

16143-04-001

PROPOSED MIXED DEVELOPMENT AT
MAGEE BARRACKS, KILDARE TOWN

Traffic Impact Assessment

for

Ballymount Properties Limited

July 2019

ROADPLAN

CONSULTING

7, Ormonde Road
Kilkenny.
R95 N4FE

Tel: 056 7795800
info@roadplan.ie

TABLE OF CONTENTS

1	INTRODUCTION	2
1.1	INTRODUCTION.....	2
1.2	OBJECTIVES.....	2
1.3	STUDY METHODOLOGY.....	2
1.4	STRUCTURE OF REPORT	2
2	PROPOSED DEVELOPMENT	5
2.1	SITE LOCATION	5
2.2	EXISTING LAND USE.....	5
2.3	DESCRIPTION OF PROPOSED DEVELOPMENT	5
3	EXISTING AND PROPOSED TRAFFIC CONDITIONS.....	8
3.1	EXISTING TRAFFIC FLOWS.....	8
3.2	EXISTING ROAD NETWORK.....	8
3.3	PROPOSED ROAD NETWORK IMPROVEMENTS	9
3.4	ROAD COLLISIONS	9
4	TRAFFIC GENERATION AND TRIP DISTRIBUTION	11
4.1	DEVELOPMENT TRIP GENERATION	11
4.1.1	<i>Dwelling Units</i>	11
4.1.2	<i>Duplex Units</i>	11
4.1.3	<i>Apartment Units</i>	11
4.1.4	<i>Crèche</i>	12
4.1.5	<i>Coffee shop</i>	12
4.1.6	<i>Retail units</i>	12
4.1.7	<i>Total Development Trip Generation</i>	13
4.2	COMMITTED DEVELOPMENTS.....	13
4.2.1	<i>Retail Anchor Unit</i>	13
4.2.2	<i>Medical Clinic</i>	13
4.2.3	<i>Total Committed Development Trip Generation</i>	14
4.3	FUTURE DEVELOPMENTS (PHASE 2).....	14
4.3.1	<i>Residential Units</i>	14
4.3.2	<i>Apartment Units</i>	14
4.3.3	<i>Total Future Development Trip Generation</i>	15
4.4	TRIP DISTRIBUTION.....	15
4.4.1	<i>Proposed Development and Committed Developments</i>	15
4.4.2	<i>Trip distribution for Proposed Dev, Committed Dev & Future Dev</i>	16
4.5	FUTURE YEAR TRAFFIC GROWTH.....	17
5	OPERATIONAL ASSESSMENTS.....	19
5.1	INTRODUCTION.....	19
5.2	PROPOSED HOSPITAL STREET / DEV ACCESS SIGNALISED JUNCTION.....	19
5.3	MELITTA ROAD / SAINT BARBARA'S PARK PRIORITY JUNCTION	20
6	PARKING.....	22
6.1	CAR PARKING PROVISION.....	22
6.2	CAR PARKING REQUIREMENTS FROM DEVELOPMENT PLAN.....	22
6.3	CYCLE PARKING PROVISION	23
7	ROAD SAFETY, PEDESTRIANS, CYCLISTS AND INTERNAL LAYOUT	25
7.1	ROAD SAFETY	25
7.2	PEDESTRIANS & CYCLISTS	25
7.3	INTERNAL LAYOUT	25
8	CONCLUSIONS	27
8.1	CONCLUSIONS.....	27
	APPENDICES	28

APPENDIX A – DRAWINGS

APPENDIX B – TRAFFIC COUNTS

APPENDIX C – TRAFFIC FLOW SHEETS

APPENDIX D – TRICS INFORMATION

APPENDIX E – PICADY RESULTS

APPENDIX F – TRANSYT RESULTS

1 INTRODUCTION

1 Introduction

1.1 INTRODUCTION

Roadplan Consulting was commissioned by the Garland Consultancy on behalf of Ballymount Properties Limited to prepare a Traffic Impact Assessment for the proposed mixed development at Magee Barracks in Kildare Town.

In preparing this report, Roadplan Consulting has made reference to

- the *Kildare County Development Plan 2017 – 2023*,
- The Institute of Highways and Transportation *Guidelines on the Preparation of Traffic Impact Assessments*,
- the *TII Transport Assessment Guidelines*
- the *TII National Traffic Model*.

1.2 OBJECTIVES

The objective of this report is to examine the traffic implications of the proposed development in terms of how it can integrate with existing traffic in the area. The report will determine and quantify the extent of additional trips generated by the development, and the impact of such trips on the operational performance of the local road network and junctions, in particular the following junctions:

- the proposed Hospital Street / Development Access Signalised Junction,
- the proposed Melitta Road / Saint Barbara's Park Priority Junction.

1.3 STUDY METHODOLOGY

The methodology adopted for this report is summarised as follows:

- Traffic counts were undertaken by Tracsis on Thursday 19th of January 2017 during a 12-hour period (07:00 to 19:00). Count information was obtained at the existing Melitta Road / Saint Barbara's Park Priority Junction and Hospital Street two-way flow.
- Existing Traffic Assessment – A spreadsheet model was created which contains the base year DO-NOTHING traffic count data described above. The traffic count data was used to develop a PICADY model of the priority junctions.
- Future Year Assessment – The estimated future year traffic volumes on the study area road network, as a result of the increase in background traffic and the additional development related traffic was used to assess the future operational performance of the junctions both at the year of opening of the development, 5 and 15 years after opening.
- Parking Requirements – Car parking provision in the proposed development was assessed against the parking standards as set out in Kildare Development Plan 2017 – 2023.

1.4 STRUCTURE OF REPORT

Following this introduction, the report is set out as follows:

- Chapter 2 provides details of the proposed development;
- Chapter 3 provides an overview of the existing traffic conditions and the local road network, identifying any existing issues related to traffic flow or road infrastructure;

- Chapters 4 and 5 outline the analysis as described in the Study Methodology above. The analysis examines trip generation, distribution and resulting junction operational performance with the development in place;
- Chapter 6 establishes the parking requirements for the development and sets out how these needs are provided for;
- Chapter 7 addresses road safety, pedestrian and cycling issues; and
- Chapter 8 presents the conclusions and a summary of the report.

2 PROPOSED DEVELOPMENT

2 Proposed Development

2.1 SITE LOCATION

The Magee Barracks site is located in Kildare town, as shown on Figure 2.1 'Site Location Map'. The proposed development is bounded by the Ruanbeg residential estate to the east, Melitta Park and Melitta Road to the north, Campion Crescent residential estate to the west and Hospital Street to the south.

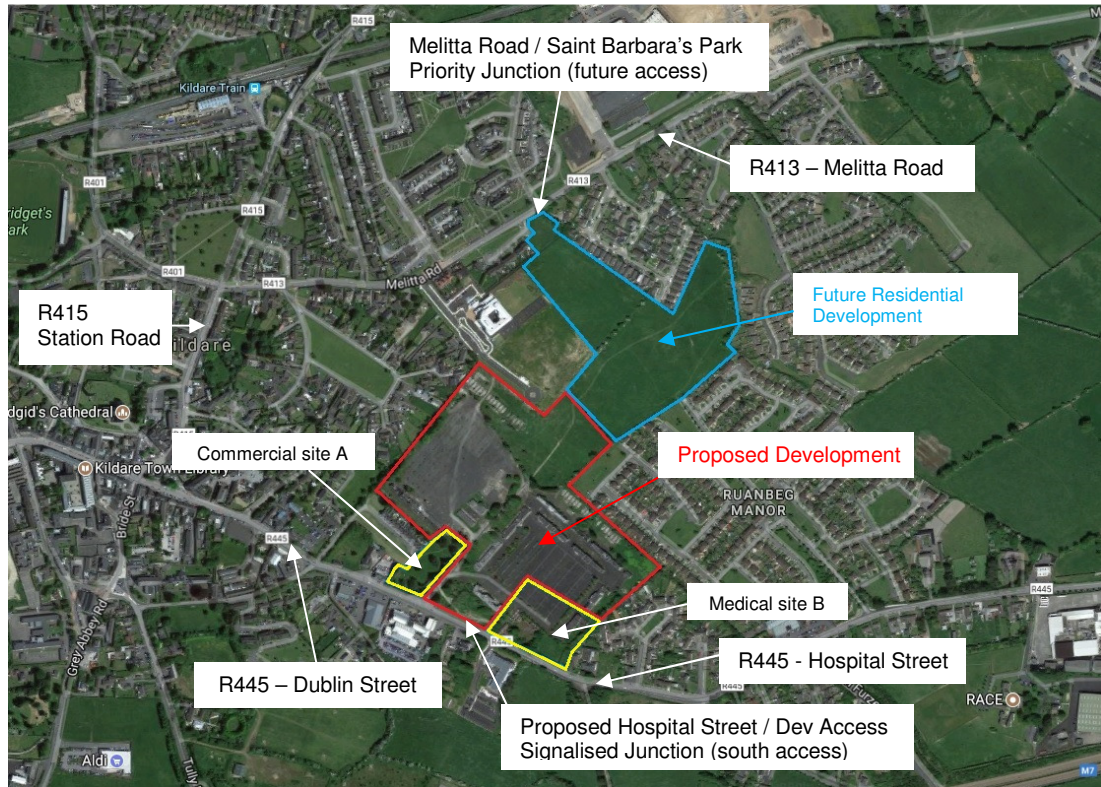


Figure 2.1: Site Location Map

The proposed development (planning application) is represented by the red boundary line and a future residential development is represented by the blue boundary line. In addition, a Retail unit and a Medical Centre represented by the yellow boundary line will be constructed separately.

2.2 EXISTING LAND USE

The lands currently contain unoccupied former military buildings and therefore generate no traffic volumes.

2.3 DESCRIPTION OF PROPOSED DEVELOPMENT

The planning application consists of residential units, a creche, coffee shop and retail units with associated parking and green space. The proposed development schedule is shown in Table 2.1 below.

Table 2.1: Proposed Development Schedule

Item	Units	Quantity
Residential Dwellings	No. of Dwellings	185 Dwellings
Duplex Units	No. of Units	68 Units
Apartments	No. of Units	122 Units
Creche	Sqm	680 sqm
Coffee shop	Sqm	300 sqm
Retail unit	Sqm	335 sqm

Access to the proposed development will be via a signalised junction onto the R445 Hospital Street. A layout of the proposed development access is shown on the Architect's drawing which is contained in Appendix A – Drawings.

3 EXISTING AND PROPOSED TRAFFIC CONDITIONS

3 Existing and Proposed Traffic Conditions

3.1 EXISTING TRAFFIC FLOWS

Traffic counts were undertaken on the 19th of January 2017 during the 12-hour period (07:00 – 19:00). The count data is provided in Appendix B – Traffic Counts. Count information was obtained the following locations:

- R445 Hospital Street Two-way Flow.
- Melitta Road / Saint Barbara's Park Priority Junction,

The traffic flows during the AM and PM peak hours were abstracted from the surveyed data and are shown in the following tables:

Hospital Street – Two-way Traffic Flow

2017 AM Peak Existing (08:00 – 09:00)

From / To	Hospital Street (east)	Hospital Street (west)	Totals
Hospital Street (east)	0	397	397
Hospital Street (west)	391	0	391
Totals	391	397	788

2017 PM Peak Existing (17:00 – 18:00)

From / To	Hospital Street (east)	Hospital Street (west)	Totals
Hospital Street (east)	0	440	440
Hospital Street (west)	389	0	389
Totals	389	440	829

Melitta Road / Saint Barbara's Park Priority Junction

2017 AM Peak Existing (08:00 – 09:00)

From / To	R413 Melitta Rd (east)	Saint Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	1	246	247
Saint Barbara's Park	3	0	3	6
R413 Melitta Rd (west)	243	1	0	244
Totals	246	2	249	497

2017 PM Peak Existing (17:00 – 18:00)

From / To	R413 Melitta Rd (east)	Saint Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	0	269	269
Saint Barbara's Park	2	0	1	3
R413 Melitta Rd (west)	242	2	1	245
Totals	244	3	272	517

A summary of the count data for the peak hour flows is contained in Appendix C – Traffic Flow Sheets.

3.2 EXISTING ROAD NETWORK

The proposed development will be accessed via a proposed priority junction onto the existing R445 Hospital Street and from the existing Melitta Road / Saint Barbara's Park priority junction when the Magee Barracks masterplan is fully developed.

The R445 Hospital Street has the following characteristics at the location of the proposed development:

- It is a single carriageway road that is approximately 8m wide.
- It has a footpath on both sides of the carriageway which caters for pedestrians travelling to and from Kildare Town.

The R413 Melitta Road has the following characteristics at the location of the proposed development:

- It is a single carriageway road that is approximately 7.5m wide.
- It has a footpath on both sides of the carriageway which caters for pedestrians travelling to and from Kildare Town

All roads are governed by a 50kph speed limit.

3.3 PROPOSED ROAD NETWORK IMPROVEMENTS

It is proposed to provide traffic calming measures along the R445 Hospital Street as part of the Cherry Avenue Park development (subject to a current part 8 planning application). The Scheme extends from the R445 / French Furze Grove to the Kildare Medical Centre. It is proposed to upgrade the existing footpaths and provide 3 signalised pedestrian crossing points along the R445.

As part of the Magee Barracks Development it is proposed to upgrade the existing footpath fronting the development and provide cycle facilities along the R445 and a signalised pedestrian crossing on the R445. The location of the cycle facilities and the pedestrian crossing is indicated on the Architects Drawings which is contained in Appendix A – Drawings.

3.4 ROAD COLLISIONS

Information on road collisions was taken from the Road Safety Authority website and is provided hereunder in Figure 3.4.

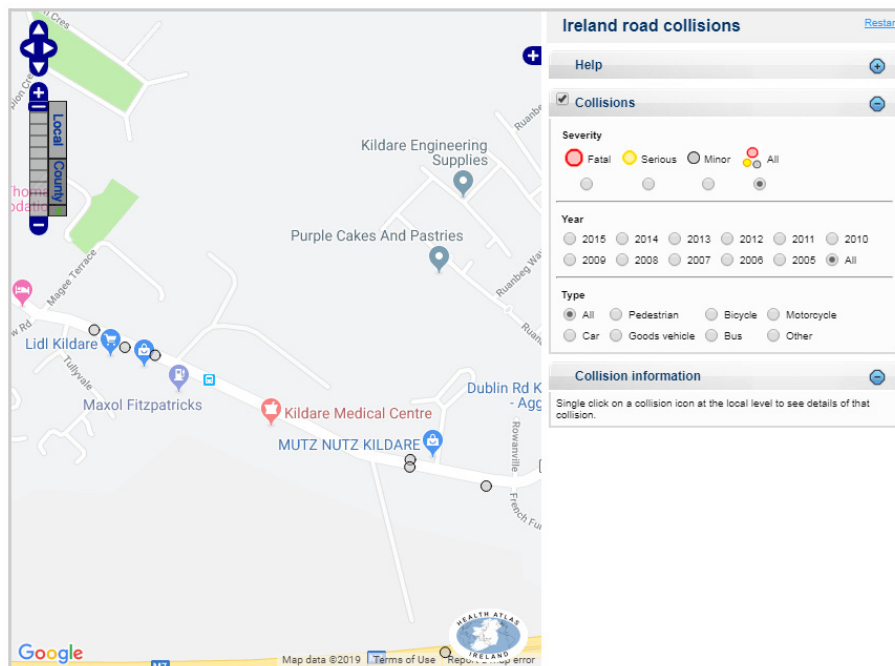


Fig 3.4: Road collisions

Few minor collisions occurred along the R445 Hospital Street in the period of eleven years (from 2005 to 2013), but none at the proposed accesses to the development.

4 TRAFFIC GENERATION & TRIP DISTRIBUTION

4 Traffic Generation and Trip Distribution

4.1 DEVELOPMENT TRIP GENERATION

The TRICS database has been used to predict the trip generation to and from the proposed development for the AM and PM peak periods. Full details of the TRICS information used for the assessments are provided in Appendix D - TRICS information.

The trips generated by the proposed development is shown in the tables below.

4.1.1 Dwelling Units

The category of "Residential – Houses Privately Owned" has been interrogated as the most appropriate development type category for the development and the trip rates for the AM and PM peak periods are shown below:

Dwellings – Trip Rates per Dwelling

	Arrivals to development	Departures from development
AM Peak	0.164	0.416
PM Peak	0.354	0.228

For the proposed 185 residential dwellings, this would give the following trips to and from the proposed development:

Trip Generation – 185 Dwellings

	Trips to development	Trips from development
AM Peak	31	77
PM Peak	66	42

4.1.2 Duplex Units

The category of "Apartments – Privately Owned" has been interrogated as the most appropriate development type category for the development and the trip rates for the AM and PM peak periods are shown below:

Dwellings – Trip Rates per Dwelling

	Arrivals to development	Departures from development
AM Peak	0.083	0.361
PM Peak	0.361	0.139

For the proposed 68 duplex residential units, this would give the following trips to and from the proposed development:

Trip Generation – 68 Duplex Units

	Trips to development	Trips from development
AM Peak	6	25
PM Peak	25	10

4.1.3 Apartment Units

The category of "Apartments – Privately Owned" has been interrogated as the most appropriate development type category for the development and the trip rates for the AM and PM peak periods are shown below:

Dwellings – Trip Rates per Dwelling

	Arrivals to development	Departures from development
AM Peak	0.083	0.361
PM Peak	0.361	0.139

For the proposed 122 apartments, this would give the following trips to and from the proposed development:

Trip Generation – 122 Apartments

	Trips to development	Trips from development
AM Peak	11	44
PM Peak	44	17

4.1.4 Crèche

The category of “Education – Nursery” has been interrogated as the most appropriate development type category for the development and the trip rates for the AM and PM peak periods are shown below:

Trip rates per 100m²

	Arrivals to development	Departures from development
AM Peak	6.629	5.181
PM Peak	5.211	5.861

For the proposed 680m² this would give the following trips to and from the proposed development:

Trip Generation – 680m²

	Trips to development	Trips from development
AM Peak	45	35
PM Peak	35	40

4.1.5 Coffee shop

The category of “Retail – Convenience Shop” has been interrogated as the most appropriate development type category for the development and the trip rates for the AM and PM peak periods are shown below:

Trip rates per 100m²

	Arrivals to development	Departures from development
AM Peak	3.250	3.000
PM Peak	6.750	6.500

For the proposed 300m² this would give the following trips to and from the proposed development:

Trip Generation – 300m²

	Trips to development	Trips from development
AM Peak	10	9
PM Peak	20	20

4.1.6 Retail units

The category of “Retail – Local Shops” has been interrogated as the most appropriate development type category for the development and the trip rates for the AM and PM peak periods are shown below:

Trip rates per 100 m²

	Arrivals to development	Departures from development
AM Peak	6.435	5.742
PM Peak	7.283	7.823

For the proposed three retail unit with total of 335m² this would give the following trips to and from the proposed development:

Trip Generation – 335m²

	Trips to development	Trips from development
AM Peak	22	19
PM Peak	24	26

4.1.7 Total Development Trip Generation

To summarise, the combined trips that are predicted to be generated by the proposed development are shown in the table below:

Trip Generation – Total Development Trips for Proposed Development

	Trips to development	Trips from development
AM Peak	125	209
PM Peak	214	155

4.2 COMMITTED DEVELOPMENTS

A retail anchor unit to be built by Lidl has been granted permission by Kildare County Council and a medical centre (an application has been submitted to Kildare County Council for a cancer treatment clinic / proton hospital which is currently under review with An Bord Pleanála) are proposed to be built. The two sites are located within the overall masterplan for Magee Barracks and access to these developments will be via the R445 Hospital Street.

In order to give a robust assessment, trips generated by the retail anchor unit and the medical centre will be added to the existing and predicted traffic at the junctions for the future year scenarios. The additional traffic that will arise from the retail anchor unit and the medical centre developments is predicted hereunder.

4.2.1 Retail Anchor Unit

The category of “Retail – Shopping Centre” has been interrogated as the most appropriate development type category for the development and the trip rates for the AM and PM peak periods are shown below:

Trip rates per 100m²

	Arrivals to development	Departures from development
AM Peak	2.325	1.516
PM Peak	4.699	6.288

For the proposed retail anchor unit of 2,000m² this would give the following trips to and from the proposed development:

Trip Generation – 2,000m²

	Trips to development	Trips from development
AM Peak	47	30
PM Peak	94	126

The proposed Lidl retail unit will be a relocation and extension of the existing Lidl retail unit. The existing Lidl is located opposite the proposed location for the new Lidl retail unit and it is approximately 1,000m² in size.

The traffic flows related to the existing retail development are already accounted for within existing traffic flows. The new Lidl retail unit will increase by 50%, therefore it is considered that 50% of the predicted retail trip shown in the table above already exist on the network.

As a result, only 50% of the predicted trips will be taken into account when assessing the existing junctions for the future year capacity assessments.

4.2.2 Medical Clinic

The category of “Health – Clinics” has been interrogated as the most appropriate development type category for the development and the trip rates for the AM and PM peak periods are shown below:

Trip rates per 100 m²

	Arrivals to development	Departures from development
AM Peak	1.990	0.540
PM Peak	1.113	1.855

For the proposed medical centre of 3,724m² this would give the following trips to and from the proposed development:

Trip Generation – 3,724m²

	Trips to development	Trips from development
AM Peak	74	20
PM Peak	42	69

4.2.3 Total Committed Development Trip Generation

To summarise, the combined trips that are predicted to be generated by the future residential development are shown in the table below:

Trip Generation – Total Development Trips for Committed Developments

	Trips to development	Trips from development
AM Peak	97	35
PM Peak	89	132

We have been informed that the Lidl retail units and the Medical Centre will be open before the future residential development to the north which forms part of the overall masterplan for Magee Barracks is completed and therefore all traffic will access via the proposed signalised junction onto the R445 Hospital Street.

4.3 FUTURE DEVELOPMENTS (PHASE 2)

There are residential zoned lands located to the north the proposed development which forms part of the overall masterplan for Magee Barracks. The predicted development trips generated for the overall masterplan development (subject to a separate future planning application) is shown in the tables below.

4.3.1 Residential Units

The category of “Residential – Houses Privately Owned” has been interrogated as the most appropriate development type category for the development and the trip rates for the AM and PM peak periods are shown below:

Dwellings – Trip rates per Dwelling

	Arrivals to development	Departures from development
AM Peak	0.164	0.416
PM Peak	0.354	0.228

For the proposed 110 residential dwellings, this would give the following trips to and from the proposed development:

Trip Generation – 110 Dwellings

	Trips to development	Trips from development
AM Peak	18	46
PM Peak	39	25

4.3.2 Apartment Units

The category of “Apartments – Privately Owned” has been interrogated as the most appropriate development type category for the development and the trip rates for the AM and PM peak periods are shown below:

Dwellings – Trip Rates per Dwelling

	Arrivals to development	Departures from development
AM Peak	0.083	0.361
PM Peak	0.361	0.139

For the proposed 140 apartments, this would give the following trips to and from the proposed development:

Trip Generation – 140 Apartments

	Trips to development	Trips from development
AM Peak	12	50
PM Peak	50	19

4.3.3 Total Future Development Trip Generation

To summarise, the combined trips that are predicted to be generated by the future residential development are shown in the table below:

Trip Generation – Total Development Trips for Future Residential Development

	Trips to development	Trips from development
AM Peak	30	96
PM Peak	89	44

4.4 TRIP DISTRIBUTION

In order to determine the distribution pattern of the proposed development a short period count during the AM peak and PM peak hour was carried out at the neighbouring Ruanbeg Manor housing estate. It is assumed that the distribution of development traffic at the proposed access onto the R445 will be similar to the distribution of existing traffic to / from Ruanbeg Manor housing estate access.

The following diagram shows the existing traffic distribution percentage for the AM and PM peak at the existing Ruanbeg Manor housing estate access:

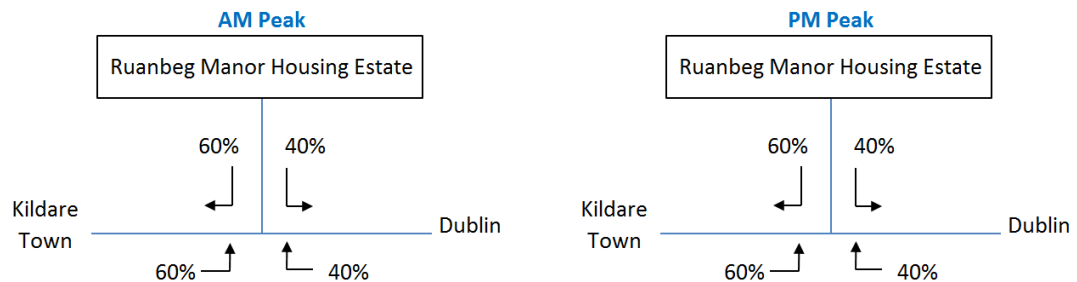


Figure 4.1: Trip Distribution Percentage

Using the directional splits outlined above the following diagrams show the turning movements of predicted development traffic for the proposed development access onto the R445 Hospital Street during the AM and PM peak hours:

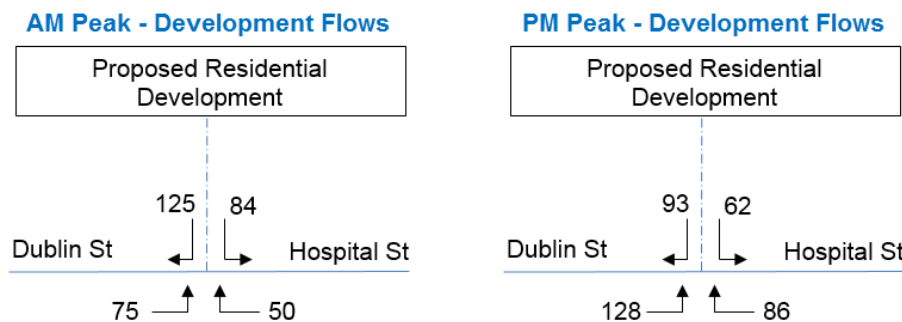


Figure 4.1: Proposed Development Flows

4.4.1 Proposed Development and Committed Developments

Using the directional splits outlined in 4.4 above the following diagrams show the turning movements of predicted development traffic for the proposed development and the committed developments at the proposed signalised junctions during the AM and PM peak hours:

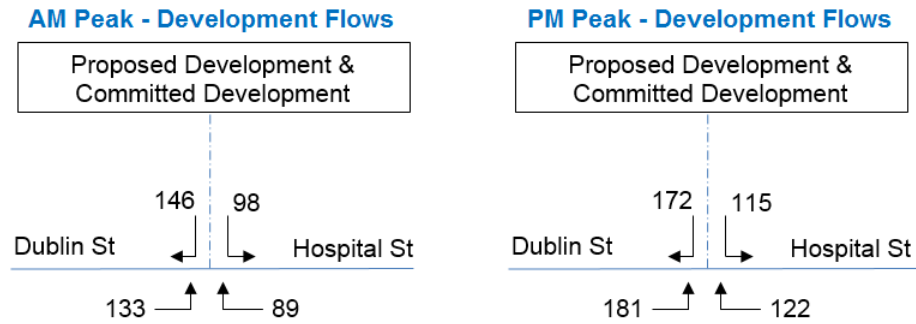


Figure 4.2: Proposed Development & Committed Development Flows

4.4.2 Trip distribution for Proposed Dev, Committed Dev & Future Dev

As part of the overall masterplan for Magee Barracks it is proposed to provide a second access onto the R413 Melitta Road. Access to Melitta Road will be via the existing R413 Melitta Road / Saint Barbara’s Park priority junction. The development of the residential lands to the north of the proposed development will result in the re-distribution of the development traffic.

It is assumed that of the 60% of development traffic that arrives / departs to and from the Kildare Town direction, 20% of the development traffic will now arrive and depart via the proposed R413 Melitta Road / Saint Barbara’s Park access. The new distribution percentages at the development junctions and the re-distribution of development flows are indicated on the diagrams below following the completion of the overall masterplan for Magee Barracks.

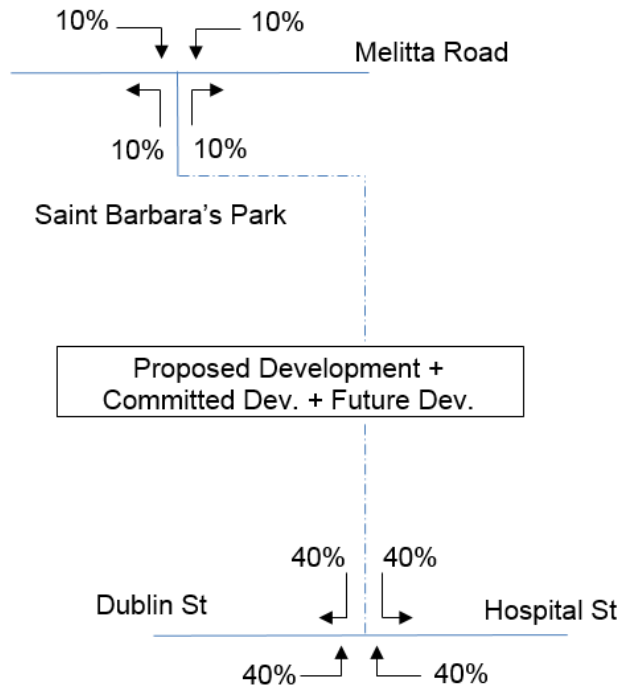


Figure 4.3: Proposed Dev, Committed Dev and Future Dev Peak Trip Distribution Percentage

Using the existing and proposed directional splits outlined above the following diagrams show the turning movements of predicted development traffic for propose development, the committed developments and the future development at the existing and proposed junctions during the AM and PM peak hours:

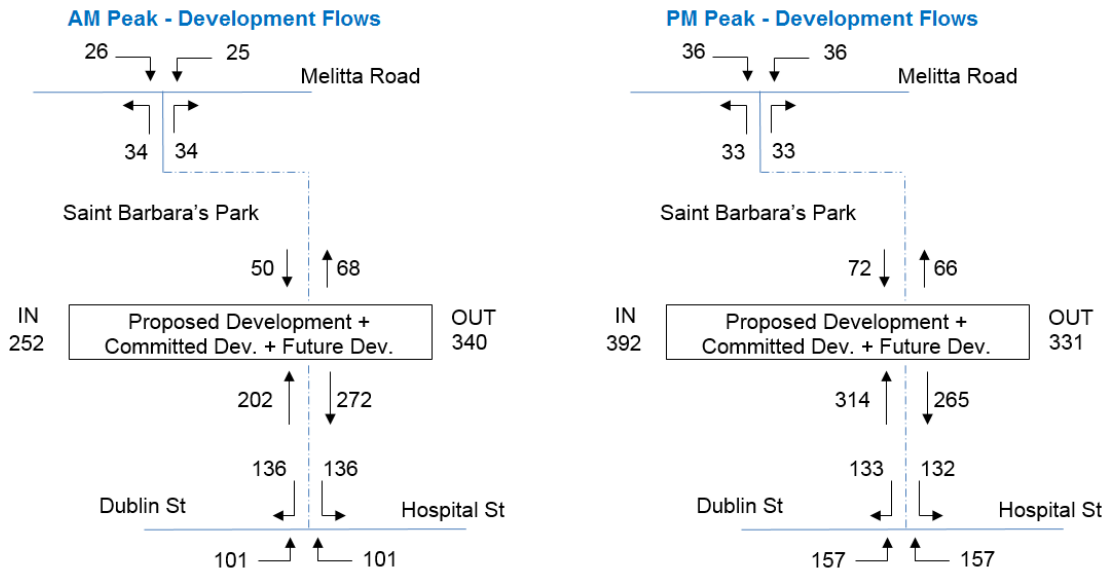


Figure 4.4: Proposed Dev, Committed Dev and Future Dev Peak Trip Distribution

4.5 FUTURE YEAR TRAFFIC GROWTH

The TII issues a range of forecasts: low growth, medium growth and high growth. The implementation of policies relating to Smarter Travel and to public transport will also act a deterrent to high growth in car-based travel. Low growth factors are however likely to be equally unrealistic at present in the Kildare Town, so we have used medium growth factors in our assessment.

The zone in which the site is located is numbered 518 in the TII National Traffic Model. The growth factors are as follows:

Zone	2019 Base Year	2022 development completion	2027 5 years after dev. completion	2037 15 years after dev. completion
518	+3.11%	+4.70%	+13.04%	+22.14%

These percentages have been used to predict the increase in background traffic that will occur in future years. Full summary tables and predicted future traffic flows for 2019, 2022, 2027 and 2037 future years are included in Appendix C – Traffic Flow Sheets.

5 OPERATIONAL ASSESSMENTS

5 Operational Assessments

5.1 INTRODUCTION

Capacity assessments have been carried out on the following junction:

- Proposed Hospital Street / Development Access Signalised Junction and

It should be noted that this planning application is for 375 retail units, a creche, coffee shop and retail units only. However, in order to give a robust assessment, trips generated by the retail anchor unit, the Medical Clinic and future residential development to the north which forms part of the overall masterplan for Magee Barracks has been taken into account when assessing operational performance of the proposed Hospital Street / Development Access signalised junction for the future year scenarios.

5.2 PROPOSED HOSPITAL STREET / DEV ACCESS SIGNALISED JUNCTION

Capacity assessments have been undertaken using the computer program TRANSYT for the AM and PM peak hours.

The following tables summarise the effects that the proposed development will have on this junction in 2022, 2027 and 2037 using the existing and predicted traffic flows shown in Appendix C – Traffic Flow Sheets. Full TRANSYT printouts are provided in Appendix F – TRANSYT Results.

The parameters shown in the tables are defined as follows:

Max Degree of Saturation (%) is a ratio of demand to capacity on each approach to the junction, with a value of 100% meaning that demand and capacity are equal and no further traffic is able to progress through the junction. Values over 90% are typically regarded as suffering from traffic congestion, with queues of vehicles beginning to form.

Queue at end of Red is the number of vehicles queued on the approach arm at the end of red.

Average Delay is the average number of seconds delay to each vehicle in the time period.

Practical Reserve Capacity is the capacity available relative to a capacity of 90%. A positive PRC indicates that a junction has spare capacity and may be able to accept more traffic. A negative PRC indicates that the junction is over capacity and is suffering from traffic congestion.

Hospital Street / Development Access Signalised Junction

AM Peak		2022 Proposed Dev + Committed Dev	2027 Proposed Dev + Committed Dev	2037 Proposed Dev + Committed Dev	2037 Proposed Dev + Committed Dev + Future Dev	
Hospital Street / Dev Access	Hospital Street (west)	Max DoS %	68%	69%	72%	68%
		Q red (pcu's)	16	17	18	17
		Average delay (s)	31	30	31	28
		PRC %	33%	30%	24%	33%
	Dev. Access	Max DoS %	63%	65%	65%	70%
		Q red (pcu's)	8	8	8	9
		Average delay (s)	11	12	12	14
		PRC %	42%	38%	38%	29%
	Hospital Street (east)	Max DoS %	45%	47%	51%	50%
		Q red (pcu's)	6	6	6	6
		Average delay (s)	18	17	16	16
		PRC %	100%	91%	76%	79%

Hospital Street / Development Access Signalised Junction

AM Peak		2022 Proposed Dev + Committed Dev	2027 Proposed Dev + Committed Dev	2037 Proposed Dev + Committed Dev	2037 Proposed Dev + Committed Dev + Future Dev	
Hospital Street / Dev Access	Hospital Street (west)	Max DoS %	71%	75%	79%	70%
		Q red (pcu's)	18	19	21	18
		Average delay (s)	31	33	35	28
		PRC %	27%	20%	14%	28%
	Dev. Access	Max DoS %	70%	70%	73%	73%
		Q red (pcu's)	10	10	10	10
		Average delay (s)	14	14	16	17
		PRC %	28%	28%	24%	23%
	Hospital Street (east)	Max DoS %	49%	53%	60%	74%
		Q red (pcu's)	6	6	7	10
		Average delay (s)	18	17	17	6
		PRC %	83%	70%	60%	74%

In 2022, 2027 and 2037 (AM and PM peak), with the proposed development operational and the committed development operational the proposed signalised junction will operate within capacity with some queues and delays.

In 2037 (AM and PM peak), with the Magee Barracks development fully operational the proposed signalised junction will operate within capacity with some queues and delays.

5.3 MELITTA ROAD / SAINT BARBARA'S PARK PRIORITY JUNCTION

As part of the overall masterplan for Magee Barracks it is proposed to provide an additional access to the overall development via the existing Melitta Road / Saint Barbara's Park priority junction. In order to carry out a robust assessment of the complete development a capacity assessment capacity assessment have been carried out at the existing Melitta Road / Saint Barbara's Park priority junction when the overall development at Magee Barracks is complete. A capacity analysis has been undertaken using the computer program PICADY for the AM and PM peak hours.

The following table summarise the effects that the completion of the Magee Barracks development will have on this junction in 2037 using the existing and predicted traffic flows shown in Appendix C – Traffic Flow Sheets. Full PICADY printouts are provided in Appendix E – PICADY Results.

Year	Peak Hour	Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh./hrs.)
2019 Base Year	AM Peak	R413 Melitta Rd (east)	-	-	-	0.018
		Saint Barbara's Park	0.01	0	7	
		R413 Melitta Rd (west)	0.00	0	6	
	PM Peak	R413 Melitta Rd (east)	-	-	-	0.005
		R413 Melitta Rd (west)	0.00	0	6	
2037 Magee Barracks Fully Operational	AM Peak	R413 Melitta Rd (east)	-	-	-	0.329
		Saint Barbara's Park	0.18	0	9	
		R413 Melitta Rd (west)	0.05	0	6	
	PM Peak	R413 Melitta Rd (east)	-	-	-	0.343
		Saint Barbara's Park	0.17	0	9	
		R413 Melitta Rd (west)	0.07	0	6	

On completion of the overall masterplan for Magee Barracks the R413 Melitta Road / Saint Barbara's Park priority junction will operate within capacity with no queues and minimal delays in the AM and PM peak hours in 2037 when the development is fully operational.

6 PARKING

6 Parking

6.1 CAR PARKING PROVISION

A total of 639 parking spaces are to be provided within the proposed development with 611 spaces associated with the residential part of the development and 28 spaces associated with the crèche, coffee shop and retail part of the development as shown on the architect's drawing contained in Appendix A – Drawings.

6.2 CAR PARKING REQUIREMENTS FROM DEVELOPMENT PLAN

The 'Kildare County Development Plan 2017-2023' lists standard provision for car parking and the table below sets out those requirements in relation to the proposed development of the site.

<i>Car parking Standards</i>			
Item	Requirements	Quantity	Car Parking
Residential Dwellings	Dwelling - 2 spaces per unit	185 units	370 spaces
	Apartment – 1.5 spaces per unit + 1 visitor space per 4 apartments	190 units	285 spaces 48 spaces
Creche	0.5 per staff member plus 1 per 4 children	15 staff members 90 children	30 spaces
Coffee shop	1 per 20sqm gross floor area	300 m ²	15 spaces
Retail	1 per 20sqm gross floor area	335 m ²	17 spaces
Total			765

The Kildare County Development Plan indicates that the maximum number of parking spaces to be provided is 765.

The provision of parking spaces for the residential dwellings is 370 spaces and 241 parking spaces are provided for the apartments / duplex units.

The majority of the apartments are 1 bed or 2 bed apartments and a requirement of 1 space per apartment is considered adequate in accordance with the 2018 Apartment Guidelines.

The provision of parking spaces for the Neighbourhood Centre is 28 no. spaces. This is considered appropriate in the context of the mixed-use development proposal for the lands and the proximity of the site to the town centre and public transport facilities. There will also be surface parking provided on the adjacent proposed commercial site along the front of the site, i.e. the supermarket site.

There will be an opportunity for linked trips between the creche, café and retail units proposed in the Neighbourhood Centre and the adjacent proposed commercial uses. The neighbourhood centre will also primarily serve a walking catchment population comprising of the new residential area to the north and adjoining residential areas which will benefit from improved accessibility to Hospital Street and the town centre as a result of the proposed development.

The provision of 639 parking spaces is considered sufficient to cater for the parking demands of the proposed development.

6.3 CYCLE PARKING PROVISION

A total of 447 bicycle parking spaces are to be provided within the proposed development. The location of the bicycle parking stands is shown on the architect's drawing.

The 'Kildare County Development Plan 2017-2023' lists standard provision for car parking and the table below sets out those requirements in relation to the proposed development of the site.

For the cycle parking for the apartments / duplex, the 2018 Apartment Guidelines was used and the table below sets out those requirements in relation to the proposed development of the site.

<i>Cycle parking Standards</i>			
Item	Requirements	Quantity	Cycle Parking
Apartments/ Duplex	1 space per bed 1 visitor space per 4 beds	334 beds	417 spaces
Creche	1 space per 5 staff 1 space per 10 children	15 staff members 90 children	14 spaces
Coffee shop	1 space per 40 sqm GFA	300 m ²	8 spaces
Retail	1 space per 40 sqm GFA	335 m ²	8 spaces
Total			447

The Kildare County Development plan and the 2018 Apartment Guidelines for cycle parking indicates that the number of cycle parking spaces to be provided is 447. The proposed development will provide a total of 447 cycle parking spaces.

7 ROAD SAFETY, PEDESTRIANS, CYCLISTS AND INTERNAL LAYOUT

7 Road Safety, Pedestrians, Cyclists and Internal Layout

7.1 ROAD SAFETY

The internal roads and junctions within the proposed development are designed in accordance with the Design Manual for Urban Roads and Streets.

A Quality Audit was carried out and is provided under a separate cover.

7.2 PEDESTRIANS & CYCLISTS

A 2m wide footpath (minimum) is to be provided to cater for pedestrian movement within the proposed development. The proposed footpath will connect to an existing footpath on the R445 Hospital Street which will provide pedestrian linkage from the proposed development to Kildare Town.

Pedestrian crossings are provided along the R445 Hospital Street and at the proposed signalised junction to cater for pedestrians travelling to and from the proposed development.

A 2m wide cycle path is to be provided along the R445 Hospital Street and along the internal access road to cater for cyclist's movement within the proposed development.

7.3 INTERNAL LAYOUT

Within the development, the main access road from the R445 Hospital Street is 9.5m wide with the all other internal roads ranging from 5m to 6.5m wide.

Parking is provided at the front of each residential dwelling and a separated car parking area is provided in front of the crèche, coffee shop and retail unit. Parking bays are 2.5m wide x 5m long.

HGV access to the site will be via the proposed R445 Hospital Street access. The types of HGV's accessing the site would be articulated vehicles, emergency vehicles and refuse vehicles. The internal layout can facilitate HGV movement within the site.

8 CONCLUSIONS AND SUMMARY

8 Conclusions

8.1 CONCLUSIONS

The main conclusions of this study are summarised as follows:

- The development flows to and from the site have been predicted using the TRICS database.
- On completion of the proposed development (Phase 1) the proposed R445 Hospital Street / Development Access signalised junction will operate within capacity with queues and delays in the AM and PM peak hours in 2022, 2027 and 2037.
- On completion of the proposed development (Phase 1) and the committed developments (the retail unit and the Cancer Treatment Clinic) the proposed R445 Hospital Street / Development Access signalised junction will operate at capacity with small queues and delays in the AM and PM peak hours in 2022, 2027 and 2037.
- On completion of the overall Magee Barracks masterplan the proposed development (Phase 1), the committed developments (the retail unit and the Cancer Treatment Clinic) and the future residential development (Phase 2) the proposed R445 Hospital Street / Development Access signalised junction will operate at capacity with small queues and delays in the AM and PM peak hours in 2037.
- On completion of the overall Magee Barracks masterplan the proposed development (Phase 1), the committed developments (the retail unit and the Cancer Treatment Clinic) and the future residential development (Phase 2) the R413 Melitta Road / Saint Barbara's Park priority junction will operate within capacity with no queues and minimal delays in the AM and PM peak hours in 2037.
- The development provides adequate car parking spaces to cater for the development demands. Facilities for pedestrians and cyclists are included in the internal layout.
- The proposed development will provide a series of pedestrian and cycle routes throughout the site providing a linkage to the permitted Gaelscoil Mhic Aodha primary school (currently under construction) and the existing Kildare Town Educate Together School to the west. These links and routes for pedestrians and cyclists will provide excellent levels of permeability and accessibility for the new neighbourhood as a whole while also improving the permeability of the wider area.

APPENDICES

APPENDIX A – DRAWINGS

1:750 @ A0

SITE PLAN

PHASE 1 SCHEDULE

RESIDENTIAL PHASE 1

3 BED SEMI DETACHED	76
3 BED TERRACE	42
4 BED SEMI-D. & DETACHED	67
1 BED APT. (DUPLX)	16
2 BED APT. (DUPLX)	34
3 BED APT. (DUPLX)	19
1 BED APT. (BLOCK)	30
2 BED APT. (BLOCK)	92
TOTAL	375

COMMERCIAL NEIGHBOURHOOD CENTRE (SQM)

CRECHE	680
CAFE/GALLERY	300
IND. GALLERY SPACE	335
NEIGHBOURHOOD RETAIL	12.5
BIN STORE	12.5
TOTAL	1327.5

APPLICATIONS BY OTHERS WITHIN MASTERPLAN

COMMERCIAL - PERMITTED SUPERMARKET UNIT (BY OTHERS) APPROXIMATE AREA: 2,200 sqm

MEDICAL CANCER TREATMENT CLINIC (BY OTHERS) APPROXIMATE AREA: 3,555 sqm

NOTE: REFER TO 1:500 LAYOUT PLANS (A1010-A1011) FOR COMPLIANCE WITH PLANNING AND DEVELOPMENT REGULATIONS.

BOUNDARY LEGEND

- AREA OF PROPOSED WORKS ON ROAD OUTSIDE THE OWNERSHIP OF THE APPLICANT SHOWN HATCHED RED
- PHASE ONE SITE BOUNDARY
- LANDS WITHIN APPLICANTS OWNERSHIP
- WAYLEAVE

RESIDENTIAL LEGEND

- A1 3 BED SEMI-DETACHED (GABLE FRONT)
- A1a 3 BED SEMI-DETACHED
- A2 3 BED SEMI-DETACHED (GABLE FRONT, CORNER)
- A3 3 BED DETACHED (BAY WINDOW)
- B1 3 BED TERRACE (GABLE FRONT, CORNER)
- B2 3 BED TERRACE
- B3 3 BED TERRACE (BAY WINDOW)
- B4 3 BED TERRACE (CORNER, BAY WINDOW)
- C1 4 BED SEMI-DETACHED (GABLE FRONT)
- C1A 4 BED SEMI-DETACHED (GABLE FRONT, CORNER)
- C2 4 BED DETACHED (GABLE FRONT, CORNER)
- D & E 1 BED & 2 BED DUPLEX 2 STOREY
- E1 & E2 2 BED & 3 BED DUPLEX 3 STOREY
- E3 & E2 2 BED & 3 BED DUPLEX 3 STOREY (CORNER)
- F1 3 BED APARTMENT
- F2 2 BED APARTMENT

COMMERCIAL LEGEND

- RETAIL UNITS
- CRECHE
- CAFE/GALLERY
- EXISTING BUILDINGS
- SUPERMARKET
- CANCER TREATMENT CLINIC

INDICATE LANDS OF LANDLORD - REFER TO BSM LANDSCAPE ARCH. FOR LANDSCAPE DESIGN

CONNECTIONS PROPOSED OUTSIDE REDLINE

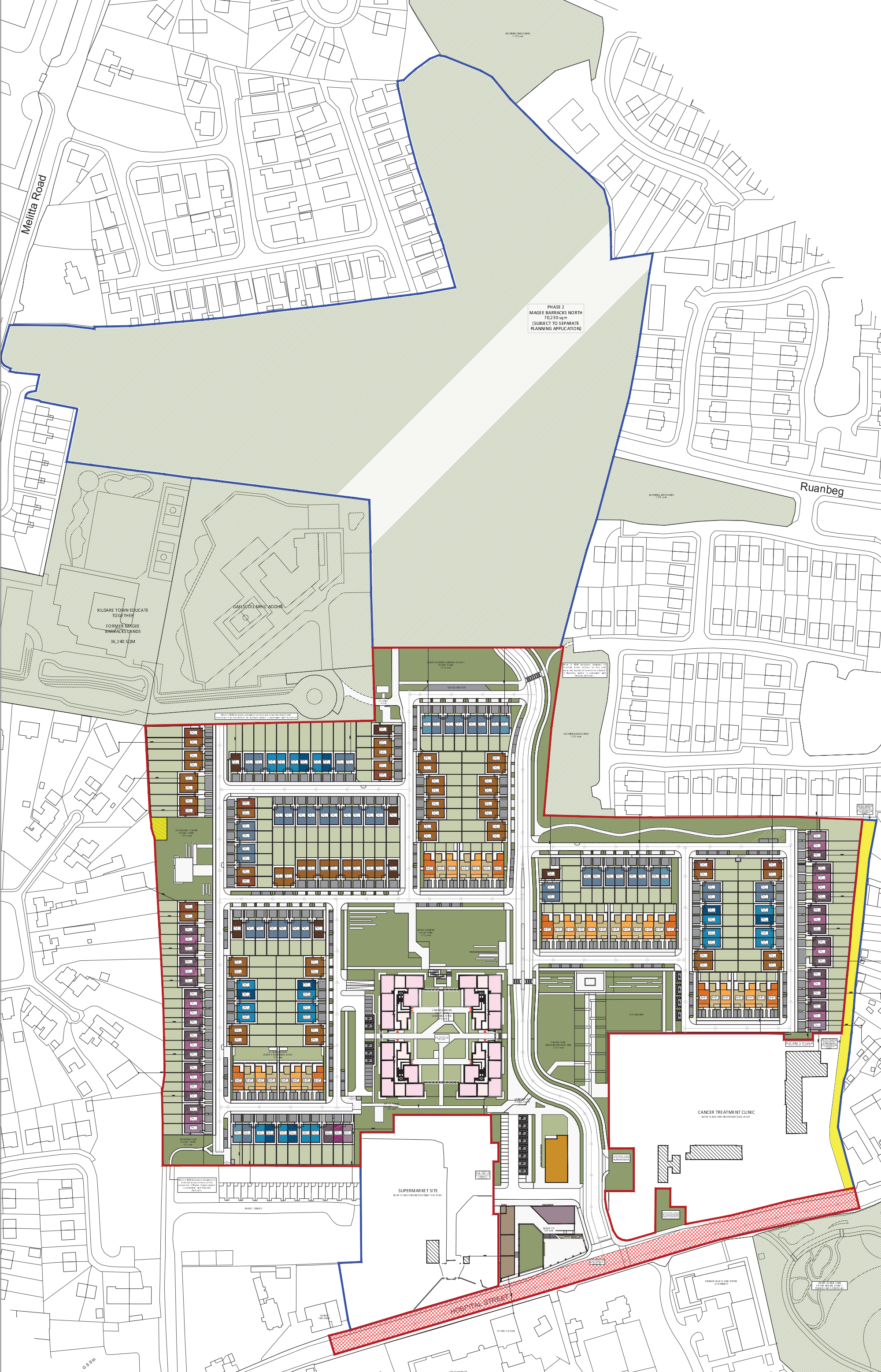
BALLYMOUNT PROPERTIES LTD.

PLANNING

PROJECT: RESIDENTIAL AND NEIGHBOURHOOD CENTRE DEVELOPMENT (PHASE 1)

PROPOSAL: 40 MAGEE BARRACKS SITE, KILDARE TOWN

DATE: 02/07/2013



PHASE 2 MAGEE BARRACKS NORTH 70,230 sqm (SUBJECT TO SEPARATE PLANNING APPLICATION)

KILDARE TOWN EDUCATE TOGETHER FORMER EDGES BARRACKS STANDS 36,240 sqm

GALLS COIL MHC ADDON

SUPERMARKET SITE WITH 10 MULTISTORY PARKING SPACES

CANCER TREATMENT CLINIC REFER TO BSM LANDSCAPE ARCH FOR LANDSCAPE DESIGN

HOSPITAL STREET

Ruanbeg

Melitta Road

6559

08 1 20 20 20

APPENDIX B – TRAFFIC COUNTS

Entry: Arm C - Melitta Rd

	Destination : Arm A - Melitta Rd							Destination : Arm B - St Barbara's Park							Destination : Arm C - Melitta Rd							Arm Totals			
	CAR	LGV	OGV1	OGV2	PSV	MC	PC	Total	CAR	LGV	OGV1	OGV2	PSV	MC	PC	Total	CAR	LGV	OGV1	OGV2	PSV		MC	PC	Total
07:00	18	2	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
07:15	23	6	0	0	0	0	0	29	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	30
07:30	23	1	0	1	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
07:45	28	4	0	0	2	0	1	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
1 Hr	92	13	0	1	2	0	1	109	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	110
08:00	27	3	1	0	4	0	0	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
08:15	60	2	0	0	0	0	0	62	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	63
08:30	79	4	2	0	0	1	0	86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86
08:45	53	8	0	0	0	0	0	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61
1 Hr	219	17	3	0	4	1	0	244	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	245
09:00	69	1	0	0	0	0	0	70	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	71
09:15	41	5	0	0	0	0	0	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46
09:30	47	9	0	1	0	0	0	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57
09:45	30	4	0	0	0	0	0	34	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	35
1 Hr	187	19	0	1	0	0	0	207	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	209
10:00	34	4	1	0	0	0	0	39	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	40
10:15	18	5	0	0	0	0	0	23	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	25
10:30	25	5	1	1	0	0	0	33	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	35
10:45	18	5	1	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
1 Hr	95	19	3	1	0	0	0	119	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	124
11:00	30	4	0	0	0	1	0	35	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	36
11:15	24	3	0	0	0	0	0	27	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	28
11:30	36	5	0	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
11:45	38	7	0	0	0	0	0	45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	46
1 Hr	128	19	0	1	0	1	2	150	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	153
12:00	36	3	0	0	0	0	0	40	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	40
12:15	32	0	2	0	0	0	0	34	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	35
12:30	42	6	0	0	0	0	0	48	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	49
12:45	34	5	0	0	0	0	0	39	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	41
1 Hr	144	14	2	1	0	0	0	161	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	165
13:00	47	6	0	1	0	0	0	54	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	55
13:15	45	8	0	0	1	1	0	54	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	57
13:30	35	3	1	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39
13:45	58	6	1	0	0	0	0	65	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	66
1 Hr	185	23	2	1	1	0	0	212	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	217
14:00	44	4	0	0	1	0	0	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49
14:15	55	3	0	0	1	0	1	60	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	61
14:30	25	4	0	0	0	0	1	30	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	32
14:45	60	8	0	0	0	0	0	68	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	69
1 Hr	184	19	0	0	2	0	2	207	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	211
15:00	58	8	1	0	0	0	1	68	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	69
15:15	30	4	0	0	1	0	0	35	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	36
15:30	49	1	0	0	0	0	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
15:45	39	1	1	1	0	1	0	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43
1 Hr	176	14	2	1	1	1	1	196	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	198
16:00	54	4	1	0	0	0	0	59	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	60
16:15	67	6	0	0	0	0	0	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73
16:30	45	5	0	0	0	0	0	50	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	53
16:45	40	6	0	0	0	0	0	46	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	50
1 Hr	206	21	1	0	0	0	0	228	8	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	236
17:00	57	2	0	0	0	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59
17:15	50	7	0	0	0	0	0	57	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	58
17:30	55	5	0	0	0	0	0	60	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	61
17:45	62	4	0	0	0	0	0	66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66
1 Hr	224	18	0	0	0	0	0	242	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	245
18:00	51	1	0	0	0	0	0	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52
18:15	48	6	0	0	0	0	1	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55
18:30	44	4	0	0	0	0	0	48	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	49
18:45	38	2	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40
1 Hr	181	13	0	0	0	0	1	195	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	196
Total	2021	209	13	6	10	3	8	2270	34	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	2309

ORIGIN SUMMARY

	Origin : Arm A - Melitta Rd							Origin : Arm B - St Barbara's Park							Origin : Arm C - Melitta Rd							Origin Totals				
	CAR	LGV	OGV1	OGV2	PSV	MC	PC	Total	CAR	LGV	OGV1	OGV2	PSV	MC	PC	Total	CAR	LGV	OGV1	OGV2	PSV		MC	PC	Total	
07:00	13	2	0	0	0	0	0	15	0	0	0	0	0	0	0	0	18	2	0	0	0	0	0	0	20	35
07:15	13	2	0	0	0	0	0	15	0	0	0	0	0	0	0	0	24	6	0	0	0	0	0	0	0	45
07:30	15	1	1	0	0	1	1	19	1	0	0	0	0	0	0	1	23	1	0	1	0	0	0	0	0	45
07:45	32	6	1	0	2	0	0	41	1	0	0	0	0	0	0	1	28	4	0	0	2	0	1	35	77	
1 Hr	73	11	2	0	2	1	1	90	2	0	0	0	0	0	0	2	93	13	0	1	2	0	1	110	202	
08:00	50	7	1	0	1	0	0	59	1	0	0	0	0	0	0	1	27	3	1	0	4	0	0	0	35	95
08:15	75	4	1	0	2	0	0	82	1	0	0	0	0	0	0	1	61	2	0	0	0	0	0	0	63	

DESTINATION SUMMARY

	Destination : Arm A - Melitta Rd							Total	Destination : Arm B - St Barbara's Park							Total	Destination : Arm C - Melitta Rd							Total	Dest Totals						
	CAR	LGV	OGV1	OGV2	PSV	MC	PC		CAR	LGV	OGV1	OGV2	PSV	MC	PC		CAR	LGV	OGV1	OGV2	PSV	MC	PC								
07:00	18	2	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	0	0	0	0	0	15	35
07:15	23	6	0	0	0	0	0	29	1	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	0	0	0	0	15	45	
07:30	24	1	0	1	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	1	1	0	0	1	19	45	
07:45	28	4	0	0	2	0	1	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	6	1	0	2	0	42	77	
1 Hr	93	13	0	1	2	0	1	110	1	0	0	0	0	0	0	0	0	0	0	0	0	74	11	2	0	2	1	91	202		
08:00	28	3	1	0	4	0	0	36	1	0	0	0	0	0	0	0	0	0	0	0	0	49	7	1	0	1	0	58	95		
08:15	60	2	0	0	0	0	0	62	1	0	0	0	0	0	0	0	0	0	0	0	0	76	4	1	0	2	0	83	146		
08:30	80	4	2	0	0	1	0	87	0	0	0	0	0	0	0	0	0	0	0	0	0	54	6	1	0	1	0	62	149		
08:45	54	8	0	0	0	0	0	62	0	0	0	0	0	0	0	0	0	0	0	0	0	37	6	1	1	1	0	46	108		
1 Hr	222	17	3	0	4	1	0	247	2	0	0	0	0	0	0	0	0	0	0	0	0	216	23	4	1	5	0	249	498		
09:00	69	1	0	0	0	0	0	70	2	0	0	0	0	0	0	0	0	0	0	0	0	37	5	0	0	0	0	42	114		
09:15	41	5	0	0	0	0	0	46	0	0	0	0	0	0	0	0	0	0	0	0	0	39	2	0	0	0	0	41	87		
09:30	47	9	0	1	0	0	0	57	0	0	0	0	0	0	0	0	0	0	0	0	0	25	4	0	0	0	0	29	86		
09:45	31	4	0	0	0	0	0	35	1	0	0	0	0	0	0	0	0	0	0	0	0	33	6	0	1	0	0	41	77		
1 Hr	188	19	0	1	0	0	0	208	3	0	0	0	0	0	0	0	0	0	0	0	0	134	17	0	1	0	0	153	364		
10:00	34	4	1	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	20	5	2	0	0	0	27	67		
10:15	18	5	0	0	0	0	0	23	2	0	0	0	0	0	0	0	0	0	0	0	0	26	4	0	0	0	0	30	55		
10:30	26	5	1	1	0	0	1	34	2	0	0	0	0	0	0	0	0	0	0	0	0	22	5	0	0	0	0	27	63		
10:45	18	5	1	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	34	5	0	0	0	0	39	63		
1 Hr	96	19	3	1	0	0	1	120	4	0	0	0	0	0	0	0	0	0	0	0	0	102	19	2	0	0	0	124	248		
11:00	30	4	0	0	0	1	0	35	1	0	0	0	0	0	0	0	0	0	0	0	0	23	4	0	0	0	0	27	63		
11:15	24	3	0	0	0	0	0	27	1	0	0	0	0	0	0	0	0	0	0	0	0	30	6	2	0	0	0	38	66		
11:30	36	5	0	0	0	0	0	41	0	1	0	0	0	0	0	0	0	0	0	0	0	34	3	1	1	0	0	41	83		
11:45	38	7	0	0	0	0	2	47	0	0	0	0	0	0	0	0	0	0	0	0	0	36	5	0	0	0	1	42	89		
1 Hr	128	19	0	0	0	1	2	150	2	1	0	0	0	0	0	0	0	0	0	0	0	123	18	3	1	0	1	148	301		
12:00	36	4	0	1	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	45	5	0	1	0	0	51	92		
12:15	32	0	2	0	0	0	0	34	2	0	0	0	0	0	0	0	0	0	0	0	0	41	7	1	0	0	0	49	85		
12:30	43	6	0	0	0	0	0	49	1	0	0	0	0	0	0	0	0	0	0	0	0	42	3	0	0	0	0	45	95		
12:45	34	5	0	0	0	0	0	39	2	0	0	0	0	0	0	0	0	0	0	0	0	42	6	3	0	0	0	52	93		
1 Hr	145	15	2	1	0	0	0	163	5	0	0	0	0	0	0	0	0	0	0	0	0	170	21	4	1	0	0	197	365		
13:00	48	6	0	1	0	0	0	55	2	0	0	0	0	0	0	0	0	0	0	0	0	53	6	0	0	0	0	59	116		
13:15	45	8	0	0	1	0	0	54	1	0	0	0	0	0	0	0	0	0	0	0	0	64	6	0	0	1	0	73	128		
13:30	35	3	1	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	46	7	0	0	0	0	53	92		
13:45	59	6	1	0	0	0	0	66	1	0	0	0	0	0	0	0	0	0	0	0	0	48	3	0	0	1	0	52	119		
1 Hr	187	23	2	1	1	0	0	214	4	0	0	0	0	0	0	0	0	0	0	0	0	211	22	0	0	2	0	237	455		
14:00	45	4	0	0	1	0	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0	52	2	0	0	0	0	54	104		
14:15	55	3	0	0	1	0	1	60	1	0	0	0	0	0	0	0	0	0	0	0	0	47	4	0	0	1	0	52	113		
14:30	28	4	0	0	0	0	1	33	3	0	0	0	0	0	0	0	0	0	0	0	0	48	7	0	0	1	0	56	92		
14:45	61	8	0	0	0	0	0	69	1	0	0	0	0	0	0	0	0	0	0	0	0	47	6	1	1	0	0	55	125		
1 Hr	189	19	0	0	2	0	2	212	5	0	0	0	0	0	0	0	0	0	0	0	0	194	19	1	1	2	0	217	434		
15:00	58	8	1	0	0	0	1	68	1	0	0	0	0	0	0	0	0	0	0	0	0	46	7	1	1	2	0	57	126		
15:15	30	4	0	0	1	0	0	35	1	0	0	0	0	0	0	0	0	0	0	0	0	50	8	0	0	0	0	58	94		
15:30	49	1	0	0	0	0	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0	51	4	0	0	0	1	56	106		
15:45	39	1	1	1	0	1	0	43	0	1	0	0	0	0	0	0	0	0	0	0	0	48	5	0	0	0	0	53	97		
1 Hr	176	14	2	1	1	1	1	196	2	1	0	0	0	0	0	0	0	0	0	0	0	195	24	1	1	2	1	224	423		
16:00	54	4	1	0	0	0	0	59	1	0	0	0	0	0	0	0	0	0	0	0	0	50	7	1	0	1	0	59	119		
16:15	67	6	0	0	0	0	0	73	0	0	0	0	0	0	0	0	0	0	0	0	0	63	4	0	0	0	0	67	140		
16:30	45	5	0	0	0	0	0	50	3	0	0	0	0	0	0	0	0	0	0	0	0	48	9	0	1	1	0	59	117		
16:45	40	6	0	0	0	0	0	46	5	0	0	0	0	0	0	0	0	0	0	0	0	58	8	0	0	0	0	66	117		
1 Hr	206	21	1	0	0	0	0	228	9	0	0	0	0	0	0	0	0	0	0	0	0	219	28	1	1	2	0	251	488		
17:00	58	2	0	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	55	9	0	0	0	0	64	124		
17:15	50	7	0	0	0	0	0	57	1	0	0	0	0	0	0	0	0	0	0	0	0	49	5	0	0	0	0	54	112		
17:30	56	5	0	0	0	0	0	61	1	0	0	0	0	0	0	0	0	0	0	0	0	74	3	0	0	0	0	77	139		
17:45	62	4	0	0	0	0	0	66	0	0	0	0	0	0	0	0	0	0	0	0	0	72	4	0	0	0	0	76	142		
1 Hr	226	18	0	0	0	0	0	244	2	0	0	0	0	0	0	0	0	0	0	0	0	250	21	0	0	0	0	271	517		
18:00	51	1	0	0	0	0	0	52	0	0	0	0	0	0	0	0	0	0	0	0	0	62	1	0	0	0	0	63	115		
18:15	48	6	0	0	0	0	1	55	0	0	0	0	0	0	0	0	0	0	0	0	0	57	8	0	0	0	0	65	120		
18:30	44	4	0	0	0	0	0	48	1	1	0	0	0	0	0	0	0	0	0	0	0	54	5	0	0	0	0	59	109		
18:45	38	2	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	50	2	0	0	0	0	52	92		
1 Hr	181	13	0	0	0	0	1	195	1	1	0	0	0	0	0	0	0	0	0	0	0	223	16	0	0	0	0	239	436		
Total	2037	210	13	6	10	3	8	2287	40	3	0	0</																			

Eastbound							
CAR	LGV	OGV1	OGV2	BUS	MC	PC	Total

Westbound							
CAR	LGV	OGV1	OGV2	BUS	MC	PC	Total

07:00	32	6	0	0	4	0	0	42
07:15	45	4	1	0	1	0	1	52
07:30	48	6	0	0	4	1	1	60
07:45	50	10	1	2	2	0	0	65
1 Hr	175	26	2	2	11	1	2	219
08:00	49	8	1	0	4	0	0	62
08:15	59	9	2	0	1	1	0	72
08:30	92	3	1	2	3	0	0	101
08:45	143	10	0	2	2	0	0	157
1 Hr	343	30	4	4	10	1	0	392
09:00	93	13	1	1	2	1	0	111
09:15	83	9	1	1	0	0	0	94
09:30	71	6	3	1	2	0	0	83
09:45	71	9	0	0	0	0	0	80
1 Hr	318	37	5	3	4	1	0	368
10:00	64	9	2	1	1	0	0	77
10:15	69	11	5	1	0	0	1	87
10:30	80	11	3	0	1	0	0	95
10:45	62	10	3	0	0	0	0	75
1 Hr	275	41	13	2	2	0	1	334
11:00	67	7	3	1	1	0	0	79
11:15	62	8	2	0	2	1	0	75
11:30	61	7	2	0	1	0	1	72
11:45	80	8	3	0	0	0	0	91
1 Hr	270	30	10	1	4	1	1	317
12:00	72	9	4	1	3	0	0	89
12:15	66	5	0	0	0	0	1	72
12:30	67	4	3	3	1	0	0	78
12:45	82	7	2	0	1	0	0	92
1 Hr	287	25	9	4	5	0	1	331
13:00	80	7	0	0	1	0	0	88
13:15	104	13	0	0	0	0	1	118
13:30	80	14	1	1	2	0	0	98
13:45	111	12	2	0	3	0	0	128
1 Hr	375	46	3	1	6	0	1	432
14:00	59	8	1	2	1	0	0	71
14:15	69	6	2	1	0	0	0	78
14:30	86	10	1	2	1	0	0	100
14:45	141	7	0	0	2	0	0	150
1 Hr	355	31	4	5	4	0	0	399
15:00	66	7	0	2	2	0	0	77
15:15	65	7	1	2	0	0	0	75
15:30	72	7	0	2	1	0	0	82
15:45	92	9	1	2	0	0	0	104
1 Hr	295	30	2	8	3	0	0	338
16:00	96	5	1	1	1	0	0	104
16:15	94	8	0	1	1	0	0	104
16:30	75	7	0	0	0	0	0	82
16:45	75	8	0	0	2	0	2	87
1 Hr	340	28	1	2	4	0	2	377
17:00	82	9	0	0	3	0	1	95
17:15	73	7	0	1	0	0	1	82
17:30	101	9	0	1	1	0	0	112
17:45	94	6	0	0	0	0	0	100
1 Hr	350	31	0	2	4	0	2	389
18:00	77	7	0	0	2	0	1	87
18:15	70	3	0	0	1	0	0	74
18:30	67	6	0	0	0	1	0	74
18:45	76	5	0	0	0	0	1	82
1 Hr	290	21	0	0	3	1	2	317
Total	3673	376	53	34	60	5	12	4213

07:00	24	3	1	1	2	0	1	32
07:15	26	2	3	0	0	0	0	31
07:30	43	7	1	1	0	0	0	52
07:45	28	7	1	0	3	0	1	40
1 Hr	121	19	6	2	5	0	2	155
08:00	32	5	0	2	0	0	1	40
08:15	66	9	1	0	0	0	0	76
08:30	145	4	0	0	1	1	0	151
08:45	118	8	1	1	3	0	0	131
1 Hr	361	26	2	3	4	1	1	398
09:00	86	8	2	1	1	0	0	98
09:15	68	10	3	1	1	0	0	83
09:30	71	6	5	2	0	0	0	84
09:45	44	7	2	0	0	0	0	53
1 Hr	269	31	12	4	2	0	0	318
10:00	75	6	3	1	2	0	0	87
10:15	59	8	0	0	1	0	0	68
10:30	75	6	1	2	0	1	0	85
10:45	63	6	2	0	1	0	1	73
1 Hr	272	26	6	3	4	1	1	313
11:00	58	2	1	1	1	0	0	63
11:15	54	4	0	1	0	0	1	60
11:30	75	2	5	2	0	0	0	84
11:45	74	2	2	0	2	0	0	80
1 Hr	261	10	8	4	3	0	1	287
12:00	68	7	1	0	0	0	0	76
12:15	80	7	3	0	1	0	0	91
12:30	83	9	1	0	1	0	0	94
12:45	74	9	1	0	0	0	0	84
1 Hr	305	32	6	0	2	0	0	345
13:00	94	6	1	1	1	0	0	103
13:15	93	4	1	1	1	0	0	100
13:30	76	6	1	0	1	0	0	84
13:45	85	3	2	0	2	0	1	93
1 Hr	348	19	5	2	5	0	1	380
14:00	77	8	1	0	0	0	0	86
14:15	92	4	0	0	0	0	0	96
14:30	101	4	1	0	1	0	0	107
14:45	90	9	1	0	1	0	0	101
1 Hr	360	25	3	0	2	0	0	390
15:00	88	13	3	0	3	1	0	108
15:15	91	5	0	0	0	0	2	98
15:30	77	8	0	2	0	0	0	87
15:45	113	10	1	1	1	0	0	126
1 Hr	369	36	4	3	4	1	2	419
16:00	115	10	2	1	2	1	2	133
16:15	94	10	0	0	0	0	0	104
16:30	99	5	1	1	2	0	0	108
16:45	97	5	1	1	1	1	1	107
1 Hr	405	30	4	3	5	2	3	452
17:00	94	7	3	0	3	0	0	107
17:15	92	8	0	0	0	1	2	103
17:30	105	7	1	0	1	0	1	115
17:45	107	5	1	0	0	0	2	115
1 Hr	398	27	5	0	4	1	5	440
18:00	95	7	0	0	2	1	1	106
18:15	86	5	1	0	0	0	1	93
18:30	81	3	0	0	2	1	0	87
18:45	86	7	0	0	2	1	1	97
1 Hr	348	22	1	0	6	3	3	383
Total	3817	303	62	24	46	9	19	4280

APPENDIX C – TRAFFIC FLOW SHEETS

AM Peak Hour (08:00-09:00) Hospital Street / Development Access Signalised Junction

2017 AM Peak - Base Year Flows

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	391	391
Development Access	0	0	0	0
R445 Hospital St (east)	397	0	0	397
Totals	397	0	391	788

2019 AM Peak - Base Year Flows (Existing + 3.11%)

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	403	403
Development Access	0	0	0	0
R445 Hospital St (east)	409	0	0	409
Totals	409	0	403	813

AM Peak - Development Flows + Committed Development Flows

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	133	0	133
Development Access	146	0	98	244
R445 Hospital St (east)	0	89	0	89
Totals	146	222	98	466

AM Peak - Development Flows + Committed Flows + Future Flows

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	101	0	101
Development Access	136	0	136	272
R445 Hospital St (east)	0	101	0	101
Totals	136	202	136	474

2022 AM Peak - No Development (2019 Base Flows + 4.70%)

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	422	422
Development Access	0	0	0	0
R445 Hospital St (east)	429	0	0	429
Totals	429	0	422	851

2022 AM Peak - With Development

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	133	422	555
Development Access	146	0	98	244
R445 Hospital St (east)	429	89	0	518
Totals	575	222	520	1317

2027 AM Peak - No Development (2019 Base Flows + 13.04%)

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	456	456
Development Access	0	0	0	0
R445 Hospital St (east)	463	0	0	463
Totals	463	0	456	918

2027 AM Peak - With Development

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	133	456	589
Development Access	146	0	98	244
R445 Hospital St (east)	463	89	0	552
Totals	609	222	554	1384

2037 AM Peak - No Development (2019 Base Flows + 22.14%)

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	492	492
Development Access	0	0	0	0
R445 Hospital St (east)	500	0	0	500
Totals	500	0	492	992

2037 AM Peak - With Development

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	133	492	625
Development Access	146	0	98	244
R445 Hospital St (east)	500	89	0	589
Totals	646	222	590	1458

2037 AM Peak - With Development Flows + Committed Flows + Future Flows

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	133	915	1048
Development Access	146	0	98	244
R445 Hospital St (east)	929	89	0	1018
Totals	1075	222	1013	2309

AM Peak Hour (08:00-09:00) Hospital Street / Development Access Signalised Junction

LV's

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	374	374
Development Access	0	0	0	0
R445 Hospital St (east)	389	0	0	389
Totals	389	0	374	763

HGV's

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	18	18
Development Access	0	0	0	0
R445 Hospital St (east)	9	0	0	9
Totals	9	0	18	27

% HGV's

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)
R445 Hospital St (west)	0.00%	0.00%	4.46%
Development Access	0.00%	0.00%	0.00%
R445 Hospital St (east)	2.20%	0.00%	0.00%

PM Peak Hour (17:00-18:00) Hospital Street / Development Access Signalised Junction

2017 PM Peak - Base Year Flows

0	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	389	389
Development Access	0	0	0	0
R445 Hospital St (east)	440	0	0	440
Totals	440	0	389	829

2019 PM Peak - Base Year Flows (Existing + 3.11%)

0	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	401	401
Development Access	0	0	0	0
R445 Hospital St (east)	454	0	0	454
Totals	454	0	401	855

PM Peak - Development Flows + Committed Development Flows

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	181	0	181
Development Access	172	0	115	287
R445 Hospital St (east)	0	122	0	122
Totals	172	303	115	590

PM Peak - Development Flows + Committed Flows + Future Flows

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	157	0	157
Development Access	133	0	132	265
R445 Hospital St (east)	0	157	0	157
Totals	133	314	132	579

2022 PM Peak - No Development (2019 Base Flows + 4.70%)

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	420	420
Development Access	0	0	0	0
R445 Hospital St (east)	475	0	0	475
Totals	475	0	420	895

2022 PM Peak - With Development

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	181	420	601
Development Access	172	0	115	287
R445 Hospital St (east)	475	122	0	597
Totals	647	303	535	1485

2027 PM Peak - No Development (2019 Base Flows + 13.04%)

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	453	453
Development Access	0	0	0	0
R445 Hospital St (east)	513	0	0	513
Totals	513	0	453	966

2027 PM Peak - With Development

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	181	453	634
Development Access	172	0	115	287
R445 Hospital St (east)	513	122	0	635
Totals	685	303	568	1556

2037 PM Peak - No Development (2019 Base Flows + 22.14%)

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	490	490
Development Access	0	0	0	0
R445 Hospital St (east)	554	0	0	554
Totals	554	0	490	1044

2037 PM Peak - With Development

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	181	490	671
Development Access	172	0	115	287
R445 Hospital St (east)	554	122	0	676
Totals	726	303	605	1634

2037 PM Peak - With Development Flows + Committed Flows + Future Flows

	R445 Hospital St (west)	Development Access	R445 Hospital St (east)	Totals
R445 Hospital St (west)	0	181	910	1091
Development Access	172	0	115	287
R445 Hospital St (east)	1029	122	0	1151
Totals	1201	303	1025	2529

PM Peak Hour (17:00-18:00) Hospital Street / Development Access Signalised Junction

LV's

	R445 Hospital St (west)	Development Access	445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	383	383
Development Access	0	0	0	0
R445 Hospital St (east)	431	0	0	431
Totals	431	0	383	814

HGV's

	R445 Hospital St (west)	Development Access	445 Hospital St (east)	Totals
R445 Hospital St (west)	0	0	9	9
Development Access	0	0	0	0
R445 Hospital St (east)	6	0	0	6
Totals	6	0	9	15

% HGV's

	R445 Hospital St (west)	Development Access	445 Hospital St (east)
R445 Hospital St (west)	0.00%	0.00%	2.24%
Development Access	0.00%	0.00%	0.00%
R445 Hospital St (east)	1.32%	0.00%	0.00%

AM Peak Hour (08:00-09:00) Melitta Rd Junction

2017 AM Peak - Base Year Flows

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	1	246	247
Sait Barbara's Park	3	0	3	6
R413 Melitta Rd (west)	243	1	0	244
Totals	246	2	249	497

2019 AM Peak - Base Year Flows (Existing + 3.11%)

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	1	254	255
Sait Barbara's Park	3	0	3	6
R413 Melitta Rd (west)	251	1	0	252
Totals	254	2	257	512

AM Peak - Development Flows + Committed Flows + Future Flows

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	25	0	25
Sait Barbara's Park	34	0	34	68
R413 Melitta Rd (west)	0	25	0	25
Totals	34	50	34	118

2022 AM Peak - No Development (2019 Base Flows + 4.70%)

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	1	266	267
Sait Barbara's Park	3	0	3	6
R413 Melitta Rd (west)	262	1	0	263
Totals	266	2	269	537

2022 AM Peak - With Development

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	26	266	292
Sait Barbara's Park	37	0	37	74
R413 Melitta Rd (west)	262	26	0	288
Totals	300	52	303	655

2027 AM Peak - No Development (2019 Base Flows + 13.04%)

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	1	287	288
Sait Barbara's Park	3	0	3	7
R413 Melitta Rd (west)	283	1	0	284
Totals	287	2	290	579

2027 AM Peak - With Development

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	26	287	313
Sait Barbara's Park	37	0	37	75
R413 Melitta Rd (west)	283	26	0	309
Totals	321	52	324	697

2037 AM Peak - No Development (2019 Base Flows + 22.14%)

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	1	310	311
Sait Barbara's Park	4	0	4	8
R413 Melitta Rd (west)	306	1	0	307
Totals	310	3	314	626

2037 AM Peak - With Development

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	26	310	336
Sait Barbara's Park	38	0	38	76
R413 Melitta Rd (west)	306	26	0	332
Totals	344	53	348	744

AM Peak Hour (08:00-09:00) Melitta Rd Junction**LV's**

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	0	374	374
Sait Barbara's Park	0	0	0	0
R413 Melitta Rd (west)	389	0	0	389
Totals	389	0	374	763

HGV's

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	0	18	18
Sait Barbara's Park	0	0	0	0
R413 Melitta Rd (west)	9	0	0	9
Totals	9	0	18	27

% HGV's

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)
R413 Melitta Rd (east)	0.00%	0.00%	7.10%
Sait Barbara's Park	0.00%	0.00%	0.00%
R413 Melitta Rd (west)	3.59%	0.00%	0.00%

PM Peak Hour (17:00-18:00) Melitta Rd Junction

2017 PM Peak - Base Year Flows

0	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	0	269	269
Sait Barbara's Park	2	0	1	3
R413 Melitta Rd (west)	242	2	0	244
Totals	244	2	270	516

2019 PM Peak - Base Year Flows (Existing + 3.11%)

0	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	0	277	277
Sait Barbara's Park	2	0	1	3
R413 Melitta Rd (west)	250	2	0	252
Totals	252	2	278	532

PM Peak - Development Flows + Committed Flows + Future Flows

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	36	0	36
Sait Barbara's Park	33	0	33	66
R413 Melitta Rd (west)	0	36	0	36
Totals	33	72	33	138

2022 PM Peak - No Development (2019 Base Flows + 4.70%)

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	0	290	290
Sait Barbara's Park	2	0	1	3
R413 Melitta Rd (west)	261	2	0	263
Totals	263	2	291	557

2022 PM Peak - With Development

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	36	290	326
Sait Barbara's Park	35	0	34	69
R413 Melitta Rd (west)	261	38	0	299
Totals	296	74	324	695

2027 PM Peak - No Development (2019 Base Flows + 13.04%)

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	0	314	314
Sait Barbara's Park	2	0	1	3
R413 Melitta Rd (west)	282	2	0	284
Totals	284	2	315	601

2027 PM Peak - With Development

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	36	314	350
Sait Barbara's Park	35	0	34	69
R413 Melitta Rd (west)	282	38	0	320
Totals	317	74	348	739

2037 PM Peak - No Development (2019 Base Flows + 22.14%)

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	0	339	339
Sait Barbara's Park	3	0	1	4
R413 Melitta Rd (west)	305	3	0	307
Totals	307	3	340	650

2037 PM Peak - With Development

	R413 Melitta Rd (east)	Sait Barbara's Park	R413 Melitta Rd (west)	Totals
R413 Melitta Rd (east)	0	36	339	375
Sait Barbara's Park	36	0	34	70
R413 Melitta Rd (west)	305	39	0	343
Totals	340	75	373	788

PM Peak Hour (17:00-18:00) Melitta Rd Junction

LV's

	R413 Melitta Rd (eas)	Sait Barbara's Park	413 Melitta Rd (wes)	Totals
R413 Melitta Rd (east)	0	0	383	383
Sait Barbara's Park	0	0	0	0
R413 Melitta Rd (west)	431	0	0	431
Totals	431	0	383	814

HGV's

	R413 Melitta Rd (eas)	Sait Barbara's Park	413 Melitta Rd (wes)	Totals
R413 Melitta Rd (east)	0	0	9	9
Sait Barbara's Park	0	0	0	0
R413 Melitta Rd (west)	6	0	0	6
Totals	6	0	9	15

% HGV's

	R413 Melitta Rd (eas)	Sait Barbara's Park	413 Melitta Rd (west)
R413 Melitta Rd (east)	0.00%	0.00%	3.24%
Sait Barbara's Park	0.00%	0.00%	0.00%
R413 Melitta Rd (west)	2.40%	0.00%	0.00%

APPENDIX D – TRICS INFORMATION

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	BD BEDFORDSHIRE	1 days
	HF HERTFORDSHIRE	1 days
04	EAST ANGLIA	
	CA CAMBRIDGESHIRE	1 days
05	EAST MIDLANDS	
	LN LINCOLNSHIRE	1 days
06	WEST MIDLANDS	
	WO WORCESTERSHIRE	1 days
08	NORTH WEST	
	CH CHESHIRE	1 days
	GM GREATER MANCHESTER	1 days
09	NORTH	
	TV TEES VALLEY	1 days
10	WALES	
	CF CARDIFF	1 days
11	SCOTLAND	
	SR STIRLING	1 days
12	CONNAUGHT	
	GA GALWAY	1 days
15	GREATER DUBLIN	
	DL DUBLIN	1 days
17	ULSTER (NORTHERN IRELAND)	
	DE DERRY	1 days

Filtering Stage 2 selection:

Parameter: Number of dwellings
Range: 115 to 363 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/00 to 17/11/08

Selected survey days:

Monday	2 days
Tuesday	2 days
Thursday	5 days
Friday	3 days
Sunday	1 days

Selected survey types:

Manual count	13 days
Directional ATC Count	0 days

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	12

Selected Location Sub Categories:

Residential Zone	10
No Sub Category	3

LIST OF SITES relevant to selection parameters

1	BD-03-A-01 SEMI DETACHED, LUTON NEW BEDFORD ROAD LUTON Total Number of dwellings: 131 Survey date: THURSDAY 08/07/04	BEDFORDSHIRE Survey Type: MANUAL
2	CA-03-A-02 MIXED HOUSES, PETERBOROUGH THORPE ROAD PETERBOROUGH Total Number of dwellings: 363 Survey date: THURSDAY 13/05/04	CAMBRIDGESHIRE Survey Type: MANUAL
3	CF-03-A-01 MIXED HOUSES, CARDIFF VIRGIL STREET NINIAN PARK CARDIFF Total Number of dwellings: 222 Survey date: THURSDAY 17/10/02	CARDIFF Survey Type: MANUAL
4	CH-03-A-06 SEMI-DET./BUNGALOWS, CREWE CREWE ROAD CREWE Total Number of dwellings: 129 Survey date: TUESDAY 14/10/08	CHESHIRE Survey Type: MANUAL
5	DE-03-A-03 BUNGALOWS, LONDONDERRY ABBEYDALE KILFENNAN LONDONDERRY Total Number of dwellings: 160 Survey date: THURSDAY 02/10/03	DERRY Survey Type: MANUAL
6	DL-03-A-01 SEMI DETACHED, DUBLIN KILMACUD ROAD UPPER GOATSTOWN DUBLIN Total Number of dwellings: 208 Survey date: FRIDAY 22/11/02	DUBLIN Survey Type: MANUAL
7	GA-03-A-02 TERRACED, GALWAY BOHERMORE TOWNPARKS GALWAY Total Number of dwellings: 185 Survey date: TUESDAY 19/09/06	GALWAY Survey Type: MANUAL
8	GM-03-A-07 SEMI DETACHED, MANCHESTER MILFORD DRIVE LEVENSHULME MANCHESTER Total Number of dwellings: 138 Survey date: FRIDAY 09/11/01	GREATER MANCHESTER Survey Type: MANUAL
9	HF-03-A-02 HOUSES, WELWYN GDN. CITY BLACK FAN ROAD PANSHANGER WELWYN GARDEN CITY Total Number of dwellings: 195 Survey date: SUNDAY 20/07/08	HERTFORDSHIRE Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

10	LN-03-A-02	MIXED HOUSES, LINCOLN HYKEHAM ROAD	LINCOLNSHIRE
		LINCOLN	
		Total Number of dwellings: 186	
		Survey date: MONDAY 14/05/07	Survey Type: MANUAL
11	SR-03-A-01	DETACHED, STIRLING BENVIEW	STIRLING
		STIRLING	
		Total Number of dwellings: 115	
		Survey date: MONDAY 23/04/07	Survey Type: MANUAL
12	TV-03-A-01	MIXED HOUSES/FLATS, HARTLEPL POWLETT ROAD	TEES VALLEY
		HARTLEPOOL	
		Total Number of dwellings: 225	
		Survey date: THURSDAY 14/04/05	Survey Type: MANUAL
13	WO-03-A-03	DETACHED, KIDDERMINSTER BLAKEBROOK BLAKEBROOK KIDDERMINSTER	WORCESTERSHIRE
		Total Number of dwellings: 138	
		Survey date: FRIDAY 05/05/06	Survey Type: MANUAL

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	13	184	0.068	13	184	0.226	13	184	0.294
08:00 - 09:00	13	184	0.164	13	184	0.416	13	184	0.580
09:00 - 10:00	13	184	0.167	13	184	0.240	13	184	0.407
10:00 - 11:00	13	184	0.147	13	184	0.159	13	184	0.306
11:00 - 12:00	13	184	0.177	13	184	0.174	13	184	0.351
12:00 - 13:00	13	184	0.215	13	184	0.192	13	184	0.407
13:00 - 14:00	13	184	0.210	13	184	0.197	13	184	0.407
14:00 - 15:00	13	184	0.210	13	184	0.205	13	184	0.415
15:00 - 16:00	13	184	0.275	13	184	0.210	13	184	0.485
16:00 - 17:00	13	184	0.314	13	184	0.200	13	184	0.514
17:00 - 18:00	13	184	0.354	13	184	0.228	13	184	0.582
18:00 - 19:00	13	184	0.296	13	184	0.249	13	184	0.545
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			2.597			2.696			5.293

Parameter summary

Trip rate parameter range selected: 115 - 363 (units:)
 Survey date date range: 01/01/00 - 17/11/08
 Number of weekdays (Monday-Friday): 12
 Number of Saturdays: 0
 Number of Sundays: 1
 Surveys manually removed from selection: 0

ORGANISATION NAME STREET NAME TOWN/CITY

Licence No: 729101

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 01 - RETAIL
Category : 0 - CONVENIENCE STORE
VEHICLES

Selected regions and areas:

01	GREATER LONDON	
	WH WANDSWORTH	1 days
09	NORTH	
	TW TYNE & WEAR	1 days

Main parameter selection:

Parameter: Gross floor area
Range: 165 to 400 (units: sqm)

Date Range: 01/01/00 to 15/05/07

Selected survey days:

Saturday 2 days

Selected survey types:

Manual count 2 days
Directional ATC Count 0 days

Selected Locations:

Suburban Area (PPS6 Out of Centre) 1
Neighbourhood Centre (PPS6 Local Centre) 1

Selected Location Sub Categories:

Residential Zone 1
Village 1

ORGANISATION NAME STREET NAME TOWN/CITY

Licence No: 729101

LIST OF SITES relevant to selection parameters

- | | | | |
|---|-------------------------|-----------------------|-------------|
| 1 | TW-01-O-01 | CO-OP, NEAR NEWCASTLE | TYNE & WEAR |
| | CORONATION ROAD | | |
| | SUNNISIDE | | |
| | NEAR NEWCASTLE | | |
| | Total Gross floor area: | 400 sqm | |
| 2 | WH-01-O-01 | CO-OP, ROEHAMPTON | WANDSWORTH |
| | 1-9 DANEBURY ROAD | | |
| | ROEHAMPTON | | |
| | Total Gross floor area: | 400 sqm | |

ORGANISATION NAME STREET NAME TOWN/CITY

Licence No: 729101

TRIP RATE for Land Use 01 - RETAIL/O - CONVENIENCE STORE
 VEHICLES
 Calculation factor: 100 sqm
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	2	400	2.125	2	400	2.125	2	400	4.250
08:00 - 09:00	2	400	3.250	2	400	3.000	2	400	6.250
09:00 - 10:00	2	400	3.500	2	400	3.875	2	400	7.375
10:00 - 11:00	2	400	3.500	2	400	3.000	2	400	6.500
11:00 - 12:00	2	400	3.750	2	400	3.750	2	400	7.500
12:00 - 13:00	2	400	4.375	2	400	3.625	2	400	8.000
13:00 - 14:00	2	400	3.375	2	400	3.750	2	400	7.125
14:00 - 15:00	2	400	4.000	2	400	4.000	2	400	8.000
15:00 - 16:00	2	400	5.250	2	400	4.750	2	400	10.000
16:00 - 17:00	2	400	4.500	2	400	5.375	2	400	9.875
17:00 - 18:00	2	400	6.750	2	400	6.500	2	400	13.250
18:00 - 19:00	2	400	6.125	2	400	6.000	2	400	12.125
19:00 - 20:00	2	400	3.875	2	400	4.375	2	400	8.250
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			54.375			54.125			108.500

Parameter summary

Trip rate parameter range selected: 165 - 400 (units: sqm)
 Survey date range: 01/01/00 - 15/05/07
 Number of weekdays (Monday-Friday): 0
 Number of Saturdays: 2
 Number of Sundays: 0
 Optional parameters used in selection: NO
 Surveys manually removed from selection: 0

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : D - NURSERY
VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	HC HAMPSHIRE	1 days
03	SOUTH WEST	
	BA BATH & NORTH EAST SOMERSET	1 days
04	EAST ANGLIA	
	CA CAMBRIDGESHIRE	1 days
	NF NORFOLK	1 days
	SF SUFFOLK	1 days
06	WEST MIDLANDS	
	WM WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	NY NORTH YORKSHIRE	1 days
09	NORTH	
	DH DURHAM	1 days
10	WALES	
	WR WREXHAM	1 days
11	SCOTLAND	
	EA EAST AYRSHIRE	1 days
14	LEINSTER	
	WT WESTMEATH	1 days

Filtering Stage 2 selection:

Parameter: Gross floor area
Range: 230 to 850 (units: sqm)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/00 to 27/11/08

Selected survey days:

Tuesday	5 days
Wednesday	1 days
Thursday	3 days
Friday	2 days

Selected survey types:

Manual count	11 days
Directional ATC Count	0 days

Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	6
Neighbourhood Centre (PPS6 Local Centre)	2
Free Standing (PPS6 Out of Town)	2

Selected Location Sub Categories:

Commercial Zone	2
Development Zone	1
Residential Zone	2
Village	1
Out of Town	2
No Sub Category	3

LIST OF SITES relevant to selection parameters

1	BA-04-D-01 WESTON ROAD	NURSERY, BATH	BATH & NORTH EAST SOMERSET
	BATH		
	Total Gross floor area:	825 sqm	
	Survey date:	THURSDAY 05/10/06	Survey Type: MANUAL
2	CA-04-D-01 CHAPEL STREET	NURSERY, CAMBRIDGE	CAMBRIDGESHIRE
	CAMBRIDGE		
	Total Gross floor area:	420 sqm	
	Survey date:	FRIDAY 05/11/04	Survey Type: MANUAL
3	DH-04-D-01 PEA ROAD	NURSERY, STANLEY	DURHAM
	STANLEY		
	Total Gross floor area:	750 sqm	
	Survey date:	TUESDAY 10/06/03	Survey Type: MANUAL
4	EA-04-D-01 ALTONHILL AVENUE	NURSERY, KILMARNOCK	EAST AYRSHIRE
	KILMARNOCK		
	Total Gross floor area:	592 sqm	
	Survey date:	THURSDAY 19/05/05	Survey Type: MANUAL
5	HC-04-D-01 STAG OAK LANE CHINEHAM BUSINESS PARK BASINGSTOKE	NURSERY, BASINGSTOKE	HAMPSHIRE
	Total Gross floor area:	725 sqm	
	Survey date:	THURSDAY 22/11/07	Survey Type: MANUAL
6	NF-04-D-01 MERIDIAN WAY	NURSERY, NORWICH	NORFOLK
	NORWICH		
	Total Gross floor area:	700 sqm	
	Survey date:	FRIDAY 25/05/07	Survey Type: MANUAL
7	NY-04-D-01 LONDON ROAD BARKSTON ASH NEAR TADCASTER	NURSERY, NEAR TADCASTER	NORTH YORKSHIRE
	Total Gross floor area:	245 sqm	
	Survey date:	TUESDAY 10/05/05	Survey Type: MANUAL
8	SF-04-D-01 IXWORTH ROAD THURSTON NEAR BURY ST EDMUNDS	NURSERY, NR BURY ST EDMUNDS	SUFFOLK
	Total Gross floor area:	600 sqm	
	Survey date:	TUESDAY 09/05/06	Survey Type: MANUAL
9	WM-04-D-01 SCHOOL ROAD YARDLEY WOOD BIRMINGHAM	NURSERY, BIRMINGHAM	WEST MIDLANDS
	Total Gross floor area:	850 sqm	
	Survey date:	WEDNESDAY 19/09/07	Survey Type: MANUAL
10	WR-04-D-01 LLAY ROAD CEFN-Y-BEDD NEAR WREXHAM	NURSERY, NEAR WREXHAM	WREXHAM
	Total Gross floor area:	230 sqm	
	Survey date:	TUESDAY 23/09/03	Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

11	WT-04-D-01	NURSERY, ATHLONE	WESTMEATH
	DUBLIN ROAD		
	GARRycastle		
	ATHLONE		
	Total Gross floor area:	625 sqm	
	Survey date: TUESDAY	19/06/07	Survey Type: MANUAL

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
 VEHICLES
 Calculation factor: 100 sqm
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	9	599	2.170	9	599	1.076	9	599	3.246
08:00 - 09:00	11	597	6.629	11	597	5.181	11	597	11.810
09:00 - 10:00	11	597	3.155	11	597	3.810	11	597	6.965
10:00 - 11:00	11	597	1.143	11	597	1.189	11	597	2.332
11:00 - 12:00	11	597	1.798	11	597	1.783	11	597	3.581
12:00 - 13:00	11	597	2.530	11	597	2.316	11	597	4.846
13:00 - 14:00	11	597	1.280	11	597	1.265	11	597	2.545
14:00 - 15:00	11	597	2.194	11	597	1.798	11	597	3.992
15:00 - 16:00	11	597	1.173	11	597	2.133	11	597	3.306
16:00 - 17:00	9	599	2.578	9	599	2.207	9	599	4.785
17:00 - 18:00	9	599	5.211	9	599	5.861	9	599	11.072
18:00 - 19:00	8	645	0.484	8	645	1.918	8	645	2.402
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			30.345			30.537			60.882

Parameter summary

Trip rate parameter range selected: 230 - 850 (units: sqm)
 Survey date range: 01/01/00 - 27/11/08
 Number of weekdays (Monday-Friday): 11
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys manually removed from selection: 4

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 01 - RETAIL

Category : 1 - SHOPPING CENTRE - LOCAL SHOPS

VEHICLESSelected regions and areas:**03 SOUTH WEST**

DC DORSET 1 days

SG SOUTH GLOUCESTERSHIRE 1 days

06 WEST MIDLANDS

WO WORCESTERSHIRE 1 days

09 NORTH

TW TYNE & WEAR 1 days

Main parameter selection:

Parameter: Gross floor area

Range: 240 to 906 (units: sqm)

Date Range: 01/01/99 to 17/10/06

Selected survey days:

Tuesday 1 days

Friday 3 days

Selected survey types:

Manual count 4 days

Directional ATC Count 0 days

LIST OF SITES relevant to selection parameters

- | | | | |
|---|-------------------------|-----------------------------------|------------------------------|
| 1 | DC-01-I-03 | LOCAL SHOPS, CHRISTCHURCH | DORSET |
| | MARLOW DRIVE | | |
| | ST CATHERINES HILL | | |
| | CHRISTCHURCH | | |
| | Total Gross floor area: | 906 sqm | |
| 2 | SG-01-I-01 | LOCAL SHOPS, BRISTOL | SOUTH GLOUCESTERSHIRE |
| | BURLEY GROVE | | |
| | KINGSWOOD | | |
| | BRISTOL | | |
| | Total Gross floor area: | 240 sqm | |
| 3 | TW-01-I-01 | LOCAL SHOPS, NORTH SHIELDS | TYNE & WEAR |
| | FARRINGDON ROAD | | |
| | MARDEN | | |
| | NORTH SHIELDS | | |
| | Total Gross floor area: | 850 sqm | |
| 4 | WO-01-I-01 | LOCAL SHOPS, WORCESTER | WORCESTERSHIRE |
| | AMBLESIDE DRIVE | | |
| | WARNDON | | |
| | WORCESTER | | |
| | Total Gross floor area: | 599 sqm | |

TRIP RATE for Land Use 01 - RETAIL/I - SHOPPING CENTRE - LOCAL SHOPS

VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	4	649	4.778	4	649	4.316	4	649	9.094
08:00 - 09:00	4	649	6.435	4	649	5.742	4	649	12.177
09:00 - 10:00	4	649	6.975	4	649	6.513	4	649	13.488
10:00 - 11:00	4	649	6.551	4	649	7.399	4	649	13.950
11:00 - 12:00	4	649	7.322	4	649	6.821	4	649	14.143
12:00 - 13:00	4	649	7.746	4	649	7.630	4	649	15.376
13:00 - 14:00	4	649	6.089	4	649	6.782	4	649	12.871
14:00 - 15:00	4	649	6.744	4	649	6.975	4	649	13.719
15:00 - 16:00	4	649	6.628	4	649	6.397	4	649	13.025
16:00 - 17:00	4	649	7.746	4	649	6.628	4	649	14.374
17:00 - 18:00	4	649	7.283	4	649	7.823	4	649	15.106
18:00 - 19:00	4	649	6.243	4	649	6.628	4	649	12.871
19:00 - 20:00	3	665	2.104	3	665	3.056	3	665	5.160
20:00 - 21:00	1	906	0.662	1	906	0.993	1	906	1.655
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			83.306			83.703			167.009

Parameter summary

Trip rate parameter range selected: 240 - 906 (units: sqm)
 Survey date date range: 01/01/99 - 17/10/06
 Number of weekdays (Monday-Friday): 4
 Number of Saturdays: 0
 Number of Sundays: 0
 Optional parameters used in selection: NO
 Surveys manually removed from selection: 0

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 01 - RETAIL
Category : I - SHOPPING CENTRE - LOCAL SHOPS
VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	BD BEDFORDSHIRE	1 days
	WS WEST SUSSEX	1 days
10	WALES	
	SW SWANSEA	1 days
15	GREATER DUBLIN	
	DL DUBLIN	2 days

Filtering Stage 2 selection:

Parameter: Gross floor area
Range: 2461 to 4650 (units: sqm)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/00 to 12/07/03

Selected survey days:

Wednesday	1 days
Saturday	4 days

Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

Selected Locations:

Edge of Town	2
Neighbourhood Centre (PPS6 Local Centre)	3

Selected Location Sub Categories:

Industrial Zone	1
Residential Zone	3
No Sub Category	1

LIST OF SITES relevant to selection parameters

1	BD-01-I-01	DISTRICT CENTRE, LUTON	BEDFORDSHIRE
	WIGMORE LANE		
	WIGMORE		
	LUTON		
	Total Gross floor area:	4045 sqm	
	Survey date: SATURDAY	09/03/02	Survey Type: MANUAL
2	DL-01-I-01	LOCAL SHOPS, DUBLIN	DUBLIN
	CARDIFFSBRIDGE ROAD		
	FINGLAS		
	DUBLIN		
	Total Gross floor area:	2900 sqm	
	Survey date: SATURDAY	30/11/02	Survey Type: MANUAL
3	DL-01-I-02	SUPERSTORE/SHOPS, DUBLIN	DUBLIN
	MAIN STREET		
	BLANCHARDSTOWN		
	DUBLIN		
	Total Gross floor area:	4650 sqm	
	Survey date: SATURDAY	12/07/03	Survey Type: MANUAL
4	SW-01-I-01	SHOPPING CENTRE, SWANSEA	SWANSEA
	SAMLET ROAD		
	LLANSAMLET		
	SWANSEA		
	Total Gross floor area:	2500 sqm	
	Survey date: SATURDAY	21/09/02	Survey Type: MANUAL
5	WS-01-I-01	LOCAL SHOPS, CRAWLEY	WEST SUSSEX
	TILGATE PARADE		
	TILGATE		
	CRAWLEY		
	Total Gross floor area:	2461 sqm	
	Survey date: WEDNESDAY	17/10/01	Survey Type: MANUAL

TRIP RATE for Land Use 01 - RETAIL/I - SHOPPING CENTRE - LOCAL SHOPS
 VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	4	3514	1.373	4	3514	1.188	4	3514	2.561
08:00 - 09:00	5	3311	2.325	5	3311	1.516	5	3311	3.841
09:00 - 10:00	5	3311	4.228	5	3311	3.225	5	3311	7.453
10:00 - 11:00	5	3311	5.074	5	3311	4.228	5	3311	9.302
11:00 - 12:00	5	3311	5.400	5	3311	5.019	5	3311	10.419
12:00 - 13:00	5	3311	6.300	5	3311	6.052	5	3311	12.352
13:00 - 14:00	5	3311	6.113	5	3311	6.203	5	3311	12.316
14:00 - 15:00	5	3311	6.064	5	3311	6.094	5	3311	12.158
15:00 - 16:00	5	3311	5.780	5	3311	5.732	5	3311	11.512
16:00 - 17:00	5	3311	6.264	5	3311	6.638	5	3311	12.902
17:00 - 18:00	5	3311	4.699	5	3311	6.288	5	3311	10.987
18:00 - 19:00	5	3311	3.256	5	3311	4.095	5	3311	7.351
19:00 - 20:00	2	3775	0.728	2	3775	1.523	2	3775	2.251
20:00 - 21:00	1	2900	0.586	1	2900	0.483	1	2900	1.069
21:00 - 22:00	1	2900	0.483	1	2900	0.414	1	2900	0.897
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			58.673			58.698			117.371

Parameter summary

Trip rate parameter range selected: 2461 - 4650 (units: sqm)
 Survey date range: 01/01/00 - 12/07/03
 Number of weekdays (Monday-Friday): 2
 Number of Saturdays: 4
 Number of Sundays: 0
 Surveys manually removed from selection: 0

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 05 - HEALTH
Category : E - CLINICS
VEHICLES

Selected regions and areas:

03	SOUTH WEST	
	DC DORSET	1 days
05	EAST MIDLANDS	
	DS DERBYSHIRE	1 days

Main parameter selection:

Parameter: Gross floor area
Range: 1175 to 1790 (units: sqm)

Date Range: 01/01/00 to 12/06/08

Selected survey days:

Tuesday	1 days
Friday	1 days

Selected survey types:

Manual count	2 days
Directional ATC Count	0 days

Selected Locations:

Town Centre	1
Suburban Area (PPS6 Out of Centre)	1

Selected Location Sub Categories:

No Sub Category	2
-----------------	---

LIST OF SITES relevant to selection parameters

1	DC-05-E-01	MEDICAL CENTRE, SHAFTESBURY	DORSET
		SALISBURY ROAD	
		SHAFTESBURY	
		Total Gross floor area:	1790 sqm
		Survey date: TUESDAY	02/09/03
			Survey Type: MANUAL
2	DS-05-E-01	CHILDRENS CLINIC, NR CHESTFLD	DERBYSHIRE
		HIGH STREET	
		CLAY CROSS	
		NEAR CHESTERFIELD	
		Total Gross floor area:	1175 sqm
		Survey date: FRIDAY	23/06/06
			Survey Type: MANUAL

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
 VEHICLES
 Calculation factor: 100 sqm
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	2	1483	0.236	2	1483	0.135	2	1483	0.371
08:00 - 09:00	2	1483	1.990	2	1483	0.540	2	1483	2.530
09:00 - 10:00	2	1483	3.845	2	1483	2.563	2	1483	6.408
10:00 - 11:00	2	1483	3.069	2	1483	3.137	2	1483	6.206
11:00 - 12:00	2	1483	2.428	2	1483	2.901	2	1483	5.329
12:00 - 13:00	2	1483	1.788	2	1483	2.395	2	1483	4.183
13:00 - 14:00	2	1483	1.484	2	1483	1.450	2	1483	2.934
14:00 - 15:00	2	1483	2.024	2	1483	2.024	2	1483	4.048
15:00 - 16:00	2	1483	1.417	2	1483	1.855	2	1483	3.272
16:00 - 17:00	2	1483	2.125	2	1483	2.091	2	1483	4.216
17:00 - 18:00	2	1483	1.113	2	1483	1.855	2	1483	2.968
18:00 - 19:00	2	1483	0.877	2	1483	1.315	2	1483	2.192
19:00 - 20:00	1	1790	0.112	1	1790	0.279	1	1790	0.391
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			22.508			22.540			45.048

Parameter summary

Trip rate parameter range selected: 1175 - 1790 (units: sqm)
 Survey date range: 01/01/00 - 12/06/08
 Number of weekdays (Monday-Friday): 2
 Number of Saturdays: 0
 Number of Sundays: 0
 Optional parameters used in selection: NO
 Surveys manually removed from selection: 2

APPENDIX E – PICADY RESULTS

<h1>Junctions 9</h1>
<h2>PICADY 9 - Priority Intersection Module</h2>
Version: 9.5.0.6896 © Copyright TRL Limited, 2018
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Melitta Rd Junction.j9

Path: S:\Jobs\2016\16143 Magee Barracks, Mixed-use Development TES\16143-04 Report Revision\Reports\Working\PICADY

Report generation date: 13/06/2019 14:46:56

- »2019, AM
- »2019, PM
- »2037, AM
- »2037, PM

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
2019								
Stream B-AC	0.0	7.22	0.01	A	0.0	0.00	0.00	A
Stream C-AB	0.0	5.70	0.00	A	0.0	5.74	0.00	A
2037								
Stream B-AC	0.2	9.22	0.18	A	0.2	9.31	0.17	A
Stream C-AB	0.1	6.05	0.05	A	0.1	6.20	0.07	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	13/06/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ROADPLAN01\jbyrne
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	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				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)	Run automatically
D1	2019	AM	ONE HOUR	07:45	09:15	15	✓
D2	2019	PM	ONE HOUR	16:45	18:15	15	✓
D3	2037	AM	ONE HOUR	07:45	09:15	15	✓
D4	2037	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2019, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.09	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	8.00			230.0	✓	1.00

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	175	46

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	558	0.093	0.234	0.147	0.335
1	B-C	653	0.091	0.231	-	-
1	C-B	707	0.250	0.250	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

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)	Run automatically
D1	2019	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	255	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	252	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
	A	B	C	
From	A	0	1	254
	B	3	0	3
	C	251	1	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	0	0	7
	B	0	0	0
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.01	7.22	0.0	A	6	8
C-AB	0.00	5.70	0.0	A	0.92	1
C-A					230	345
A-B					0.92	1
A-C					233	350

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	5	1	536	0.008	4	0.0	0.0	6.775	A
C-AB	0.75	0.19	656	0.001	0.75	0.0	0.0	5.493	A
C-A	189	47			189				
A-B	0.75	0.19			0.75				
A-C	191	48			191				

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	5	1	523	0.010	5	0.0	0.0	6.956	A
C-AB	0.90	0.22	646	0.001	0.90	0.0	0.0	5.578	A
C-A	226	56			226				
A-B	0.90	0.22			0.90				
A-C	228	57			228				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	7	2	505	0.013	7	0.0	0.0	7.225	A
C-AB	1	0.28	633	0.002	1	0.0	0.0	5.700	A
C-A	276	69			276				
A-B	1	0.28			1				
A-C	280	70			280				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	7	2	505	0.013	7	0.0	0.0	7.225	A
C-AB	1	0.28	633	0.002	1	0.0	0.0	5.700	A
C-A	276	69			276				
A-B	1	0.28			1				
A-C	280	70			280				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	5	1	523	0.010	5	0.0	0.0	6.956	A
C-AB	0.90	0.22	646	0.001	0.90	0.0	0.0	5.581	A
C-A	226	56			226				
A-B	0.90	0.22			0.90				
A-C	228	57			228				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	5	1	536	0.008	5	0.0	0.0	6.778	A
C-AB	0.75	0.19	656	0.001	0.75	0.0	0.0	5.495	A
C-A	189	47			189				
A-B	0.75	0.19			0.75				
A-C	191	48			191				

2019, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.02	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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)	Run automatically
D2	2019	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	277	100.000
B		ONE HOUR	✓	3	100.000
C		ONE HOUR	✓	252	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	0	277
	B	2	0	1
	C	250	2	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.00	0.00	0.0	A	0	0
C-AB	0.00	5.74	0.0	A	2	3
C-A					229	344
A-B					0	0
A-C					254	381

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	0	0	534	0.000	0	0.0	0.0	0.000	A
C-AB	2	0.38	654	0.002	1	0.0	0.0	5.517	A
C-A	188	47			188				
A-B	0	0			0				
A-C	209	52			209				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	0	0	520	0.000	0	0.0	0.0	0.000	A
C-AB	2	0.45	644	0.003	2	0.0	0.0	5.608	A
C-A	225	56			225				
A-B	0	0			0				
A-C	249	62			249				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	0	0	502	0.000	0	0.0	0.0	0.000	A
C-AB	2	0.55	630	0.004	2	0.0	0.0	5.737	A
C-A	275	69			275				
A-B	0	0			0				
A-C	305	76			305				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	0	0	502	0.000	0	0.0	0.0	0.000	A
C-AB	2	0.55	630	0.004	2	0.0	0.0	5.737	A
C-A	275	69			275				
A-B	0	0			0				
A-C	305	76			305				

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	0	0	520	0.000	0	0.0	0.0	0.000	A
C-AB	2	0.45	644	0.003	2	0.0	0.0	5.608	A
C-A	225	56			225				
A-B	0	0			0				
A-C	249	62			249				

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	0	0	534	0.000	0	0.0	0.0	0.000	A
C-AB	2	0.38	654	0.002	2	0.0	0.0	5.520	A
C-A	188	47			188				
A-B	0	0			0				
A-C	209	52			209				

2037, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		1.11	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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)	Run automatically
D3	2037	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	336	100.000
B		ONE HOUR	✓	76	100.000
C		ONE HOUR	✓	332	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	26	310
	B	38	0	38
	C	306	26	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	7
	B	0	0	0
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.18	9.22	0.2	A	70	105
C-AB	0.05	6.05	0.1	A	24	36
C-A					280	421
A-B					24	36
A-C					284	427

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	57	14	515	0.111	57	0.0	0.1	7.841	A
C-AB	20	5	647	0.031	20	0.0	0.0	5.738	A
C-A	230	58			230				
A-B	20	5			20				
A-C	233	58			233				

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	68	17	498	0.137	68	0.1	0.2	8.368	A
C-AB	24	6	637	0.037	24	0.0	0.0	5.869	A
C-A	275	69			275				
A-B	23	6			23				
A-C	279	70			279				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	84	21	474	0.176	83	0.2	0.2	9.207	A
C-AB	29	7	624	0.047	29	0.0	0.1	6.048	A
C-A	336	84			336				
A-B	29	7			29				
A-C	341	85			341				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	84	21	474	0.176	84	0.2	0.2	9.216	A
C-AB	29	7	624	0.047	29	0.1	0.1	6.048	A
C-A	336	84			336				
A-B	29	7			29				
A-C	341	85			341				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	68	17	498	0.137	69	0.2	0.2	8.382	A
C-AB	24	6	637	0.037	24	0.1	0.0	5.873	A
C-A	275	69			275				
A-B	23	6			23				
A-C	279	70			279				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	57	14	515	0.111	57	0.2	0.1	7.862	A
C-AB	20	5	647	0.031	20	0.0	0.0	5.741	A
C-A	230	58			230				
A-B	20	5			20				
A-C	233	58			233				

2037 , PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		1.12	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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)	Run automatically
D4	2037	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	375	100.000
B		ONE HOUR	✓	70	100.000
C		ONE HOUR	✓	344	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	36	339
	B	36	0	34
	C	305	39	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.17	9.31	0.2	A	64	96
C-AB	0.07	6.20	0.1	A	37	55
C-A					279	418
A-B					33	50
A-C					311	467

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	53	13	508	0.104	52	0.0	0.1	7.891	A
C-AB	30	7	645	0.046	30	0.0	0.0	5.847	A
C-A	229	57			229				
A-B	27	7			27				
A-C	255	64			255				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	63	16	490	0.129	63	0.1	0.1	8.432	A
C-AB	36	9	636	0.057	36	0.0	0.1	5.998	A
C-A	273	68			273				
A-B	32	8			32				
A-C	305	76			305				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	77	19	464	0.166	77	0.1	0.2	9.297	A
C-AB	45	11	625	0.071	45	0.1	0.1	6.201	A
C-A	334	84			334				
A-B	40	10			40				
A-C	373	93			373				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	77	19	464	0.166	77	0.2	0.2	9.306	A
C-AB	45	11	625	0.071	45	0.1	0.1	6.204	A
C-A	334	84			334				
A-B	40	10			40				
A-C	373	93			373				

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	63	16	490	0.129	63	0.2	0.1	8.445	A
C-AB	36	9	636	0.056	36	0.1	0.1	6.002	A
C-A	273	68			273				
A-B	32	8			32				
A-C	305	76			305				

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	53	13	508	0.104	53	0.1	0.1	7.912	A
C-AB	30	7	645	0.046	30	0.1	0.0	5.852	A
C-A	229	57			229				
A-B	27	7			27				
A-C	255	64			255				

APPENDIX F – TRANSYT RESULTS

TRANSYT 15

Version: 15.5.2.7994
© Copyright TRL Limited, 2018

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Proposed Dev + Committed Dev Flows.t15

Path: S:\Jobs\2016\16143 Magee Barracks, Mixed-use Development TES\16143-04 Report Revision\Reports\Working\TRANSYT

Report generation date: 12/06/2019 16:57:51

-
- »A1 - (untitled) : D1 - 2022 am with dev* :
 - »A2 - (untitled) : D2 - 2027 am with dev* :
 - »A3 - (untitled) : D3 - 2037 am with dev* :
 - »A4 - (untitled) : D8 - 2037 am with all developments* :
 - »A5 - (untitled) : D4 - 2022 pm with dev* :
 - »A6 - (untitled) : D5 - 2027 pm with dev* :
 - »A7 - (untitled) : D6 - 2037 pm with dev* :
 - »A8 - (untitled) : D7 - 2037 pm with all developments* :

A1 - (untitled) D1 - 2022 am with dev*

Signal Timings

Network Default: 120s cycle time; 120 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A				5	16	
	B				5	16	
	C				5	5	16
	D	5	5	5			16
	E			5			16
	F	16	16	16	16	16	

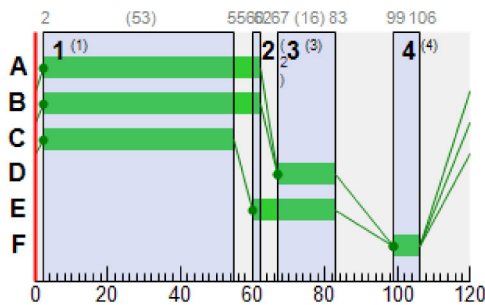
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A,B,C	2	55	53	1	7
	2	✓	2	A,B,E	60	62	2	1	1
	3	✓	3	D,E	67	83	16	1	7
	4	✓	4	F	99	106	7	1	7

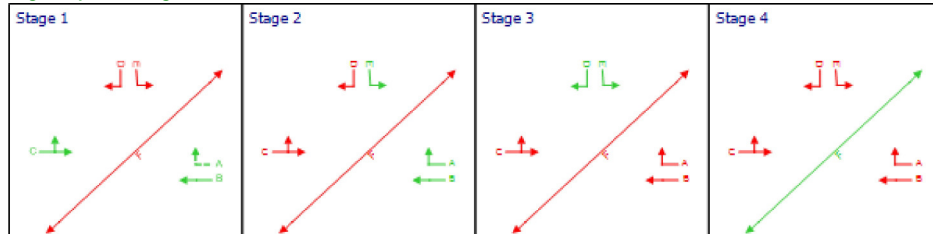
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	D	67	83	16
2	1		1	C	2	55	53
5	1		1	A	2	62	60
7	1		1	B	2	62	60
9	1		1	E	60	83	23

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	12/06/2019 16:52:54	12/06/2019 16:52:56	08:00	120	187.57	12.14	67.76	2/1	0	0	2/1	10/1	2/1	✓

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	68	0	3468	812	12.60	172.39	15.18	187.57

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	Proposed Access Flare 1		1	D	146	1787	16	0.00	58	56	58.14	54.54	90.30	4.22	100	100	0.00	33.06
2	1	R445 hospital Rd (west)		1	C	576	1889	53	0.00	68	33	42.52	30.52	80.66	15.74	100	100	0.00	75.16
3	1					222	Unrestricted	120	46.00	0	Unrestricted	39.85	0.00	0.00	0.00	100	100	0.00	0.00
4	1					585	Unrestricted	120	8.00	0	Unrestricted	43.95	0.00	0.00	0.00	100	100	0.00	0.00
5	1	R445 hospital St (east) Flair 1		1	A	89	595	60	0.00	29	206	25.15	20.35	42.10	1.52	100	100	0.00	7.61
6	1					541	Unrestricted	120	19.00	0	Unrestricted	41.57	0.00	0.00	0.00	100	100	0.00	0.00
7	1	hospital St (east) Flair 2		1	B	439	1915	60	0.00	45	100	22.63	17.83	41.12	6.02	100	100	0.00	33.14
8	1	hospital St (east)				528	1800	120	23.05	36	148	16.26	3.47	24.54	4.80	100	100	0.00	8.85
9	1	Proposed Access Flair 2		1	E	98	1730	23	4.00	28	218	44.08	40.48	78.66	2.50	100	100	0.00	16.61
10	1	Proposed Access				244	1800	120	94.33	63	42	19.65	11.17	77.74	7.93	100	100	0.00	13.13

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	635.01	33.31	19.07	12.14	172.39	15.18	0.00	187.57
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	635.01	33.31	19.07	12.14	172.39	15.18	0.00	187.57

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A2 - (untitled) D2 - 2027 am with dev*

Signal Timings

Network Default: 120s cycle time; 120 steps

Intergreen Matrix for Controller Stream 1

From	To					
	A	B	C	D	E	F
A				5	16	
B				5	16	
C				5	5	16
D	5	5	5			16
E			5			16
F	16	16	16	16	16	

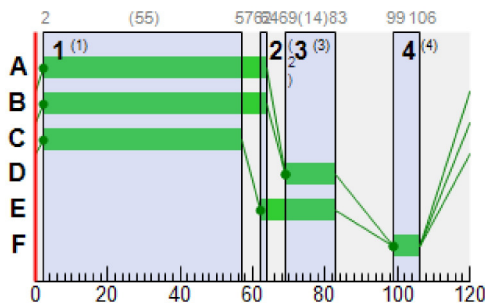
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A,B,C	2	57	55	1	7
	2	✓	2	A,B,E	62	64	2	1	1
	3	✓	3	D,E	69	83	14	1	7
	4	✓	4	F	99	106	7	1	7

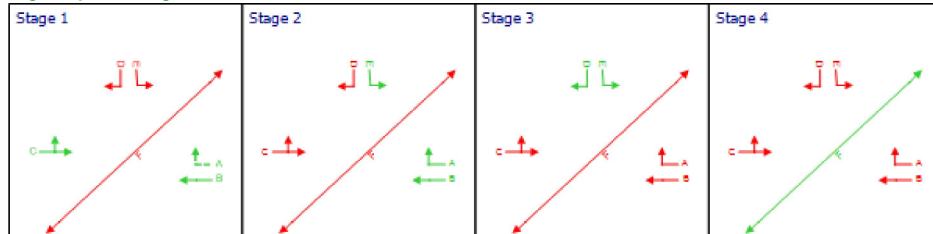
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	D	69	83	14
2	1		1	C	2	57	55
5	1		1	A	2	64	62
7	1		1	B	2	64	62
9	1		1	E	62	83	21

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
2	12/06/2019 16:52:56	12/06/2019 16:52:57	08:00	120	193.98	12.54	69.31	2/1	0	0	2/1	10/1	2/1	✓

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	69	0	3643	814	12.40	178.11	15.87	193.98

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	Proposed Access Flare 1		1	D	146	2055	14	0.00	57	58	58.97	55.37	91.25	4.26	100	100	0.00	33.56
2	1	R445 hospital Rd (west)		1	C	611	1889	55	0.00	69	30	41.79	29.79	80.58	16.73	100	100	0.00	77.97
3	1					222	Unrestricted	120	45.00	0	Unrestricted	39.85	0.00	0.00	0.00	100	100	0.00	0.00
4	1					620	Unrestricted	120	6.00	0	Unrestricted	43.95	0.00	0.00	0.00	100	100	0.00	0.00
5	1	R445 hospital St (east) Flair 1		1	A	89	608	62	0.00	28	223	22.96	18.16	38.72	1.51	100	100	0.00	6.81
6	1					576	Unrestricted	120	17.00	0	Unrestricted	41.57	0.00	0.00	0.00	100	100	0.00	0.00
7	1	hospital St (east) Flair 2		1	B	474	1915	62	0.00	47	91	21.42	16.62	38.24	6.04	100	100	0.00	33.34
8	1	hospital St (east)				563	1800	120	24.22	39	130	16.87	4.08	27.23	5.60	100	100	0.00	10.98
9	1	Proposed Access Flair 2		1	E	98	1915	21	3.00	28	222	45.39	41.79	79.39	2.54	100	100	0.00	17.13
10	1	Proposed Access				244	1800	120	95.13	65	38	20.71	12.22	79.17	8.06	100	100	0.00	14.18

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	668.59	34.83	19.20	12.54	178.11	15.87	0.00	193.98
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	668.59	34.83	19.20	12.54	178.11	15.87	0.00	193.98

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A3 - (untitled) D3 - 2037 am with dev*

Signal Timings

Network Default: 120s cycle time; 120 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A				5		16
	B				5		16
	C				5	5	16
	D	5	5	5			16
	E			5			16
	F	16	16	16	16	16	

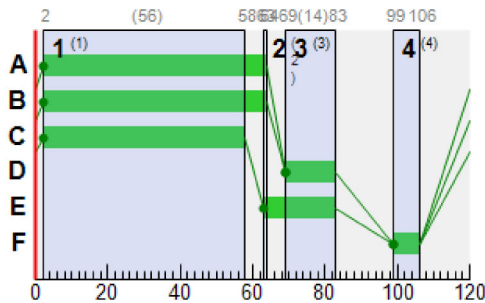
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A,B,C	2	58	56	1	7
	2	✓	2	A,B,E	63	64	1	1	1
	3	✓	3	D,E	69	83	14	1	7
	4	✓	4	F	99	106	7	1	7

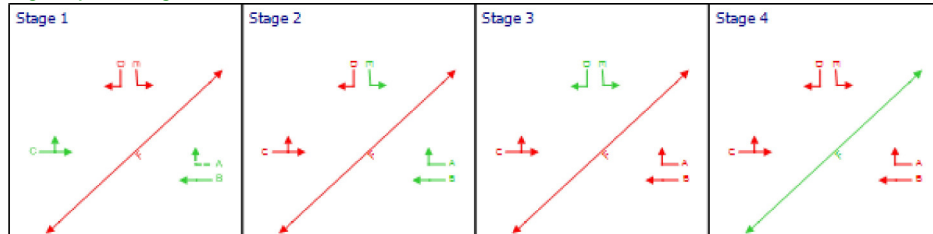
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	D	69	83	14
2	1		1	C	2	58	56
5	1		1	A	2	64	62
7	1		1	B	2	64	62
9	1		1	E	63	83	20

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
3	12/06/2019 16:52:57	12/06/2019 16:52:59	08:00	120	206.86	13.38	72.33	2/1	0	0	2/1	10/1	2/1	✓

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	72	0	3836	814	12.56	189.97	16.89	206.86

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	Proposed Access Flare 1		1	D	146	2055	14	0.00	57	58	58.98	55.38	91.22	4.26	100	100	0.00	33.56
2	1	R445 hospital Rd (west)		1	C	649 <	1889	56	0.00	72	24	42.37	30.37	82.03	18.06 +	100	100	0.00	84.42
3	1					222	Unrestricted	120	45.00	0	Unrestricted	39.85	0.00	0.00	0.00	100	100	0.00	0.00
4	1					659	Unrestricted	120	6.00	0	Unrestricted	43.95	0.00	0.00	0.00	100	100	0.00	0.00
5	1	R445 hospital St (east) Flair 1		1	A	89	571	62	0.00	30	203	22.15	17.35	36.21	1.52	100	100	0.00	6.49
6	1					614	Unrestricted	120	17.00	0	Unrestricted	41.57	0.00	0.00	0.00	100	100	0.00	0.00
7	1	hospital St (east) Flair 2		1	B	513	1915	62	0.00	51	76	21.12	16.32	35.66	6.10	100	100	0.00	35.31
8	1	hospital St (east)				602	1800	120	27.35	43	108	18.23	5.44	32.38	7.02	100	100	0.00	15.36
9	1	Proposed Access Flair 2		1	E	98	1915	20	3.00	29	208	46.42	42.82	80.20	2.57	100	100	0.00	17.54
10	1	Proposed Access				244	1800	120	95.14	65	38	20.71	12.23	79.19	8.06	100	100	0.00	14.19

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	705.55	36.90	19.12	13.38	189.97	16.89	0.00	206.86
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	705.55	36.90	19.12	13.38	189.97	16.89	0.00	206.86

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A4 - (untitled) D8 - 2037 am with all developments*

Signal Timings

Network Default: 120s cycle time; 120 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A				5	16	
	B				5	16	
	C				5	5	16
	D	5	5	5			16
	E			5			16
	F	16	16	16	16	16	

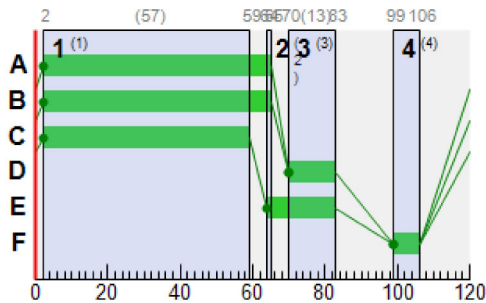
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A,B,C	2	59	57	1	7
	2	✓	2	A,B,E	64	65	1	1	1
	3	✓	3	D,E	70	83	13	1	7
	4	✓	4	F	99	106	7	1	7

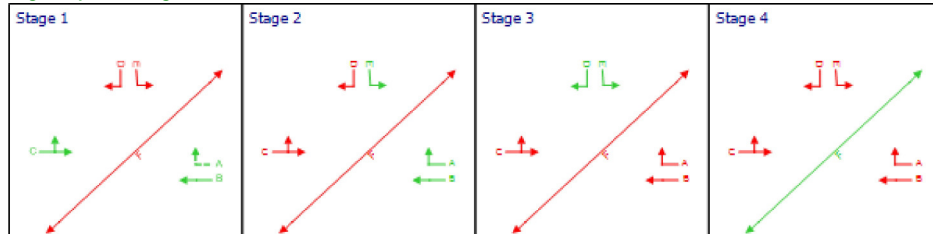
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	D	70	83	13
2	1		1	C	2	59	57
5	1		1	A	2	65	63
7	1		1	B	2	65	63
9	1		1	E	64	83	19

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
4	12/06/2019 16:52:59	12/06/2019 16:53:00	08:00	120	206.56	13.36	69.71	10/1	0	0	2/1	10/1	10/1	✓

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	70	0	3892	815	12.36	189.67	16.89	206.56

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	Proposed Access Flare 1		1	D	136	2055	13	0.00	57	59	59.89	56.29	89.74	3.93	100	100	0.00	31.72
2	1	R445 hospital Rd (west)		1	C	617	1889	57	0.00	68	33	39.86	27.86	77.94	16.47	100	100	0.00	73.83
3	1					202	Unrestricted	120	45.00	0	Unrestricted	39.85	0.00	0.00	0.00	100	100	0.00	0.00
4	1					649	Unrestricted	120	6.00	0	Unrestricted	43.95	0.00	0.00	0.00	100	100	0.00	0.00
5	1	R445 hospital St (east) Flair 1		1	A	101	586	63	0.00	32	179	23.11	18.31	36.38	1.54	100	100	0.00	7.76
6	1					652	Unrestricted	120	12.00	0	Unrestricted	41.57	0.00	0.00	0.00	100	100	0.00	0.00
7	1	hospital St (east) Flair 2		1	B	513	1915	63	0.00	50	79	20.69	15.89	35.59	6.09	100	100	0.00	34.44
8	1	hospital St (east)				614	1800	120	26.28	44	106	17.93	5.14	31.35	6.82	100	100	0.00	14.85
9	1	Proposed Access Flair 2		1	E	136	1915	19	2.00	43	111	49.73	46.13	81.79	3.62	100	100	0.00	26.14
10	1	Proposed Access				272	1800	120	93.99	70	29	22.51	14.02	81.28	9.09	100	100	0.00	17.82

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	709.79	37.02	19.17	13.36	189.67	16.89	0.00	206.56
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	709.79	37.02	19.17	13.36	189.67	16.89	0.00	206.56

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A5 - (untitled) D4 - 2022 pm with dev*

Signal Timings

Network Default: 120s cycle time; 120 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A				5	16	
	B				5	16	
	C				5	5	16
	D	5	5	5			16
	E			5			16
	F	16	16	16	16	16	

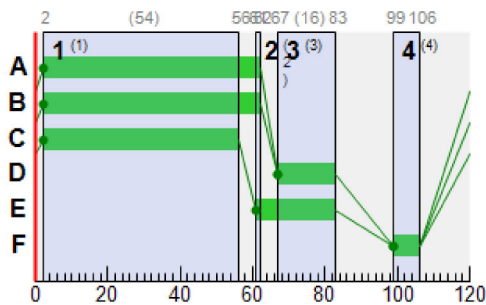
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A,B,C	2	56	54	1	7
	2	✓	2	A,B,E	61	62	1	1	1
	3	✓	3	D,E	67	83	16	1	7
	4	✓	4	F	99	106	7	1	7

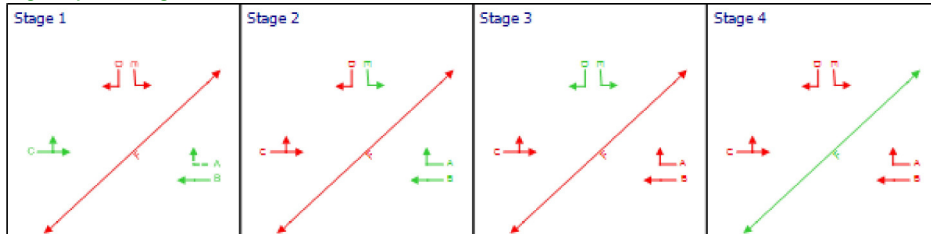
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	D	67	83	16
2	1		1	C	2	56	54
5	1		1	A	2	62	60
7	1		1	B	2	62	60
9	1		1	E	61	83	22

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
5	12/06/2019 16:53:00	12/06/2019 16:53:02	17:00	120	220.24	14.28	70.92	2/1	0	0	2/1	10/1	2/1	✓

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
17:00-18:00	71	0	3889	812	13.22	202.72	17.52	220.24

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	Proposed Access Flare 1		1	D	172	2055	16	0.00	59	52	56.61	53.01	84.95	4.75	100	100	0.00	37.80
2	1	R445 hospital Rd (west)		1	C	614	1889	54	0.00	71	27	43.09	31.09	82.33	17.23	100	100	0.00	81.64
3	1					303	Unrestricted	120	41.00	0	Unrestricted	39.85	0.00	0.00	0.00	100	100	0.00	0.00
4	1					650	Unrestricted	120	6.00	0	Unrestricted	43.95	0.00	0.00	0.00	100	100	0.00	0.00
5	1	R445 hospital St (east) Flair 1		1	A	122	581	60	0.00	41	118	29.16	24.36	44.89	1.63	100	100	0.00	12.41
6	1					548	Unrestricted	120	16.00	0	Unrestricted	41.57	0.00	0.00	0.00	100	100	0.00	0.00
7	1	hospital St (east) Flair 2		1	B	478	1915	60	0.00	49	83	22.28	17.48	38.09	6.07	100	100	0.00	35.23
8	1	hospital St (east)				600	1800	120	26.15	43	111	17.80	5.00	30.84	6.66	100	100	0.00	14.16
9	1	Proposed Access Flair 2		1	E	115	1915	22	4.00	31	187	44.61	41.01	76.45	2.86	100	100	0.00	19.71
10	1	Proposed Access				287	1800	120	92.79	70	28	22.92	14.43	82.13	9.58	100	100	0.00	19.29

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	706.83	37.84	18.68	14.28	202.72	17.52	0.00	220.24
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	706.83	37.84	18.68	14.28	202.72	17.52	0.00	220.24

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A6 - (untitled) D5 - 2027 pm with dev*

Signal Timings

Network Default: 120s cycle time; 120 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A				5		16
	B				5		16
	C				5	5	16
	D	5	5	5			16
	E			5			16
	F	16	16	16	16	16	

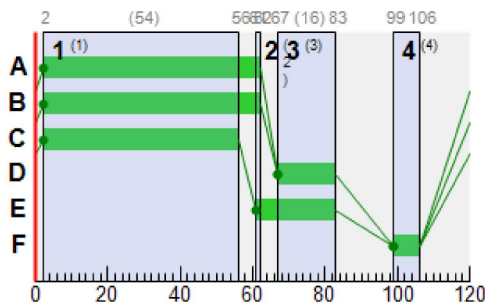
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A,B,C	2	56	54	1	7
	2	✓	2	A,B,E	61	62	1	1	1
	3	✓	3	D,E	67	83	16	1	7
	4	✓	4	F	99	106	7	1	7

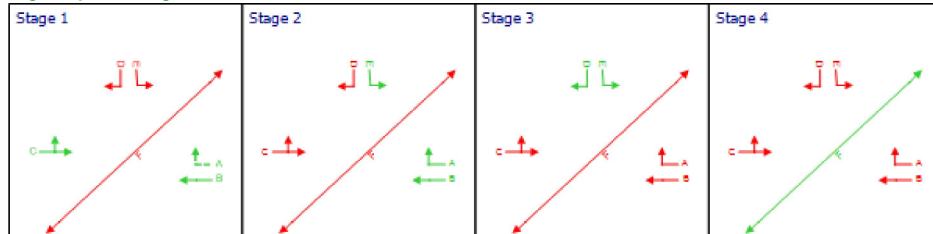
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	D	67	83	16
2	1		1	C	2	56	54
5	1		1	A	2	62	60
7	1		1	B	2	62	60
9	1		1	E	61	83	22

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
6	12/06/2019 16:53:02	12/06/2019 16:53:03	17:00	120	236.31	15.33	74.84	2/1	0	0	2/1	10/1	2/1	✓

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
17:00-18:00	75	0	4071	812	13.55	217.65	18.66	236.31

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	Proposed Access Flare 1		1	D	172	2055	16	0.00	59	52	56.61	53.01	84.95	4.75	100	100	0.00	37.80
2	1	R445 hospital Rd (west)		1	C	648 <	1889	54	0.00	75	20	44.88	32.88	85.25	18.73 +	100	100	0.00	90.97
3	1					303	Unrestricted	120	41.00	0	Unrestricted	39.85	0.00	0.00	0.00	100	100	0.00	0.00
4	1					688	Unrestricted	120	5.00	0	Unrestricted	43.95	0.00	0.00	0.00	100	100	0.00	0.00
5	1	R445 hospital St (east) Flair 1		1	A	122	566	60	0.00	42	112	28.35	23.55	41.71	1.61	100	100	0.00	11.97
6	1					582	Unrestricted	120	16.00	0	Unrestricted	41.57	0.00	0.00	0.00	100	100	0.00	0.00
7	1	hospital St (east) Flair 2		1	B	516	1915	60	0.00	53	70	21.97	17.17	35.64	6.13	100	100	0.00	37.25
8	1	hospital St (east)				638	1800	120	29.90	47	91	19.32	6.53	36.28	8.36	100	100	0.00	19.33
9	1	Proposed Access Flair 2		1	E	115	1915	22	4.00	31	187	44.61	41.01	76.45	2.86	100	100	0.00	19.71
10	1	Proposed Access				287	1800	120	92.79	70	28	22.92	14.43	82.13	9.58	100	100	0.00	19.29

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	741.50	40.04	18.52	15.33	217.65	18.66	0.00	236.31
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	741.50	40.04	18.52	15.33	217.65	18.66	0.00	236.31

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A7 - (untitled) D6 - 2037 pm with dev*

Signal Timings

Network Default: 120s cycle time; 120 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A				5		16
	B				5		16
	C				5	5	16
	D	5	5	5			16
	E			5			16
	F	16	16	16	16	16	

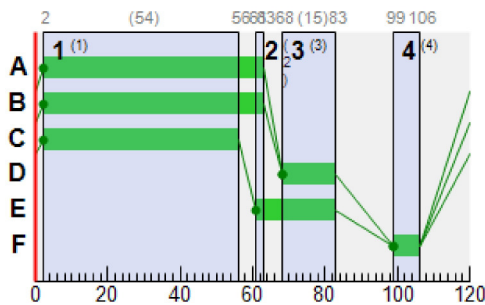
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A,B,C	2	56	54	1	7
	2	✓	2	A,B,E	61	63	2	1	1
	3	✓	3	D,E	68	83	15	1	7
	4	✓	4	F	99	106	7	1	7

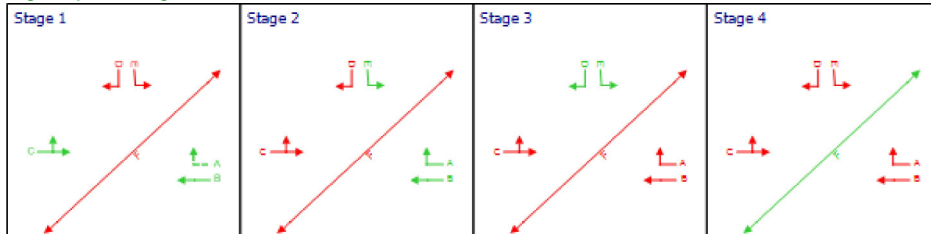
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	D	68	83	15
2	1		1	C	2	56	54
5	1		1	A	2	63	61
7	1		1	B	2	63	61
9	1		1	E	61	83	22

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
7	12/06/2019 16:53:03	12/06/2019 16:53:05	17:00	120	258.21	16.77	79.23	2/1	0	0	2/1	10/1	2/1	✓

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
17:00-18:00	79	0	4273	813	14.13	238.16	20.05	258.21

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	Proposed Access Flare 1		1	D	172	2055	15	0.00	63	43	59.53	55.93	87.47	4.88	100	100	0.00	39.83
2	1	R445 hospital Rd (west)		1	C	686 <	1889	54	0.00	79	14	47.38	35.38	89.14	20.91 +	100	100	0.00	103.40
3	1					303	Unrestricted	120	41.00	0	Unrestricted	39.85	0.00	0.00	0.00	100	100	0.00	0.00
4	1					730	Unrestricted	120	4.00	0	Unrestricted	43.95	0.00	0.00	0.00	100	100	0.00	0.00
5	1	R445 hospital St (east) Flair 1		1	A	122	574	61	0.00	41	119	26.26	21.46	37.41	1.60	100	100	0.00	10.90
6	1					620	Unrestricted	120	15.00	0	Unrestricted	41.57	0.00	0.00	0.00	100	100	0.00	0.00
7	1	hospital St (east) Flair 2		1	B	558	1915	61	0.00	56	60	21.26	16.46	33.30	6.20	100	100	0.00	38.57
8	1	hospital St (east)				680	1800	120	31.92	51	75	20.61	7.82	40.62	9.91	100	100	0.00	24.44
9	1	Proposed Access Flair 2		1	E	115	1915	22	4.00	31	187	44.66	41.06	76.50	2.87	100	100	0.00	19.73
10	1	Proposed Access				287	1800	120	93.69	73	24	24.66	16.17	84.27	9.79	100	100	0.00	21.34

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	780.00	42.77	18.24	16.77	238.16	20.05	0.00	258.21
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	780.00	42.77	18.24	16.77	238.16	20.05	0.00	258.21

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

A8 - (untitled) D7 - 2037 pm with all developments*

Signal Timings

Network Default: 120s cycle time; 120 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A				5	16	
	B				5	16	
	C				5	5	16
	D	5	5	5			16
	E			5			16
	F	16	16	16	16	16	

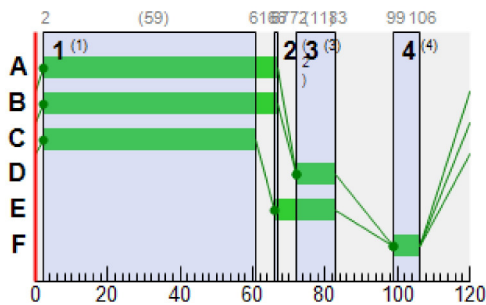
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A,B,C	2	61	59	1	7
	2	✓	2	A,B,E	66	67	1	1	1
	3	✓	3	D,E	72	83	11	1	7
	4	✓	4	F	99	106	7	1	7

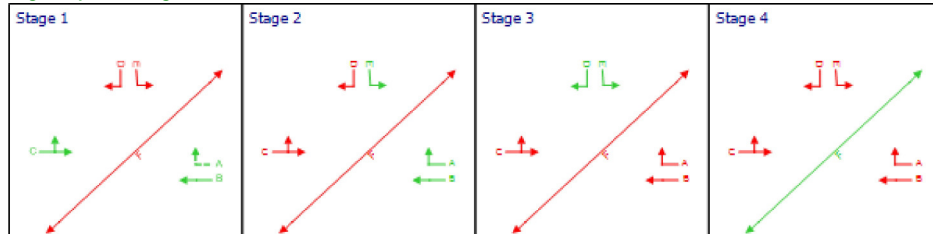
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	D	72	83	11
2	1		1	C	2	61	59
5	1		1	A	2	67	65
7	1		1	B	2	67	65
9	1		1	E	66	83	17

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
8	12/06/2019 16:53:05	12/06/2019 16:53:06	17:00	120	233.04	15.09	73.41	10/1	0	0	2/1	10/1	10/1	✓

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
17:00-18:00	73	0	4264	817	12.74	214.28	18.76	233.04

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	Proposed Access Flare 1		1	D	133	2055	11	0.00	65	39	67.72	64.12	96.87	4.15	100	100	0.00	35.26
2	1	R445 hospital Rd (west)		1	C	662 <	1889	59	0.00	70	28	39.51	27.51	78.50	17.73 +	100	100	0.00	78.36
3	1					314	Unrestricted	120	36.00	0	Unrestricted	39.85	0.00	0.00	0.00	100	100	0.00	0.00
4	1					691	Unrestricted	120	5.00	0	Unrestricted	43.95	0.00	0.00	0.00	100	100	0.00	0.00
5	1	R445 hospital St (east) Flair 1		1	A	157	572	65	0.00	50	80	29.22	24.42	43.99	1.89	100	100	0.00	15.99
6	1					637	Unrestricted	120	11.00	0	Unrestricted	41.57	0.00	0.00	0.00	100	100	0.00	0.00
7	1	hospital St (east) Flair 2		1	B	558	1915	65	0.00	53	70	19.58	14.78	32.95	6.13	100	100	0.00	34.84
8	1	hospital St (east)				715	1800	120	27.76	52	74	19.12	6.33	36.07	9.41	100	100	0.00	21.09
9	1	Proposed Access Flair 2		1	E	132	1915	17	2.00	46	96	52.65	49.05	84.68	3.63	100	100	0.00	26.94
10	1	Proposed Access				265	1800	120	95.94	73	23	25.45	16.97	84.96	9.22	100	100	0.00	20.56

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	775.77	40.95	18.94	15.09	214.28	18.76	0.00	233.04
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	775.77	40.95	18.94	15.09	214.28	18.76	0.00	233.04

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX