consulting engineers

NRB

Transportation Assessment Report

for

Proposed Residential Development

At

St. Joseph's Place,
Ballinasloe, Co. Galway.

FINAL ISSUE

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EXECUTIVE SUMMARY

NRB Consulting Engineers Ltd were appointed to address the Traffic & Transportation issues associated with a planning application for a small residential development at St. Joseph's Place, Ballinasloe, Co Galway.

The proposed residential development consists of a total of 8 No residential houses located within the existing St. Joseph's Place residential estate.

This Transportation Assessment Report (TA) has been prepared to address the Traffic and Transportation issues associated with the proposal, the capacity of the existing road network and the impact of the development locally, conscious that the proposed site use will generate very low traffic volumes indeed in the context of the road network in the area. The Report has been prepared in accordance with TII's Traffic & Transportation Assessment Guidelines and addresses the worst case traffic impact of the proposal.

We commissioned and undertook new traffic surveys of the adjacent road network during March 2023 when schools were fully open. This traffic survey data formed the basis of the study.

The analysis includes the effects of the existing traffic on the local roads and assesses the impact during the traditional peak commuter periods in accordance with Traffic & Transportation Assessment Guidelines.

The Transportation Assessment confirms that the road network and the existing St. Joseph's Place access junction arrangement is more than adequate to accommodate the worst-case traffic associated with the development, and full occupation will have a negligible and unnoticeable impact upon the operation of the local roads.

Based on our study and assessment, we believe that there are no adverse traffic/transportation capacity or operational issues associated with the occupation of the residential development that would prevent planning permission being granted by Galway County Council (GCC).

1.0 INTRODUCTION

1.1 This Transportation Assessment (TA) has been prepared by NRB Consulting Engineers Ltd and addresses the Traffic/ Transportation issues associated with a planning application for a small residential development at St. Joseph's Place, Ballinasloe, Co Galway.

1.2 Vehicular access to the site is proposed via the existing St. Joseph's Place access on the R446 Regional Road. A site location plan for the site is included below as ***Figure 1.1***.

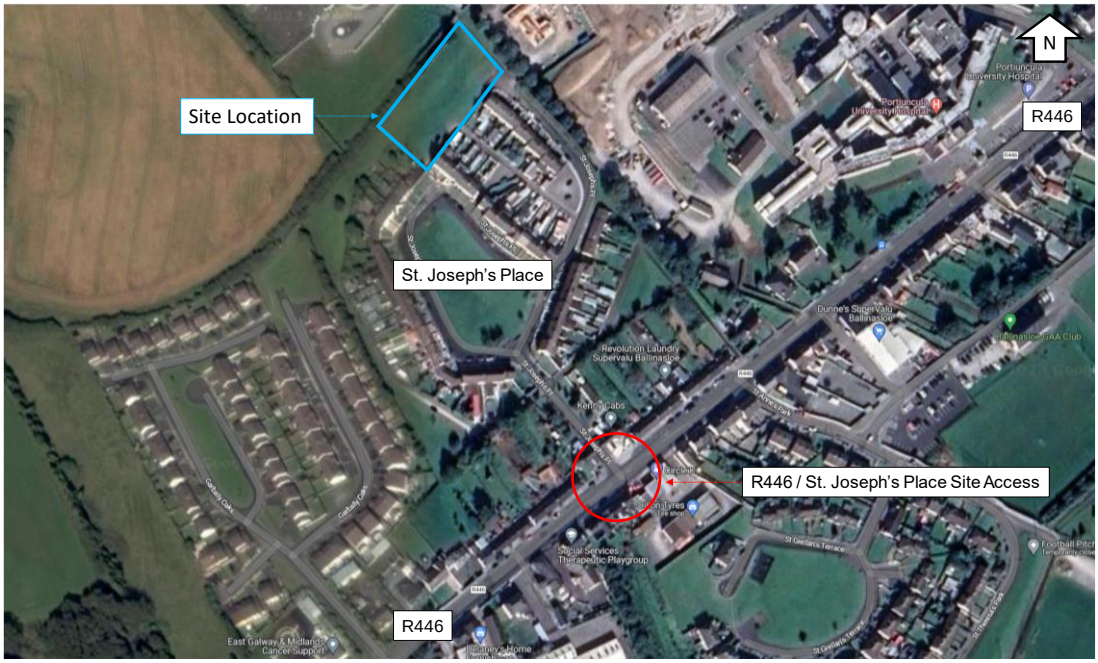


Figure 1.1 - Site Location

1.3 In describing the Receiving Environment and the Proposed Future Environment, this report addresses the following aspects of the proposed development:

- Very small scale of the development in traffic generation terms in the context of the local road network (Reflected in the very Low Traffic Generation of the Development, consistent with the proposed uses),
- Location of the development on the site, being on zoned lands in close proximity to local amenities for residents,
- Traffic & Transportation impact,
- Capacity of the existing vehicular access junction, and,
- Impact upon the adjacent affected junctions locally.

1.4 The Recommendations contained within this Transportation Assessment are based on the following sources of information and industry-standard practices; -

- TII Traffic & Transport Assessment Guidelines,
- Design Manual for Urban Roads and Streets,
- 2023 Traffic Survey Data collected,
- TRICS Database (being the recommended method referenced within the TII Guidelines),
- Relevant Roads Design Guidance, and,
- Our experience in assessing the impact of Developments of this Nature.

1.5 The Report has been prepared in accordance with the requirements of the TII's Traffic & Transport Assessment Guidelines. These are the professional Guidelines used to assess the impact of developments on public roads.

2.0 DEVELOPMENT PROPOSALS & EXISTING CONDITIONS

2.1 The proposal consists of the development of the edge of town site to provide;

- 8 No. Residential Houses;
- 12 car parking spaces & 16 Cycle Parking spaces; and,
- Associated ancillary roads/footpaths, refuse storage & landscaping.

2.2 An extracted image from the Architects Layout Plans, showing the development in the context of the site and the adjoining roads, is reproduced below as ***Figure 2.1*** with more detailed plans of the site and the proposed vehicular access included as ***Appendix A.***

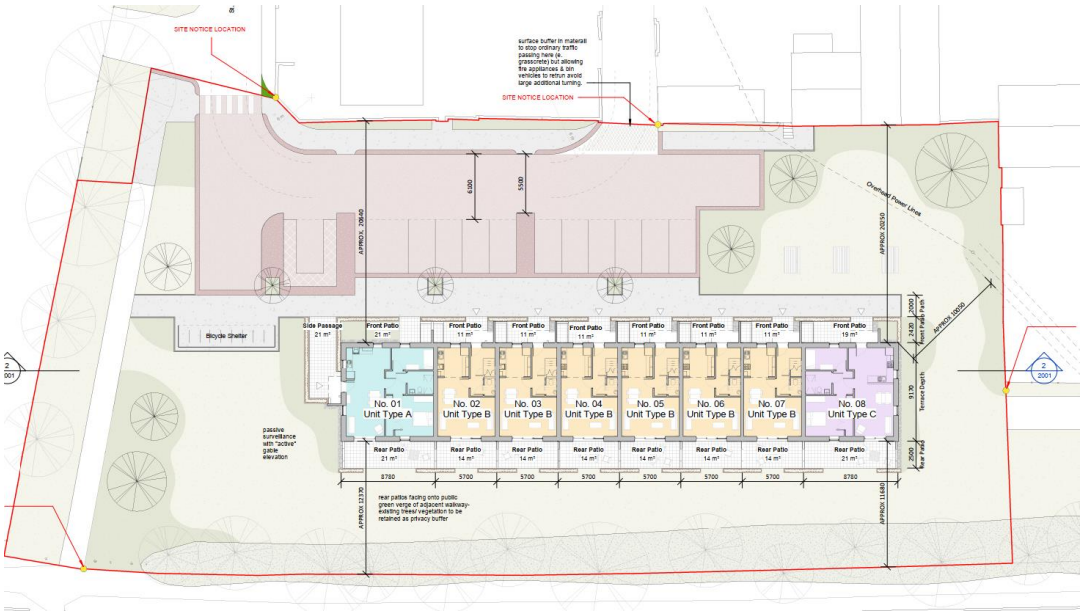


Figure 2.1 –Extract Architects Plans

2.3 The internal layout and arrangement has been designed to be generally consistent with both DMURS and best practice in terms of operational safety and design.

2.4 General traffic will access the proposed houses via the existing St Joseph's Place access road, located on the perimeter of the site. Refuse vehicles and Fire Tenders will access the development via a one-way loop, using an existing internal service road northbound, and using the general access road to exit to the south. This is proposed for ease of access and reduce large additional turning areas. The proposed traffic movements are shown in ***Figure 2.2*** below.

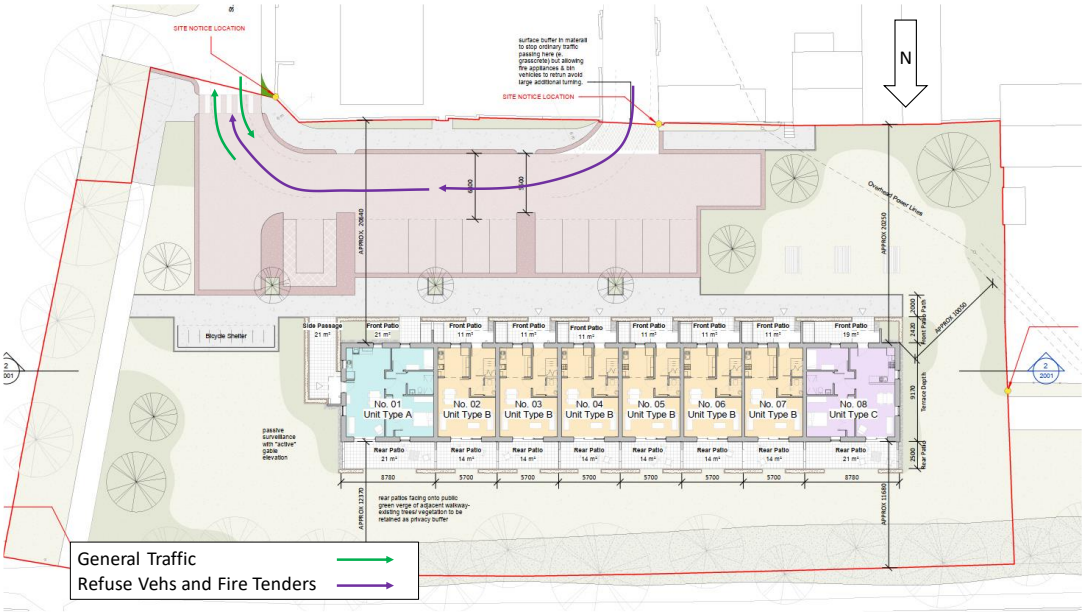


Figure 2.2 – Proposed Traffic Movements

2.5 It is proposed to provide 12 car parking spaces for the 8 housing units. This number of car parking spaces is in accordance with the Galway County Council Development Plan Standards, of 1.5 car parking spaces per dwelling (1-3 bedrooms).

2.6 While each housing unit has a location to park their bikes in either the front or rear patio, it is also proposed to provide 16 sheltered visitor cycle parking spaces (8 stands) for the 8 housing units. This number of visitor cycle parking spaces is in excess of the Galway County Council Development Plan Standards.

2.7 Details of the proposed layout and access are provided on the Architects drawings at ***Appendix A***.

Existing Conditions

2.8 The site is bound along the southern and western boundaries by the existing established St. Joseph's Place residential development. To the east it is bound by Portiuncula University Hospital, and to the north by Scoil Ui Cheithearnaigh, with an established pedestrian access and footpath. Vehicular Access is already established, with a priority controlled junction on the R446 Regional Road.

2.9 The R446 regional road connects Kinnegad in County Westmeath to Galway City. Prior to the construction of the M6 motorway the R446 formed the main N6 road connecting Dublin and Galway. Being an established urban area / town centre, the R446 is subject to a 50kph urban speed restriction. It is a moderately trafficked single carriageway 2-way road, provided with footpaths.

2.10 The R446 Regional Road at the existing St. Joseph's Place site access carries a weekday AM Peak Hour 2-way flow of approximately 1,131 PCUs and a weekday PM Peak Hour 2-Way flow of approximately 958 PCUs, measured at the development location. In these terms, it can be considered as moderately trafficked in terms of its link carrying capacity.

2.11 To set the traffic flows in context, urban roads of this nature have a theoretical free flow link capacity of approximately 1,500 to 1,800 PCUs per-direction per-hour. In this regard, the R117 can be considered to moderately trafficked in comparison with the link carrying capacity. However, it is accepted that the capacity of any road is generally limited by the capacity of road junctions along its length, particularly in urban areas.

2.12 A site layout plan showing the development arrangement in relation to the existing site and roads is included herein as ***Appendix A*** along with further details of the development access/egress and internal arrangement.

3.0 VEHICULAR TRIP GENERATION, ASSIGNMENT & DISTRIBUTION

3.1 The Trip Rate Information Computer System (TRICS) database is ordinarily used to ascertain vehicular trip generation associated with the use of any particular site. This represents industry standard practice for Transportation Assessments in Ireland and is specifically referenced and recommended for use in the TII Guidelines for Traffic & Transport Assessment. In this case the worst case assessment has been undertaken based on Private Residential Houses (using the licensed version of TRICS). The use of Trip Rates from TRICS in this fashion represents industry-standard practice.

3.2 A robust and onerous assessment has been undertaken of the impact in the network emanating from the site. We commissioned an independent Classified Interval Turning Movement Traffic Survey of the network in the vicinity of the site as set out in an image included below as ***Figure 3.1***.

Figure 3.1 – Details of Traffic Data Collection/Surveys Commissioned

3.3 The quantification of traffic generated, and the associated network assessment is undertaken in accordance with the Guidelines in the context of the demonstrably low levels of traffic generated by the proposed development, being a small infill Residential Development Scheme.

3.4 We have undertaken the Traffic Generation calculations using the appropriate categories from within TRICS. The resulting TRICS Trip Rates applied for the Development in this case are as set out below as ***Table 3.1***.

Table 3.1; - TRICS Data Summary, Proposed Development

8 Resi Units	Arrivals (PCUs)		Departures (PCUs)		Total 2-Way Vehicular Traffic Generated
Network Hour	per unit	Dev	per unit	Dev	
Weekday AM Peak Hr 8-9	0.096	1	0.356	3	4
Weekday PM Peak Hr 5-6	0.315	3	0.151	1	4
24 Hours	2.383	21	2.575	23	46

3.5 We have included herein as ***Appendix C*** the TRICS data output upon which the above is based.

Assignment/Distribution - Future Year Traffic

3.6 We have used hand assignment techniques based on the observed movements, with the worst-case traffic assigned to the roads based on the observed established traffic patterns, being the industry standard methodology.

3.7 The standard methodology applied was to firstly ascertain the base background traffic conditions for both the weekday AM and weekday PM Commuter Peak periods. To this end we commissioned and undertook the 2023 Traffic Survey of the network serving the site, in order to establish base background traffic conditions.

3.8 Details of the traffic surveys are included as ***Appendix B*** and are reproduced as commuter peak hour Network Flow Diagrams as ***Appendix D.*** We then used the TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 (Travel Demand Projections 2019, Table 6.2: Central Growth Rates: Annual Growth Factors), to establish projected occupation/opening year 2026 and design year 2041 traffic conditions 15 years following opening on the local road network.

3.9 The worst case traffic based on the content of ***Table 3.1*** above was then applied in order to establish Opening Year and Design Year Traffic Conditions with the proposed development in place and fully occupied. This is all included in the calculations included herein as ***Appendix D***.

3.10 It should be noted that we have selected an opening year of 2026 as being reasonable and appropriate. However, in our experience, varying the opening year and design year by 1-3 years, if required for whatever reason, would have no significant impact upon the conclusions of the study. In addition, given the

favourable results reported in this study, if required to apply higher background traffic conditions for any reason we would not anticipate any changes whatsoever to the conclusions.

3.11 Traffic growth factors for future year assessments were calculated from data obtained in the TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 which provides the recommended method of predicting future year traffic growth on Roads. Calculations of the relevant growth factors are included in ***Table 3.2*** below (based on tabulated 'Central Growth' for County Galway). It should be noted that any requirement to use different or higher growth factors will also have no implications whatsoever for the conclusions of the study.

Table 3.2 - Traffic Growth Rates, TII Travel Demand Projections Unit 5.3

Year	to Year	Table 6.2:
Surveyed	2026	1.080
2026	2039	1.248

3.12 The resulting Traffic Flow Projections and Figures within ***Appendix D*** allowed the assessment of impact of the development to be undertaken.

4.0 TRAFFIC IMPACT - THRESHOLD ASSESSMENT/TRAFFIC CAPACITY

4.1 The Institution of Highways and Transportation (IHT) Guidelines for Traffic Impact Assessment and the TII Traffic and Transport Assessment Guidelines sets out a strict mechanism for assessment of developments of this nature and determining whether further assessment is indeed required.

4.2 This TII Traffic and Transport Assessment Guidelines requires a **Threshold Assessment** of the impact on the local roads to be provided in order to determine whether additional detailed modelling and assessment of particular critical junctions is necessary.

4.3 The professional guidance referenced above sets out specific increases in traffic volume associated with new development, which, if breached, requires further more detailed analysis and assessment to be undertaken. The recommendation is that, if the expected increase is **5%** for networks that are considered heavily trafficked or congested, then further analysis is warranted. The threshold is set at 10% for lightly trafficked or uncongested networks. For robustness we have used the more onerous 5% threshold.

4.4 It is demonstrated herein that the proposed opening and occupation of the entire small residential development, with very low volumes of vehicular traffic added to the local road network, will not result in any significant or noticeable level of new trips on the local roads, with all anticipated traffic increases beyond the site access junction expected to be **well below** the Industry-Standard level of 5% above which further assessment is required.

Table 4.1; - Threshold Assessment, Worst-Case Impact - AM & PM Peak Hours

Assessed Road or Junction	Traffic Increase %		COMMENT
	AM Pk Hr	PM Pk Hr	
R446 / St. Joseph's Place	0.3%	0.4%	<5%; No Further Assessment Req'd. However, Capacity Assessment Undertaken for completeness

4.5 The Threshold assessment clearly confirms that, even at the existing site access junction, the worst case traffic increase are in all cases imperceptible AND significantly below the IHT and TII recommended level of 5% above which further assessment is warranted (5% being the lower threshold for congested networks). To set these predicted increased levels of traffic in context, the day-to-day variation in traffic volume (due to day-of-week or weather conditions) is accepted as being

10%, so, in this context alone, increases of in all cases way less than 5% in Traffic on the local road links will go entirely unnoticed.

4.6 It is clear that the introduction of the proposed development will have an absolutely negligible & unnoticeable impact upon vehicular traffic conditions locally. Notwithstanding the above we have undertaken detailed capacity modelling of the existing St. Joseph's Place site access, with the results summarised below.

4.7 We have used the TII-approved software package 'Junctions 10' PiCADY' (**P**riority **I**ntersection **C**apacity **A**nd **D**elay) software package (as part of the TRL Package 'Junction 10') to assess the capacity of the junction. PiCADY produces results based on a 'Ratio of Flow to capacity' (RFC) and queue length. An RFC greater that 1.00 indicates that a junction is operating at or above capacity, with 0.85 considered to be the optimum RFC value. We have appended the detailed computer simulation model results for the proposed site access in ***Appendix E.***

EXISTING R446 / ST. JOSEPHS SITE ACCESS JUNCTION CAPACITY ANALYSIS

4.8 A summary of the results is included below as ***Table 4.1***

Table 4.1 - PiCADY Summary Results, Existing R446 / St. Joseph's Site Access Junction

Modelled Scenario	*Period Mean Max Q (PCUs)*	*Period Max RFC*
2026 Opening Year AM Peak Hr	0.1	0.10
2026 Opening Year PM Peak Hr	0.1	0.06
2041 Design Year AM Peak Hr	0.2	0.14
2041 Design Year PM Peak Hr	0.1	0.08

4.9 The results of the modelling clearly shows that the existing R446 / St. Joseph's Place site access will have significantly more than adequate capacity to accommodate the worst case traffic associated with the development. All of the RFCs are way below the theoretical optimum capacity of 0.85 and no queuing is anticipated. These results are unsurprising given the low traffic volumes generated.

5.0 CONCLUSIONS

5.1 This Transportation Assessment Report assesses the traffic and transportation impact associated with a planning application for a small residential development at St. Joseph's Place, Ballinasloe, Co Galway. The proposed residential development consists of a total of 8 No residential houses.

5.2 This Report has been prepared in accordance with the TII Traffic & Transport Assessment Guidelines and is based on industry-standard Trip Generation Rates established using the most up to date version of the TRICS Database.

5.3 The impact of the development traffic on the local roads has been modelled and assessed, based on a comprehensive traffic survey undertaken in March 2023. Appropriate industry standard TII traffic growth factors have been applied to establish selected opening year and design year traffic conditions.

5.4 This report demonstrates that the proposed Development will have an absolutely negligible impact upon the established local traffic conditions and can easily be accommodated on the road network without any capacity concerns arising.

5.5 The assessment confirms that the existing R446 / St. Joseph's Place site access is of more than adequate capacity to accommodate the worst-case traffic associated with the proposed development during the selected year of opening and the design year 15 years following opening.

5.6 It is considered that there are no significant Operational Traffic Safety or Road Capacity issues that prevent a positive determination of the application by Galway County Council.

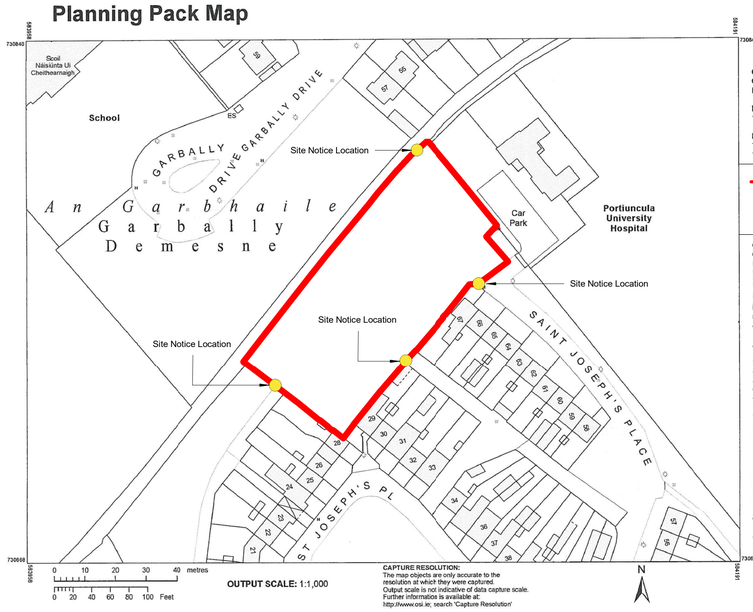
APPENDICES - CONTENT

A	Proposed Development – Site Layout
B	2023 Raw Traffic Survey Data Collected
C	TRICS Trip Generation Output *(Residential Housing)*
D	Traffic Surveys, Trip Distribution & Network Traffic Flow Diagrams
E	PICADY Junction Capacity Model Output – Existing St. Joseph's Place Site Access Junction

APPENDIX A

Proposed Development - Site Layout

Planning Pack Map



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CENTRE COORDINATES:
ITM 584075,730754

PUBLISHED: 16/12/2022
ORDER NO.: 50308525_1

MAP SERIES: 1:1,000 1:1,000
MAP SHEETS: 3296-06 3296-11

SITE BOUNDARY
SITE AREA = 3746 m² = 0.37 Ha
SITE NOTICE LOCATIONS

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1 OSI Site Location Map
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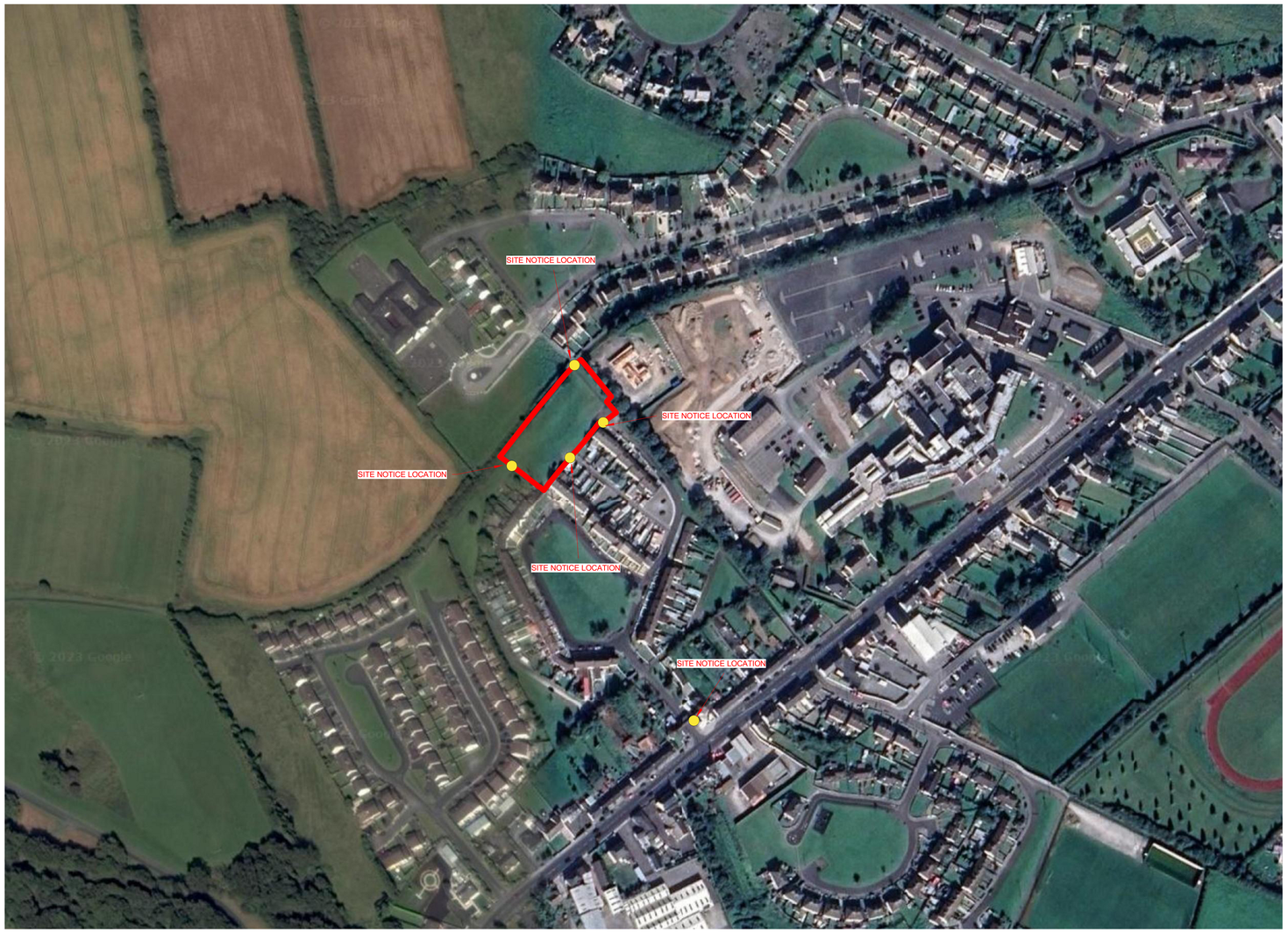

2 Site Aerial Photo
1 : 2000

3 Site Photos

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PROJ	AUTHOR	BLK	LVL	TYP	ROLE	SHEET	REV.	PURPOSE
OBFA-V1-ZZ-DR-A-1001								SK

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Site Location Map

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SCALE **As indicated** SHEET **A1**
DRAWN **LH** CHECKED **CMG**

OBFA PROJECT NUMBER
2210

NAME
ST. JOSEPH'S PLACE

CLIENT
GCC

SITE PLAN LEGEND

SITE BOUNDARY
SITE AREA = 3746 m² = 0.37 Ha

SITE NOTICE LOCATIONS

UNIT TYPES

Unit Type A - 1 Storey - 2B/3P - 69m²
1 Unit - House No. 01

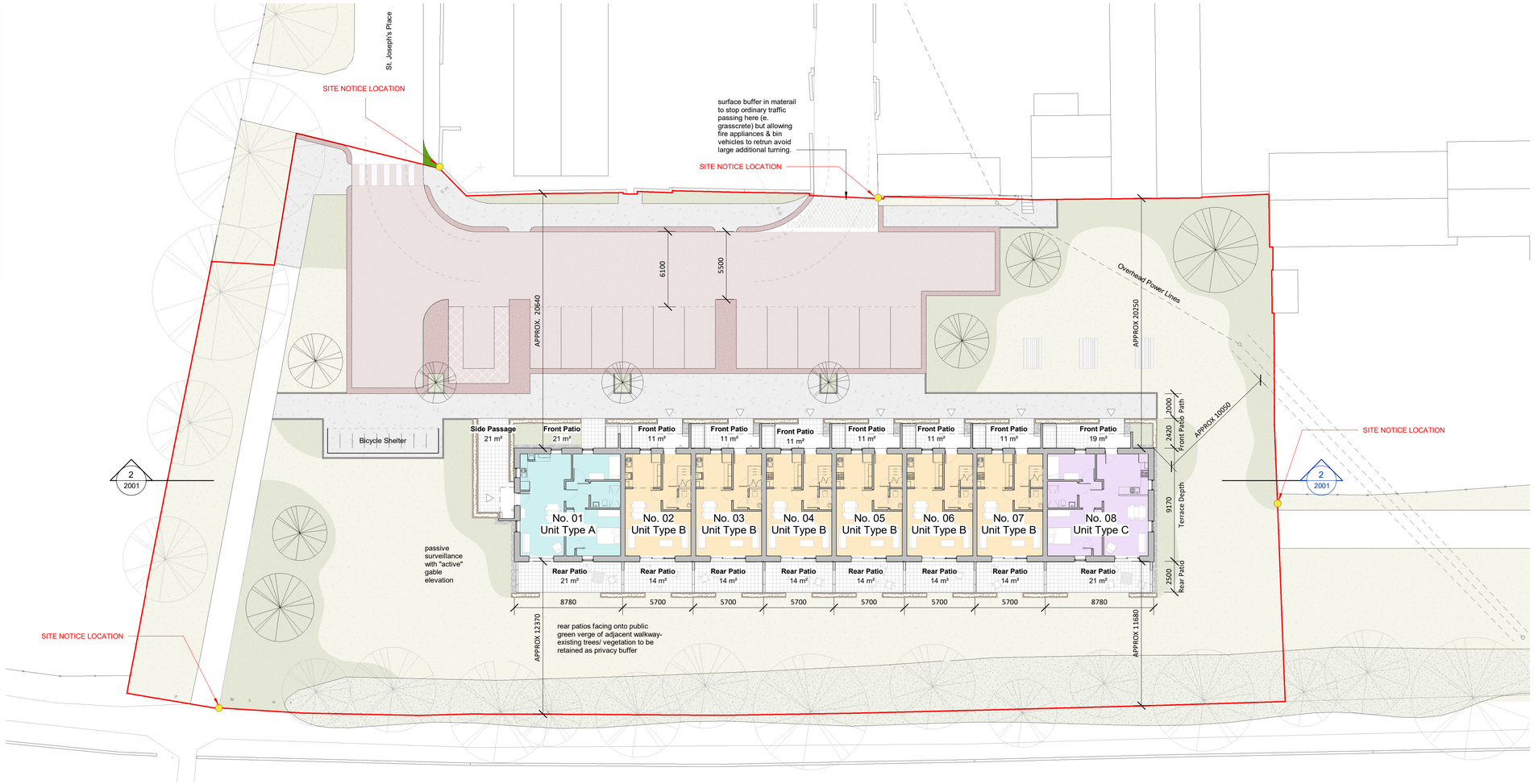
Unit Type B - 2 Storey - 2B/4P - 89m²
6 Units - House No. 02 - 07

Unit Type C - 1 Storey - 2B/3P - 69m²
1 Unit - House No. 08

Alterations to public footpath outside of site boundary
Subject to Taken-In-Charge Application

MATERIALS LEGEND

- Existing Grass
- Existing Hedgerow
- Proposed Landscaping
- Existing Trees
- Proposed Trees
- Proposed Concrete Path (To Match Existing)
- Pavement/Landscape Buffer
- Tinted Tarmac - Shared Surface
- Proposed Curbs
- Proposed Plant Beds
- Proposed Gravel Drains
- Proposed Patio Paving
- Front Entrance



1 Site Plan - Proposed
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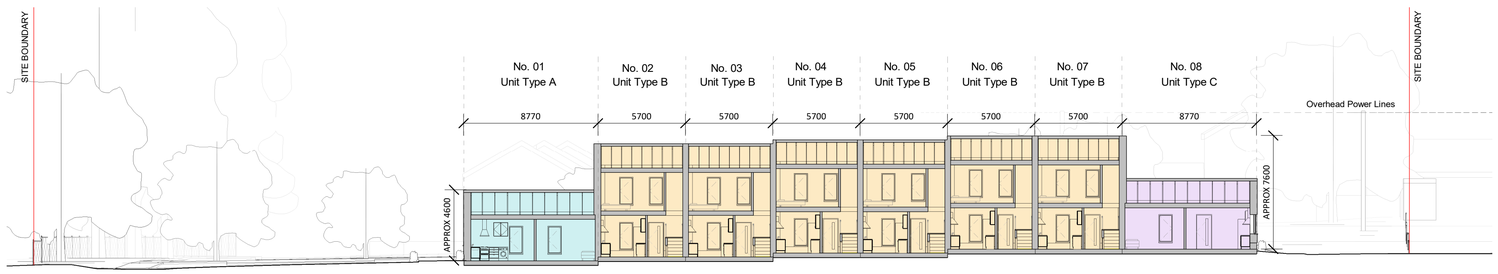

2 Terrace Long Section - Proposed
1 : 200

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DRAWING NAME
Proposed Site Plan

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2210

NAME
ST. JOSEPH'S PLACE

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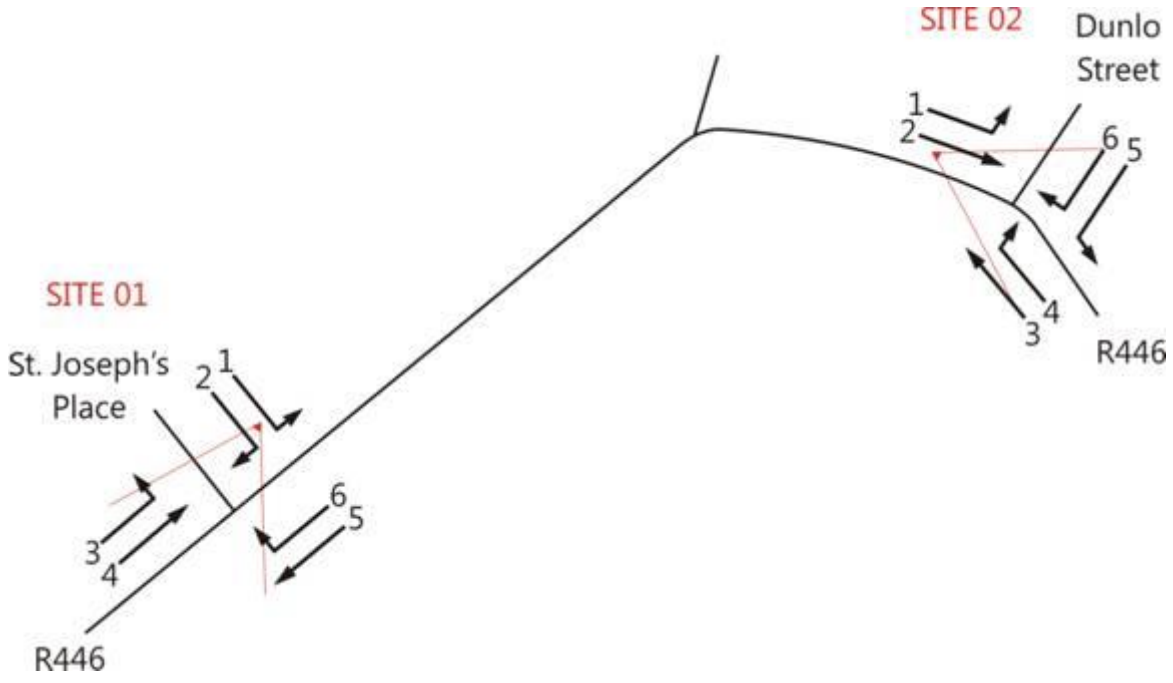
APPENDIX B

2023 Raw Traffic Survey Data Collected

Site Locations

Movement Numbering



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	Client: NRB	Job Day: Thursday	Author: SPW	

TRAFFINOMICS LIMITED

BALLINASLOE TRAFFIC COUNTS **MARCH 2023**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/23/056**

SITE: 01 DATE: 9th March 2023

LOCATION: R446/St. Joseph's Place DAY: Thursday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	1	1	2	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
07:30	0	0	2	0	1	0	3	4	0	0	0	1	0	1	2	3	0	0	0	0	1	0	1	2
07:45	0	0	4	0	0	0	4	4	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	6	0	1	1	8	10	0	0	3	1	0	1	5	6	0	0	0	0	1	0	1	2
08:00	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3	0	0	3	0	0	0	3	3
08:15	0	0	5	0	0	0	5	5	0	0	2	0	0	0	2	2	0	0	3	0	0	0	3	3
08:30	0	0	3	0	0	0	3	3	0	0	5	1	0	0	6	6	0	0	6	1	0	1	8	9
08:45	0	0	6	0	0	0	6	6	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1
H/TOT	0	0	14	0	0	0	14	14	0	0	12	1	0	0	13	13	0	0	13	1	0	1	15	16
09:00	0	0	4	1	0	0	5	5	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
09:15	0	0	1	2	0	1	4	5	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
09:30	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	3	0	0	0	3	3
09:45	0	0	6	0	0	0	6	6	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	12	3	0	1	16	17	0	0	3	1	0	0	4	4	0	0	3	0	0	0	3	3
P/TOT	0	0	32	3	1	2	38	41	0	0	18	3	0	1	22	23	0	0	16	1	1	1	19	21

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	6	0	0	0	6	6	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1
16:15	0	0	4	1	0	0	5	5	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1
16:30	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
16:45	0	0	3	0	0	1	4	5	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	13	2	0	1	16	17	0	0	3	0	0	0	3	3	0	0	3	0	0	0	3	3
17:00	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
17:15	0	0	6	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
17:30	0	0	4	1	0	0	5	5	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
17:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
H/TOT	0	0	14	1	0	0	15	15	0	0	1	0	0	0	1	1	0	0	5	0	0	0	5	5
18:00	0	0	2	1	0	1	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	2	1	0	0	3	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
18:30	0	0	3	3	0	0	6	6	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
18:45	0	0	4	0	0	0	4	4	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2
H/TOT	0	0	11	5	0	1	17	18	0	0	2	0	0	0	2	2	0	0	3	0	0	0	3	3
P/TOT	0	0	38	8	0	2	48	50	0	0	6	0	0	0	6	6	0	0	11	0	0	0	11	11

TRAFFINOMICS LIMITED

BALLINASLOE TRAFFIC COUNTS **MARCH 2023**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/23/056**

SITE: 01 DATE: 9th March 2023

LOCATION: R446/St. Joseph's Place DAY: Thursday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6								PCU's Through Junction
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	
07:00	0	0	30	6	5	0	41	46	0	0	25	5	3	1	34	38	0	0	0	0	0	0	0	0	84
07:15	0	0	63	11	3	3	80	86	0	0	28	8	2	1	39	42	0	0	1	1	0	0	2	2	134
07:30	1	0	93	18	2	0	114	115	0	0	42	19	0	1	62	63	0	0	1	0	0	0	1	1	188
07:45	0	0	97	20	2	0	119	121	0	0	39	4	3	1	47	51	0	0	2	0	0	0	2	2	179
H/TOT	1	0	283	55	12	3	354	368	0	0	134	36	8	4	182	194	0	0	4	1	0	0	5	5	585
08:00	0	0	51	18	2	1	72	75	0	0	58	21	2	4	85	91	0	0	2	0	0	0	2	2	174
08:15	0	0	115	19	4	0	138	142	0	0	71	18	2	7	98	107	0	0	1	0	0	0	1	1	260
08:30	0	0	158	15	9	4	186	199	1	0	118	17	3	2	141	145	0	0	2	0	0	0	2	2	364
08:45	0	0	214	17	1	1	233	235	0	0	92	12	4	0	108	112	0	0	0	1	0	0	1	1	357
H/TOT	0	0	538	69	16	6	629	651	1	0	339	68	11	13	432	455	0	0	5	1	0	0	6	6	1155
09:00	0	0	118	16	7	7	148	162	1	0	60	17	4	3	85	91	0	0	3	0	0	1	4	5	264
09:15	0	0	115	7	1	2	125	128	0	0	52	12	6	2	72	80	0	0	3	1	0	1	5	6	220
09:30	0	0	82	16	9	2	109	120	0	0	56	13	4	1	74	79	0	0	1	0	0	0	1	1	205
09:45	0	0	67	13	6	1	87	94	0	0	36	16	7	2	61	70	0	0	4	1	0	0	5	5	176
H/TOT	0	0	382	52	23	12	469	504	1	0	204	58	21	8	292	320	0	0	11	2	0	2	15	17	865
P/TOT	1	0	1203	176	51	21	1452	1523	2	0	677	162	40	25	906	969	0	0	20	4	0	2	26	28	2606

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6								PCU's Through Junction
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	
16:00	0	0	136	17	4	6	163	173	0	0	101	13	5	0	119	124	0	0	2	1	0	0	3	3	308
16:15	0	0	70	12	5	1	88	94	0	0	124	15	6	2	147	155	0	0	5	0	0	1	6	7	263
16:30	0	0	90	13	0	1	104	105	0	0	115	11	1	0	127	128	0	0	2	0	0	0	2	2	237
16:45	0	0	93	19	4	0	116	120	0	0	100	22	1	1	124	126	0	0	0	0	0	0	0	0	252
H/TOT	0	0	389	61	13	8	471	492	0	0	440	61	13	3	517	533	0	0	9	1	0	1	11	12	1060
17:00	0	0	77	13	1	1	92	94	0	0	117	28	2	2	149	153	0	0	5	1	0	0	6	6	257
17:15	0	0	78	17	2	3	100	105	0	0	111	15	2	0	128	130	0	0	8	1	0	0	9	9	252
17:30	0	0	84	12	0	2	98	100	0	0	108	17	2	0	127	129	0	0	5	1	0	0	6	6	242
17:45	0	0	90	8	2	0	100	102	0	0	105	12	2	0	119	121	0	0	5	1	0	0	6	6	231
H/TOT	0	0	329	50	5	6	390	401	0	0	441	72	8	2	523	533	0	0	23	4	0	0	27	27	982
18:00	0	0	82	14	1	0	97	98	0	0	86	13	2	0	101	103	0	0	3	2	0	1	6	7	213
18:15	0	0	74	11	4	0	89	93	0	0	88	14	1	1	104	106	0	0	5	0	0	0	5	5	208
18:30	0	0	44	6	2	0	52	54	0	0	76	7	0	0	83	83	0	0	0	0	0	0	0	0	144
18:45	0	0	52	6	1	1	60	62	0	0	73	8	0	2	83	85	0	0	3	0	0	0	3	3	157
H/TOT	0	0	252	37	8	1	298	307	0	0	323	42	3	3	371	377	0	0	11	2	0	1	14	15	722
P/TOT	0	0	970	148	26	15	1159	1200	0	0	1204	175	24	8	1411	1443	0	0	43	7	0	2	52	54	2764

APPENDIX C

TRICS - Trip Generation Output

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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	6	12	0.096	6	12	0.260	6	12	0.356
08:00 - 09:00	6	12	0.096	6	12	0.356	6	12	0.452
09:00 - 10:00	6	12	0.096	6	12	0.219	6	12	0.315
10:00 - 11:00	6	12	0.219	6	12	0.178	6	12	0.397
11:00 - 12:00	6	12	0.178	6	12	0.192	6	12	0.370
12:00 - 13:00	6	12	0.247	6	12	0.274	6	12	0.521
13:00 - 14:00	6	12	0.205	6	12	0.219	6	12	0.424
14:00 - 15:00	6	12	0.219	6	12	0.178	6	12	0.397
15:00 - 16:00	6	12	0.219	6	12	0.219	6	12	0.438
16:00 - 17:00	6	12	0.274	6	12	0.178	6	12	0.452
17:00 - 18:00	6	12	0.315	6	12	0.151	6	12	0.466
18:00 - 19:00	6	12	0.219	6	12	0.151	6	12	0.370
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.383			2.575			4.958

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

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Parameter summary

Trip rate parameter range selected:	6 - 18 (units:)
Survey date date range:	01/01/14 - 19/05/21
Number of weekdays (Monday-Friday):	7
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

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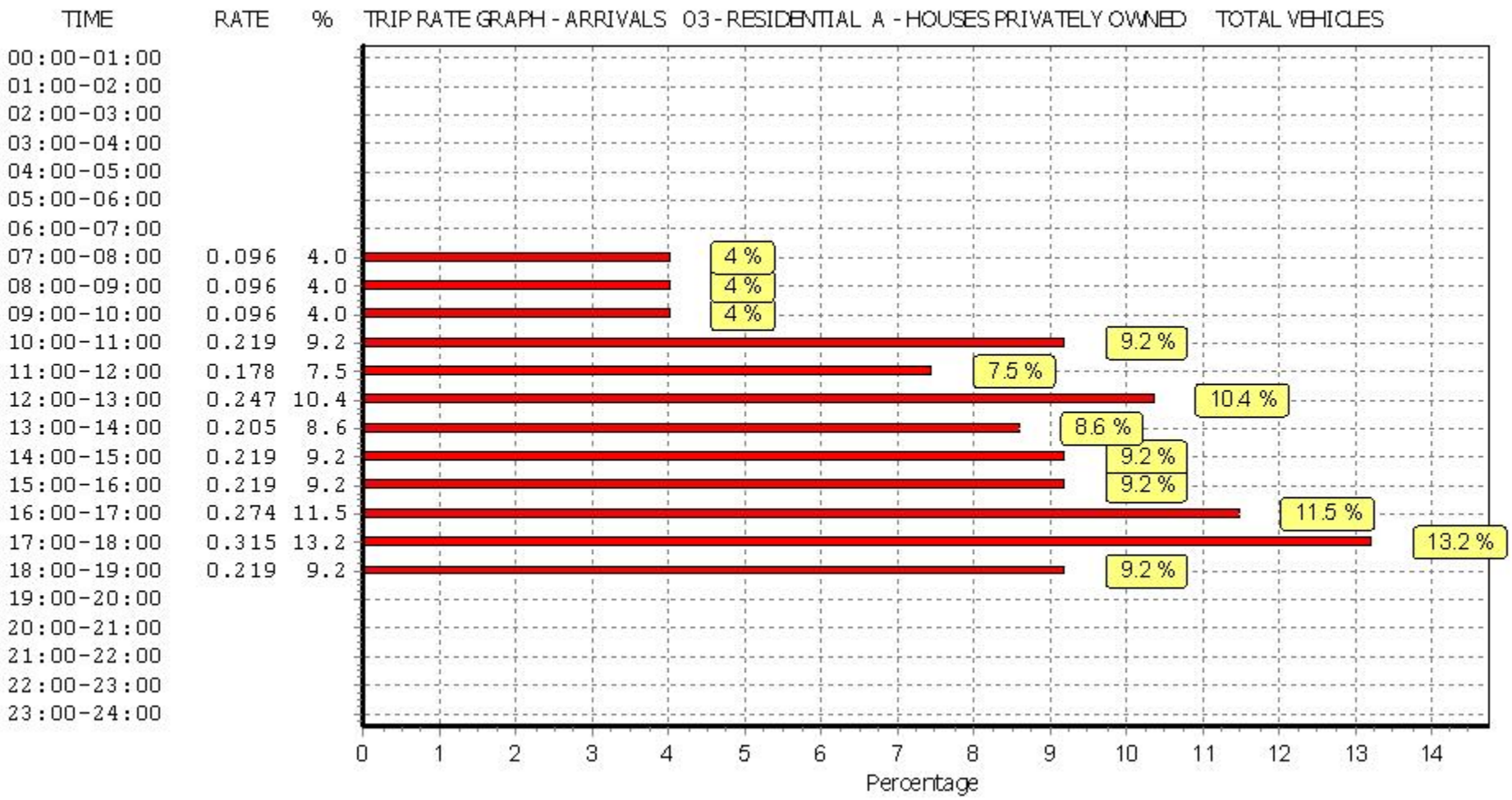
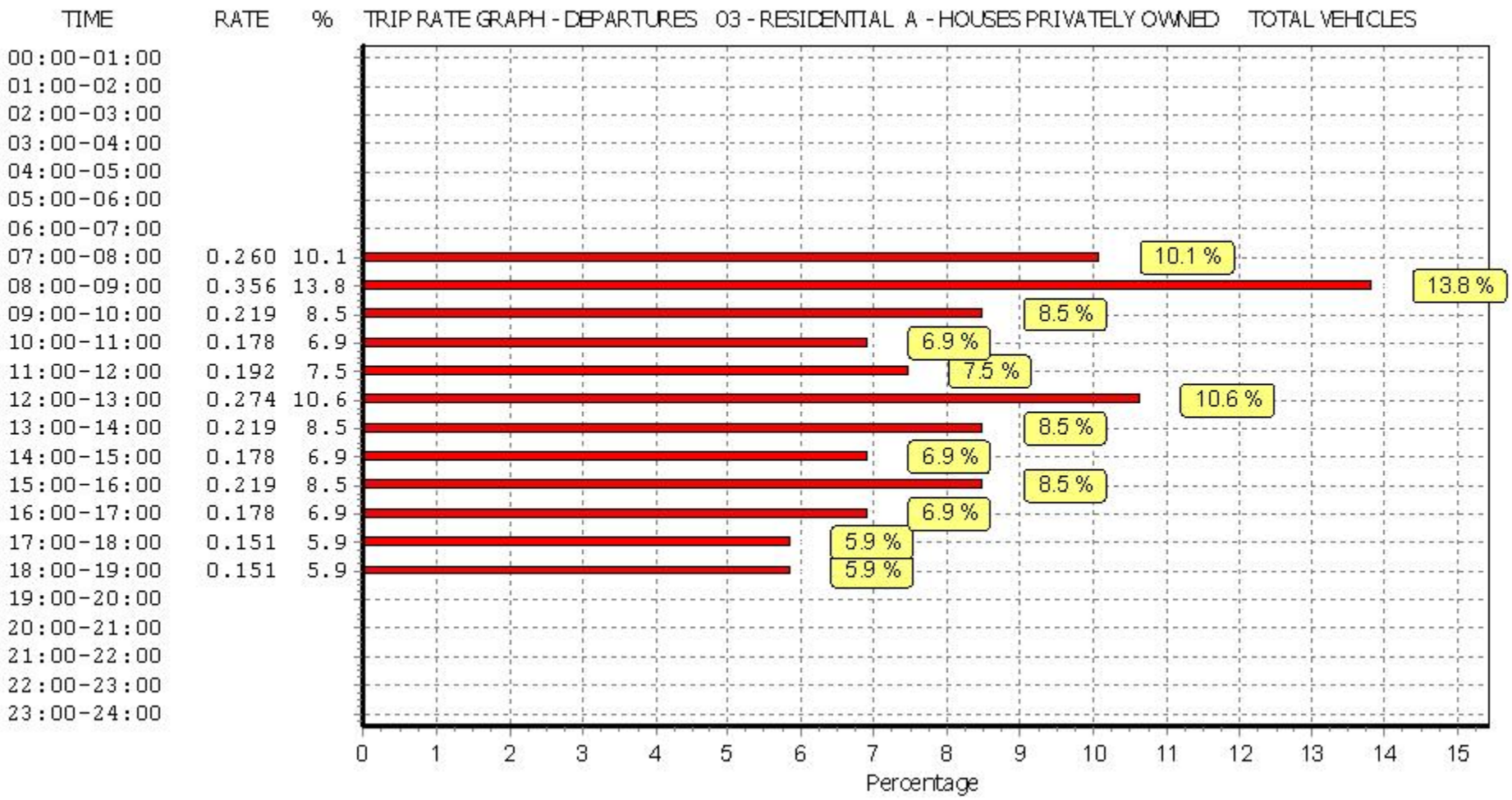
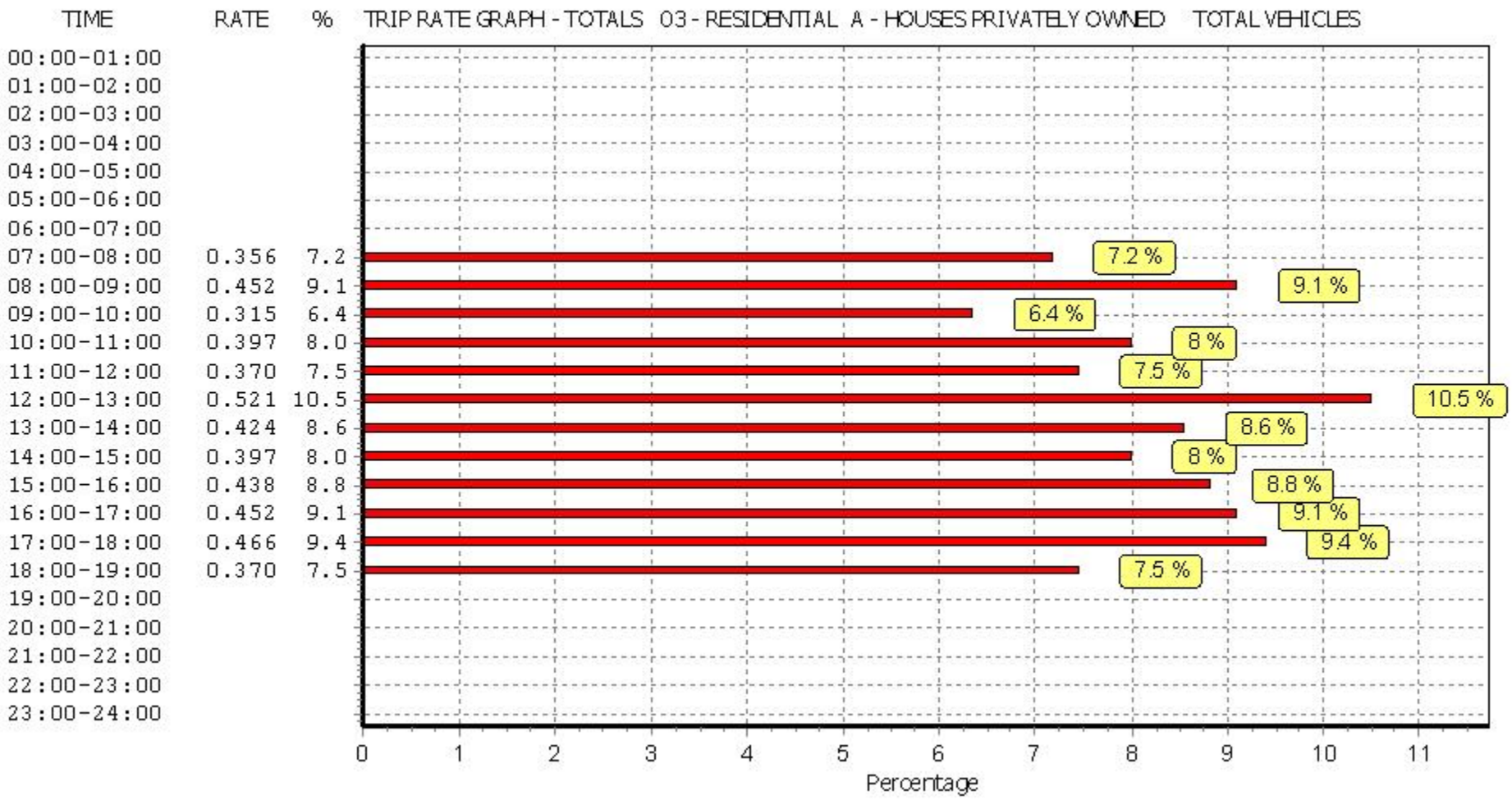


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



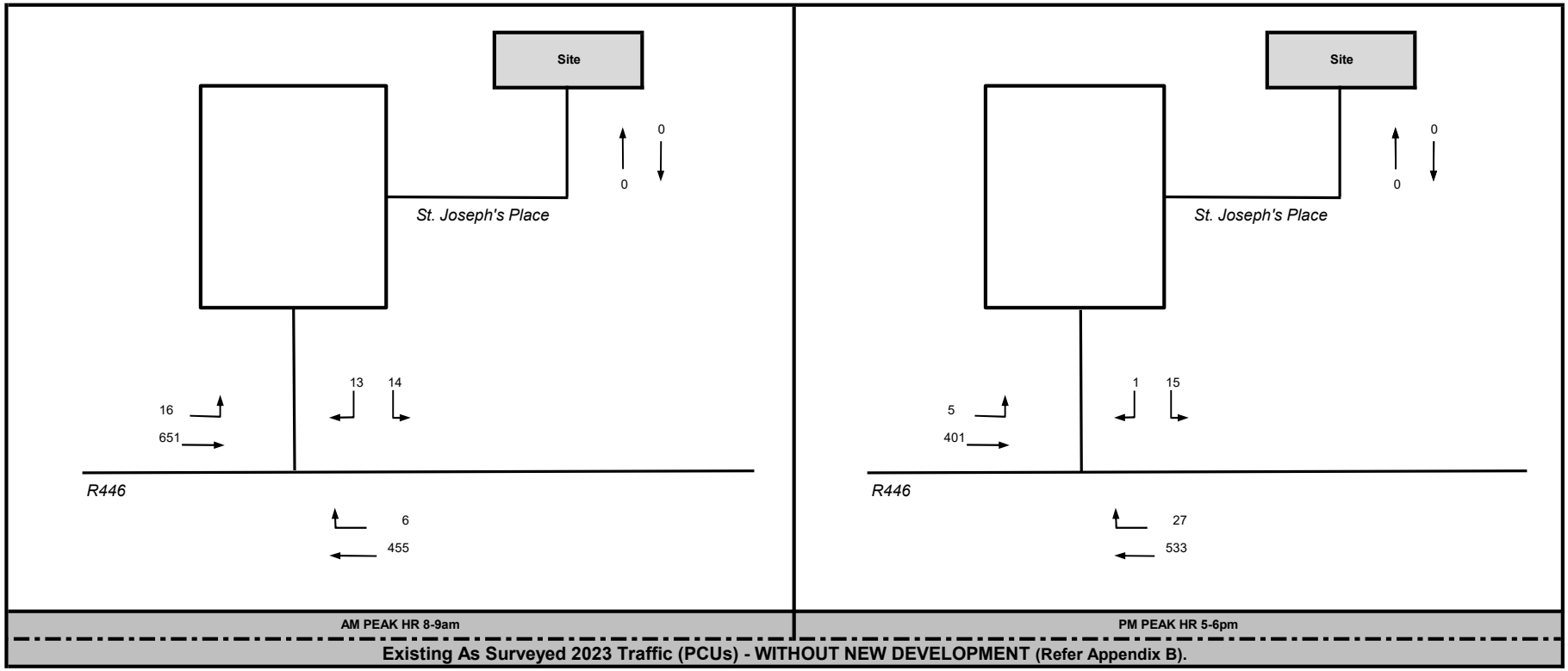
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

APPENDIX D

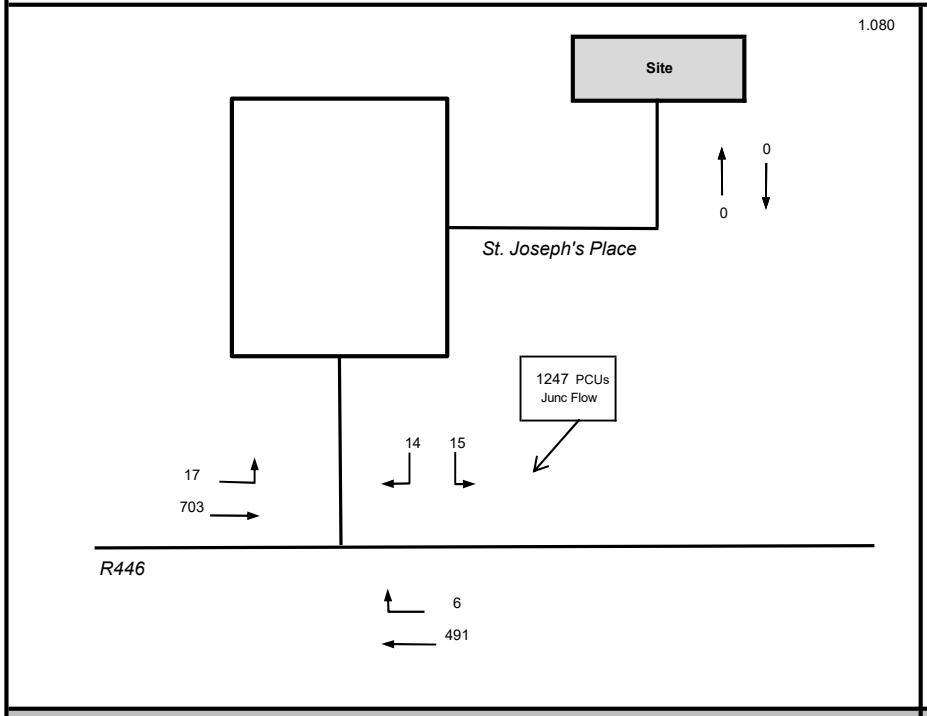
Trip Generation, Trip Distribution & Network Traffic Flow Diagrams



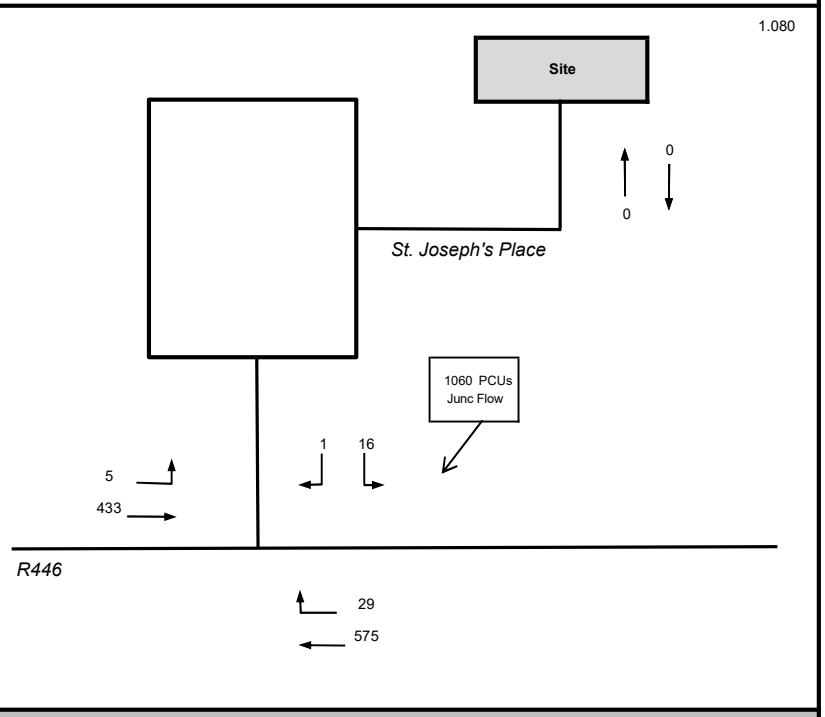
Existing As Surveyed 2023 Traffic (PCUs) - WITHOUT NEW DEVELOPMENT (Refer Appendix B).

TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3
(Travel Demand Projections 2021, Table 6.2: Central Growth Rates: Annual Growth Factors (Excluding Metropolitan Area)

1.080
1.248



AM PEAK HR 8-9am

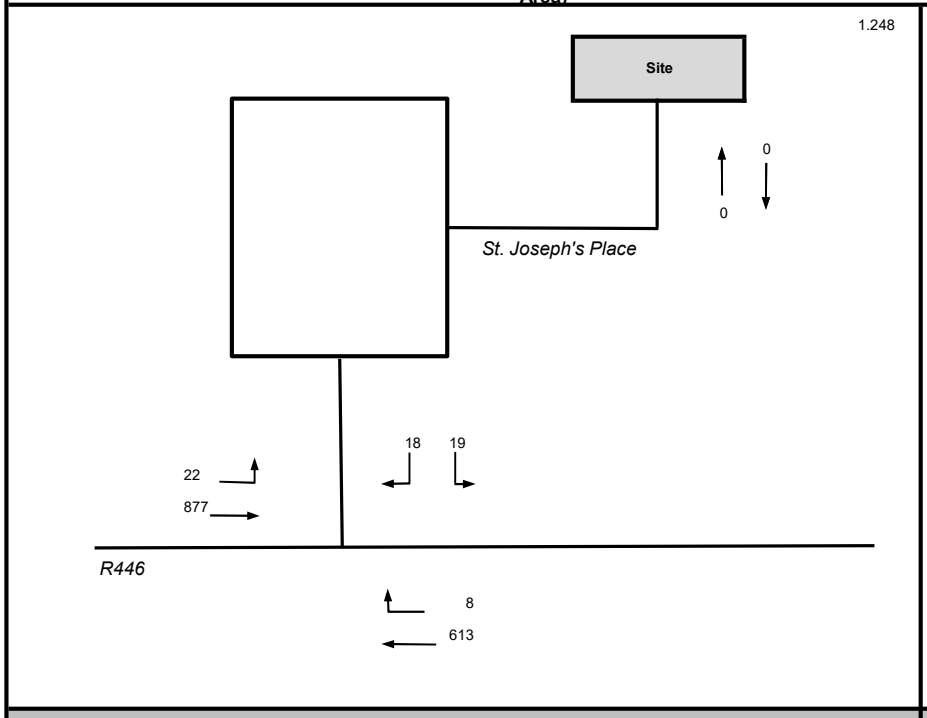


PM PEAK HR 5-6pm

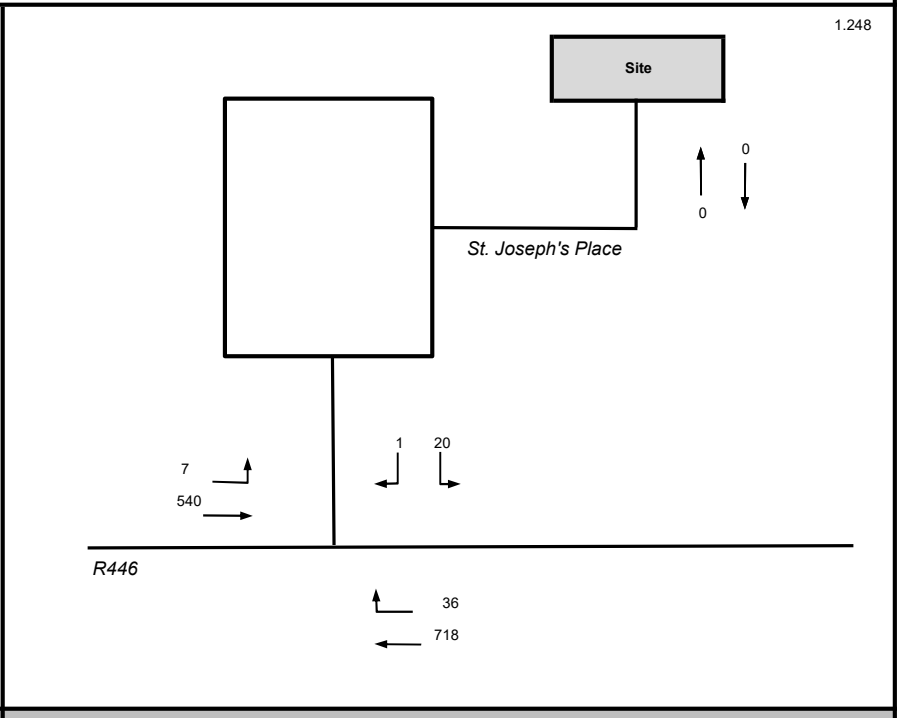
Projected Selected Opening Year 2026 Weekday Peak Hour Traffic Volumes - TII Annual Growth Applied (PCUs) - W/O ANY DEVELOPMENT

TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3
(Travel Demand Projections 2021, Table 6.2: Central Growth Rates: Annual Growth Factors (Excluding Metropolitan Area)

1.080
1.248



AM PEAK HR 8-9am



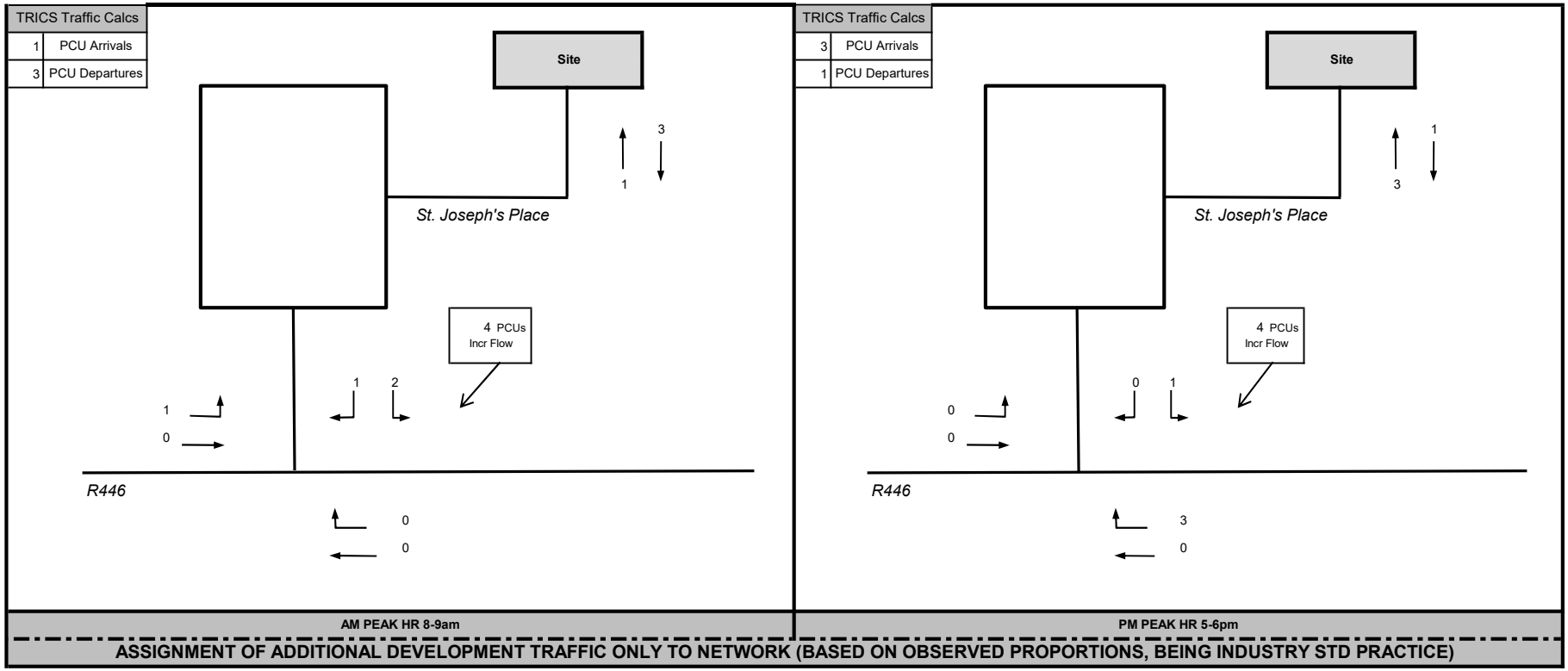
PM PEAK HR 5-6pm

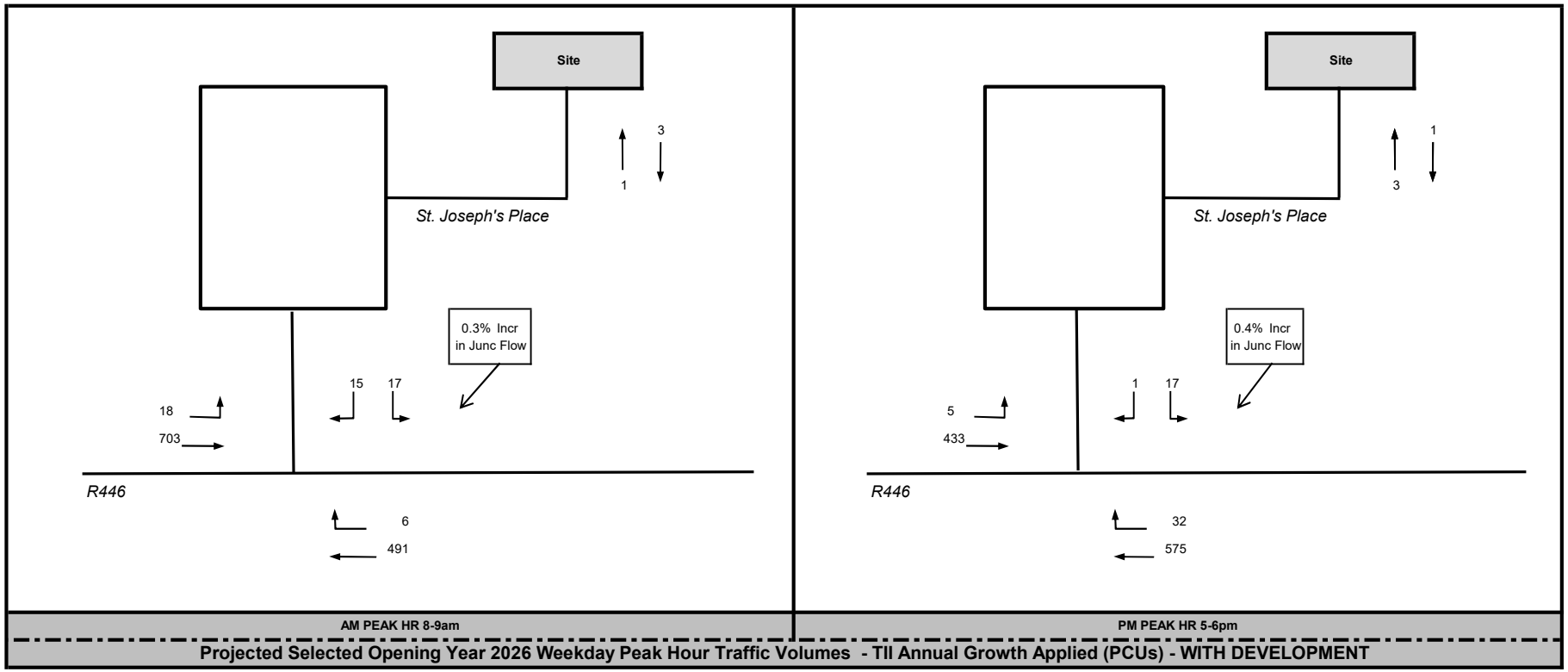
Projected Selected Opening Year 2041 Weekday Peak Hour Traffic Volumes - TII Annual Growth Applied (PCUs) - W/O ANY DEVELOPMENT

TRICS ASSESSMENT OF WORST-CASE TRAFFIC GENERATED BY APPROX DEVELOPMENT (PCUs) (Refer Appendix C)

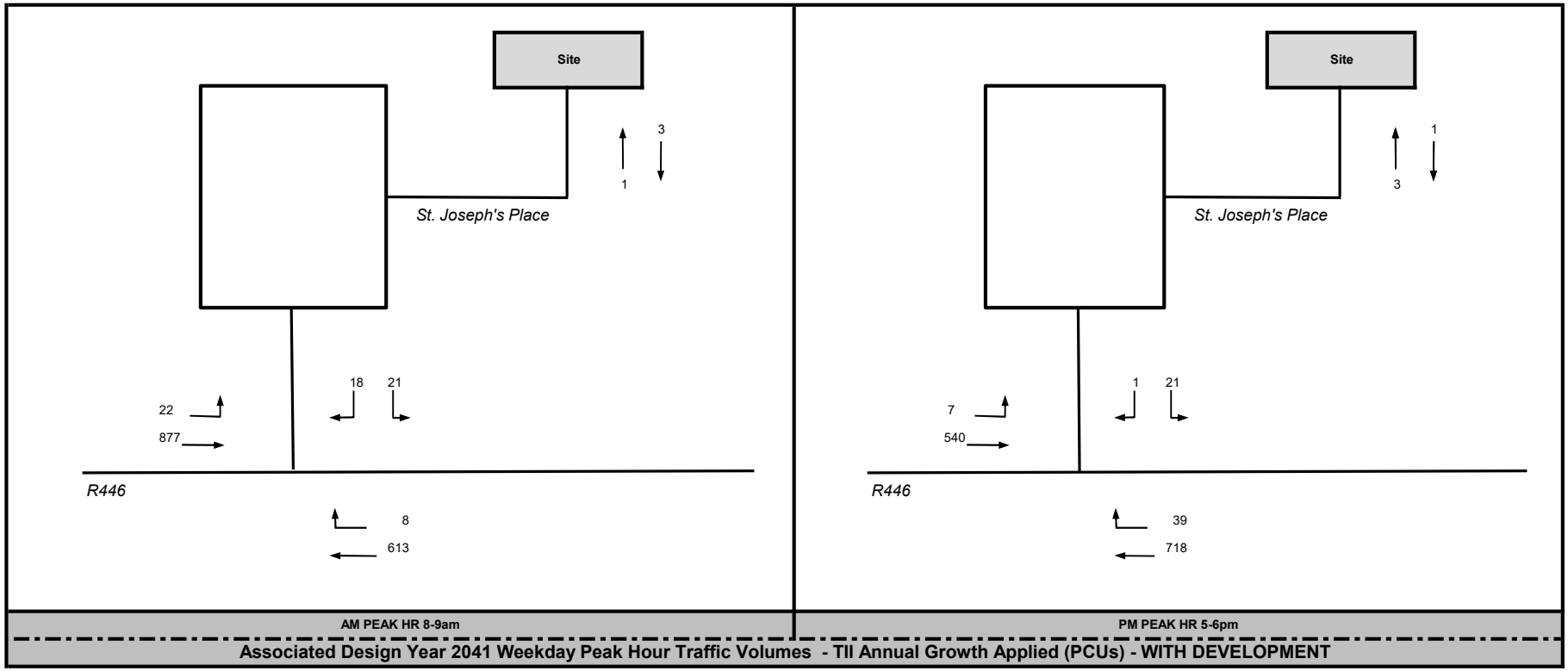
8 Resi Units	Arrivals (PCUs)		Departures (PCUs)		Total 2-Way Vehicular Traffic Generated
Network Hour	per unit	Dev	per unit	Dev	
Weekday AM Peak Hr 8-9	0.096	1	0.356	3	4
Weekday PM Peak Hr 5-6	0.315	3	0.151	1	4
24 Hours	2.383	19	2.575	21	41

Based on TRICS Database for Private Homes


TRICS Traffic Calcs
1 PCU Arrivals
3 PCU Departures
Site
St. Joseph's Place
3
1
4 PCUs
Incr Flow
1
2
1
0
R446
0
0
AM PEAK HR 8-9am
TRICS Traffic Calcs
3 PCU Arrivals
1 PCU Departures
Site
St. Joseph's Place
1
3
4 PCUs
Incr Flow
0
1
0
0
R446
3
0
PM PEAK HR 5-6pm
ASSIGNMENT OF ADDITIONAL DEVELOPMENT TRAFFIC ONLY TO NETWORK (BASED ON OBSERVED PROPORTIONS, BEING INDUSTRY STD PRACTICE)



Projected Selected Opening Year 2026 Weekday Peak Hour Traffic Volumes - TII Annual Growth Applied (PCUs) - WITH DEVELOPMENT



Associated Design Year 2041 Weekday Peak Hour Traffic Volumes - TII Annual Growth Applied (PCUs) - WITH DEVELOPMENT

APPENDIX E

JUNCTION 10 - PICADY
Simulation Capacity Model Output

Existing R446 / St. Joseph's Place Priority Junction
Summary PICADY Results in Order as included herein

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.1	0.10
2026 Opening Year PM Peak Hr	0.1	0.06
2041 Design Year AM Peak Hr	0.2	0.14
2041 Design Year PM Peak Hr	0.1	0.08

All Results Above are WAY below the recommended RFC of 0.85 (85% Capacity) and therefore no problems whatsoever are anticipated at the Junction in terms of Capacity or excessive vehicle Queues.

NB - Any Small Changes to Selected Opening Year 2026 or Design Year 2041, or indeed significantly higher traffic volumes experienced, as clearly deductable from the positive results presented, will clearly have no significant implications in terms of the conclusions of the Study.

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.4.1693
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+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

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Filename: 2026 Existing St. Josephs Place.j10
Path: C:\Users\BrianMc\OneDrive\OneDrive - NRB Consulting Engineers Ltd\Documents\2023\23-022 St. Josephs Place\Calculations\PICADY
Report generation date: 21/03/2023 17:49:35

»2026, AM
»2026, PM

Summary of junction performance

	AM						PM					
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
	2026											
Stream B-AC	D1	0.1	10.73	0.10	B	78 % [Stream B-AC]	D2	0.0	6.95	0.04	A	162 % [Stream B-AC]
Stream C-AB		0.0	7.49	0.01	A			0.1	6.90	0.06	A	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	21/03/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Office-LT\BrianMc
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2026	AM	ONE HOUR	07:45	09:15	15
D2	2026	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2026, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.31	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	78	Stream B-AC	0.31	A

Arms

Arms

Arm	Name	Description	Arm type
A	R446 West		Major
B	St. Joseph's Place		Minor
C	R446 East		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	9.00		✓	3.00	65.0	✓	6.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.00	65	65

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	531	0.084	0.213	0.134	0.304
B-C	665	0.089	0.224	-	-
C-B	665	0.224	0.224	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2026	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	721	100.000
B		✓	32	100.000
C		✓	497	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	18	703
	B	15	0	17
	C	491	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	5
	B	0	0	0
	C	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.10	10.73	0.1	B
C-AB	0.01	7.49	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	444	0.054	24	0.1	8.568	A
C-AB	5	543	0.008	4	0.0	6.681	A
C-A	370			370			
A-B	14			14			
A-C	529			529			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	29	413	0.070	29	0.1	9.356	A
C-AB	5	520	0.010	5	0.0	6.999	A
C-A	441			441			
A-B	16			16			
A-C	632			632			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	35	371	0.095	35	0.1	10.727	B
C-AB	7	487	0.014	7	0.0	7.492	A
C-A	541			541			
A-B	20			20			
A-C	774			774			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	35	371	0.095	35	0.1	10.733	B
C-AB	7	487	0.014	7	0.0	7.492	A
C-A	541			541			
A-B	20			20			
A-C	774			774			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	29	413	0.070	29	0.1	9.365	A
C-AB	5	520	0.010	5	0.0	7.002	A
C-A	441			441			
A-B	16			16			
A-C	632			632			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	444	0.054	24	0.1	8.581	A
C-AB	5	543	0.008	5	0.0	6.681	A
C-A	370			370			
A-B	14			14			
A-C	529			529			

2026, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.33	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	162	Stream B-AC	0.33	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2026	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	438	100.000
B		✓	19	100.000
C		✓	607	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	5	433
	B	1	0	18
	C	575	32	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	5
	B	0	0	0
	C	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.04	6.95	0.0	A
C-AB	0.06	6.90	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	14	577	0.025	14	0.0	6.402	A
C-AB	24	591	0.041	24	0.0	6.347	A
C-A	433			433			
A-B	4			4			
A-C	326			326			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	17	561	0.030	17	0.0	6.621	A
C-AB	29	577	0.050	29	0.1	6.569	A
C-A	517			517			
A-B	4			4			
A-C	389			389			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	539	0.039	21	0.0	6.953	A
C-AB	35	557	0.063	35	0.1	6.900	A
C-A	633			633			
A-B	6			6			
A-C	477			477			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	539	0.039	21	0.0	6.953	A
C-AB	35	557	0.063	35	0.1	6.900	A
C-A	633			633			
A-B	6			6			
A-C	477			477			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	17	561	0.030	17	0.0	6.624	A
C-AB	29	577	0.050	29	0.1	6.573	A
C-A	517			517			
A-B	4			4			
A-C	389			389			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	14	577	0.025	14	0.0	6.402	A
C-AB	24	591	0.041	24	0.0	6.350	A
C-A	433			433			
A-B	4			4			
A-C	326			326			

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.4.1693
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Filename: 2041 Existing St. Josephs Place.j10
Path: C:\Users\BrianMc\OneDrive\OneDrive - NRB Consulting Engineers Ltd\Documents\2023\23-022 St. Josephs Place\Calculations\PICADY
Report generation date: 21/03/2023 17:53:44

»2041, AM
»2041, PM

Summary of junction performance

	AM						PM					
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
	2041											
Stream B-AC	D1	0.2	13.58	0.14	B	42 % [Stream B-AC]	D2	0.1	7.40	0.05	A	111 % [Stream B-AC]
Stream C-AB		0.0	8.29	0.02	A			0.1	7.39	0.08	A	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	21/03/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Office-LT\BrianMc
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2041	AM	ONE HOUR	07:45	09:15	15
D2	2041	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2041, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.39	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	42	Stream B-AC	0.39	A

Arms

Arms

Arm	Name	Description	Arm type
A	R446 West		Major
B	St. Joseph's Place		Minor
C	R446 East		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	9.00		✓	3.00	65.0	✓	6.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.00	65	65

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	531	0.084	0.213	0.134	0.304
B-C	665	0.089	0.224	-	-
C-B	665	0.224	0.224	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2041	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	899	100.000
B		✓	40	100.000
C		✓	621	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	22	877
	B	19	0	21
	C	613	8	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	5
	B	0	0	0
	C	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.14	13.58	0.2	B
C-AB	0.02	8.29	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	404	0.075	30	0.1	9.618	A
C-AB	6	513	0.012	6	0.0	7.096	A
C-A	461			461			
A-B	17			17			
A-C	660			660			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	36	365	0.099	36	0.1	10.937	B
C-AB	7	484	0.015	7	0.0	7.551	A
C-A	551			551			
A-B	20			20			
A-C	788			788			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	44	309	0.142	44	0.2	13.554	B
C-AB	9	443	0.020	9	0.0	8.287	A
C-A	675			675			
A-B	24			24			
A-C	966			966			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	44	309	0.142	44	0.2	13.576	B
C-AB	9	443	0.020	9	0.0	8.287	A
C-A	675			675			
A-B	24			24			
A-C	966			966			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	36	365	0.099	36	0.1	10.958	B
C-AB	7	484	0.015	7	0.0	7.552	A
C-A	551			551			
A-B	20			20			
A-C	788			788			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	404	0.075	30	0.1	9.642	A
C-AB	6	513	0.012	6	0.0	7.096	A
C-A	461			461			
A-B	17			17			
A-C	660			660			

2041, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.35	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	111	Stream B-AC	0.35	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2041	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	547	100.000
B		✓	23	100.000
C		✓	757	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	7	540
	B	1	0	22
	C	718	39	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	5
	B	0	0	0
	C	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.05	7.40	0.1	A
C-AB	0.08	7.39	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	17	559	0.031	17	0.0	6.639	A
C-AB	29	573	0.051	29	0.1	6.619	A
C-A	541			541			
A-B	5			5			
A-C	407			407			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	540	0.038	21	0.0	6.937	A
C-AB	35	555	0.063	35	0.1	6.926	A
C-A	645			645			
A-B	6			6			
A-C	485			485			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	512	0.049	25	0.1	7.398	A
C-AB	43	530	0.081	43	0.1	7.390	A
C-A	791			791			
A-B	8			8			
A-C	595			595			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	512	0.049	25	0.1	7.398	A
C-AB	43	530	0.081	43	0.1	7.390	A
C-A	791			791			
A-B	8			8			
A-C	595			595			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	540	0.038	21	0.0	6.941	A
C-AB	35	555	0.063	35	0.1	6.928	A
C-A	645			645			
A-B	6			6			
A-C	485			485			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	17	559	0.031	17	0.0	6.645	A
C-AB	29	573	0.051	29	0.1	6.629	A
C-A	541			541			
A-B	5			5			
A-C	407			407			