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APPENDIX C

TRICS Traffic Generation Output
Residential Apartments

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED

TOTAL 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									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	46	65	0.040	46	65	0.146	46	65	0.186
08:00 - 09:00	46	65	0.062	**46**	**65**	**0.184**	46	65	0.246
09:00 - 10:00	46	65	0.078	46	65	0.083	46	65	0.161
10:00 - 11:00	46	65	0.066	46	65	0.083	46	65	0.149
11:00 - 12:00	46	65	0.067	46	65	0.082	46	65	0.149
12:00 - 13:00	46	65	0.088	46	65	0.084	46	65	0.172
13:00 - 14:00	46	65	0.074	46	65	0.087	46	65	0.161
14:00 - 15:00	46	65	0.081	46	65	0.085	46	65	0.166
15:00 - 16:00	46	65	0.103	46	65	0.070	46	65	0.173
16:00 - 17:00	46	65	0.127	46	65	0.080	46	65	0.207
17:00 - 18:00	**46**	**65**	**0.169**	46	65	0.089	**46**	**65**	**0.258**
18:00 - 19:00	46	65	0.147	46	65	0.100	46	65	0.247
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.102			1.173			2.275

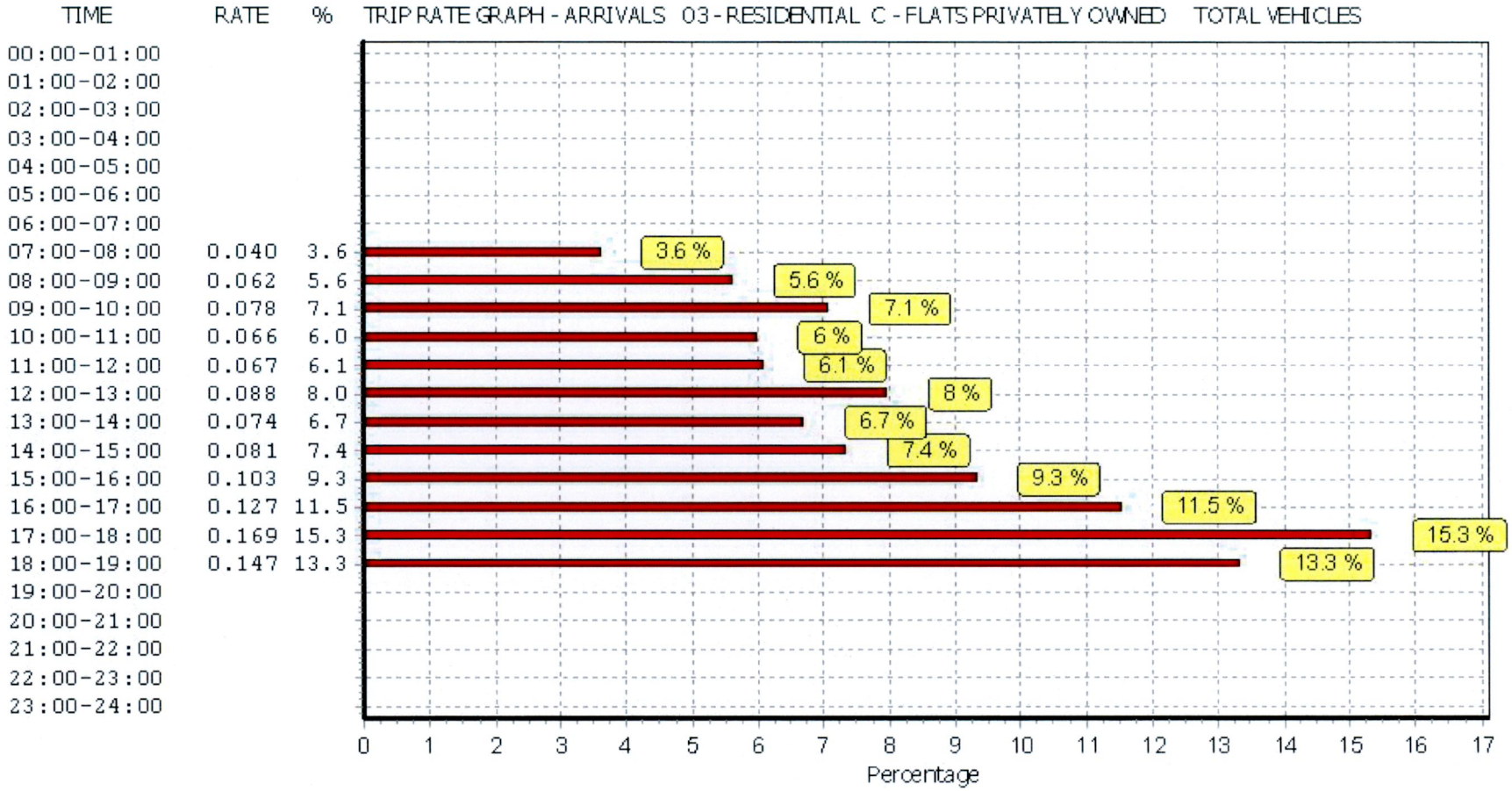
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are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

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

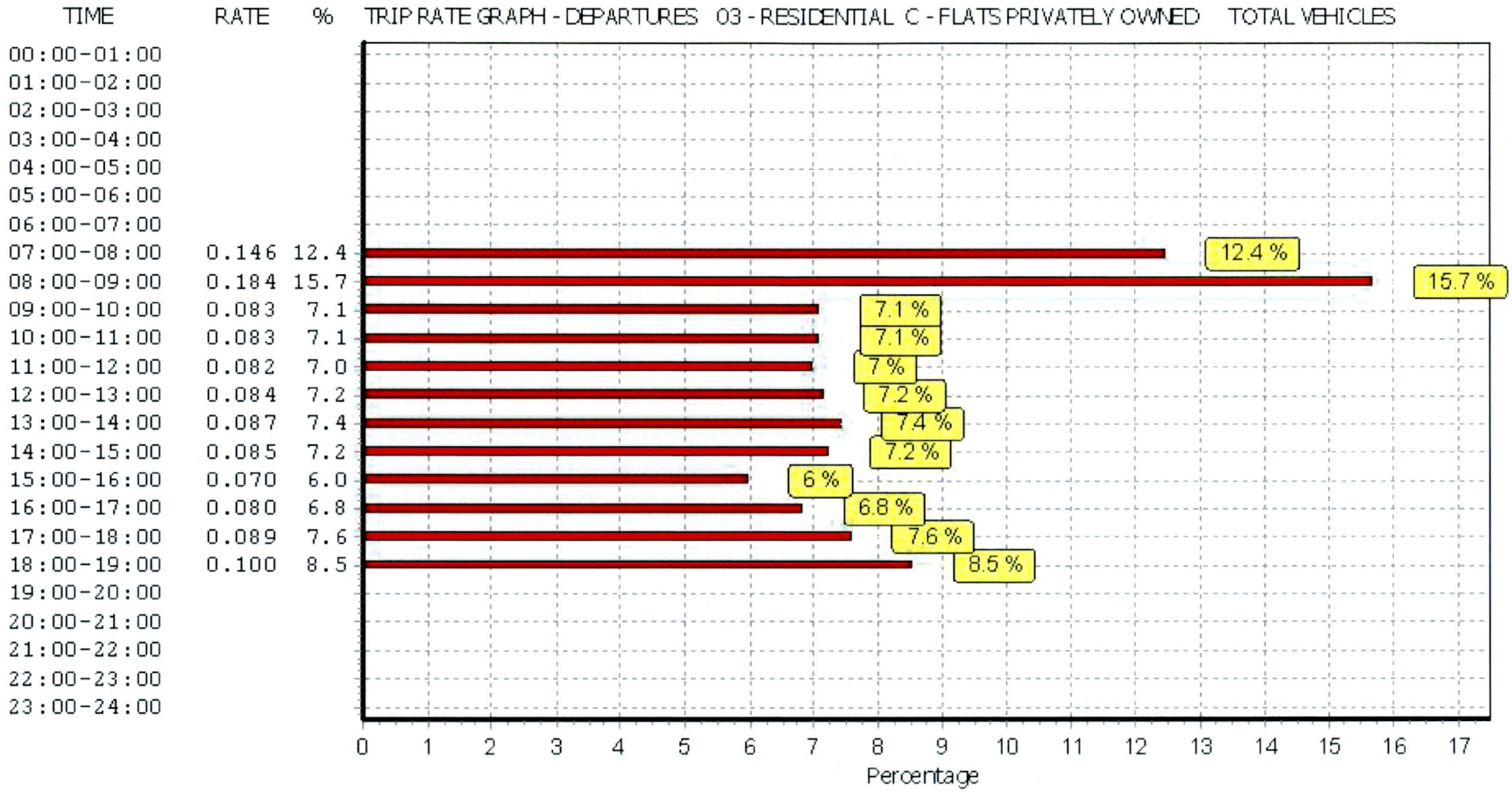
Parameter summary

Trip rate parameter range selected:	9 - 332 (units:)
Survey date date range:	01/01/14 - 15/10/21
Number of weekdays (Monday-Friday):	46
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

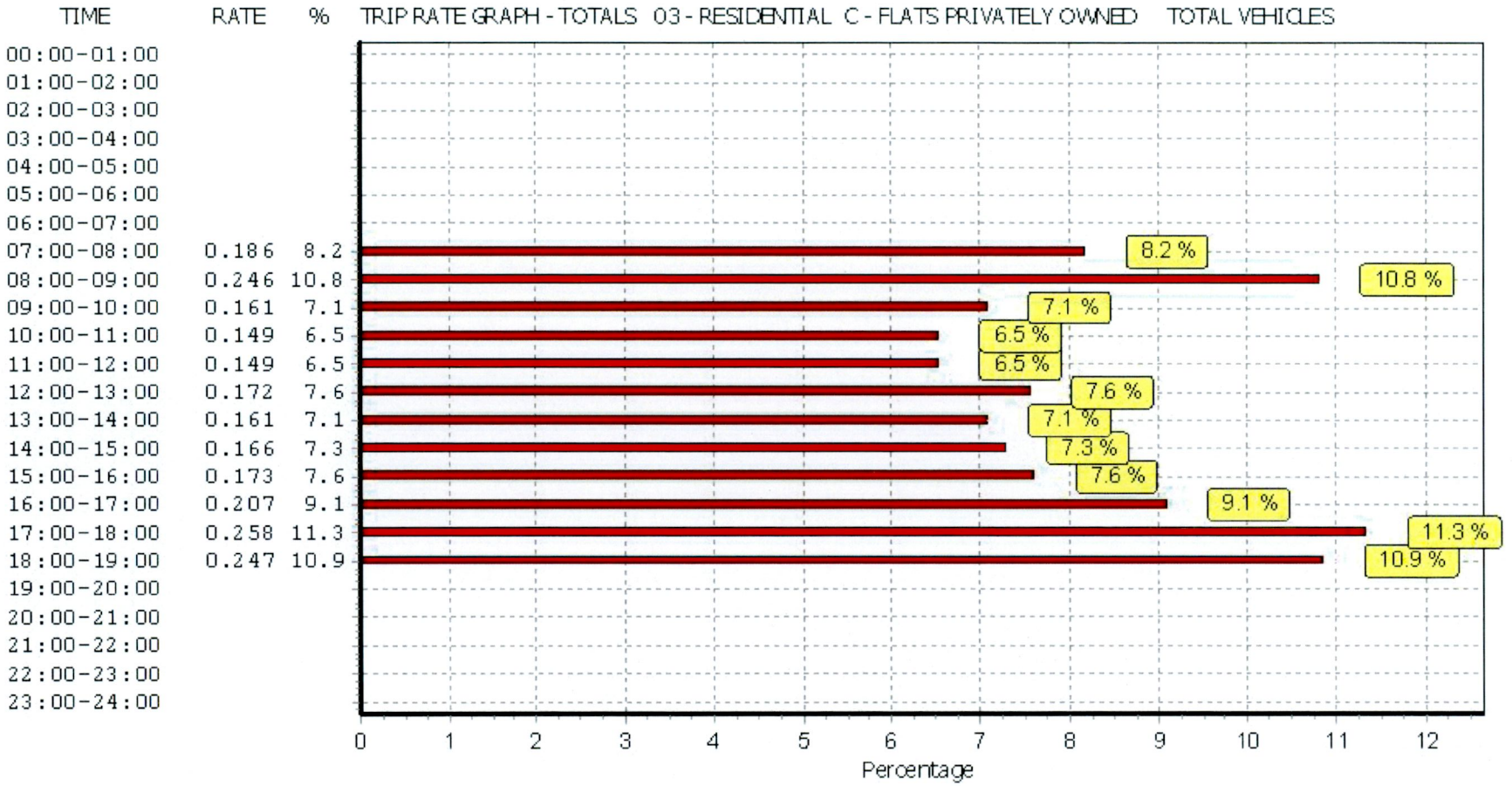
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected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



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



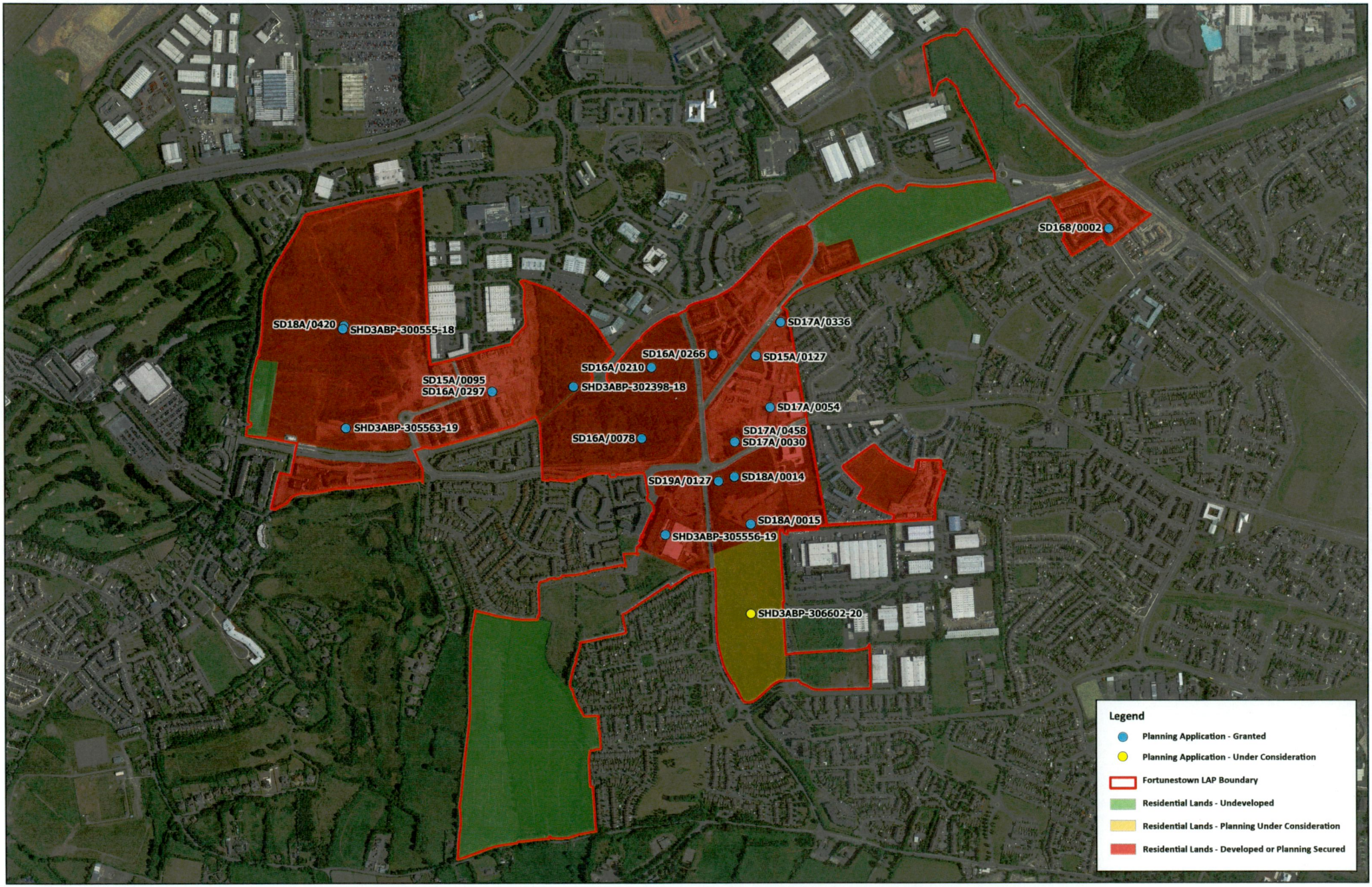
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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



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

Fortunestown LAP - Current Development Status of Residentially Zoned Lands within LAP Area - March 2020

Fortunestown LAP - Current Development Status of Residentially Zoned Lands within LAP Area - March 2020



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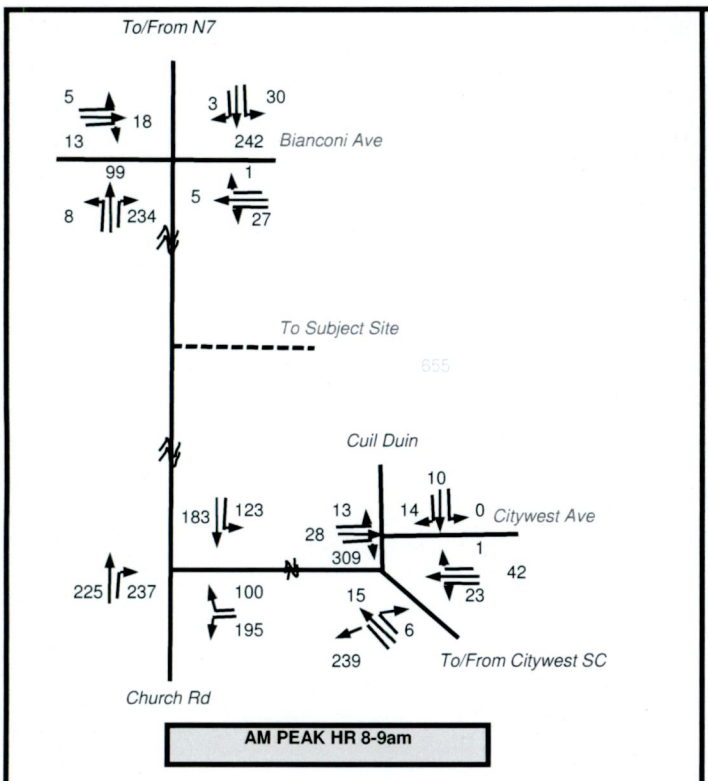
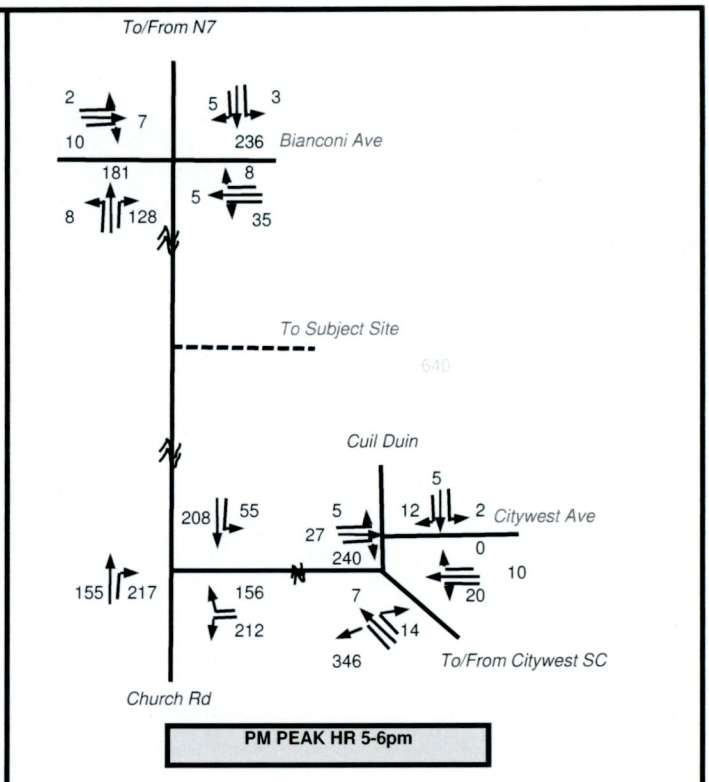
APPENDIX D

Traffic Surveys, Trip Distribution & Network Traffic Flow Projections & Diagrams



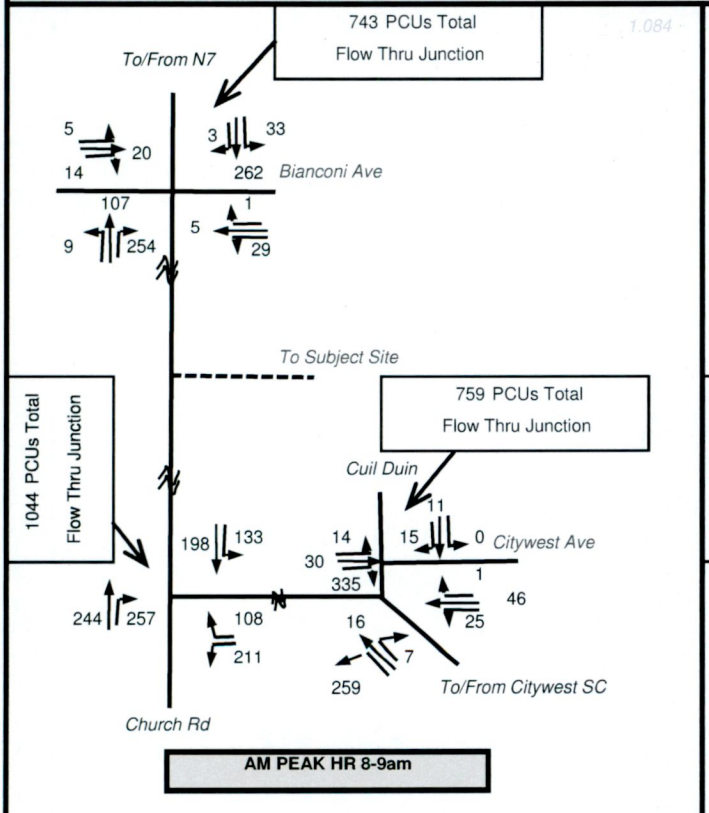


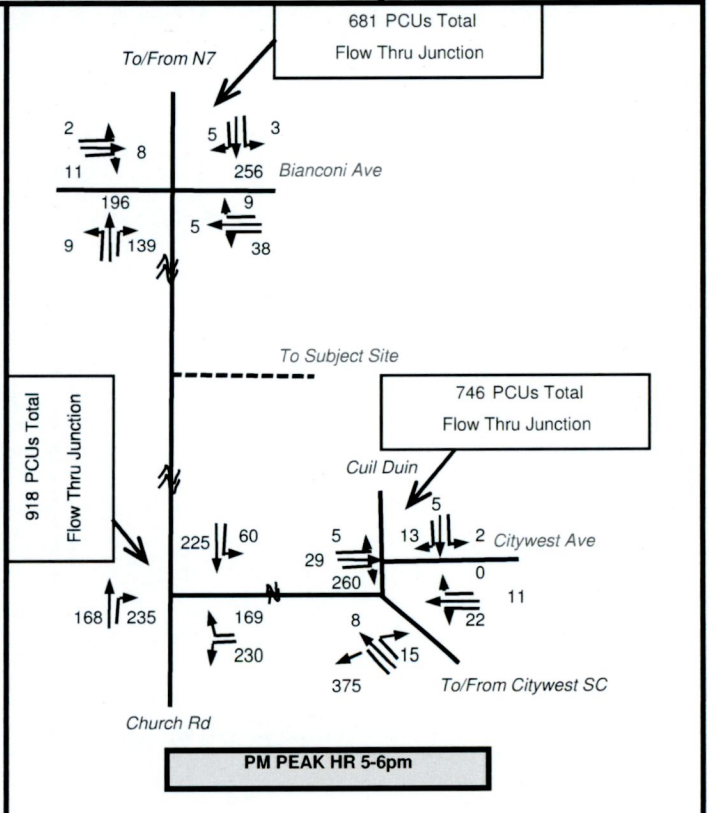
Existing 2022 Weekday Peak Hour Traffic Volumes
As Surveyed (PCUs) - WITHOUT FURTHER DEVELOPMENT.

TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 (Travel Demand Projections October 2021, Table 5.3.2: Link-Based Growth Rates: Annual Growth Factors) SDCC

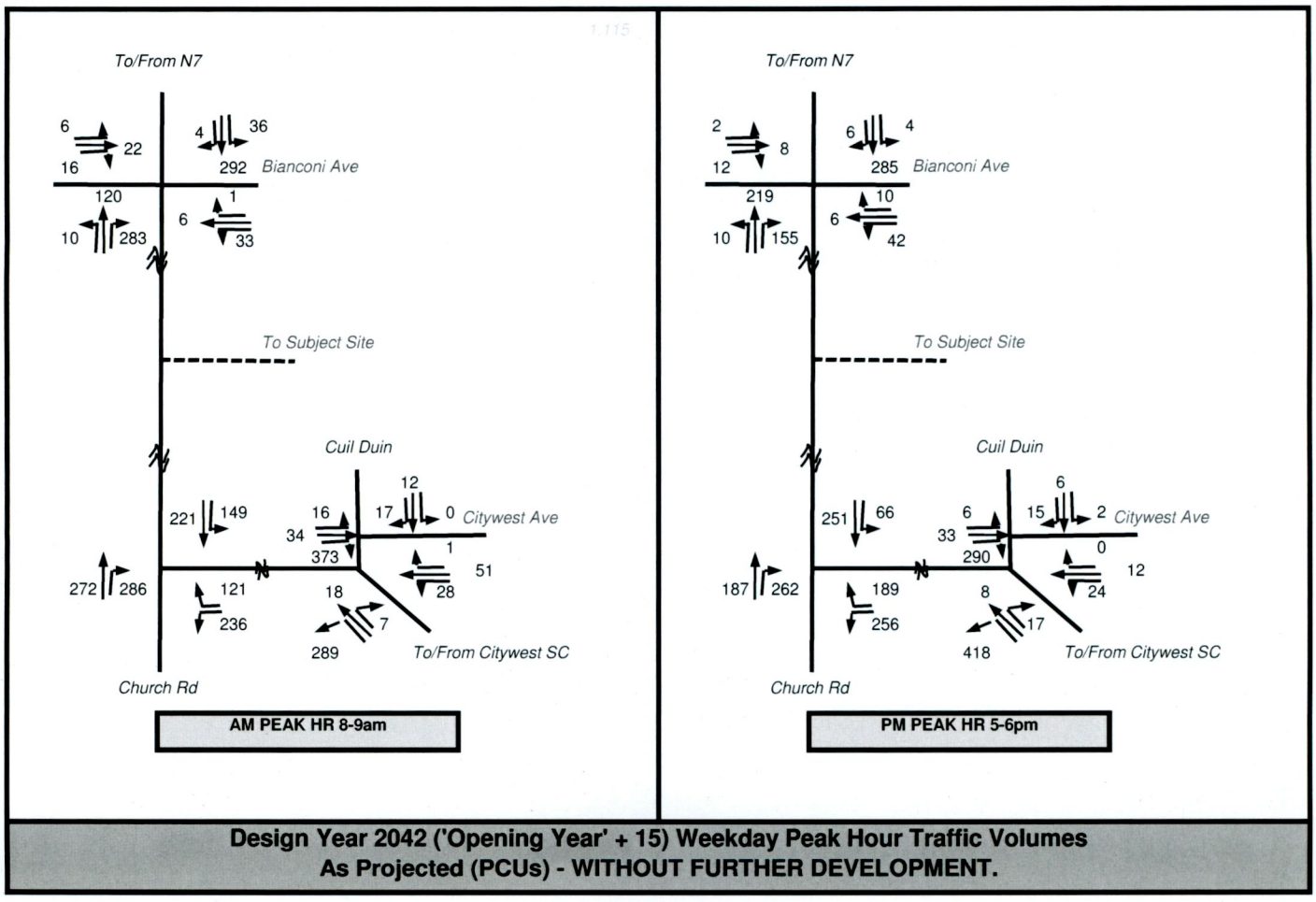
2022 to 2027 = 1.084

2027 to 2042 = 1.115

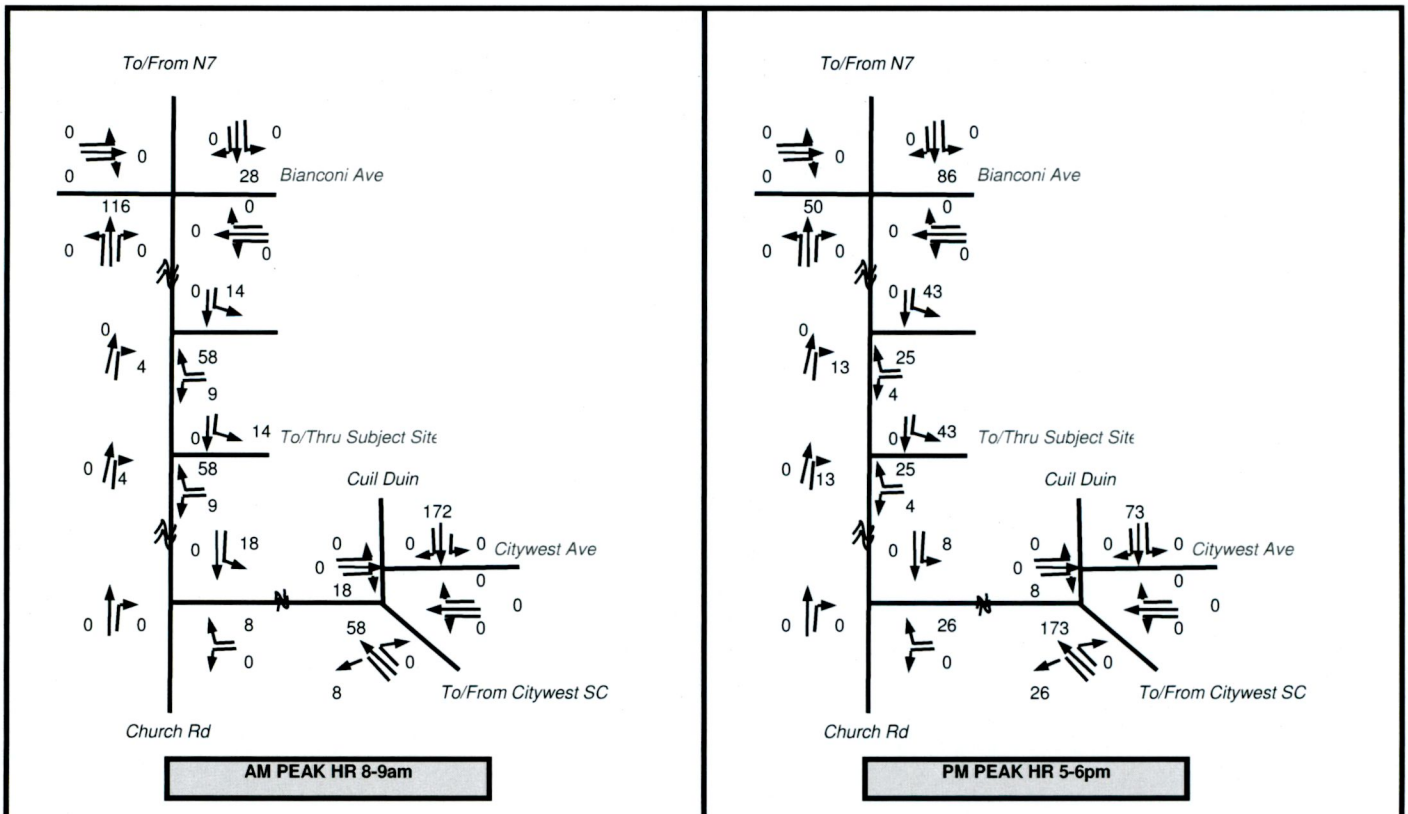




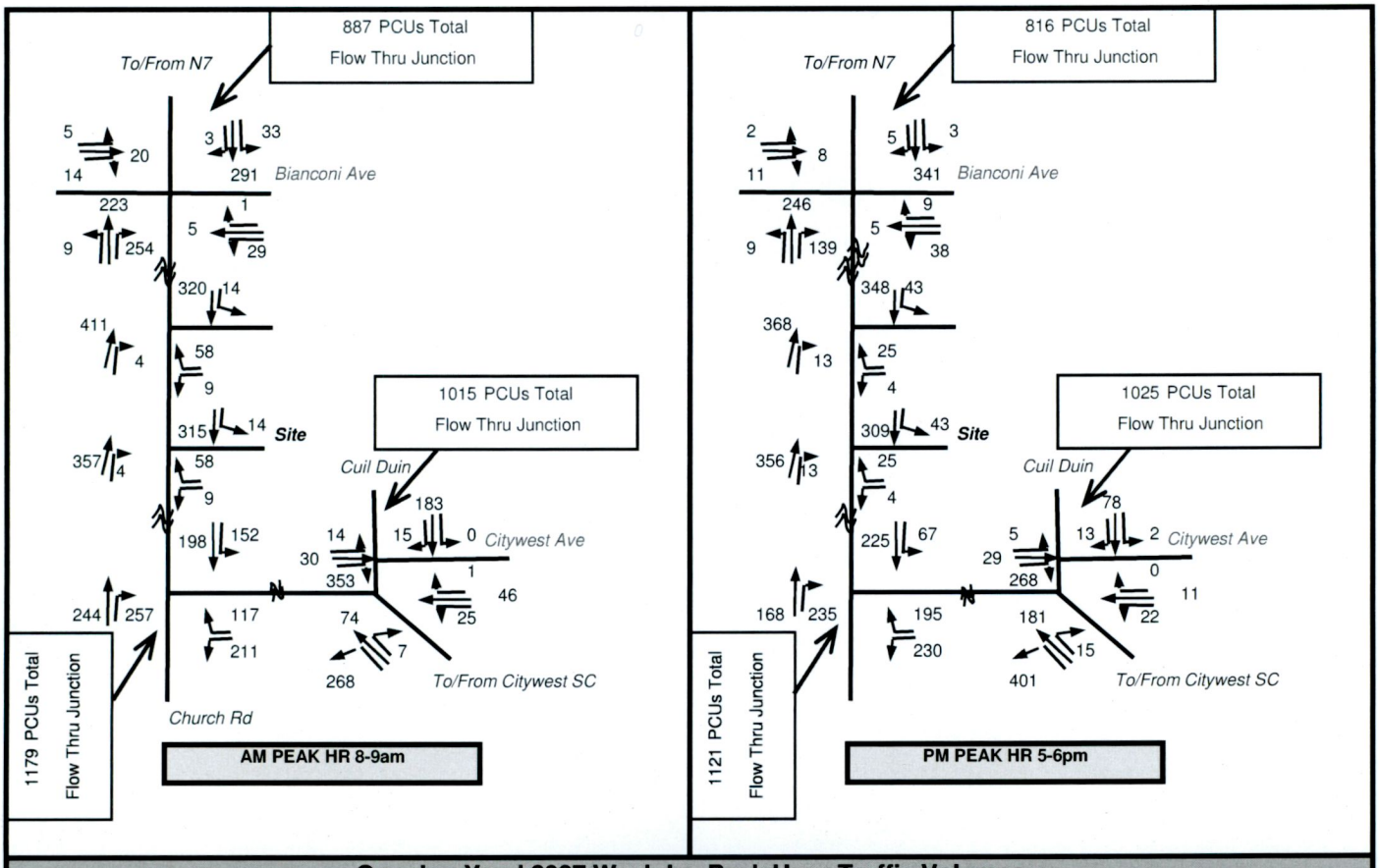
Opening Year' 2027 Weekday Peak Hour Traffic Volumes (As Per Permitted SHD Studies)
As Projected (PCUs) - WITHOUT FURTHER DEVELOPMENT.



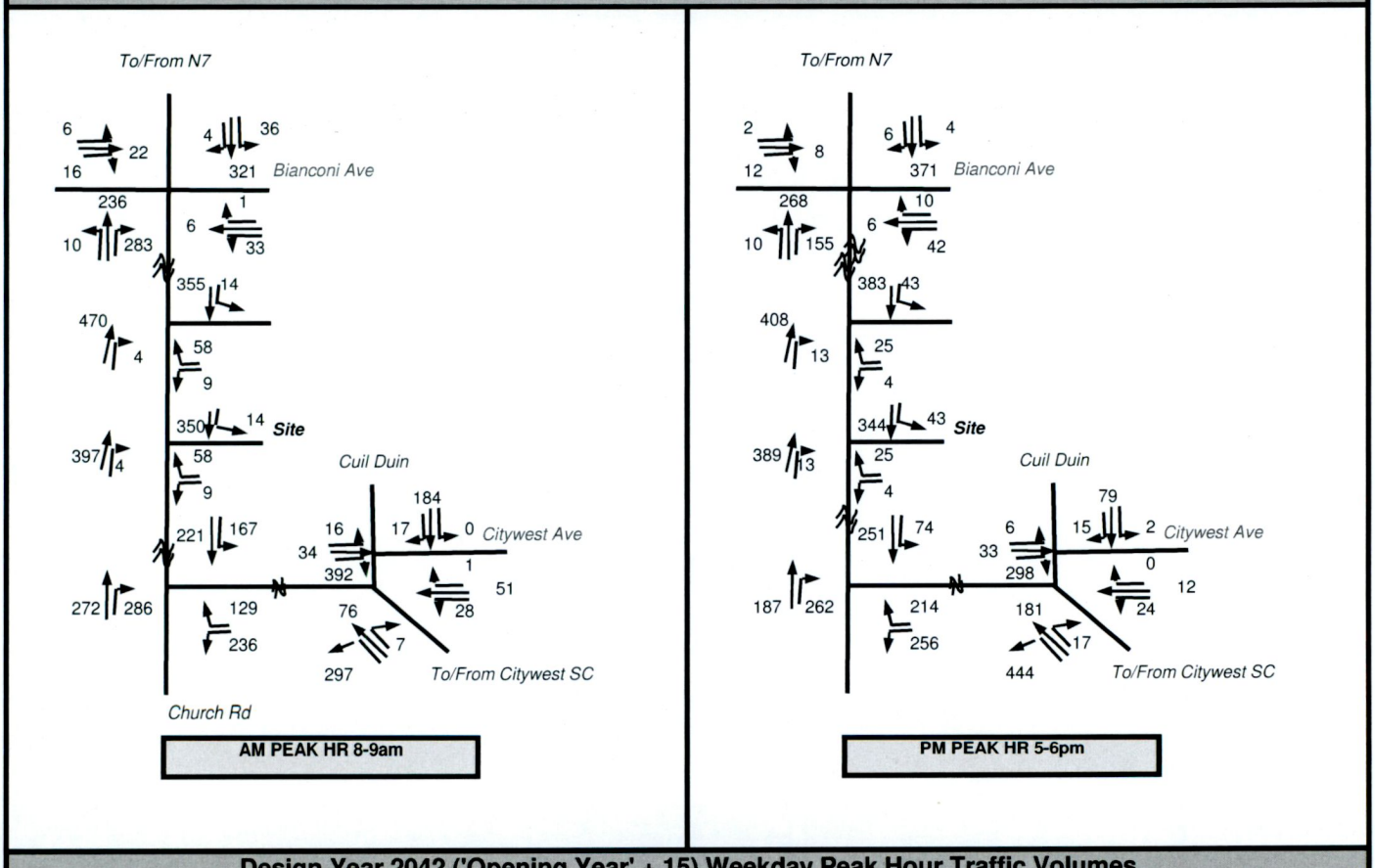
Design Year 2042 ('Opening Year' + 15) Weekday Peak Hour Traffic Volumes As Projected (PCUs) - WITHOUT FURTHER DEVELOPMENT.



Assignment of COMMITTED Development Traffic in Network Area of Influence
(As Extracted from DBFL TA Report Figure 23, 24 and 25)



Opening Year' 2027 Weekday Peak Hour Traffic Volumes
As Projected (PCUs) - WITH ALL COMMITTED DEV - BUT WITHOUT SUBJECT DEVELOPMENT.

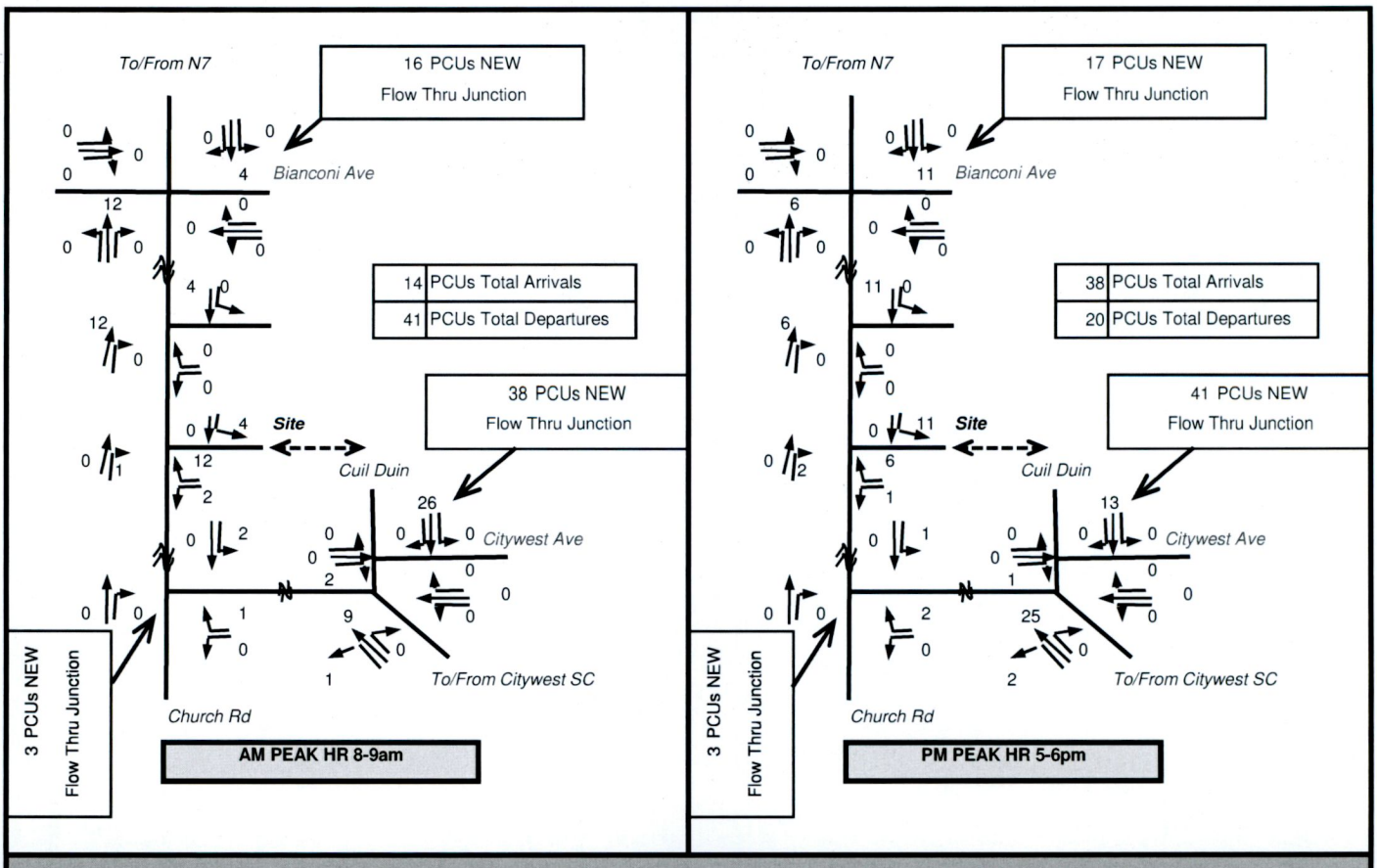


Design Year 2042 ('Opening Year' + 15) Weekday Peak Hour Traffic Volumes
As Projected (PCUs) - WITH ALL COMMITTED DEV - BUT WITHOUT SUBJECT DEVELOPMENT.

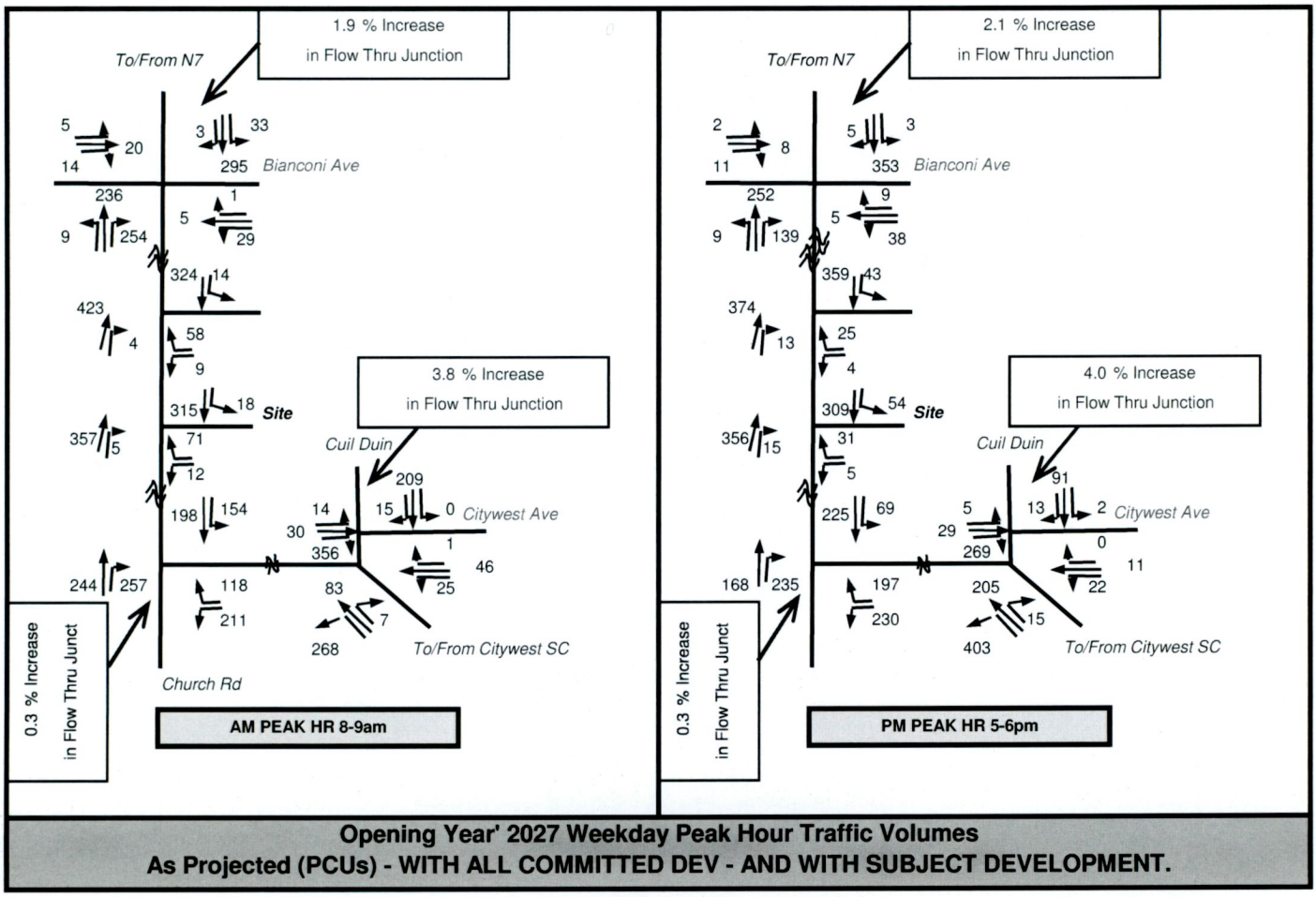
TRICS ASSESSMENT OF WORST-CASE TRAFFIC GENERATED BY DEVELOPMENT

223 Aparts	Car Arrivals		Car Departures		Total 2-Way Traffic
Network Period	Per Unit	Total	Per Unit	Total	
AM Peak Hr 8-9am	0.062	14	0.184	41	55
PM Peak Hr 5-6pm	0.169	38	0.089	20	58

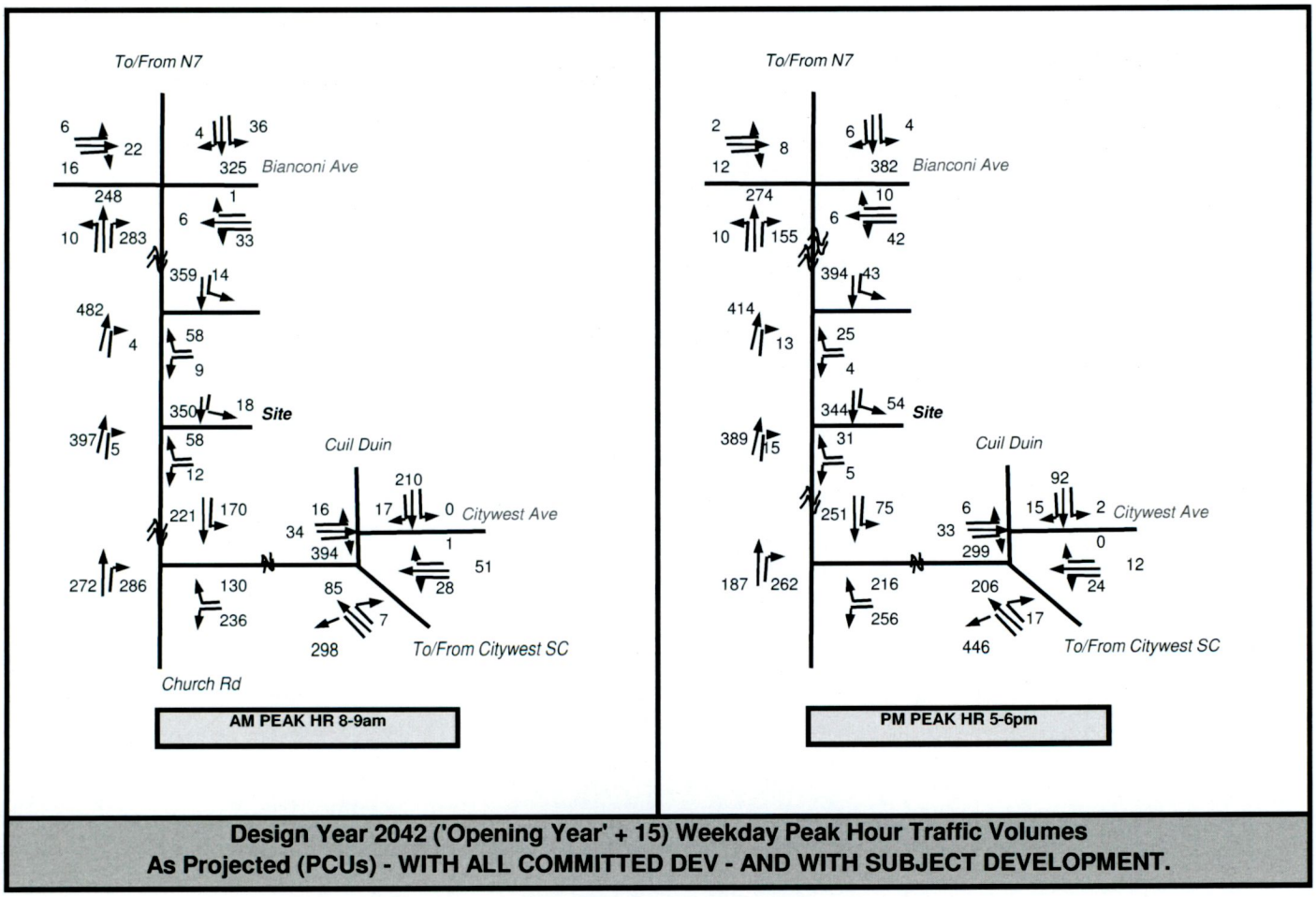
Apartment Trip Rates as Extracted from TRICS Output Data in Seperate Dedicated Appendix C



Assignment of SUBJECT Development Traffic to Road Network Area of Influence
(Based on Trip Assignment Proportions as Applied in the DBFL Studies for Permitted SHD Applications Nearby)



Opening Year' 2027 Weekday Peak Hour Traffic Volumes
As Projected (PCUs) - WITH ALL COMMITTED DEV - AND WITH SUBJECT DEVELOPMENT.



Design Year 2042 ('Opening Year' + 15) Weekday Peak Hour Traffic Volumes
As Projected (PCUs) - WITH ALL COMMITTED DEV - AND WITH SUBJECT DEVELOPMENT.

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APPENDIX E

PiCADY Junction Simulation Model Output - Southern NEW Access

Proposed New Vehicular Access to Garter Lane
Summary PICADY Results in Order as included herein
(Robust & Worst Case)

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2027 Opening Year AM Peak	<1	0.22
2027 Opening Year PM Peak	<1	0.10
2042 Design Year AM Peak	<1	0.29
2042 Design Year PM Peak	<1	0.1

All Results Above are well below the recommended RFC of 0.85 (85% Capacity) and therefore no problems whatsoever are anticipated at the Proposed Junction in terms of Capacity or excessive vehicle Queues - AND This Clearly and Unequivically Demonstrates that No Dedicated Right Turn Lane is Necessary

NB *Any Small Changes to Selected Opening Year 2027 or Design Year 2042 will have no significant implications in terms of the conclusions of the Study.*

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Southern T Junc 2027 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2019\19-115 Garters Lane Trch\Calculations\Picadys
Report generation date: 06/12/2022 12:47:20

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2027							
Stream B-AC	0.3	10.95	0.22	B	0.1	9.64	0.10	A
Stream C-AB	0.0	6.74	0.01	A	0.0	6.88	0.03	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	19/03/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2027	AM	ONE HOUR	07:45	09:15	15
D2	2027	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2027, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Garter Lane S Access junc	T-Junction	Two-way	1.21	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Garter N		Major
B	Southern New Site Access		Minor
C	Garter S		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	7.00			90.0	✓	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	90	90

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	552	0.096	0.243	0.153	0.347
1	B-C	681	0.100	0.252	-	-
1	C-B	626	0.232	0.232	-	-

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)
D1	2027	AM	ONE HOUR	07:45	09:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	333	100.000
B		✓	83	100.000
C		✓	362	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	18	315
	B	71	0	12
	C	357	5	0

Vehicle Mix

HV %s

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

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.22	10.95	0.3	B
C-AB	0.01	6.74	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	62	469	0.133	62	0.2	8.912	A
C-AB	4	570	0.007	4	0.0	6.423	A
C-A	269			269			
A-B	14			14			
A-C	237			237			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	75	450	0.166	74	0.2	9.676	A
C-AB	5	559	0.008	5	0.0	6.552	A
C-A	321			321			
A-B	16			16			
A-C	283			283			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	91	423	0.216	91	0.3	10.935	B
C-AB	6	545	0.010	6	0.0	6.737	A
C-A	393			393			
A-B	20			20			
A-C	347			347			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	91	423	0.216	91	0.3	10.954	B
C-AB	6	545	0.010	6	0.0	6.737	A
C-A	393			393			
A-B	20			20			
A-C	347			347			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	75	450	0.166	75	0.2	9.702	A
C-AB	5	559	0.008	5	0.0	6.553	A
C-A	321			321			
A-B	16			16			
A-C	283			283			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	62	469	0.133	63	0.2	8.948	A
C-AB	4	570	0.007	4	0.0	6.423	A
C-A	269			269			
A-B	14			14			
A-C	237			237			

2027, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Garter Lane S Access junc	T-Junction	Two-way	0.59	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)
D2	2027	PM	ONE HOUR	16:45	18:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	363	100.000
B		✓	36	100.000
C		✓	371	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	54	309
	B	31	0	5
	C	356	15	0

Vehicle Mix

HV %s

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

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.10	9.64	0.1	A
C-AB	0.03	6.88	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	27	465	0.058	27	0.1	8.301	A
C-AB	11	568	0.020	11	0.0	6.529	A
C-A	268			268			
A-B	41			41			
A-C	233			233			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	32	445	0.073	32	0.1	8.818	A
C-AB	14	558	0.025	14	0.0	6.673	A
C-A	320			320			
A-B	49			49			
A-C	278			278			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	40	417	0.095	40	0.1	9.637	A
C-AB	17	546	0.031	17	0.0	6.873	A
C-A	392			392			
A-B	59			59			
A-C	340			340			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	40	417	0.095	40	0.1	9.641	A
C-AB	17	546	0.031	17	0.0	6.876	A
C-A	392			392			
A-B	59			59			
A-C	340			340			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	32	445	0.073	32	0.1	8.826	A
C-AB	14	559	0.025	14	0.0	6.674	A
C-A	320			320			
A-B	49			49			
A-C	278			278			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	27	465	0.058	27	0.1	8.312	A
C-AB	11	568	0.020	11	0.0	6.532	A
C-A	268			268			
A-B	41			41			
A-C	233			233			

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.0.1.4646 []

Filename: Southern T Junc 2042 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2019\19-115 Garters Lane Trch\Calculations\Picadys
Report generation date: 06/12/2022 12:49:50

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2042							
Stream B-AC	0.2	10.88	0.19	B	0.1	10.03	0.10	B
Stream C-AB	0.0	6.84	0.01	A	0.0	6.97	0.03	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	19/03/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2042	AM	ONE HOUR	07:45	09:15	15
D2	2042	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2042, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Garter Lane S Access junc	T-Junction	Two-way	0.95	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Garter N		Major
B	Southern New Site Access		Minor
C	Garter S		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	7.00			90.0	✓	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	90	90

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	552	0.096	0.243	0.153	0.347
1	B-C	681	0.100	0.252	-	-
1	C-B	626	0.232	0.232	-	-

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)
D1	2042	AM	ONE HOUR	07:45	09:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	368	100.000
B		✓	70	100.000
C		✓	402	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	18	350
	B	58	0	12
	C	397	5	0

Vehicle Mix

HV %s

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

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.19	10.88	0.2	B
C-AB	0.01	6.84	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	53	462	0.114	52	0.1	8.859	A
C-AB	4	564	0.007	4	0.0	6.490	A
C-A	299			299			
A-B	14			14			
A-C	263			263			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	63	441	0.143	63	0.2	9.613	A
C-AB	5	552	0.008	5	0.0	6.636	A
C-A	357			357			
A-B	16			16			
A-C	315			315			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	77	411	0.187	77	0.2	10.871	B
C-AB	6	537	0.010	6	0.0	6.843	A
C-A	437			437			
A-B	20			20			
A-C	385			385			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	77	411	0.187	77	0.2	10.879	B
C-AB	6	537	0.010	6	0.0	6.843	A
C-A	437			437			
A-B	20			20			
A-C	385			385			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	63	441	0.143	63	0.2	9.635	A
C-AB	5	552	0.008	5	0.0	6.639	A
C-A	357			357			
A-B	16			16			
A-C	315			315			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	53	462	0.114	53	0.1	8.887	A
C-AB	4	564	0.007	4	0.0	6.493	A
C-A	299			299			
A-B	14			14			
A-C	263			263			

2042, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Garter Lane S Access junc	T-Junction	Two-way	0.56	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)
D2	2042	PM	ONE HOUR	16:45	18:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	398	100.000
B		✓	36	100.000
C		✓	404	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	54	344
	B	31	0	5
	C	389	15	0

Vehicle Mix

HV %s

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

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.10	10.03	0.1	B
C-AB	0.03	6.97	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	27	455	0.060	27	0.1	8.493	A
C-AB	11	563	0.020	11	0.0	6.595	A
C-A	293			293			
A-B	41			41			
A-C	259			259			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	32	433	0.075	32	0.1	9.083	A
C-AB	14	552	0.025	14	0.0	6.754	A
C-A	349			349			
A-B	49			49			
A-C	309			309			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	40	402	0.099	40	0.1	10.028	B
C-AB	17	538	0.031	17	0.0	6.974	A
C-A	428			428			
A-B	59			59			
A-C	379			379			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	40	402	0.099	40	0.1	10.034	B
C-AB	17	538	0.031	17	0.0	6.974	A
C-A	428			428			
A-B	59			59			
A-C	379			379			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	32	433	0.075	32	0.1	9.090	A
C-AB	14	552	0.025	14	0.0	6.757	A
C-A	349			349			
A-B	49			49			
A-C	309			309			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	27	455	0.060	27	0.1	8.509	A
C-AB	11	563	0.020	11	0.0	6.595	A
C-A	293			293			
A-B	41			41			
A-C	259			259			

NRB consulting engineers

APPENDIX F

Original Independent Stage 1 Road Safety Audit & Designer Feedback Form

Title: **Stage 1 Road Safety Audit**

For;

Residential Apartment Development at Garter Lane, Saggart, Dublin 24.

Client: **NRB**

Date: **August 2020**

Report reference: **0831R01**

VERSION: **FINAL**

Prepared By:

Bruton Consulting Engineers Ltd

Glaspistol
Clogherhead
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Co. Louth.

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BRUTON CONSULTING ENGINEERS

CONTENTS SHEET

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1.0 Introduction

This report was prepared in response to a request from Mr. Eoin Reynolds, NRB Consulting Engineers for a Stage 1 Road Safety Audit of the proposed residential development at Garter Lane, Saggart, Dublin 24.

The Road Safety Team comprised of;

Team Leader: **Norman Bruton**, BE CEng FIEI, Cert Comp RSA.

Team Member: **Owen O'Reilly** B.SC. Eng Dip Struct. Eng NCEA Civil Dip Civil.Eng CEng MIEI

The Road Safety Audit comprised of an examination of drawings and other material provided by NRB and a site visit by the Audit Team, together, on 31st July 2020.

This Stage 1 Road Safety Audit has been carried out in accordance with the requirements of TII, Publication Number GE-STY-01024, dated December 2017.

The scheme has been examined and this report compiled in respect of the consideration of those matters that have an adverse effect on road safety. It has not been examined or verified for compliance with any other standards or criteria.

The problems identified in this report are considered to require action in order to improve the safety of the scheme for road users.

If any of the recommendations within this safety audit report are not accepted, a written response is required, stating reasons for non-acceptance. Comments made within the report under the heading of Observation are intended to be for information only. Written responses to Observations are not required.

The weather at the time of the site visits was dry and the road surface was dry.

The information supplied to the Audit Team is listed in **Appendix A.**

A feedback form for the Designer to complete is contained in **Appendix B.**

A plan drawing showing the problem locations is contained in **Appendix C**.

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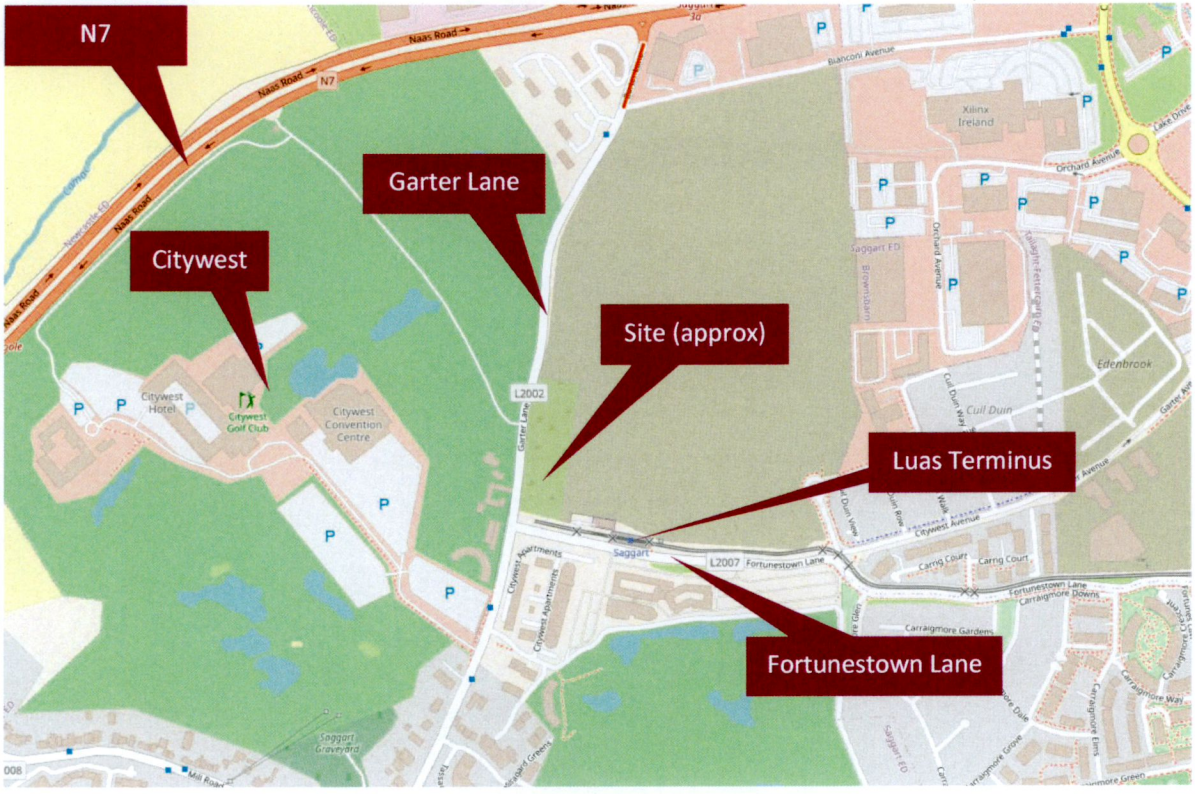
2.0 Background

It is proposed to construct a residential apartment scheme at Garter Lane, Saggart. The location is adjacent to the Luas Red line terminus. The site is bounded by lands zoned for residential development with recent permissions. Garter Lane is a single carriageway road with a speed limit of 50km/hr. It links with the N7 via a left in-left out junction (Junction 3a). The Citywest complex is located to the West of Garter Lane. The main access to the complex is South of the Fortunestown Lane signalised junction.

It is proposed to provide a right turning lane into the development off Garter Lane , north of the existing Fortunestown Lane/Garter Lane signalised junction.

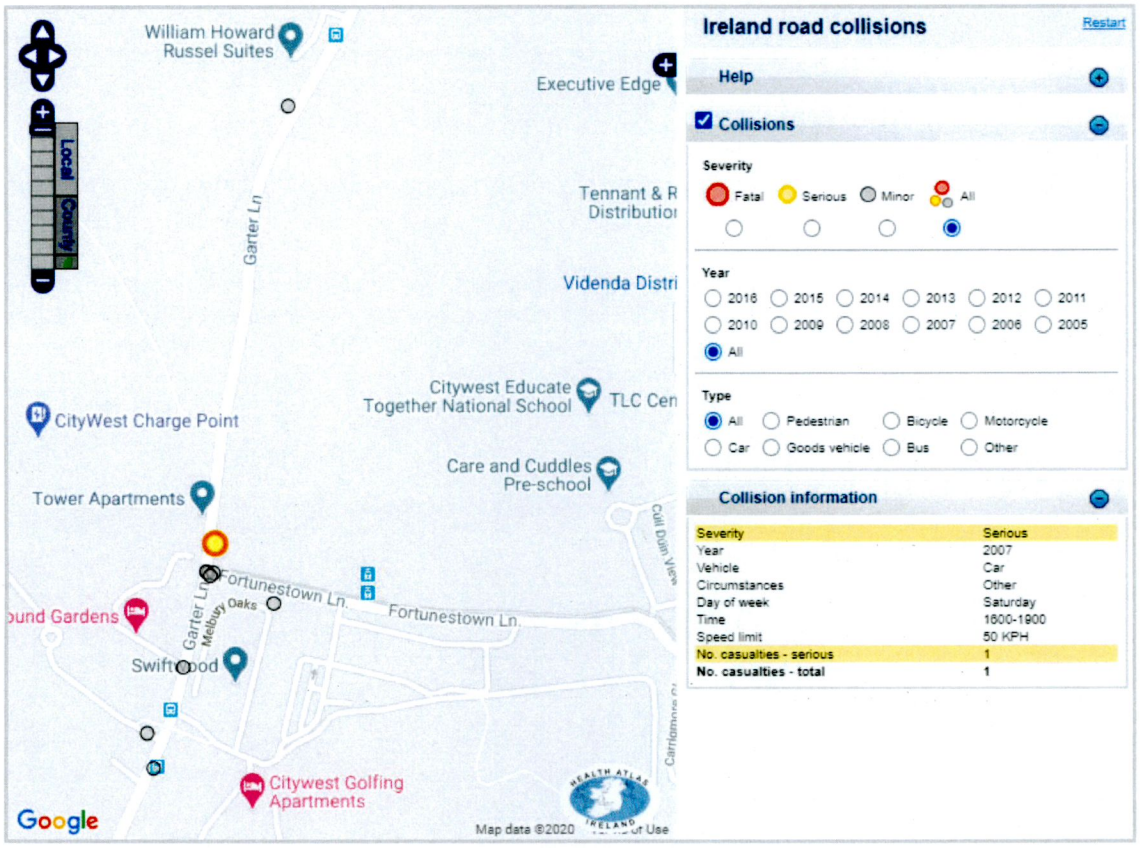
Garter Lane is a bus route.

The location of the site is shown below.



Site Location Map (image courtesy of www.maps.openstreetmap.ie)

The Road Safety Authority's website shows that there was one serious injury and three minor injury collisions adjacent to the site on Garter Lane in the 12 year period 2005-2016.



3.0 Main Report

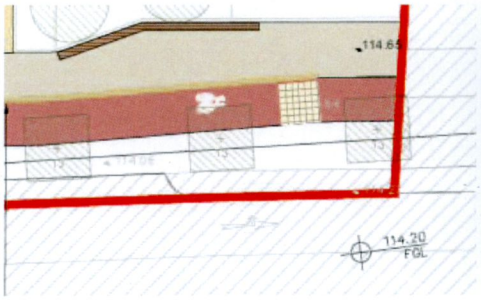
3.1 Problem

LOCATION

Drawing 1799_PL_P_01.2 Rev IFP

PROBLEM

The proposed cycle lane outside the development stops at the site boundary. There is provision for a transition onto the carriageway where the tactile paving is proposed. Drivers approaching the signalised junction may not anticipate cyclists and may not leave enough room for cyclists resulting in possible collisions as they turn left onto Fortunestown Lane.



RECOMMENDATION

It is recommended that that cyclists provision be brought to the junction and linkage with the Fortunestown Lane cycle lane provided.

3.2 Problem

LOCATION

Drawing 1799_PL_P_01.2 Rev IFP & Site Observation.

PROBLEM

It was observed during the site visit that visibility from the existing residential entrance on the opposite side of Garter Lane is very limited. There is a convex mirror located on the development side verge to help drivers safely enter Garter lane. This aid will be removed by the introduction of the scheme and would thereby increase the likelihood of a collision. It is unclear how regularly this access is used.

RECOMMENDATION

It is recommended that the visibility from the access on the opposite side of Garter Lane is not made any worse by the proposed development.

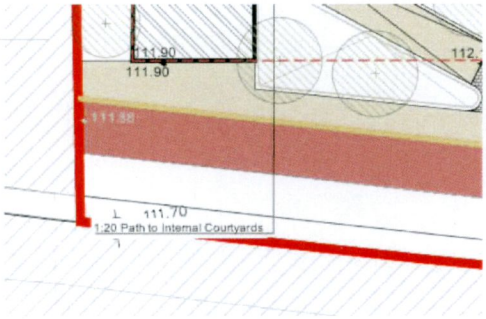
3.3 Problem

LOCATION

Drawing 1799_PL_P_01.2 Rev IFP

PROBLEM

There is no provision for southbound cyclists on Garter lane to access the new cycle lane. This could result in cyclists staying on the carriageway where they would be at greater risk of being struck by passing vehicles. It is acknowledges that the cycle lane will be extended when the future developments are constructed.



RECOMMENDATION

Depending on the sequencing of the various developments in the area a temporary transition from on-road to off-road should be provided for cyclists on Garter Lane.

4.0 Observations

4.1 Observation

The gradients into the basement or the basement carparking layout for vehicles and cyclists have not been provided to the Audit Team.

4.2 Observation

Public lighting and drainage details have not been provided to the Audit Team.

4.3 Observation

The existing public light on Garter Lane on the opposite side of the development at the access to Tassagart House is ineffective due to the tree growth.

4.4 Observation

Tree girths have been given which show that the trees should not be obstacles to visibility however the canopy heights are unknown. The spacing and location of trees should ensure that their combined effects do not lead to blocking of sightlines.

4.5 Observation

It was observed that there is existing high friction surfacing on approach to the signalised junction.

5 Audit Statement

We certify that we have examined the site on the 31st July 2020. The examination has been carried out with the sole purpose of identifying any aspects of the design which could be added, removed or modified in order to improve the safety of the scheme.

The problems identified have been noted in this report together with associated safety improvement suggestions which we would recommend should be studied for implementation. The audit has been carried out by the persons named below who have not been involved in any design work on this scheme as a member of the Design Team.

Norman Bruton **Signed:** Norman Bruton

(Audit Team Leader) **Dated: 25/8/2020**

Owen O'Reilly **Signed:** Owen O'Reilly

(Audit Team Member) **Dated: 25/8/2020**

Appendix A

List of Material Supplied for this Audit;

- Drawing 1799_PL_P_01.2 Rev IFP
- Drawing 1799_PL_P_01.1 Rev IFP
- Drawing PA-002
- Draft TTA, NRB

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Appendix B

Feedback Form

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ROAD SAFETY AUDIT FORM – FEEDBACK ON AUDIT REPORT

Scheme: SHD Garters Lane, Saggart.
Stage: Stage 1 Road Safety Audit
Date Audit (Site Visit) Completed: 31/7/2020

Paragraph No. in Quality Audit Report	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Alternative measures (describe)	Alternative measures accepted by Auditors (Yes/No)
3.1	Yes	Yes - This can easily be agreed with SDCC in the event that the development is permitted by ABP		
3.2	Yes	Yes - Visibility on the opposite side will be unaffected		
3.3	Yes	Yes - There are plans to increase and enhance cyclist permeability through permitted SHD schemes and through wider Masterplans for the area		

Observations:
4.1 Ramp Gradients - The basement layout and gradients have been carefully designed and they comply with the Multi Storey Car Park Design Guidance.
4.2 Public Lighting & Drainage - Noted
4.3 Existing Public Lighting & Foliage - Noted
4.4 Tree Girths and Canopies - canopies will be maintained to ensure sightlines are not compromised
4.5 High Friction Surface - Noted

Signed **Date** 24 Aug 2020.
Design Team Leader

Signed..... **Date**.....25/8/2020.....
Audit Team Leader

Signed.....
Employer/Developer

Date 25 Aug 2020

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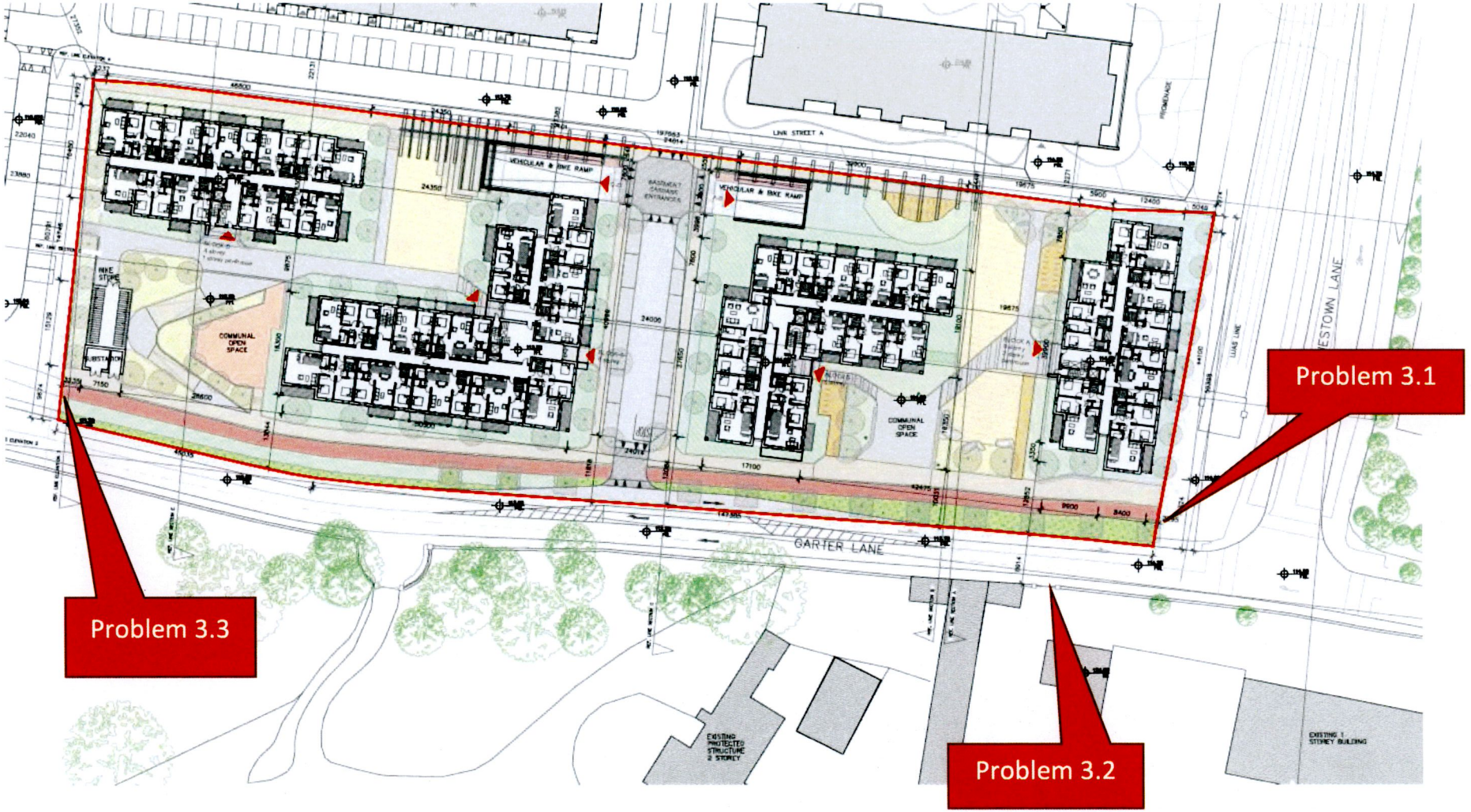
Appendix C

Problem Location Plan.


Problem 3.1
Problem 3.3
Problem 3.2
GARTER LANE
LINK STREET A
VEHICULAR & BIKE RAMP
COMMUNAL OPEN SPACE
BIKE STORE
EXISTING PROTECTED STRUCTURE 2 STOREY
EXISTING 1 STOREY BUILDING

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APPENDIX G

Original Preliminary Planning Stage Mobility Management Plan (Travel Plan)