

# **Traffic Impact of proposed housing development at Church Fields on neighbouring Avondale Park, Mulhuddart, Dublin 15**

## **Traffic Assessment**

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## 1.0 INTRODUCTION

### 1.1 BACKGROUND TO REPORT

Lohan Donnelly Consulting Engineers have been commissioned by Fingal County Council to assess the traffic impact of the proposed housing development at Church Fields on the neighbouring Avondale Park Estate located immediately east of the subject site.

Specifically, Fingal County Council have requested that the projected traffic volumes at each of the three access points from our site to the existing Avondale Park estate be estimated together with the projected traffic volumes at the main entrance into Avondale Park.

In addition, this report will detail the existing flows at the existing main entrance to Avondale Park, which is a priority junction, and will assess the existing efficiency of all critical movements at this junction and the impact that the additional flows from the Church Fields Phase 2B development will have on the efficient operation of these critical movements.

The proposed development at Church Fields is located immediately west of Avondale Park, and generated traffic will utilise use 3 No. internal access roads within Avondale Park development in order to reach the external road network at the priority junction in question.

The proposed development at Church Fields will consist of 70 No. housing units.

Figure 1.1 contains a site location map of the proposed development.

Figure 1.2 contains a diagrammatic representation of the three access routes through Avondale Park which traffic from the proposed development will use in order to get access to the external road network via the main entrance to Avondale Park at its eastern extremity.

The major road at the entrance to Avondale Park accesses southwards towards the Damastown Road / Ladyswell Road roundabout.

This link between Avondale Park and the Damastown Road roundabout is identified as the Damastown Access Road for the purposes of this report.

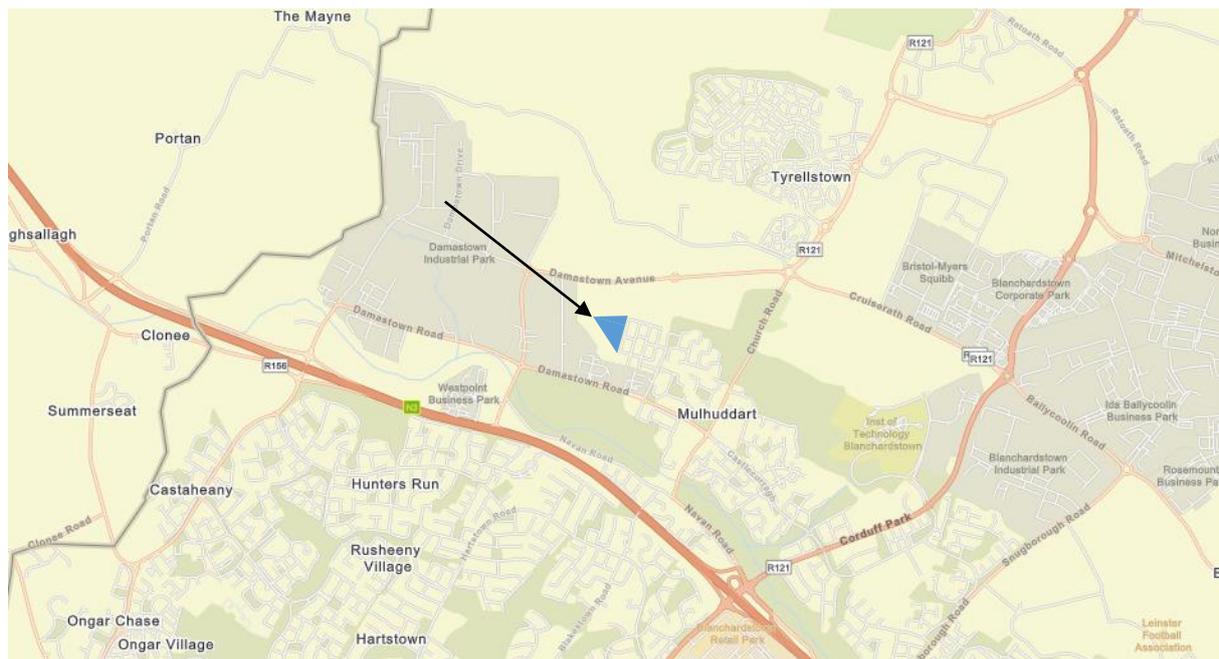
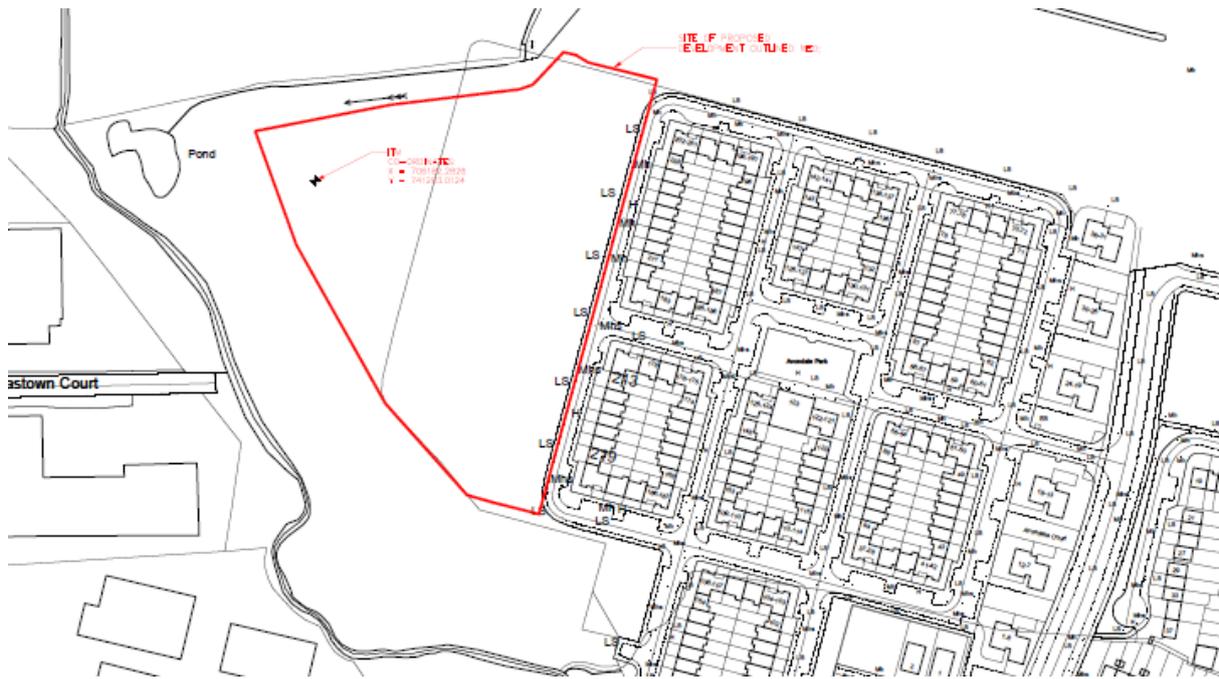


Figure 1-1: Location of proposed residential development

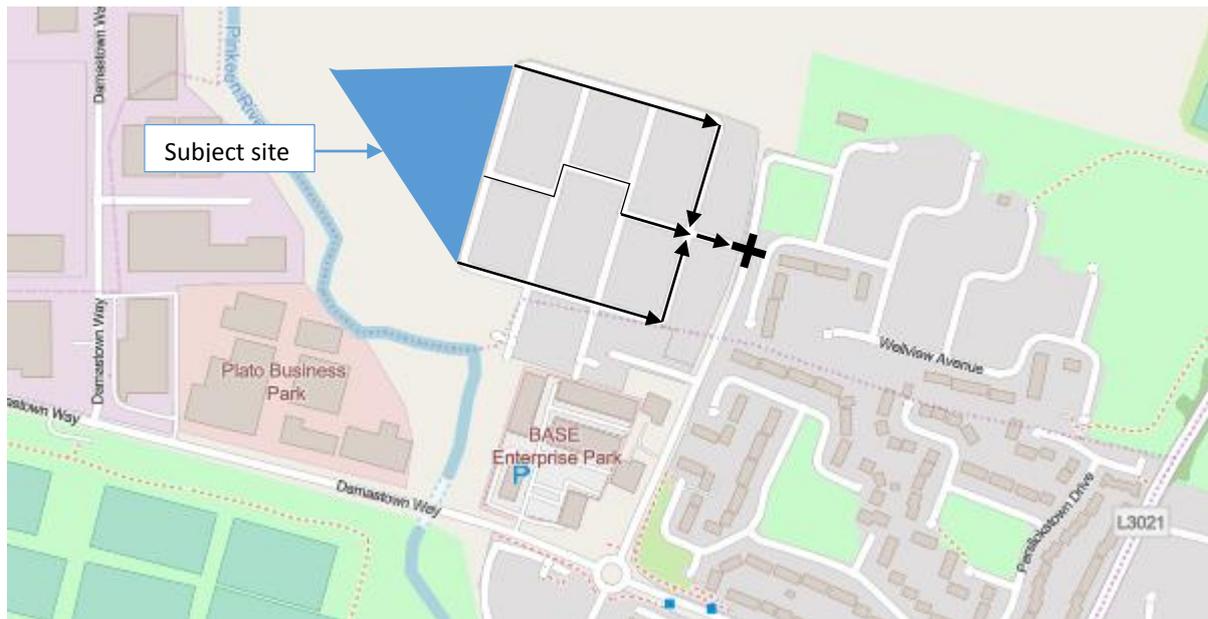


Figure 1-2: 3 No. routes through Avondale Park to external road network

## 1.2 SCOPE OF THE REPORT

Section 2 details the receiving environment in the vicinity of the proposed development.

Section 3 details the survey of the priority junction at the entrance to Avondale Park carried out in October 2019 and comments on the general levels of flows incident on this intersection at present.

Section 4 estimates the traffic volumes generated by the proposed residential development and distributes these flows between the 3 No. access routes to the Avondale Park entrance (see Figure 1.2)

Section 5 contains an analysis of the priority junction at the Avondale Park entrance now and on the day of opening of the proposed development (with and without the proposed development at Church Fields in place), detailing the ratios of flow to capacity and queue lengths for the critical movements at the intersection.

Section 6 makes some overall concluding comments regarding the sustainability of the proposed residential development in transportation terms.

## 2.0 RECEIVING ENVIRONMENT

The proposed development is located immediately west and adjacent to the existing Avondale Park residential development.

The entrance to Avondale Park on its eastern extremity provides access to the external road network, with the major road link at this junction running southwards towards the Damastown Road / Ladyswell Road Roundabout intersection (see Figure 1-2).

The site is located east of the Damastown Industrial park, approximately 800 metres north of the Navan Road (N3) and approximately 4 km north-west of the Navan Road (N3) / M50 grade separated interchange (see Figure 2-1).

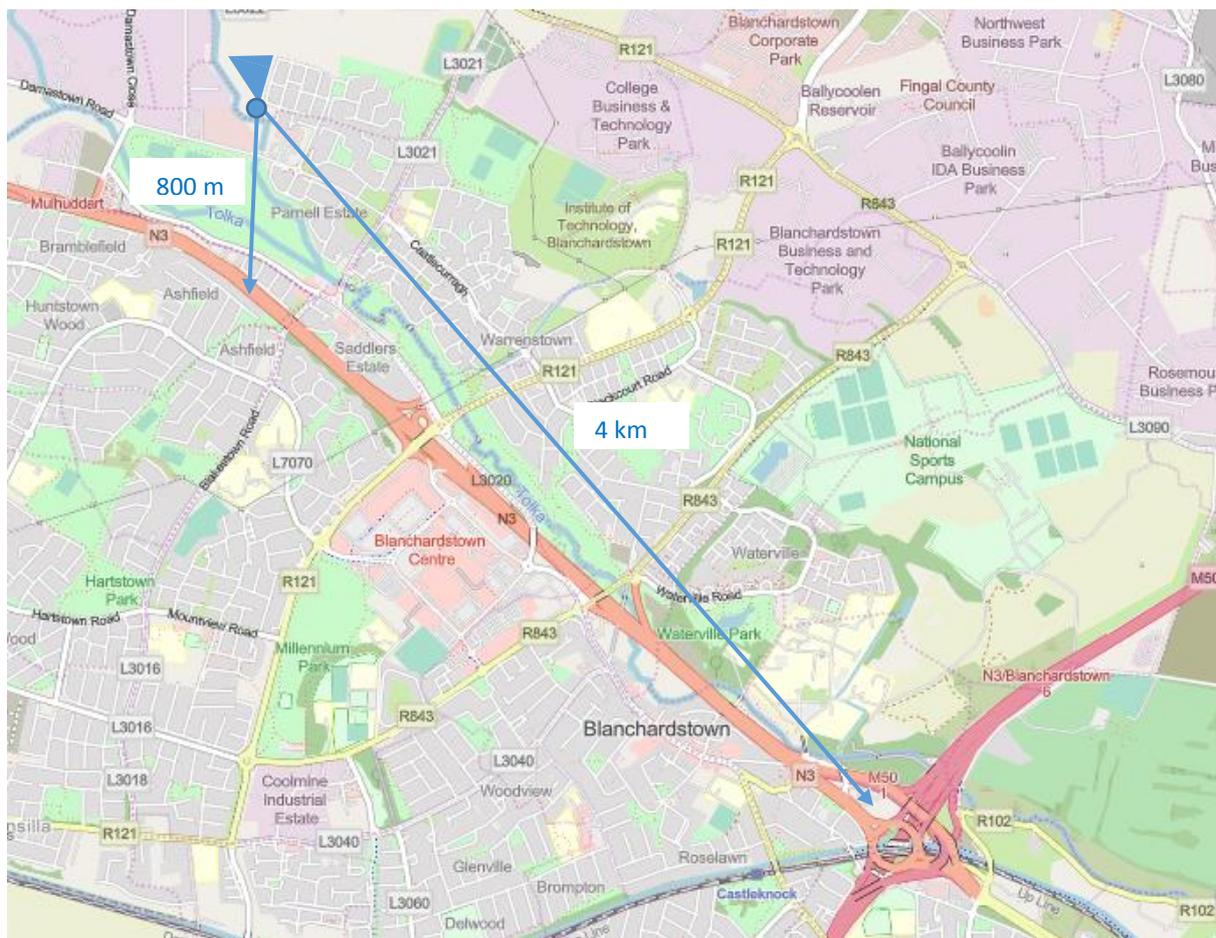


Figure 2-1: Location of subject site relative to N3 and M50

### 3.0 TRAFFIC SURVEY AT ENTRANCE TO AVONDALE PARK

A traffic survey was carried out on Thursday 10<sup>th</sup> October 2019 at the junction.

The survey data is provided within Appendix 1.

The survey was carried out over a 12-hour period between 0700 and 1900 in order to ascertain the peak hour flows for all traffic movements at the junction.

The existing all-day flows are detailed in Figure 3-1.



Figure 3-1: All day flows at entrance to Avondale Park in passenger car units (PCU)

Thus, between 7AM and 7PM, 2590 PCU pass through the junction, thus averaging 216 PCU/hour over the duration of the 12-hour survey.

Based on these figures, the priority junction at the entrance to Avondale Park can be classified as lightly trafficked.

The survey indicated that the weekday morning peak occurred between 0800 and 1000 with the evening peak occurring between 1600 and 1800 – these were observed to be the timeframes during which the junction was most heavily loaded. The following analysis is based on these peak periods.

On the basis of the results of both the surveys and assumptions regarding when peak flows from the generated traffic will occur, the morning peak hour has been taken as 0800 to 0900, with the evening peak taken to occur between 1600 and 1700.

The existing flows at the T-junction for the morning and evening peak hours are detailed within Figures 3-2 and 3-3 respectively.



Figure 3-2: AM peak flows at entrance to Avondale Park

During the morning peak hour, 313 No. passenger car units were incident on the junction, 12.1% of the 12-hour total detailed within Figure 3-1



Figure 3-3: PM peak flows at entrance to Avondale Park

During the evening peak hour, 265 No. passenger car units were incident on the junction, 10.2% of the 12-hour total detailed within Figure 3-1

Table 3-1 details the average queue lengths on the Avondale Park approach to the junction for each of the 60-minute periods within the 12-hour survey:

TIME	MAXIMUM QUEUE EVERY 15-MINUTES ALONG AVONDALE PARK APPROACH TO T-JUNCTION
7 AM - 8 AM	0-0-1-2
8 AM - 9 AM	1-4-1-2
9 AM - 10 AM	2-1-2-0
10 AM - 11 AM	0-0-1-1
11 AM - 12 NOON	1-3-2-2
12 NOON - 1 PM	1-1-1-2
1PM - 2PM	1-1-1-2
2PM - 3PM	1-1-0-3
3PM - 4PM	1-1-2-1
4 PM - 5PM	1-1-1-2
5 PM - 6PM	1-0-1-1
6PM - 7PM	1-1-1-1

Table 3-1: Maximum queue lengths every 15-minutes during the 12-hour traffic survey

Thus, on the Avondale Park approach to the priority intersection, where traffic from the estate interacts with traffic from the external road network, queuing is light throughout the day, reaching a maximum of 4 vehicles in one 15-minute period, but averaging 1.6 No. vehicles during the 8AM to 10AM morning peak period, and averaging 1 No. vehicle during the 4PM to 6PM evening peak period.

These queue lengths are confirmation of a lightly trafficked priority junction with light queuing on the main opposed traffic movements during peak periods of travel.

## 4.0 TRIPS GENERATED BY PROPOSED RESIDENTIAL DEVELOPMENT AND THEIR DISTRIBUTION WITHIN AVONDALE PARK ROAD NETWORK

### 4.1 INTRODUCTION

The traffic impact of the proposed development is determined by assessing the trips generated by the proposal, taking the existing, day of opening and design year flows on the network, and gauging the extent to which the superimposed flows from the proposed development will affect the efficiency of future network flows.

The proposed retail / crèche component is assumed to have no traffic associated with it as it is small in scale and designed for local use only

### 4.2 TRIPS GENERATED BY CANDIDATE SITE

#### 4.2.1 INTRODUCTION

The subject site consists of 70 No. dwelling units. The classification is as public sector / local authority housing.

#### 4.2.2 RESIDENTIAL TRIP GENERATION

TRICS gives the following weekday morning, weekday evening peak, and 2-way total daily trip rates for affordable / local authority housing using both UK and Irish sites:

		Weekday AM		Weekday PM		DAILY
		IN	OUT	IN	OUT	2-WAY
Public Housing (UK and Ireland)	Trips/Unit	0.15	0.26	0.29	0.22	4.3

Table 4-1: Peak hour trip rates for public sector housing within development site (UK and Irish sites)

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

		Weekday AM		Weekday PM		DAILY
		IN	OUT	IN	OUT	2-WAY
Public Housing (UK and Ireland)	No. of units	11	19	21	15	301

Table 4-2: Peak hour flows generated by proposed public sector housing within development site (UK and Irish sites)

The above rates are for both UK and Ireland public housing estates, totalling fourteen in number, ranging between 8 No. and 100 No. units, two of which are Irish sites.

If one were to utilise the two Irish sites only, the following trip generation estimates:

TRICS gives the following weekday morning, weekday evening peak, and 2-way total daily trip rates for affordable / local authority housing using Irish sites only:

		Weekday AM		Weekday PM		DAILY
		IN	OUT	IN	OUT	2-WAY
Public Housing (Ireland only)	Trips/Unit	0.16	0.25	0.39	0.27	5.0

Table 4-3: Peak hour trip rates for public sector housing within development site (Irish sites only)

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

	No. of units	Weekday AM		Weekday PM		DAILY
		IN	OUT	IN	OUT	2-WAY
Public Housing (Ireland only)	70	10	16	27	19	350

Table 4-4: Peak hour flows generated by proposed public sector housing within development site (Irish sites only)

While the above Irish data is obtained from 2 No. sites only, in the interests of robustness, these rates will be used within this study, as the rates are approximately 15% greater than the rates obtained from the combined UK and Irish sites.

Thus, on the basis of using the Irish trip generation rates, the following flows are assumed to be generated by the proposed development:

- AM peak arrivals - 10 No. vehicles
- AM peak departures - 16 No. vehicles
- PM peak arrivals - 27 No. vehicles
- PM peak departures - 18 No. vehicles
- TOTAL DAILY 2-WAY - 350 No. vehicles

Full details of the TRICS data is contained within Appendix 2.

#### 4.3 DISTRIBUTION OF GENERATED FLOWS FROM PROPOSED DEVELOPMENT THROUGH AVONDALE PARK

##### 4.3.1 DISTRIBUTION OF GENERATED FLOWS THROUGH AVONDALE PARK

Figure 4-1 details the layout of housing at Church Fields, indicating the distribution of 1-bed, 2-bed, 3-bed and 4-bed units planned:



Figure 4-1: Layout of proposed public housing development at Church Fields

Figure 4-2 details the distribution of flows through Avondale Park of traffic flows originating within the proposed public housing development in Church Fields:



Figure 4-2: Distribution of flows through Avondale Park for traffic generated by Church Fields Development

While Figure 4-1 indicates a relatively even distribution of housing units within the proposed development relative to the receiving road network within Avondale Park, it is assumed that 70% of traffic will use the access roads at the northern and southern extremities of Avondale Park, rather than the access route through the middle of Avondale Park, on the basis that the routes at the northern and southern boundaries are more direct routes, as opposed to the route through the centre which is less direct.

Thus, during the morning peak hour, in the outward peak direction, 6 vehicles will travel along the routes at the northern and southern boundaries of Avondale Park, with 4 vehicles travelling through the central route (16 No. in total outward flow).

Thus, during the evening peak hour, in the inward peak direction, 10 vehicles will travel along the routes at the northern and southern boundaries of Avondale Park, with 8 vehicles travelling through the central route (28 No. in total inward flow).

Thus, incident volumes along these links will be low at morning and evening peak times.

#### 4.3.2 DISTRIBUTION OF FLOWS ONTO EXTERNAL ROAD NETWORK

For both the morning and evening peak hours, it can be assumed that all exiting traffic will travel to the Damastown Road / Ladyswell Road Roundabout intersection, with all entering traffic doing so via the Damastown Way / Ladyswell Road Roundabout intersection.

Figures 4-3 and 4-4 detail the generated flows for the morning and evening peak hour respectively incident on the priority junction at the entrance to Avondale Park:



Figure 4-3: AM peak generated flows from proposed development incident on entrance to Avondale Park



Figure 4-4: PM peak generated flows from proposed development incident on entrance to Avondale Park

#### 4.4 TRIP ASSIGNMENT

The 2014 Traffic and Transport Assessment Guidelines published by the NRA requires that the relevant junctions be analysed for the existing situation, the year of opening (2022) with the proposed and adjacent developments in place, the design year 1 (year of opening plus 5) with the proposed and adjacent developments in place, and the design year 2 (year of opening plus 15) with the proposed and adjacent developments in place.

In this situation, an analysis of the existing situation plus the year of opening (2022) with and without the development in place should be sufficient.

An annual growth rate of 1.4% has been assumed for the period 2019 to 2022, based on the medium growth estimate for Fingal County Council published by TII in 2017 (PE-PAG-02017).

The 2022 Do-Nothing ('without development') scenario is derived by factoring the survey results in Figures 3-2 and 3-3 up by 4.2% ( $(1.014)^3 - 1 = 0.042$ ). The 2022 Do-Something ('with development') scenario is derived by adding the development flows detailed within Figures 4-3 and 4-4 to these factored network flows.

Table 4-5 below details the network / proposed development incident on the Avondale Park junction in 2019 and on the projected day of opening in 2022:

AVONDALE PARK JUNCTION	Network Flows (2-way)			Development Flows (2-way)			Total Combined Flows (2-way)		
	AM	PM	All- Day	AM	PM	All- Day	AM	PM	All- Day
Existing (2019)	313	265	2590	-	-	-	313	265	2590
Day of opening (2022)	326	276	2699	26	45	350	352	321	3049

Table 4-5: Network and development flows at Avondale Park junction in 2019 and on day of opening (2022)

The proposed development will thus result in daily flows through Avondale Park increasing by 12.9%.

#### 4.5 REQUIREMENT FOR A TRAFFIC ASSESSMENT

The 2014 Traffic and Transport Assessment Guidelines requires the impact of the additional traffic volumes on the critical nearby junctions to be assessed in detail if:

- Development generates 2-way flows of 100 vehicles per hour or greater (where a national road is affected) – threshold 1;
- Development consists of 50 No. dwellings or greater (in an urban area with a population less than 30,000) – threshold 2;
- Development flows exceed 10% of existing turning movements at the two relevant junctions – threshold 3;
- Development flows exceed 5% of turning movements if the location has the potential to become congested – threshold 4.

The figures in Table 4-5 indicates that thresholds 1 and 2 are not breached, with threshold 4 not deemed relevant due to the existing uncongested nature of the priority junction at the entrance to Avondale Park.

Thus threshold 3 is breached, with incident flows increased by more than 10%. However, this must be seen in the context that generated flows are light - morning peak hour flows in the peak direction constitutes one vehicle leaving the proposed development every 3.75 minutes and evening peak hour flows in the peak direction consist of one vehicle entering the proposed development every 2.2 minutes, which is an almost imperceptible increase. The 12% increase results from the low flows presently incident on the junction – an average 2-way flow of less than 4 vehicles per minute.

## 5.0 TRAFFIC ASSESSMENT OF PRIORITY JUNCTION AT ENTRANCE TO AVONDALE PARK

### 5.1 INTRODUCTION

The traffic analysis will analyse the performance of the priority junction at the entrance to Avondale Park for the following 3 No. scenarios:

- Existing flows (AM and PM peak)
- 2022 flows without proposed development in place (AM and PM peak)
- 2022 flows with proposed development in place (AM and PM peak)

The PICADY programme will be utilised to analyse the priority junction for all scenarios.

### 5.2 GEOMETRIC PARAMETERS

For the junction in question, the analysis assumes that the major carriageway, (Damastown Access Road) is 6 metres wide in the vicinity of the entrance, with a 2.2 metre wide dedicated right-turning lane on the southbound carriageway and a 3 metre wide lane for straight-through southbound traffic, with the Avondale Park access (minor carriageway) assumed to consist of 1 No. 3 metre wide lane.

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

#### 5.2.1 ANALYSIS OF EXISTING SITUATION

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Avondale Park priority junction are detailed below for the existing situation within Tables 5-1 and 5-2:

	<b>Morning peak hour 2019 (Existing situation)</b>			
	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
<b>0800-0815</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	23.00	125.25	0.18	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	147.23	0.00	0
<b>0815-0830</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	43.00	120.97	0.36	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	144.42	0.00	0
<b>0830-0845</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	27.00	120.29	0.22	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	144.19	0.00	0
<b>0845-0900</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	16.00	120.42	0.13	1
Damastown Access southbound turning right to Avondale Park (C-B)	2.19	150.53	0.02	0

Table 5-1: Existing flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (2019)

	<b>Evening peak hour 2019 (Existing situation)</b>			
<b>1700-1715</b>	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
Avondale Park exit left/right onto Damastown access (B-AC)	18.00	120.43	0.15	1
Damastown Access southbound turning right to Avondale Park (C-B)	1.10	150.08	0.01	0
<b>1715-1730</b>	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
Avondale Park exit left/right onto Damastown access (B-AC)	13.00	121.41	0.11	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	142.79	0.00	0
<b>1730-1745</b>	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
Avondale Park exit left/right onto Damastown access (B-AC)	12.00	126.24	0.10	1
Damastown Access southbound turning right to Avondale Park (C-B)	1.12	154.16	0.01	0
<b>1745-1800</b>	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
Avondale Park exit left/right onto Damastown access (B-AC)	12.00	122.08	0.10	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	143.25	0.00	0

Table 5-2: Existing flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (2019)

All approaches are at present within capacity at all times during both peaks.

A minimum of 64% spare capacity exists on all opposed movement over all peak times.

Queuing will be at very low levels for turning movements at the T-junction during the morning and evening peaks, with queuing on any opposed movement never exceeding 1 No. vehicle on average.

#### 5.2.2 DAY OF OPENING (2022) ANALYSIS WITHOUT DEVELOPMENT IN PLACE

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Avondale Park priority junction are detailed below for detailed below for 2022 (year of opening) without the adjoining public housing development in place within Tables 5-3 and 5-4:

	<b>Morning peak hour 2022 (Development not in place)</b>			
	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
<b>0800-0815</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	24.40	125.54	0.19	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	147.09	0.00	0
<b>0815-0830</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	45.00	120.61	0.37	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	144.17	0.00	0
<b>0830-0845</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	28.80	119.89	0.24	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	143.91	0.00	0
<b>0845-0900</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	16.70	120.01	0.14	1
Damastown Access southbound turning right to Avondale Park (C-B)	2.31	150.55	0.02	0

Table 5-3: Day of opening (2022) flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development not in place)

	<b>Evening peak hour 2022 (Development not in place)</b>			
	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
<b>1700-1715</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	18.80	119.91	0.16	1
Damastown Access southbound turning right to Avondale Park (C-B)	1.44	149.97	0.01	0
<b>1715-1730</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	14.00	120.63	0.12	1
Damastown Access southbound turning right to Avondale Park (C-B)	1.13	154.47	0.01	0
<b>1730-1745</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	12.30	125.88	0.10	1
Damastown Access southbound turning right to Avondale Park (C-B)	1.13	154.46	0.01	0
<b>1745-1800</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	12.50	121.62	0.10	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	142.79	0.00	0

Table 5-4: Day of opening (2022) flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development not in place)

All approaches will remain within capacity at all times during both peaks.

A minimum of 63% spare capacity will exist on all opposed movement over all peak times, an insignificant decrease on the existing situation.

Queuing will be at low levels for turning movements at the T-junction during the morning and evening peaks, with queuing on any opposed movement never exceeding 1 No. vehicle.

### 5.2.3 DAY OF OPENING (2022) ANALYSIS WITH DEVELOPMENT IN PLACE

The flows, capacities, ratios of flow to capacity (RFC) and queue lengths are detailed immediately below for the four 15-minute periods within the morning and evening peaks for the two critical movements at the Avondale Park priority junction are detailed below for detailed below for 2022 (year of opening) with the adjoining public housing development in place within Tables 5-5 and 5-6:

	<b>Morning peak hour 2022 (Development in place)</b>			
	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
<b>0800-0815</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	28.40	125.24	0.23	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	146.50	0.00	0
<b>0815-0830</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	49.00	120.38	0.41	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	143.58	0.00	0
<b>0830-0845</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	32.60	119.66	0.27	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	143.32	0.00	0
<b>0845-0900</b>				
Avondale Park exit left/right onto Damastown access (B-AC)	20.70	119.77	0.17	1
Damastown Access southbound turning right to Avondale Park (C-B)	2.31	149.99	0.02	0

Table 5-5: Day of opening (2022) flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development in place)

	<b>Evening peak hour 2022 (Development in place)</b>			
<b>1700-1715</b>	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
Avondale Park exit left/right onto Damastown access (B-AC)	23.30	119.25	0.20	1
Damastown Access southbound turning right to Avondale Park (C-B)	1.44	148.41	0.01	0
<b>1715-1730</b>	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
Avondale Park exit left/right onto Damastown access (B-AC)	18.50	119.85	0.15	1
Damastown Access southbound turning right to Avondale Park (C-B)	1.58	154.94	0.01	0
<b>1730-1745</b>	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
Avondale Park exit left/right onto Damastown access (B-AC)	16.80	123.97	0.14	1
Damastown Access southbound turning right to Avondale Park (C-B)	1.13	152.96	0.01	0
<b>1745-1800</b>	<b>Flow (veh)</b>	<b>Cap. (veh)</b>	<b>RFC (-)</b>	<b>Queue (veh)</b>
Avondale Park exit left/right onto Damastown access (B-AC)	17.00	120.97	0.14	1
Damastown Access southbound turning right to Avondale Park (C-B)	0.00	141.20	0.00	0

Table 5-6: Day of opening (2022) flows, capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the evening peak hour (development in place)

All approaches will remain within capacity at all times during both peaks.

A minimum of 59% spare capacity will exist on all opposed movement over all peak times, a decrease of 4% on the 'without development' situation.

Queuing will be at low levels for turning movements at the T-junction during the morning and evening peaks, with queuing on any opposed movement never exceeding 1 No. vehicle.

### 5.3 OVERALL CONCLUSIONS REGARDING IMPACT OF PROPOSED PUBLIN HOUSING DEVELOPMENT ON AVONDALE PARK PRIORITY JUNCTION

The above analysis confirms that existing priority junction at the entrance to Avondale Park is relatively lightly trafficked, with low ratios of flow to capacity on its critical movements and light queuing.

The above analysis also indicates that the proposed development will have an insignificant impact on the existing efficient working of the priority junction. Ratios of flow to capacity and queue lengths will remain low on all critical movements.

The PICADY output is detailed within Appendix 3.

## 6.0 CONCLUDING COMMENTS

This report has provided details of a traffic survey carried out in October 2019 at the priority junction at the entrance to Avondale Park carried out in October 2019 - this is the location where traffic generated by the proposed public housing development at Church Fields will access the local road network.

Results of this survey have been utilised to demonstrate that the junction at present operates efficiently with low levels of queuing on critical movements.

Data from the TRICS database is then utilised to estimate the traffic volumes that will be generated by the proposed public housing development and its distribution within the Avondale Park road network.

The PICADY programme is then utilised to analyse the priority junction at the Avondale Park entrance now in 2019 and on the projected day of opening of the proposed development in 2022 with and without the development in place, confirming that the Avondale Park junction will continue to operate efficiently with the proposed development at Church Fields in place.

Thus, it can be concluded that the proposed housing development at Church Fields is totally sustainable in transportation terms, and will have a minimal impact on the efficient working of the Avondale Park priority junction.

**MRCCL**

**TRANSPORT  
PLANNING PROFESSIONAL**

**APPENDIX**

**1**

**TRAFFIC  
SURVEY  
RESULTS**





**MRCCL**

**TRANSPORT  
PLANNING PROFESSIONAL**

**APPENDIX**

**2**

**TRICS DATA**

## UK AND IRISH SITES DATA

LIST OF SITES relevant to selection parameters

<b>1</b>	<b>CH-03-B-01</b>	<b>HOUSES &amp; FLATS</b>		<b>CHESHIRE</b>
	WORDSWORTH CRES.			
	CHESTER			
	BLACON			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:	80		
	Survey date: MONDAY	17/11/14		Survey Type: MANUAL
<b>2</b>	<b>DL-03-B-02</b>	<b>TERRACED HOUSES</b>		<b>DUBLIN</b>
	MARIGOLD ROAD			
	DUBLIN			
	DARNDALE			
	Neighbourhood Centre (PPS6 Local Centre)			
	Residential Zone			
	Total Number of dwellings:	35		
	Survey date: MONDAY	19/10/15		Survey Type: MANUAL
<b>3</b>	<b>DL-03-B-03</b>	<b>SEMI-DETACHED &amp; TERRACED</b>		<b>DUBLIN</b>
	HOME PARK ROAD			
	DUBLIN			
	DRUMCONDRA			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	48		
	Survey date: TUESDAY	22/11/16		Survey Type: MANUAL
<b>4</b>	<b>DU-03-B-01</b>	<b>TERRACED BUNGALOWS</b>		<b>DUNDEE CITY</b>
	307-441 BALUNIE DRIVE			
	DUNDEE			
	DOUGLAS & ANGUS			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	68		
	Survey date: FRIDAY	21/04/17		Survey Type: MANUAL
<b>5</b>	<b>GM-03-B-01</b>	<b>TERRACED HOUSES</b>		<b>GREATER MANCHESTER</b>
	NEWBOLD			
	ROCHDALE			
	Suburban Area (PPS6 Out of Centre)			
	No Sub Category			
	Total Number of dwellings:	43		
	Survey date: WEDNESDAY	21/10/15		Survey Type: MANUAL
<b>6</b>	<b>LC-03-B-02</b>	<b>SEMI DETACHED/TERRACED</b>		<b>LANCASHIRE</b>
	BILLINGE STREET			
	BLACKBURN			
	Edge of Town Centre			
	Residential Zone			
	Total Number of dwellings:	15		
	Survey date: MONDAY	10/06/13		Survey Type: MANUAL
<b>7</b>	<b>MS-03-B-01</b>	<b>TERRACED</b>		<b>MERSEYSIDE</b>
	TARBOCK ROAD			
	LIVERPOOL			
	SPEKE			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:	16		
	Survey date: TUESDAY	18/06/13		Survey Type: MANUAL
<b>8</b>	<b>NB-03-B-01</b>	<b>SEMI DET. &amp; TERRACED</b>		<b>NORTHUMBERLAND</b>
	WESTLEA			
	BEDLINGTON			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:	97		
	Survey date: MONDAY	19/11/12		Survey Type: MANUAL
<b>9</b>	<b>NF-03-B-01</b>	<b>TERRACED HOUSES</b>		<b>NORFOLK</b>
	NELSON ROAD NORTH			
	GREAT YARMOUTH			
	Edge of Town Centre			
	Residential Zone			
	Total Number of dwellings:	45		
	Survey date: WEDNESDAY	13/09/17		Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

10	<b>TI-03-B-01</b> LIMERICK ROAD NENAGH	<b>MIXED HOUSES</b>		<b>TIPPERARY</b>
	Suburban Area (PPS6 Out of Centre) Residential Zone			
	Total Number of dwellings:	43		
	Survey date: <i>FRIDAY</i>	27/05/16		Survey Type: <i>MANUAL</i>
11	<b>TI-03-B-02</b> STRADAVOHER THURLES	<b>BUNGALOWS</b>		<b>TIPPERARY</b>
	Suburban Area (PPS6 Out of Centre) Residential Zone			
	Total Number of dwellings:	8		
	Survey date: <i>MONDAY</i>	20/11/17		Survey Type: <i>MANUAL</i>
12	<b>TW-03-B-01</b> SCEPTRE STREET NEWCASTLE UPON TYNE	<b>TERRACED HOUSES</b>		<b>TYNE &amp; WEAR</b>
	Edge of Town Centre Residential Zone			
	Total Number of dwellings:	83		
	Survey date: <i>THURSDAY</i>	18/10/18		Survey Type: <i>MANUAL</i>
13	<b>WL-03-B-01</b> BUTTERFIELD DRIVE AMESBURY	<b>TERRACED HOUSES</b>		<b>WILTSHIRE</b>
	Suburban Area (PPS6 Out of Centre) Residential Zone			
	Total Number of dwellings:	54		
	Survey date: <i>TUESDAY</i>	18/09/18		Survey Type: <i>MANUAL</i>
14	<b>WM-03-B-01</b> YORKMINSTER DRIVE BIRMINGHAM CHELMSLEY WOOD	<b>SEMI DET./TERRACED</b>		<b>WEST MIDLANDS</b>
	Edge of Town Residential Zone			
	Total Number of dwellings:	97		
	Survey date: <i>MONDAY</i>	17/10/11		Survey Type: <i>MANUAL</i>
15	<b>WO-03-B-02</b> GOODREST WALK WORCESTER MERRIMANS HILL	<b>TERRACED HOUSES</b>		<b>WORCESTERSHIRE</b>
	Neighbourhood Centre (PPS6 Local Centre) Residential Zone			
	Total Number of dwellings:	16		
	Survey date: <i>MONDAY</i>	14/11/16		Survey Type: <i>MANUAL</i>
16	<b>WY-03-B-02</b> WHITEACRE STREET HUDDERSFIELD DEIGHTON	<b>MIXED HOUSES</b>		<b>WEST YORKSHIRE</b>
	Edge of Town Residential Zone			
	Total Number of dwellings:	54		
	Survey date: <i>TUESDAY</i>	17/09/13		Survey Type: <i>MANUAL</i>
17	<b>WY-03-B-03</b> LINCOLN GREEN ROAD LEEDS	<b>TERRACED HOUSES</b>		<b>WEST YORKSHIRE</b>
	Suburban Area (PPS6 Out of Centre) Built-Up Zone			
	Total Number of dwellings:	29		
	Survey date: <i>THURSDAY</i>	19/09/13		Survey Type: <i>MANUAL</i>
18	<b>WY-03-B-04</b> SYKES CLOSE BATLEY	<b>TERRACED HOUSES</b>		<b>WEST YORKSHIRE</b>
	Edge of Town Residential Zone			
	Total Number of dwellings:	17		
	Survey date: <i>FRIDAY</i>	19/10/18		Survey Type: <i>MANUAL</i>

TRIP RATE for Land Use 03 - RESIDENTIAL/B - AFFORDABLE/LOCAL AUTHORITY HOUSES  
**VEHICLES**

Calculation factor: 1 DWELLS

Estimated TRIP rate value per 70 DWELLS shown in shaded columns

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS				DEPARTURES				TOTALS			
	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip 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	18	47	0.066	4.623	18	47	0.158	11.061	18	47	0.224	15.684
08:00 - 09:00	18	47	0.147	10.318	<b>18</b>	<b>47</b>	<b>0.261</b>	<b>18.243</b>	18	47	0.408	28.561
09:00 - 10:00	18	47	0.145	10.153	18	47	0.200	14.033	18	47	0.345	24.186
10:00 - 11:00	18	47	0.156	10.896	18	47	0.156	10.896	18	47	0.312	21.792
11:00 - 12:00	18	47	0.150	10.483	18	47	0.153	10.731	18	47	0.303	21.214
12:00 - 13:00	18	47	0.176	12.300	18	47	0.144	10.071	18	47	0.320	22.371
13:00 - 14:00	18	47	0.140	9.823	18	47	0.150	10.483	18	47	0.290	20.306
14:00 - 15:00	18	47	0.196	13.703	18	47	0.197	13.785	18	47	0.393	27.488
15:00 - 16:00	18	47	0.255	17.830	18	47	0.202	14.116	18	47	0.457	31.946
16:00 - 17:00	18	47	0.246	17.252	18	47	0.153	10.731	18	47	0.399	27.983
17:00 - 18:00	<b>18</b>	<b>47</b>	<b>0.287</b>	<b>20.059</b>	18	47	0.215	15.024	<b>18</b>	<b>47</b>	<b>0.502</b>	<b>35.083</b>
18:00 - 19:00	18	47	0.189	13.208	18	47	0.156	10.896	18	47	0.345	24.104
19:00 - 20:00												
20:00 - 21:00												
21:00 - 22:00												
22:00 - 23:00												
23:00 - 24:00												
<b>Total Rates:</b>			2.153	150.648			2.145	150.070			4.298	300.718

**IRISH SITES ONLY DATA**LIST OF SITES relevant to selection parameters

- 1 DL-03-B-02 TERRACED HOUSES DUBLIN**  
 MARIGOLD ROAD  
 DUBLIN  
 DARNDALE  
 Neighbourhood Centre (PPS6 Local Centre)  
 Residential Zone  
 Total Number of dwellings: 35  
 Survey date: MONDAY 19/10/15 Survey Type: MANUAL
- 2 DL-03-B-03 SEMI-DETACHED & TERRACED DUBLIN**  
 HOME PARK ROAD  
 DUBLIN  
 DRUMCONDRA  
 Suburban Area (PPS6 Out of Centre)  
 Residential Zone  
 Total Number of dwellings: 48  
 Survey date: TUESDAY 22/11/16 Survey Type: MANUAL
- 3 TI-03-B-01 MIXED HOUSES TIPPERARY**  
 LIMERICK ROAD  
 NENAGH  
 Suburban Area (PPS6 Out of Centre)  
 Residential Zone  
 Total Number of dwellings: 43  
 Survey date: FRIDAY 27/05/16 Survey Type: MANUAL
- 4 TI-03-B-02 BUNGALOWS TIPPERARY**  
 STRADAVOHER  
 THURLES

TRIP RATE for Land Use 03 - RESIDENTIAL/B - AFFORDABLE/LOCAL AUTHORITY HOUSES

**VEHICLES****Calculation factor: 1 DWELLS**

Estimated TRIP rate value per 70 DWELLS shown in shaded columns

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS				DEPARTURES				TOTALS			
	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip 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	4	34	0.075	5.224	4	34	0.157	10.970	4	34	0.232	16.194
08:00 - 09:00	4	34	0.112	7.836	4	34	0.246	17.239	4	34	0.358	25.075
09:00 - 10:00	4	34	0.157	10.970	4	34	0.231	16.194	4	34	0.388	27.164
10:00 - 11:00	4	34	0.209	14.627	4	34	0.157	10.970	4	34	0.366	25.597
11:00 - 12:00	4	34	0.194	13.582	4	34	0.224	15.672	4	34	0.418	29.254
12:00 - 13:00	4	34	0.254	17.761	4	34	0.149	10.448	4	34	0.403	28.209
13:00 - 14:00	4	34	0.142	9.925	4	34	0.224	15.672	4	34	0.366	25.597
14:00 - 15:00	4	34	0.239	16.716	4	34	0.194	13.582	4	34	0.433	30.298
15:00 - 16:00	4	34	0.284	19.851	4	34	0.254	17.761	4	34	0.538	37.612
16:00 - 17:00	4	34	0.246	17.239	4	34	0.164	11.493	4	34	0.410	28.732
17:00 - 18:00	4	34	<b>0.388</b>	<b>27.164</b>	4	34	<b>0.269</b>	<b>18.806</b>	4	34	<b>0.657</b>	<b>45.970</b>
18:00 - 19:00	4	34	0.246	17.239	4	34	0.209	14.627	4	34	0.455	31.866
19:00 - 20:00												
20:00 - 21:00												
21:00 - 22:00												
22:00 - 23:00												
23:00 - 24:00												
Total Rates:		2,546		178.134			2,478	173.434			5,024	351.568

**MRCL**

**TRANSPORT  
PLANNING PROFESSIONAL**

**APPENDIX**

**3**

**PICADY  
OUTPUT**