5	2	24	33	256	33	3	2	4	298	306	40	4	0	0	1	45	46
16:00	10	1	0	2	0	13	16	76	7	1	1	2	87	91	9	0	0	0	0	9	9
16:15	5	1	0	0	0	6	6	83	14	2	1	0	100	102	10	0	0	0	1	11	12
16:30	5	5	2	1	0	13	15	112	6	1	1	2	122	126	12	0	0	0	0	12	12
16:45	4	0	0	2	0	6	9	72	13	1	0	0	86	87	19	1	0	0	0	20	20
H/TOT	24	7	2	5	0	38	46	343	40	5	3	4	395	405	50	1	0	0	1	52	53
17:00	4	5	0	0	0	9	9	119	13	1	0	1	134	136	8	3	0	0	0	11	11
17:15	8	3	0	1	1	13	15	90	18	0	1	1	110	112	14	0	0	0	0	14	14
17:30	9	0	0	0	0	9	9	107	6	0	1	2	116	119	16	5	0	0	0	21	21
17:45	6	0	0	0	0	6	6	89	5	1	0	0	95	96	11	2	0	0	0	13	13
H/TOT	27	8	0	1	1	37	39	405	42	2	2	4	455	463	49	10	0	0	0	59	59
18:00	9	2	1	0	0	12	13	72	4	0	0	0	76	76	9	0	0	0	0	9	9
18:15	5	1	0	0	0	6	6	67	5	0	0	1	73	74	15	1	0	0	0	16	16
18:30	4	0	1	0	0	5	6	36	7	0	0	1	44	45	5	1	0	0	0	6	6
18:45	3	0	0	0	0	3	3	42	2	0	0	0	44	44	6	0	0	0	0	6	6
H/TOT	21	3	2	0	0	26	27	217	18	0	0	2	237	239	35	2	0	0	0	37	37
P/TOT	172	46	12	36	5	271	329	2681	321	64	27	42	3135	3244	323	39	2	0	5	369	375

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	3	2	0	0	0	5	5	2	0	0	0	0	2	2	1	0	0	0	0	1	1
13:15	8	0	0	0	0	8	8	3	3	0	0	0	6	6	3	0	0	0	0	3	3
13:30	5	0	0	0	0	5	5	4	0	0	0	0	4	4	2	1	0	0	0	3	3
13:45	6	2	0	0	0	8	8	1	2	0	0	0	3	3	6	0	0	0	0	6	6
H/TOT	22	4	0	0	0	26	26	10	5	0	0	0	15	15	12	1	0	0	0	13	13
14:00	7	0	0	0	0	7	7	5	0	0	0	0	5	5	1	0	1	0	0	2	3
14:15	4	1	0	0	0	5	5	1	0	2	0	0	3	4	3	1	1	0	0	5	6
14:30	5	2	0	0	1	8	9	2	1	1	0	0	4	5	2	0	0	0	0	2	2
14:45	4	1	0	0	0	5	5	2	0	0	0	0	2	2	1	0	0	0	0	1	1
H/TOT	20	4	0	0	1	25	26	10	1	3	0	0	14	16	7	1	2	0	0	10	11
15:00	8	0	1	0	0	9	10	4	0	0	0	0	4	4	0	0	0	0	0	0	0
15:15	9	0	0	0	0	9	9	2	0	0	0	0	2	2	4	1	0	0	0	5	5
15:30	5	0	0	0	2	7	9	1	0	0	0	0	1	1	2	0	0	0	0	2	2
15:45	8	0	0	0	0	8	8	3	0	0	0	0	3	3	1	0	0	0	0	1	1
H/TOT	30	0	1	0	2	33	36	10	0	0	0	0	10	10	7	1	0	0	0	8	8
16:00	6	1	0	0	1	8	9	4	1	0	0	0	5	5	3	1	0	0	0	4	4
16:15	2	0	0	0	0	2	2	3	2	0	0	0	5	5	3	0	0	0	0	3	3
16:30	4	2	0	0	0	6	6	6	2	0	0	0	8	8	4	1	0	0	0	5	5
16:45	4	0	0	0	0	4	4	3	4	0	0	0	7	7	3	1	0	0	0	4	4
H/TOT	16	3	0	0	1	20	21	16	9	0	0	0	25	25	13	3	0	0	0	16	16
17:00	4	1	0	0	0	5	5	4	0	1	0	0	5	6	6	1	0	0	0	7	7
17:15	4	1	0	0	0	5	5	6	0	0	0	0	6	6	5	1	0	0	0	6	6
17:30	5	0	0	0	0	5	5	6	2	0	0	0	8	8	2	1	0	0	0	3	3
17:45	6	0	0	0	0	6	6	4	0	0	0	0	4	4	2	0	0	0	0	2	2
H/TOT	19	2	0	0	0	21	21	20	2	1	0	0	23	24	15	3	0	0	0	18	18
18:00	8	0	0	0	0	8	8	5	1	0	0	0	6	6	1	1	0	0	0	2	2
18:15	12	2	0	0	0	14	14	4	2	0	0	0	6	6	3	0	0	0	0	3	3
18:30	10	0	0	0	0	10	10	5	1	0	0	0	6	6	0	1	0	0	0	1	1
18:45	4	0	0	0	0	4	4	9	0	0	0	0	9	9	1	0	0	0	0	1	1
H/TOT	34	2	0	0	0	36	36	23	4	0	0	0	27	27	5	2	0	0	0	7	7
P/TOT	329	29	4	0	6	368	376	155	46	6	0	2	209	214	175	30	3	0	1	209	212

	MOVEMENT 7							MOVEMENT 8							MOVEMENT 9						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	0	0	0	0	0	0	0	58	3	0	0	0	61	61	1	1	0	0	0	2	2
13:15	0	1	0	0	0	1	1	49	7	3	2	0	61	65	3	1	0	1	0	5	6
13:30	5	1	0	0	0	6	6	59	7	3	0	0	69	71	3	0	0	0	0	3	3
13:45	7	0	0	0	0	7	7	53	6	2	1	1	63	66	1	0	0	2	0	3	6
H/TOT	12	2	0	0	0	14	14	219	23	8	3	1	254	263	8	2	0	3	0	13	17
14:00	1	0	0	0	0	1	1	50	8	5	0	1	64	68	2	0	0	3	0	5	9
14:15	2	0	0	0	0	2	2	66	7	1	1	2	77	81	4	2	0	0	0	6	6
14:30	2	1	0	0	0	3	3	52	4	1	1	3	61	66	1	0	1	0	0	2	3
14:45	4	0	0	0	0	4	4	55	11	1	0	3	70	74	3	2	0	2	1	8	12
H/TOT	9	1	0	0	0	10	10	223	30	8	2	9	272	288	10	4	1	5	1	21	29
15:00	4	1	0	0	1	6	7	59	13	0	0	0	72	72	2	3	0	0	0	5	5
15:15	3	0	0	0	0	3	3	42	15	1	0	2	60	63	5	0	0	1	0	6	7
15:30	1	2	0	0	0	3	3	66	6	0	1	0	73	74	5	0	1	2	0	8	11
15:45	2	0	0	0	0	2	2	41	10	1	0	4	56	61	1	0	0	2	0	3	6
H/TOT	10	3	0	0	1	14	15	208	44	2	1	6	261	269	13	3	1	5	0	22	29
16:00	4	3	0	0	0	7	7	56	5	1	0	0	62	63	5	2	0	3	0	10	14
16:15	3	0	0	0	0	3	3	75	7	5	0	2	89	94	4	0	0	0	0	4	4
16:30	8	0	1	0	0	9	10	64	6	1	1	2	74	78	2	3	0	1	0	6	7
16:45	7	0	0	0	1	8	9	59	10	1	0	2	72	75	1	1	0	3	1	6	11
H/TOT	22	3	1	0	1	27	29	254	28	8	1	6	297	308	12	6	0	7	1	26	36
17:00	7	0	0	0	0	7	7	68	14	2	0	1	85	87	4	2	1	3	0	10	14
17:15	8	1	0	0	1	10	11	83	8	1	1	0	93	95	5	0	0	1	0	6	7
17:30	12	0	0	0	0	12	12	63	5	0	0	0	68	68	7	3	0	0	0	10	10
17:45	5	1	0	0	0	6	6	74	5	0	0	1	80	81	7	0	0	0	0	7	7
H/TOT	32	2	0	0	1	35	36	288	32	3	1	2	326	331	23	5	1	4	0	33	39
18:00	8	1	0	0	0	9	9	68	6	0	0	0	74	74	3	0	0	0	0	3	3
18:15	9	0	0	0	0	9	9	66	7	1	0	0	74	75	4	0	0	0	0	4	4
18:30	4	0	0	0	0	4	4	69	3	0	2	4	78	85	9	2	1	0	0	12	13
18:45	5	0	0	0	0	5	5	66	4	2	0	0	72	73	5	0	0	2	0	7	10
H/TOT	26	1	0	0	0	27	27	269	20	3	2	4	298	306	21	2	1	2	0	26	29
P/TOT	153	28	3	0	4	188	194	2976	389	77	16	52	3510	3621	131	45	7	60	3	246	331

	MOVEMENT 10							MOVEMENT 11							MOVEMENT 12							
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	PCU's Through Junction
13:00	6	1	0	0	0	7	7	2	1	0	0	0	3	3	1	0	0	1	0	2	3	167
13:15	0	1	0	1	0	2	3	2	2	0	0	0	4	4	3	0	0	0	0	3	3	177
13:30	2	1	0	0	0	3	3	3	0	0	0	0	3	3	2	1	1	0	0	4	5	173
13:45	3	1	0	0	0	4	4	1	2	0	0	0	3	3	2	0	0	1	1	4	6	175
H/TOT	11	4	0	1	0	16	17	8	5	0	0	0	13	13	8	1	1	2	1	13	17	692
14:00	2	2	0	1	0	5	6	2	0	0	0	0	2	2	0	0	0	2	0	2	5	175
14:15	5	0	0	3	0	8	12	3	0	0	0	0	3	3	3	1	0	1	0	5	6	185
14:30	5	1	0	3	0	9	13	5	0	1	0	0	6	7	3	1	0	1	0	5	6	204
14:45	0	0	1	0	0	1	2	3	0	0	0	0	3	3	6	1	0	0	0	7	7	188
H/TOT	12	3	1	7	0	23	33	13	0	1	0	0	14	15	12	3	0	4	0	19	24	752
15:00	4	0	0	2	0	6	9	3	0	0	0	0	3	3	4	0	0	3	0	7	11	208
15:15	4	1	0	1	1	7	9	2	1	0	0	0	3	3	1	0	0	1	0	2	3	205
15:30	2	2	2	0	0	6	7	2	0	0	0	0	2	2	5	2	0	0	0	7	7	211
15:45	3	0	0	1	0	4	5	2	1	0	0	1	4	5	1	0	0	0	0	1	1	193
H/TOT	13	3	2	4	1	23	30	9	2	0	0	1	12	13	11	2	0	4	0	17	22	817
16:00	6	0	0	1	1	8	10	1	1	0	0	0	2	2	3	0	0	3	0	6	10	239
16:15	3	1	0	2	0	6	9	1	0	0	0	0	1	1	3	0	0	0	0	3	3	243
16:30	2	1	3	1	0	7	10	6	2	0	0	0	8	8	1	0	0	0	0	1	1	286
16:45	5	1	0	0	0	6	6	4	1	0	0	0	5	5	3	1	0	0	0	4	4	240
H/TOT	16	3	3	4	1	27	35	12	4	0	0	0	16	16	10	1	0	3	0	14	18	1007
17:00	8	4	0	0	0	12	12	4	1	0	0	0	5	5	4	0	1	1	0	6	8	306
17:15	4	6	3	1	0	14	17	12	2	0	0	0	14	14	5	2	0	2	0	9	12	314
17:30	9	2	0	0	0	11	11	3	1	0	0	0	4	4	1	0	0	1	0	2	3	274
17:45	6	0	0	0	0	6	6	6	2	0	0	0	8	8	1	0	0	0	0	1	1	236
H/TOT	27	12	3	1	0	43	46	25	6	0	0	0	31	31	11	2	1	4	0	18	24	1129
18:00	2	2	1	2	0	7	10	6	1	0	0	0	7	7	0	1	1	0	0	2	3	219
18:15	2	0	1	0	0	3	4	2	3	0	0	0	5	5	3	0	0	0	0	3	3	218
18:30	5	0	0	1	0	6	7	5	0	0	0	0	5	5	4	1	0	0	0	5	5	192
18:45	4	0	0	0	0	4	4	2	0	0	0	0	2	2	5	0	1	0	0	6	7	167
H/TOT	13	2	2	3	0	20	25	15	4	0	0	0	19	19	12	2	2	0	0	16	17	796
P/TOT	165	47	19	51	5	287	368	125	36	4	0	1	166	169	152	34	7	41	3	237	297	9728

ABACUS TRANSPORTATION SURVEYS

CLONMELSH QUARRY TRAFFIC COUNTS — **NOVEMBER 2017**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS — **ATH/17/166**

SITE: 02 DATE: 7th November 2017

LOCATION: Ballybar Upper Road/Clonmelsh Quarry Access DAY: Tuesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							MOVEMENT 4							MOVEMENT 5							MOVEMENT 6							PCUs Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
07:00	1	0	0	0	0	1	1	2	5	0	0	0	7	7	0	0	0	1	0	1	2	07:00	0	0	1	0	0	1	2	6	6	0	0	0	12	12	8	3	1	0	0	12	13	36
07:15	8	1	0	0	0	9	9	0	0	0	3	0	3	7	0	0	0	0	0	0	0	07:15	0	0	0	0	0	0	0	2	0	0	0	0	2	2	13	2	0	0	1	16	17	35
07:30	9	4	0	0	0	13	13	0	0	0	3	0	3	7	0	0	0	4	0	4	9	07:30	0	0	0	5	0	5	12	4	0	0	0	0	4	4	7	2	0	1	0	10	11	56
07:45	9	2	0	0	1	12	13	0	1	0	2	0	3	6	0	0	0	3	0	3	7	07:45	0	0	0	3	0	3	7	3	0	0	0	0	3	3	18	5	2	1	0	26	28	64
H/TOT	27	7	0	0	1	35	36	2	6	0	8	0	16	27	0	0	0	8	0	8	18	H/TOT	0	0	1	8	0	9	21	15	6	0	0	0	21	21	46	12	3	2	1	64	69	191
08:00	8	2	0	0	0	10	10	0	0	0	2	0	2	5	0	0	0	1	0	1	2	08:00	0	0	0	0	0	0	0	2	0	2	2	0	6	10	15	1	0	1	0	17	19	45
08:15	11	0	1	0	0	12	13	0	0	0	2	0	2	5	0	1	1	7	0	9	19	08:15	0	1	1	1	0	3	5	1	0	1	1	0	3	5	48	1	1	0	1	51	53	98
08:30	6	5	0	1	1	13	15	1	1	0	2	0	4	7	0	0	1	2	0	3	6	08:30	2	0	0	2	0	4	7	0	0	0	1	0	1	1	37	3	1	0	0	41	42	78
08:45	14	2	0	0	1	17	18	2	1	1	4	0	8	13	0	1	0	3	0	4	8	08:45	0	0	0	1	0	1	1	2	0	0	1	0	3	3	30	3	0	0	0	23	23	71
H/TOT	39	9	1	1	2	52	56	3	2	2	10	0	17	31	0	2	2	13	0	17	35	H/TOT	2	1	1	4	0	8	14	5	0	3	5	0	13	21	120	8	2	1	1	132	139	292
09:00	4	4	1	0	1	10	12	1	0	0	3	0	4	8	1	0	1	2	0	4	7	09:00	0	0	0	2	0	2	5	0	1	0	1	0	2	3	20	1	1	0	1	23	25	59
09:15	12	1	0	0	0	13	13	1	0	0	1	0	2	3	1	0	0	2	0	3	6	09:15	0	1	0	5	0	6	13	0	1	0	3	0	4	8	15	1	0	0	0	16	16	58
09:30	3	2	0	0	0	5	5	0	0	0	2	0	2	5	0	0	0	1	0	1	2	09:30	0	1	0	1	0	2	3	0	0	0	2	0	2	5	5	1	0	0	0	6	6	26
09:45	7	2	0	0	0	9	10	0	1	0	4	0	5	10	0	1	0	2	0	3	6	09:45	1	1	0	2	0	4	8	0	0	1	1	0	2	4	4	0	0	1	1	6	6	48
H/TOT	26	14	1	0	1	42	44	2	1	0	10	0	13	26	1	1	1	7	0	10	21	H/TOT	1	3	0	10	0	14	29	0	2	1	7	0	10	20	44	3	1	1	2	51	53	192
10:00	5	1	1	0	0	7	8	1	0	0	1	0	2	3	0	1	0	2	0	3	6	10:00	1	0	1	0	0	2	3	2	1	0	1	0	4	5	5	1	1	0	0	7	8	32
10:15	7	0	1	0	0	8	9	0	2	0	0	0	2	2	0	0	0	2	0	2	5	10:15	0	1	0	0	0	1	1	1	0	0	1	0	2	3	7	2	0	0	0	9	9	28
10:30	3	4	0	0	0	7	7	1	0	1	1	0	3	5	0	0	1	2	0	3	6	10:30	0	0	0	0	0	0	0	0	0	0	1	1	2	4	7	1	0	0	0	8	8	30
10:45	7	2	0	0	1	10	11	0	0	0	5	0	5	12	0	0	1	1	0	2	4	10:45	0	0	0	2	0	2	4	1	0	2	1	0	4	6	2	0	0	0	0	2	2	33
H/TOT	22	7	2	0	1	32	35	2	2	0	7	0	11	22	0	1	2	7	0	10	21	H/TOT	1	1	1	2	0	5	8	4	1	2	4	1	12	18	21	4	1	0	0	26	27	123
11:00	3	1	0	0	0	4	4	0	0	0	1	0	1	2	0	0	0	1	0	1	2	11:00	0	0	2	2	0	4	8	1	1	1	1	0	4	6	6	1	1	0	0	8	8	31
11:15	7	3	0	0	0	10	10	0	0	0	3	0	3	7	0	0	0	4	0	4	9	11:15	0	0	1	1	0	2	4	0	0	0	2	0	2	5	8	4	1	0	1	14	14	50
11:30	4	2	1	0	0	7	9	1	0	0	1	0	2	3	0	1	0	4	0	5	10	11:30	1	0	1	0	0	3	4	0	0	0	2	0	2	5	6	4	2	0	0	12	13	46
11:45	3	1	0	0	0	4	4	0	1	1	2	0	4	7	1	0	0	1	0	2	4	11:45	0	1	0	1	0	2	3	0	0	0	1	0	1	1	7	2	3	0	0	5	5	25
H/TOT	17	7	1	0	0	25	27	1	1	1	7	0	10	19	1	1	0	10	0	12	25	H/TOT	1	1	3	4	0	9	17	1	1	1	6	0	9	17	27	12	4	0	1	39	40	151
12:00	8	2	0	1	0	11	12	0	1	0	2	0	3	6	0	1	0	4	0	5	12	12:00	0	0	0	0	0	0	0	0	0	0	3	0	3	6	7	0	1	0	0	8	8	45
12:15	6	5	2	0	0	13	14	0	0	0	2	0	2	5	0	0	0	2	0	2	5	12:15	0	0	0	4	0	4	9	0	0	0	0	0	0	0	9	3	0	0	0	12	12	44
12:30	6	2	0	0	0	8	8	0	0	0	3	0	3	7	0	0	0	1	0	1	2	12:30	1	0	0	0	0	1	1	1	0	0	1	0	2	3	11	2	1	0	0	14	15	36
12:45	7	3	0	0	0	10	10	0	0	0	2	0	2	5	1	0	0	0	0	1	1	12:45	0	2	0	1	0	3	4	0	0	0	1	0	1	1	8	0	0	0	0	8	8	30
H/TOT	27	12	2	1	0	42	44	0	1	0	9	0	10	22	2	0	1	7	0	10	20	H/TOT	1	2	0	5	0	8	13	1	0	0	5	0	6	12	35	5	2	0	0	42	43	156

ABACUS TRANSPORTATION SURVEYS

CLONMELSH QUARRY TRAFFIC COUNTS — **NOVEMBER 2017**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS — **ATH/17/166**

SITE: 02 DATE: 7th November 2017

LOCATION: Ballybar Upper Road/Clonmelsh Quarry Access DAY: Tuesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							MOVEMENT 4							MOVEMENT 5							MOVEMENT 6							PCUs Through Junction
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
13:00	8	3	0	0	0	11	11	0	0	1	0	0	1	2	0	0	1	0	0	1	2	13:00	1	1	0	0	0	2	2	1	0	0	1	0	2	3	10	4	0	0	0	14	14	33
13:15	11	2	0	0	0	13	13	1	1	0	1	0	3	4	0	1	0	1	0	2	3	13:15	1	0	0	3	0	4	8	1	0	0	2	0	3	5	5	1	0	0	0	6	6	40
13:30	10	0	0	0	0	10	10	0	0	0	2	0	2	5	0	0	0	1	0	1	2	13:30	2	0	0	1	0	3	4	1	0	0	0	0	1	1	10	5	0	0	0	15	15	37
13:45	7	3	0	1	0	11	12	0	0	0	2	0	2	5	1	0	0	1	0	2	3	13:45	0	0	0	1	0	1	2	0	2	1	1	0	4	6	2	3	0	0	0	5	5	33
H/TOT	36	8	0	1	0	45	46	1	1	1	5	0	8	15	1	1	1	3	0	6	10	H/TOT	4	1	0	5	0	10	17	3	2	1	4	0	10	16	27	13	0	0	0	40	40	144
14:00	12	1	0	1	0	14	15	1	0	0	2	0	3	6	0	0	1	2	0	3	6	14:00	0	1	0	3	0	4	8	1	0	0	0	0	1	1	8	2	2	1	0	13	13	51
14:15	10	3	3	0	0	16	18	0	0	0	1	0	1	2	1	0	0	5	0	6	13	14:15	0	0	0	2	0	2	5	1	0	0	3	0	4	9	11	1	0	0	0	12	12	57
14:30	9	0	2	0	0	11	12	0	0	0	1	0	1	2	1	0	0	3	0	4	8	14:30	0	0	0	0	0	0	0	2	0	0	0	0	2	2	7	1	0	0	0	8	8	32
14:45	10	0	1	0	1	12	14	0	0	0	2	0	2	5	0	0	0	2	0	2	5	14:45	2	0	0	2	0	4	7	0	0	0	1	0	1	1	7	1	0	0	0	8	8	40
H/TOT	41	4	6	1	1	53	58	1	0	0	6	0	7	15	2	0	1	12	0	15	31	H/TOT	3	1	0	7	0	10	19	4	0	0	4	0	8	13	33	5	2	1	0	41	41	180
15:00	13	3	1	1	0	18	20	0	1	0	2	0	3	6	0	0	0	2	0	2	5	15:00	0	0	0	1	0	1	2	2	0	1	1	0	4	6	13	1	1	1	0	16	16	56
15:15	12	2	0	1	0	15	16	0	0	1	2	0	3	6	1	0	0	2	0	3	6	15:15	1	0	2	2	0	5	9	1	0	0	0	0	1	1	7	0	1	0	2	10	13	50
15:30	7	2	0	0	0	9	9	0	0	0	5	0	5	12	0	0	0	0	0	0	0	15:30	0	0	1	0	0	1	2	0	1	0	2	0	3	6	11	3	2	0	0	16	17	45
15:45	7	1	0	1	0	9	10	0	0	0	2	0	2	5	0	0	0	2	0	2	5	15:45	1	0	0	2	0	3	6	2	0	0	3	0	5	9	8	4	0	0	0	12	12	46
H/TOT	39	8	1	2	0	51	55	0	1	1	11	0	13	28	1	0	0	6	0	7	15	H/TOT	2	0	3	5	0	10	19	5	1	1	6	0	13	25	39	8	4	1	2	54	59	197
16:00	15	6	1	0	1	23	25	0	0	0	4	0	4	9	1	0	0	5	0	6	13	16:00	0	0	0	1	0	1	2	0	0	0	1	0	1	2	7	2	0	1	0	10	11	62
16:15	13	4	1	0	0	18	19	1	1	1	0	0	3	4	1	0	0	0	0	1	1	16:15	0	1	0	4	0	5	10	0	0	0	3	0	3	7	5	0	0	0	0	5	5	45
16:30	13	5	0	0	0	18	18	0	0	0	2	0	2	5	1	0	1	0	0	2	3	16:30	1	2	0	0	0	3	3	0	2	0	2	0	4	7	12	4	1	0	0	17	18	52
16:45	12	5	1	0	0	18	19	0	0	0	3	0	3	7	0	0	0	0	0	0	0	16:45	1	2	0	0	0	3	3	1	0	0	4	0	5	10	12	1	0	0	0	13	13	50
H/TOT	53	20	3	0	1	77	80	1	1	1	9	0	14	25	3	0	1	5	0	10	17	H/TOT	2	5	0	5	0	12	18	1	2	0	10	0	13	26	36	7	1	1	0	45	47	214
17:00	24	4	2	0	0	30	31	0	0	0	2	0	2	5	2	3	1	2	0	8	11	17:00	3	4	0	0	0	7	7	0	0	1	3	0	4	8	11	5	0	0	0	16	16	78
17:15	23	2	1	0	1	27	29	0	0	0	3	0	3	7	2	2	0	2	0	6	9	17:15	3	2	0	0	0	5	5	0	0	0	1	0	1	1	12	1	3	2	1	19	20	75
17:30	26	7	0	0	0	33	33	0	2	0	0	0	2	2	1	0	1	1	0	3	6	17:30	2	2	0	0	0	4	4	1	0	0	0	0	1	1	8	0	0	0	0	8	8	55
17:45	13	2	1	0	0	16	17	1	0	0	0	0	1	2	0	1	0	0	0	1	1	17:45	2	0	0	0	0	2	2	1	1	0	1	0	3	5	16	0	0	0	0	16	17	42
H/TOT	86	15	4	0	1	106	109	1	2	0	5	0	8	16	5	6	2	5	0	18	27	H/TOT	10	8	0	0	0	18	18	2	1	1	5	0	9	16	47	6	3	2	1	59	61	251
18:00	10	3	0	0	0	13	13	0	0	1	0	0	1	2	0	0	0	0	0	0	0	18:00	3	3	0	0	0	6	6	0	0	0	0	0	0	0	9	1	1	2	0	13	13	39
18:15	7	4	0	0	0	11	11	0	0	0	0	0	0	0	1	0	0	0	0	1	1	18:15	1	0	0	0	0	1	1	0	0	0	1	0	1	1	11	0	0	0	0	11	11	26
18:30	14	1	2	0	0	17	18	0	0	0	0	0	0	0	2	0	0	1	0	3	4	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	12	12	34
18:45	17	2	0	1	0	20	21	0	0	0	0	0	0	0	0	0	1	0	0	1	2	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	9	9	32
H/TOT	48	10	2	1	0	61	63	0	0	1	0	0	1	2	3	0	1	1	0	5	7	H/TOT	4	3	0	0	0	7	7	0	0	0	1	0	1	1	40	2	1	0	0	43	45	131
P/TOT	453	121	24	5	8	611	648	15	16	6	87	0	124	246	15	12	6	64	0	97	194	P/TOT	28	29	4	56	0	117	222	44	15	11	57	0	127	227	510	85	34	15	7	651	677	2223

Appendix C – PICADY/ARCADY/OSCADY Outputs

PICADY

GUI Version: 5.1 AE
Analysis Program Release: 5.0 (MAY 2010)

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

TRL Limited
Crowthorne House
Nine Mile Ride
Wokingham, Berks.
RG40 3GA, UK

Tel: +44 (0)1344 770758
Fax:+44 (0)1344 770864
E-mail: software@trl.co.uk
Web: www.trlsoftware.co.uk

Run Analysis

Parameter	Values
File Run	W:\2017\P17-068\R448 junction\P17-071_Junction2.vpi
Date Run	22 November 2017
Time Run	1:08:32 PM
Driving Side	Drive On The Left

Arm Names and Flow Scaling Factors

Arm	Arm Name	Flow Scaling Factor (%)
Arm A	R448 North	100
Arm B	L3050	100
Arm C	R448 South	100
Arm D	Milford Road	100

Stream Labelling Convention

Stream A-B contains traffic going from A to B etc.

Run Information

Parameter	Values
Run Title	15040
Location	Clonmelsh, Co. Carlow
Date	22 April 2015
Enumerator	lowed [PMCE07]
Job Number	P17-068
Status	-
Client	Planex
Description	-

Errors and Warnings

Parameter	Values
Warning	No Errors Or Warnings

Geometric Data

Geometric Parameters

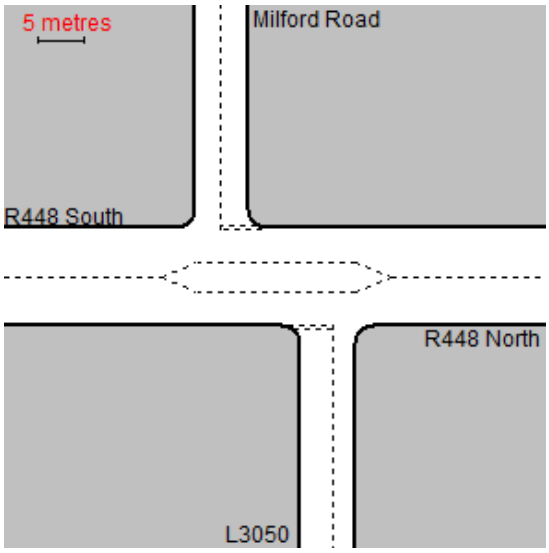
Parameter	Minor Arm B	Minor Arm D
Major Road Carriageway Width (m)	7.40	7.00
Major Road Kerbed Central Reserve Width (m)	0.00	0.00
Major Road Right Turning Lane Width (m)	3.10	3.10
Minor Road First Lane Width (m)	3.50	3.20
Minor Road Visibility To Right (m)	60	55
Minor Road Visibility To Left (m)	15	10
Major Road Right Turn Visibility (m)	200	200
Major Road Right Turn Blocks Traffic	No	No

Slope and Intercept Values

Stream	Intercept for Stream	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B
B-CD	694.833	0.100	0.253	0.253	-	-	-	-	-	-	-
B-A	537.412	0.092	0.232	0.232	-	-	0.146	0.332	-	0.146	0.332
D-AB	671.748	-	-	-	-	-	0.249	0.249	0.097	-	-
D-C	517.861	-	0.143	0.326	0.143	0.326	0.228	0.228	0.090	-	-
CD-B	757.350	0.276	0.276	0.232	-	-	-	-	-	-	-
AB-D	757.350	-	-	-	-	-	-	-	0.281	-	-

Note: Streams may be combined in which case capacity will be adjusted
These values do not allow for any site-specific corrections

Junction Diagram



Demand Data

Modelling Periods

Parameter	Period	Duration (min)	Segment Length (min)
First Modelling Period	08:00-09:00	60	15
Second Modelling Period	17:00-18:00	60	15

Direct Entry Flows

Demand Set: OY+15 (2033) AM
Modelling Period: 08:00-09:00

Segment: 08:00-08:15

Arm	Flow (veh/interval)
Arm A	92.00
Arm B	18.00
Arm C	125.00
Arm D	33.00

Segment: 08:15-08:30

Arm	Flow (veh/interval)
Arm A	85.00
Arm B	30.00
Arm C	223.00
Arm D	52.00

Segment: 08:30-08:45

Arm	Flow (veh/interval)
Arm A	88.00
Arm B	33.00
Arm C	224.00
Arm D	46.00

Segment: 08:45-09:00

Arm	Flow (veh/interval)
Arm A	82.00
Arm B	18.00
Arm C	142.00
Arm D	37.00

Demand Set: OY+15 (2033) PM
Modelling Period: 17:00-18:00

Segment: 17:00-17:15

Arm	Flow (veh/interval)
Arm A	184.00
Arm B	28.00
Arm C	124.00
Arm D	20.00

Segment: 17:15-17:30

Arm	Flow (veh/interval)
Arm A	165.00
Arm B	47.00
Arm C	129.00
Arm D	20.00

Segment: 17:30-17:45

Arm	Flow (veh/interval)
Arm A	172.00
Arm B	21.00
Arm C	106.00
Arm D	19.00

Segment: 17:45-18:00

Arm	Flow (veh/interval)
Arm A	134.00
Arm B	18.00
Arm C	109.00
Arm D	14.00

Demand Set: Development AM
Modelling Period: 08:00-09:00

Segment: 08:00-08:15

Arm	Flow (veh/interval)
Arm A	0.70
Arm B	7.80
Arm C	0.80
Arm D	0.50

Segment: 08:15-08:30

Arm	Flow (veh/interval)
Arm A	0.70
Arm B	7.80
Arm C	0.80
Arm D	0.50

Segment: 08:30-08:45

Arm	Flow (veh/interval)
Arm A	0.70
Arm B	7.80
Arm C	0.80
Arm D	0.50

Segment: 08:45-09:00

Arm	Flow (veh/interval)
Arm A	0.70
Arm B	7.80
Arm C	0.80
Arm D	0.50

Demand Set: Development PM
Modelling Period: 17:00-18:00

Segment: 17:00-17:15

Arm	Flow (veh/interval)
Arm A	2.50
Arm B	3.20
Arm C	3.00
Arm D	1.80

Segment: 17:15-17:30

Arm	Flow (veh/interval)
Arm A	2.50
Arm B	3.20
Arm C	3.00
Arm D	1.80

Segment: 17:30-17:45

Arm	Flow (veh/interval)
Arm A	2.50
Arm B	3.20
Arm C	3.00
Arm D	1.80

Segment: 17:45-18:00

Arm	Flow (veh/interval)
Arm A	2.50
Arm B	3.20
Arm C	3.00
Arm D	1.80

Turning Counts

Demand Set: OY+15 (2033) AM
Modelling Period: 08:00-09:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	-	18	306	23
Arm B	42	-	35	23
Arm C	674	25	-	14
Arm D	86	31	52	-

Demand Set: OY+15 (2033) PM
Modelling Period: 17:00-18:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	-	45	539	71
Arm B	23	-	54	37
Arm C	387	41	-	41
Arm D	25	27	22	-

Demand Set: Development AM
Modelling Period: 08:00-09:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	-	3	0	0
Arm B	1	-	1	0
Arm C	0	3	-	0
Arm D	0	2	0	-

Demand Set: Development PM
Modelling Period: 17:00-18:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	-	1	0	0
Arm B	3	-	3	2
Arm C	0	1	-	0
Arm D	0	1	0	-

Turning proportions are calculated from turning count data

Turning Proportions

Demand Set: OY+15 (2033) AM
Modelling Period: 08:00-09:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	0.000	0.052	0.882	0.066
Arm B	0.420	0.000	0.350	0.230
Arm C	0.945	0.035	0.000	0.020
Arm D	0.509	0.183	0.308	0.000

Demand Set: OY+15 (2033) PM
Modelling Period: 17:00-18:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	0.000	0.069	0.823	0.108
Arm B	0.202	0.000	0.474	0.325
Arm C	0.825	0.087	0.000	0.087
Arm D	0.338	0.365	0.297	0.000

Demand Set: Development AM
Modelling Period: 08:00-09:00

From/To

Demand Set: Development PM
Modelling Period: 17:00-18:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	0.000	1.000	0.000	0.000
Arm B	0.375	0.000	0.375	0.250
Arm C	0.000	1.000	0.000	0.000
Arm D	0.000	1.000	0.000	0.000

Heavy Vehicles Percentages

Demand Set: OY+15 (2033) AM
Modelling Period: 08:00-09:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	-	48.0	23.0	25.0
Arm B	34.0	-	53.0	19.0
Arm C	14.0	68.0	-	20.0
Arm D	8.0	28.0	14.0	-

Demand Set: OY+15 (2033) PM
Modelling Period: 17:00-18:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	-	31.0	13.0	20.0
Arm B	44.0	-	42.0	23.0
Arm C	14.0	35.0	-	10.0
Arm D	12.0	16.0	20.0	-

Demand Set: Development AM
Modelling Period: 08:00-09:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	-	36.0	0.0	0.0
Arm B	36.0	-	43.0	25.0
Arm C	0.0	43.0	-	0.0
Arm D	0.0	25.0	0.0	-

Demand Set: Development PM
Modelling Period: 17:00-18:00

From/To	Arm A	Arm B	Arm C	Arm D
Arm A	-	36.0	0.0	0.0
Arm B	36.0	-	43.0	25.0
Arm C	0.0	43.0	-	0.0
Arm D	0.0	25.0	0.0	-

Queues & Delays

Demand Set: Sum of Demand Sets for Modelling Period: 08:00 - 09:00
Modelling Period: 08:00-09:00

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
08:00-08:15	B-ACD	1.72	5.25	0.328	-	0.00	0.47	-	6.6	0.28
	D-ABC	2.23	6.32	0.353	-	0.00	0.53	-	7.5	0.24
	CD-A	9.00	-	-	-	-	-	-	-	-
	CD-B	0.75	7.29	0.103	-	0.00	0.11	-	1.6	0.15
	C-A	7.89	-	-	-	-	-	-	-	-
	C-B	0.33	-	-	-	-	-	-	-	-
	C-D	0.16	-	-	-	-	-	-	-	-
	AB-C	6.06	-	-	-	-	-	-	-	-
	AB-D	0.70	8.08	0.087	-	0.00	0.09	-	1.4	0.14
	A-B	0.37	-	-	-	-	-	-	-	-
	A-C	5.41	-	-	-	-	-	-	-	-
	A-D	0.41	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
08:15-08:30	B-ACD	2.52	4.49	0.561	-	0.47	1.19	-	16.0	0.48
	D-ABC	3.50	4.57	0.766	-	0.53	2.67	-	32.6	0.75
	CD-A	15.73	-	-	-	-	-	-	-	-
	CD-B	1.24	7.35	0.168	-	0.11	0.20	-	2.9	0.16
	C-A	14.04	-	-	-	-	-	-	-	-
	C-B	0.59	-	-	-	-	-	-	-	-
	C-D	0.29	-	-	-	-	-	-	-	-
	AB-C	5.95	-	-	-	-	-	-	-	-
	AB-D	0.81	6.37	0.127	-	0.09	0.14	-	2.1	0.18
	A-B	0.34	-	-	-	-	-	-	-	-
	A-C	5.00	-	-	-	-	-	-	-	-
	A-D	0.38	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
08:30-08:45	B-ACD	2.72	4.46	0.609	-	1.19	1.45	-	20.6	0.56
	D-ABC	3.10	4.50	0.688	-	2.67	2.40	-	37.5	0.74
	CD-A	15.67	-	-	-	-	-	-	-	-
	CD-B	1.19	7.26	0.164	-	0.20	0.20	-	3.0	0.16
	C-A	14.10	-	-	-	-	-	-	-	-
	C-B	0.59	-	-	-	-	-	-	-	-
	C-D	0.29	-	-	-	-	-	-	-	-
	AB-C	6.22	-	-	-	-	-	-	-	-
	AB-D	0.86	6.36	0.135	-	0.14	0.15	-	2.3	0.18
	A-B	0.35	-	-	-	-	-	-	-	-
	A-C	5.17	-	-	-	-	-	-	-	-
	A-D	0.39	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
08:45-09:00	B-ACD	1.72	5.24	0.328	-	1.45	0.50	-	8.3	0.29
	D-ABC	2.50	6.08	0.411	-	2.40	0.72	-	12.2	0.30
	CD-A	10.27	-	-	-	-	-	-	-	-
	CD-B	0.88	7.47	0.118	-	0.20	0.13	-	2.1	0.15
	C-A	8.96	-	-	-	-	-	-	-	-
	C-B	0.37	-	-	-	-	-	-	-	-
	C-D	0.19	-	-	-	-	-	-	-	-
	AB-C	5.51	-	-	-	-	-	-	-	-
	AB-D	0.67	7.79	0.087	-	0.15	0.10	-	1.5	0.14
	A-B	0.33	-	-	-	-	-	-	-	-
	A-C	4.82	-	-	-	-	-	-	-	-
	A-D	0.36	-	-	-	-	-	-	-	-

Demand Set: Sum of Demand Sets for Modelling Period: 17:00 - 18:00
Modelling Period: 17:00-18:00

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
17:00-17:15	B-ACD	2.08	4.81	0.432	-	0.00	0.73	-	10.0	0.35
	D-ABC	1.45	5.60	0.260	-	0.00	0.34	-	4.8	0.24
	CD-A	7.25	-	-	-	-	-	-	-	-
	CD-B	1.54	6.71	0.229	-	0.00	0.29	-	4.2	0.19
	C-A	6.81	-	-	-	-	-	-	-	-
	C-B	0.93	-	-	-	-	-	-	-	-
	C-D	0.72	-	-	-	-	-	-	-	-
	AB-C	11.02	-	-	-	-	-	-	-	-
	AB-D	1.97	8.15	0.242	-	0.00	0.31	-	4.5	0.16
	A-B	1.03	-	-	-	-	-	-	-	-
	A-C	10.08	-	-	-	-	-	-	-	-
	A-D	1.33	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
17:15-17:30	B-ACD	3.35	5.05	0.662	-	0.73	1.78	-	23.4	0.54
	D-ABC	1.45	5.46	0.266	-	0.34	0.36	-	5.3	0.25
	CD-A	7.53	-	-	-	-	-	-	-	-
	CD-B	1.58	7.01	0.226	-	0.29	0.29	-	4.4	0.18
	C-A	7.08	-	-	-	-	-	-	-	-
	C-B	0.97	-	-	-	-	-	-	-	-
	C-D	0.75	-	-	-	-	-	-	-	-
	AB-C	10.57	-	-	-	-	-	-	-	-
	AB-D	2.23	8.03	0.278	-	0.31	0.38	-	5.5	0.17
	A-B	0.92	-	-	-	-	-	-	-	-
	A-C	9.05	-	-	-	-	-	-	-	-
	A-D	1.19	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
17:30-17:45	B-ACD	1.61	5.08	0.317	-	1.78	0.48	-	8.1	0.30
	D-ABC	1.39	6.04	0.229	-	0.36	0.30	-	4.7	0.22
	CD-A	6.27	-	-	-	-	-	-	-	-
	CD-B	1.39	6.93	0.200	-	0.29	0.25	-	3.9	0.18
	C-A	5.85	-	-	-	-	-	-	-	-
	C-B	0.80	-	-	-	-	-	-	-	-
	C-D	0.62	-	-	-	-	-	-	-	-
	AB-C	10.22	-	-	-	-	-	-	-	-
	AB-D	1.78	8.48	0.210	-	0.38	0.27	-	4.2	0.15
	A-B	0.96	-	-	-	-	-	-	-	-
	A-C	9.43	-	-	-	-	-	-	-	-
	A-D	1.24	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
	B-ACD	1.41	5.63	0.251	-	0.48	0.34	-	5.3	0.24

17:45-18:00	D-ABC	1.05	6.29	0.168	-	0.30	0.20	-	3.2	0.19
	CD-A	6.33	-	-	-	-	-	-	-	-
	CD-B	1.27	7.48	0.170	-	0.25	0.21	-	3.2	0.16
	C-A	6.01	-	-	-	-	-	-	-	-
	C-B	0.82	-	-	-	-	-	-	-	-
	C-D	0.64	-	-	-	-	-	-	-	-
	AB-C	8.04	-	-	-	-	-	-	-	-
	AB-D	1.42	8.42	0.169	-	0.27	0.21	-	3.2	0.14
	A-B	0.75	-	-	-	-	-	-	-	-
	A-C	7.38	-	-	-	-	-	-	-	-
	A-D	0.97	-	-	-	-	-	-	-	-

Entry capacities marked with an '(X)' are dominated by a pedestrian crossing in that time segment.
In time segments marked with a '(B)', traffic leaving the junction may block back from a crossing so impairing normal operation of the junction.
Delays marked with '##' could not be calculated.

Overall Queues & Delays

Queueing Delay Information Over Whole Period

Demand Set: Sum of Demand Sets for Modelling Period: 08:00 - 09:00
Modelling Period: 08:00-09:00

Stream	Total Demand (veh)	Total Demand (veh/h)	Queueing Delay (min)	Queueing Delay (min/veh)	Inclusive Delay (min)	Inclusive Delay (min/veh)
B-ACD	130.2	130.2	51.5	0.4	51.6	0.4
D-ABC	170.0	170.0	89.7	0.5	89.7	0.5
CD-A	760.1	760.1	-	-	-	-
CD-B	60.9	60.9	9.6	0.2	9.6	0.2
C-A	674.9	674.9	-	-	-	-
C-B	28.2	28.2	-	-	-	-
C-D	14.0	14.0	-	-	-	-
AB-C	356.1	356.1	-	-	-	-
AB-D	45.7	45.7	7.2	0.2	7.2	0.2
A-B	20.8	20.8	-	-	-	-
A-C	306.0	306.0	-	-	-	-
A-D	23.0	23.0	-	-	-	-
All	**1367.2**	**1367.2**	**158.0**	**0.1**	**158.1**	**0.1**

Demand Set: Sum of Demand Sets for Modelling Period: 17:00 - 18:00
Modelling Period: 17:00-18:00

Stream	Total Demand (veh)	Total Demand (veh/h)	Queueing Delay (min)	Queueing Delay (min/veh)	Inclusive Delay (min)	Inclusive Delay (min/veh)
B-ACD	126.8	126.8	46.8	0.4	46.8	0.4
D-ABC	80.2	80.2	18.0	0.2	18.0	0.2
CD-A	410.8	410.8	-	-	-	-
CD-B	86.7	86.7	15.6	0.2	15.6	0.2
C-A	386.2	386.2	-	-	-	-
C-B	52.9	52.9	-	-	-	-
C-D	40.9	40.9	-	-	-	-
AB-C	597.6	597.6	-	-	-	-
AB-D	111.1	111.1	17.4	0.2	17.4	0.2
A-B	55.0	55.0	-	-	-	-
A-C	539.0	539.0	-	-	-	-
A-D	71.0	71.0	-	-	-	-
All	**1352.0**	**1352.0**	**97.8**	**0.1**	**97.8**	**0.1**

Delay is that occurring only within the time period.
Inclusive delay includes delay suffered by vehicles which are still queuing after the end of the time period.
These will only be significantly different if there is a large queue remaining at the end of the time period.

PICADY 5 Run Successful

PICADY

GUI Version: 5.1 AE
Analysis Program Release: 5.0 (MAY 2010)

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

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Run Analysis

Parameter	Values
File Run	W:\2017\P17-068\Site Access junction\Site Access.vpi
Date Run	22 November 2017
Time Run	12:38:45 PM
Driving Side	Drive On The Left

Arm Names and Flow Scaling Factors

Arm	Arm Name	Flow Scaling Factor (%)
Arm A	L3050 East	100
Arm B	Site	100
Arm C	L3050 West	100

Stream Labelling Convention

Stream A-B contains traffic going from A to B etc.

Run Information

Parameter	Values
Run Title	15040 Site Access
Location	Clonmelsh, Co.Carlow
Date	15 April 1930
Enumerator	lowed [PMCE07]
Job Number	15040
Status	-
Client	SLR Consulting Ltd
Description	-

Errors and Warnings

Parameter	Values
Warning	No Errors Or Warnings

Geometric Data

Geometric Parameters

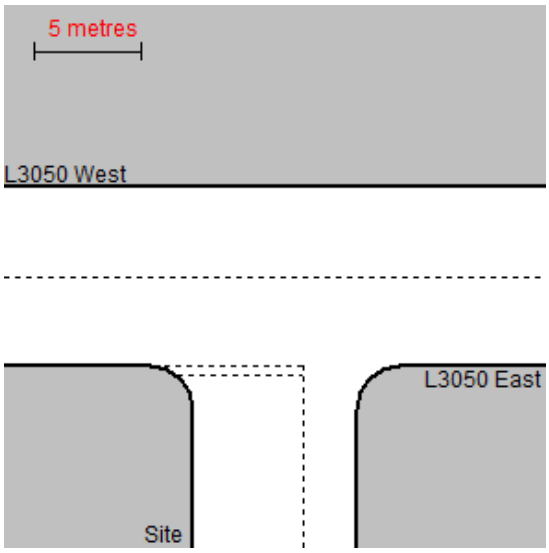
Parameter	Minor Arm B
Major Road Carriageway Width (m)	6.00
Major Road Kerbed Central Reserve Width (m)	0.00
Major Road Right Turning Lane Width (m)	2.20
Minor Road First Lane Width (m)	5.00
Minor Road Visibility To Right (m)	30
Minor Road Visibility To Left (m)	10
Major Road Right Turn Visibility (m)	160
Major Road Right Turn Blocks Traffic	Yes (if over 0 veh)

Slope and Intercept Values

Stream	Intercept for Stream	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	594.790	0.108	0.274	0.172	0.391
B-C	771.538	0.118	0.299	-	-
C-B	666.621	0.258	0.258	-	-

Note: Streams may be combined in which case capacity will be adjusted
These values do not allow for any site-specific corrections

Junction Diagram



Demand Data

Modelling Periods

Parameter	Period	Duration (min)	Segment Length (min)
First Modelling Period	08:15-09:15	60	15
Second Modelling Period	16:45-17:45	60	15

Direct Entry Flows

Demand Set: OY +15 (2033)
Modelling Period: 08:15-09:15

Segment: 08:15-08:30

Arm	Flow (veh/interval)
Arm A	64.00
Arm B	17.00
Arm C	17.00

Segment: 08:30-08:45

Arm	Flow (veh/interval)
Arm A	50.00
Arm B	9.00
Arm C	22.00

Segment: 08:45-09:00

Arm	Flow (veh/interval)
Arm A	31.00
Arm B	7.00
Arm C	33.00

Segment: 09:00-09:15

Arm	Flow (veh/interval)
Arm A	30.00
Arm B	8.00
Arm C	19.00

Demand Set: OY +15 (2033) PM
Modelling Period: 16:45-17:45

Segment: 16:45-17:00

Arm	Flow (veh/interval)
Arm A	22.00
Arm B	5.00
Arm C	29.00

Segment: 17:00-17:15

Arm	Flow (veh/interval)
Arm A	26.00
Arm B	20.00
Arm C	39.00

Segment: 17:15-17:30

Arm	Flow (veh/interval)
Arm A	11.00
Arm B	9.00
Arm C	10.00

Segment: 17:30-17:45

Arm	Flow (veh/interval)
Arm A	10.00
Arm B	13.00
Arm C	43.00

Demand Set: Develpoment AM
Modelling Period: 08:15-09:15

Segment: 08:15-08:30

Arm	Flow (veh/interval)
Arm A	1.80
Arm B	15.10
Arm C	2.00

Segment: 08:30-08:45

Arm	Flow (veh/interval)
Arm A	1.80
Arm B	15.10
Arm C	2.00

Segment: 08:45-09:00

Arm	Flow (veh/interval)
Arm A	1.80
Arm B	15.10
Arm C	2.00

Segment: 09:00-09:15

Arm	Flow (veh/interval)
Arm A	1.80
Arm B	15.10
Arm C	2.00

Demand Set: Development PM
Modelling Period: 16:45-17:45

Segment: 16:45-17:00

Arm	Flow (veh/interval)
Arm A	6.70
Arm B	6.10
Arm C	7.30

Segment: 17:00-17:15

Arm	Flow (veh/interval)
Arm A	6.70
Arm B	6.10
Arm C	7.30

Segment: 17:15-17:30

Arm	Flow (veh/interval)
Arm A	6.70
Arm B	6.10
Arm C	7.30

Segment: 17:30-17:45

Arm	Flow (veh/interval)
Arm A	6.70
Arm B	6.10
Arm C	7.30

Turning Counts

Demand Set: OY +15 (2033)
Modelling Period: 08:15-09:15

From/To	Arm A	Arm B	Arm C
Arm A	-	12	163
Arm B	14	-	28
Arm C	65	26	-

Demand Set: OY +15 (2033) PM
Modelling Period: 16:45-17:45

From/To	Arm A	Arm B	Arm C
Arm A	-	15	68
Arm B	25	-	28
Arm C	131	17	-

Demand Set: Develpoment AM
Modelling Period: 08:15-09:15

From/To	Arm A	Arm B	Arm C
Arm A	-	7	0
Arm B	2	-	2
Arm C	0	8	-

Demand Set: Development PM
Modelling Period: 16:45-17:45

From/To	Arm A	Arm B	Arm C
Arm A	-	3	0
Arm B	7	-	7
Arm C	0	3	-

Turning proportions are calculated from turning count data

Turning Proportions

Demand Set: OY +15 (2033)
Modelling Period: 08:15-09:15

From/To	Arm A	Arm B	Arm C
Arm A	0.000	0.069	0.931
Arm B	0.333	0.000	0.667
Arm C	0.714	0.286	0.000

Demand Set: OY +15 (2033) PM
Modelling Period: 16:45-17:45

From/To	Arm A	Arm B	Arm C
Arm A	0.000	0.181	0.819
Arm B	0.472	0.000	0.528
Arm C	0.885	0.115	0.000

Demand Set: Develpoment AM
Modelling Period: 08:15-09:15

From/To

Demand Set: Development PM
Modelling Period: 16:45-17:45

From/To	Arm A	Arm B	Arm C
Arm A	0.000	1.000	0.000
Arm B	0.500	0.000	0.500
Arm C	0.000	1.000	0.000

Heavy Vehicles Percentages

Demand Set: OY +15 (2033)
Modelling Period: 08:15-09:15

From/To	Arm A	Arm B	Arm C
Arm A	-	16.0	16.0
Arm B	92.0	-	92.0
Arm C	50.0	50.0	-

Demand Set: OY +15 (2033) PM
Modelling Period: 16:45-17:45

From/To	Arm A	Arm B	Arm C
Arm A	-	38.0	38.0
Arm B	60.0	-	60.0
Arm C	32.0	32.0	-

Demand Set: Develpoment AM
Modelling Period: 08:15-09:15

From/To	Arm A	Arm B	Arm C
Arm A	-	28.0	28.0
Arm B	79.0	-	79.0
Arm C	37.0	37.0	-

Demand Set: Development PM
Modelling Period: 16:45-17:45

From/To	Arm A	Arm B	Arm C
Arm A	-	28.0	28.0
Arm B	79.0	-	79.0
Arm C	37.0	37.0	-

Queues & Delays

Demand Set: Sum of Demand Sets for Modelling Period: 08:15 - 09:15
Modelling Period: 08:15-09:15

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
08:15-08:30	B-AC	2.14	5.28	0.405	-	0.00	0.66	-	9.1	0.31
	C-AB	0.49	7.13	0.069	-	0.00	0.09	-	1.3	0.15
	C-A	0.78	-	-	-	-	-	-	-	-
	A-B	0.46	-	-	-	-	-	-	-	-
	A-C	3.92	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
08:30-08:45	B-AC	1.61	5.40	0.298	-	0.66	0.43	-	6.9	0.27
	C-AB	0.64	7.46	0.086	-	0.09	0.11	-	1.7	0.15
	C-A	0.96	-	-	-	-	-	-	-	-
	A-B	0.36	-	-	-	-	-	-	-	-
	A-C	3.09	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
08:45-09:00	B-AC	1.47	5.52	0.267	-	0.43	0.37	-	5.7	0.25
	C-AB	0.99	8.01	0.123	-	0.11	0.17	-	2.6	0.14
	C-A	1.35	-	-	-	-	-	-	-	-
	A-B	0.23	-	-	-	-	-	-	-	-
	A-C	1.96	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
09:00-09:15	B-AC	1.54	5.65	0.272	-	0.37	0.37	-	5.6	0.24
	C-AB	0.55	7.63	0.072	-	0.17	0.09	-	1.4	0.14
	C-A	0.85	-	-	-	-	-	-	-	-
	A-B	0.22	-	-	-	-	-	-	-	-
	A-C	1.90	-	-	-	-	-	-	-	-

Demand Set: Sum of Demand Sets for Modelling Period: 16:45 - 17:45
Modelling Period: 16:45-17:45

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
16:45-17:00	B-AC	0.74	6.12	0.121	-	0.00	0.14	-	1.9	0.19
	C-AB	0.85	8.97	0.095	-	0.00	0.13	-	2.0	0.12
	C-A	1.57	-	-	-	-	-	-	-	-
	A-B	0.78	-	-	-	-	-	-	-	-
	A-C	1.13	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
17:00-17:15	B-AC	1.74	5.99	0.290	-	0.14	0.40	-	5.7	0.23
	C-AB	1.16	9.22	0.126	-	0.13	0.19	-	2.8	0.12
	C-A	1.92	-	-	-	-	-	-	-	-
	A-B	0.89	-	-	-	-	-	-	-	-
	A-C	1.29	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
17:15-17:30	B-AC	1.01	6.41	0.157	-	0.40	0.19	-	3.0	0.19
	C-AB	0.37	8.58	0.043	-	0.19	0.05	-	0.8	0.12
	C-A	0.79	-	-	-	-	-	-	-	-
	A-B	0.48	-	-	-	-	-	-	-	-
	A-C	0.70	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/ segment)	Delay (veh.min/ segment)	Mean Arriving Vehicle Delay (min)
17:30-17:45	B-AC	1.27	6.15	0.207	-	0.19	0.26	-	3.7	0.20
	C-AB	1.28	9.60	0.133	-	0.05	0.20	-	3.0	0.12
	C-A	2.07	-	-	-	-	-	-	-	-
	A-B	0.46	-	-	-	-	-	-	-	-
	A-C	0.66	-	-	-	-	-	-	-	-

Entry capacities marked with an '(X)' are dominated by a pedestrian crossing in that time segment.
In time segments marked with a '(B)', traffic leaving the junction may block back from a crossing so impairing normal operation of the junction.
Delays marked with '##' could not be calculated.

Overall Queues & Delays

Queueing Delay Information Over Whole Period

Demand Set: Sum of Demand Sets for Modelling Period: 08:15 - 09:15
Modelling Period: 08:15-09:15

Stream	Total Demand (veh)	Total Demand (veh/h)	Queueing Delay (min)	Queueing Delay (min/veh)	Inclusive Delay (min)	Inclusive Delay (min/veh)
B-AC	101.4	101.4	27.2	0.3	27.2	0.3
C-AB	39.9	39.9	6.9	0.2	6.9	0.2
C-A	59.1	59.1	-	-	-	-
A-B	19.2	19.2	-	-	-	-
A-C	163.0	163.0	-	-	-	-
All	**382.6**	**382.6**	**34.1**	**0.1**	**34.2**	**0.1**

Demand Set: Sum of Demand Sets for Modelling Period: 16:45 - 17:45
Modelling Period: 16:45-17:45

Stream	Total Demand (veh)	Total Demand (veh/h)	Queueing Delay (min)	Queueing Delay (min/veh)	Inclusive Delay (min)	Inclusive Delay (min/veh)
B-AC	71.4	71.4	14.3	0.2	14.3	0.2
C-AB	55.0	55.0	8.6	0.2	8.6	0.2
C-A	95.2	95.2	-	-	-	-
A-B	39.3	39.3	-	-	-	-
A-C	56.5	56.5	-	-	-	-
All	**317.4**	**317.4**	**22.9**	**0.1**	**22.9**	**0.1**

Delay is that occurring only within the time period.
Inclusive delay includes delay suffered by vehicles which are still queuing after the end of the time period.
These will only be significantly different if there is a large queue remaining at the end of the time period.

PICADY 5 Run Successful