

HALLMARK CONSTRUCTIONS PTY LTD

SUPPLEMENTARY
TRAFFIC IMPACT ASSESSMENT
OF PROPOSED
RESIDENTIAL DEVELOPMENT
AT
30-46 AUBURN ROAD & POTTS HILL RESERVOIR
WESTERN RESIDENTIAL PRECINCT
REGENTS PARK.

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Copy of Sidra Modelling Report prepared by McLaren traffic Engineering dated 9th June, 2015.

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Note: Figures show the entry to the site south of Morris Street. The new site entry is north of Morris Street as shown in the Staging Masterplan Designs prepared by Stanistic Architects in **Appendix D**.

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- Appendix A:** Design Drawing Amy Street / Auburn Road Intersection Upgrade Drawing No. ASIU-BECA-RE-00031
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EXECUTIVE SUMMARY

In preparation for the Supplementary Report, a review of the *Central Local Area Plan* released on September 2014 was carried out. The NCLAP exhibited after the refusal of the RZ 1/2014 recommends an *increase in the subject site's FSR from 0.6 to 1.2:1*. We believe the site can *sustain* an increase of up to an **FSR of 3:1 to FSR 4:1**, as demonstrated in the **SIDRA** modelling report.

We have reviewed the proposed *road widening works* at the intersection of Auburn Road and Amy Street and Carlingford Road, Park Road and Amy Streets, Regents Park. These road works are *proposed by Auburn Council in association with Transport for NSW*. The road works are designed to *increase the lane capacity of the two roundabout intersections from one lane to 2 lanes in each direction* and therefore, *substantially increasing the traffic capacity of these intersections and the capacity of the overall road network*.

Detailed micro-simulation analysis of each intersection on the road network has been modelled using **SIDRA 6** computer software by an Independent traffic consultancy firm McLaren Traffic Engineering for *each* of the development scenarios. These scenarios include:-

- the existing peak hour traffic.
- existing, plus Potts Hill Development Site.
- the *five* development scenarios for the proposed site at 30-46 Auburn Road Regents Park for Floor space ratios (FSR) of **2.1:1**, **2.7:1** and **3.1**, and additional scenarios for **3.5:1** and **4:1**.

The Level of Service identified at the *two critical roundabout intersections* will operate at **Level of Service A** for the proposed development Scenarios 3, 4 and 5 with the proposed road improvements. The full *summary* of the **SIDRA modelling outcomes** are located in **Appendix C** of this report.

1.0 INTRODUCTION

1.1 Background

We have been requested by Statewide Planning Pty Ltd to prepare a Supplementary Traffic Report for Bankstown Council on the proposed intersection upgrade works at the Auburn Road (Amy Street) rail bridge and the effects on the road vehicle capacity. Development scenarios plus existing have been modelled for the intersections within the road network.

1.2 Scope of Work

We have undertaken to analyse *five development scenarios* and model the intersections within the existing road network using **SIDRA 6.0** modelling software. This Supplementary Report is to be read in association with our Report No. 14/14 "*Peer Review of Traffic Assessment of Proposed Residential Developments at 30-46 Auburn Road & Potts Hill Reservoir Western Residential Precinct, Regents Park*".

2.0 PROPOSED INTERSECTION UPGRADE AND RAIL OVERBRIDGE WORKS AT AMY STREET / AUBURN ROAD.

2.1 Proposed Design Layout

It is proposed by Auburn Council in association with Transport for NSW to *upgrade the intersection* of Amy Street / Auburn Road and Carlingford Street and Park Road / Amy Street intersection.

The proposed works are shown in **Appendix A** of this report. It is intended to increase each approach to the Auburn Road / Amy Street roundabout from **1 lane** to **2 lanes** in *each direction*.

The Amy Street/ Railway Bridge/ Auburn Road will be increased to **2 lanes** in **each direction** and the intersection of Carlingford Street and Park Road and Amy Street will also be increased to **2 lanes** in *each direction*.

The proposed works have been confirmed by *Transport for NSW* and the design is in its final stages.

The original cost of the works provided to us by Auburn Council was in the order of *\$6.77 million plus GST*. This may increase with the addition of 'bicycle pedestrian pathway access'. Correspondence between this office and Transport for NSW is included in **Appendix B** of this report.

3.0 FUTURE DEVELOPMENT SCENARIOS FOR 30 - 46 AUBURN ROAD, REGENTS PARK

3.1 Traffic Generation of Proposed Residential Development Scenarios

Five development scenarios have been investigated for the proposed site at 30-46 Auburn Road Regents Park.

Masterplans have been prepared for the site at 30-46 Auburn Road Regents Park by Stanisic Architects and show options for different floor space ratios on the site which are included in **Appendix D** of this report.

The traffic generation has been calculated for the **five** development options. The *first option* with an **FSR of 2.1:1**, the *second option* **2.7:1** and a *third development scenario* has an **FSR of 3:1**. A fourth option has an **FSR of 3.5:1** and final fifth option of an **FSR 4:1**. The method of traffic assignment to the road network is discussed in detail in our report No **14/14** "Report on Peer Review of Traffic Impact Assessment of Proposed Residential Development at 30-46 Auburn Road and Potts Hill Reservoir Western Residential Precinct Regents Park".

The number of dwellings is based upon a range of dwellings developed by Stanisic Architects which follows the requirements of the **State Environmental Planning Policy No 65 – Design Quality of Residential Flat Development**. Whilst the **FSR** developed in the masterplan for Stage 1 was **2.0:1**, the **FSR of 2.1:1** was *selected* as the 'base line scenario' which was used in report 14/14.

Table 3.1 Development Scenarios and Range of Dwellings

Development Scenario	FSR	Area m ²	Range Number of Dwellings	Number of Dwellings
1	2.1:1	46,596	500-550	514
2	2.7:1	57,186	600-650	625
3	3:1	63,540	650-700	700
4	3.5:1	74,130	760-815	800
5	4:1	84,720	865-900	900

- The traffic generation was calculated for **Scenario 1** with an **FSR of 2.1:1** with 514 dwellings , **Scenario 2**, with an **FSR of 2.7:1** with 625 dwellings and **Scenario 3** with an **FSR of 3: 1** with 700 dwellings. Scenario 4 with an FSR of 3.5:1 and 800 dwellings and scenario 5 with an FSR of 4:1 and 900 dwellings.
- The unit mix consisted of **10%** 1 bedroom units, **80%** 2 bedroom units and **10%** 3 bedroom units.

The traffic generation is shown in **Table 3.2a** for **Scenarios 1, 2 and 3** and **Table 3.2b** for **Scenarios 4 and 5**.

3.1 (Continued)

Table 3.2a Traffic Generation for Development Scenarios 1, 2 and 3

Development Scenarios	No. of Dwellings	Mix			Peak Hour Rates		Peak Hour Traffic		AM SPLIT		PM SPLIT	
					AM	PM	AM	PM	IN	OUT	IN	OUT
Option 1		1 Bed	2 Bed	3Bed	0.19	0.15						
	514	51	412	51								
The directional split in the first report was modelled on the TTPA splits*							100	80	20%	80%	80%	20%
									20	80	64	16
	Area m2	Mix										
Option 2	57186	1 Bed	2 Bed	3Bed	Peak Hour Rates		Peak Hour Traffic		AM SPLIT		PM SPLIT	
	No Of Dwellings				AM	PM	AM	PM	IN	OUT	IN	OUT
	625	63	499	63	0.19	0.15	119	94	20%	80%	80%	20%
Option 3	63540	1 Bed	2 Bed	3Bed					24	95	75	19
	No Of Dwellings								IN	OUT	IN	OUT
	700	70	560	70	0.19	0.15	133	105	20%	80%	80%	20%
									27	106	84	21

*Refer to Report No 14/14 Section 3.1.2

Table 3.2b Traffic Generation for Development Scenarios 4 and 5

Development Scenarios	74130 No. of Dwellings	Mix			Peak Hour Rates		Peak Hour Traffic		AM SPLIT		PM SPLIT	
					AM	PM	AM	PM	IN	OUT	IN	OUT
Option 4		1 Bed	2 Bed	3Bed								
	800	80	640	80	0.19	0.15	152	120	20%	80%	80%	20%
Option 5	84720	1 Bed	2 Bed	3Bed								
	900	90	720	90	0.19	0.15	171	135	20%	80%	80%	20%
									34	137	108	27

From the report prepared by this firm, the traffic generation for the base line **Scenario 1** is shown in **Figures 3A** and **3B** and for the **Potts Hill Development Site** in **4A** and **4B**. The *proposed traffic generation* from the site and also the traffic generation from the Potts Hill Development Site is shown in **Figure 5**.

3.1 (Continued)

The assignment to the road network is demonstrated for **Scenario 2** in **Figures 6A and 6B** and the *additional* development traffic generation, plus the Potts Hills Residential Development are shown in **Figure 7**.

The traffic generation for development **Scenario 3** with an **FSR** of **3:1** is shown in **Figures 8A and 8B** for the proposed site only. **Figure 9** shows the *traffic generation* from the site and also the *traffic generation from* the Potts Hills Development Site.

The traffic generated for **Scenario 4** with an **FSR** of **3.5.1** is shown in **Figures 10A and 10B**. **Figure 11** shows the traffic generated from the site and also the traffic generated from the Potts Hill Development Site.

The traffic generated for Development **Scenario 5** with an **FSR** of **4:1** is shown in **Figures 12A and 12B**. The proposed site traffic generation, and traffic generation from the Potts Hill Development site is shown in **Figure 13**.

4.0 SIDRA MODELLING REPORT

The Micro Simulation modelling was prepared by an independent Traffic Engineering firm *McLaren Traffic Engineering* using **SIDRA 6** modelling software. The full summary of results is included in **Appendix C** of this report.

Each baseline or existing intersection was remodelled using SIDRA 6 then *each development scenario* was modelled for *every intersection*. The modelling was undertaken for the following stages:-

Scenario 1: FSR 2.1:1

- Existing Performance.
- Future Performance- Development Site only without widened railway bridge.
- Scenario 1 with Amy/ Street Auburn Road with widened railway bridge.
- Scenario 1 plus Potts Hill Development Site without widened railway bridge.
- Scenario 1 plus Potts Hill Development Site with widened railway bridge.

Scenario 2: FSR 2.7:1

Existing Performance.

- Future Performance- Development Site only without widened railway bridge.
- Scenario 2 with Amy/ Street Auburn Road with widened railway bridge.
- Scenario 2 plus Potts Hill Development Site without widened railway bridge.
- Scenario 2 plus Potts Hill Development Site with widened railway bridge.

Scenario 3: FSR 3:1

- Existing Performance.
- Future Performance - Development Site only, without widened railway bridge.
- Scenario 3 with Amy/ Street Auburn Road with widened railway bridge.
- Scenario 3 plus Potts Hill Development Site without widened railway bridge.
- Scenario 3 plus Potts Hill Development Site with widened railway bridge.

Scenario 4: FSR 3.5:1

- Existing Performance.
- Future Performance - Development Site only, without widened railway bridge.
- Scenario 4 with Amy/ Street Auburn Road with widened railway bridge.
- Scenario 4 plus Potts Hill Development Site without widened railway bridge.
- Scenario 4 plus Potts Hill Development Site with widened railway bridge.

Scenario 5: FSR 4:1

- Existing Performance.
- Future Performance - Development Site only, without widened railway bridge.
- Scenario 5 with Amy/ Street Auburn Road with widened railway bridge.
- Scenario 5 plus Potts Hill Development Site without widened railway bridge.
- Scenario 5 plus Potts Hill Development Site with widened railway bridge.

4.0 (Continued)

The following intersections were modelled as part of this exercise:-

- Carlingford Road/ Park Road Auburn Road Intersection
- Auburn Road/ Amy Street.
- Auburn Road/ Bagdad Street.
- Auburn Road/ Wellington Road/ Tewinga Road.

The Sidra modelling report also modelled the two roundabout intersections of Carlingford Road/ Park Road Auburn Road and Amy Street/ Auburn Road in a network link. This was to simulate upstream queued vehicles.

The Sidra Modelling Report demonstrates a significant improvement in the level of service of the Carlingford Road/ Park Road Auburn Road and Amy Street/ Auburn Road Intersections. The future Level of service with the widened railway bridge and intersection treatments will operate at Level Of Service A for the AM and PM peak hour for Scenarios 3, 4, and 5. The level of service is used as the performance standard.

In accordance with the Roads and Maritime Services Manual Traffic Generating Developments, Section 4.2 Describes Level of Service A as “***indicates extremely good conditions*** in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.” This indicates that there is plenty of spare capacity.

There is minimal change in the Level of Service for future development scenarios 2 and 3 with both operating at Level of Service A for the AM and PM Peak Hours.

Future Road improvements at the Intersection of Bagdad Road and Auburn Road were identified in the report 14/14 prepared by this firm. The exit approach 2 lanes wide now but not line-marked in Bagdad Street can be delineated to accommodate both Right hand and Left hand turn lanes. The future performance was Level of Service A of this intersection when modelled using SIDRA with the maximum development Scenario 5.

4.1 Development and Staging Plan

Staging masterplans have been prepared by Stanisic Architects as shown in Appendix D. Stage 1 shows a development at 2.0:1 FSR, an indication of development that is sustainable on the site prior to road intersection upgrade works at Auburn Road / Amy Street and Carlingford Road / Park Road / Auburn Road intersections.

We refer to the SIDRA 6 analysis for Scenario 1 (FSR modelled at 2.1:1), for the intersection of Carlingford Road / Park Road / Auburn Road and Amy Road / Auburn Road located in **Appendix C**.

The existing performance was modelled taking these two intersections in SIDRA 6 to simulate a linked network and the worst case queue lengths.

The intersection at Amy Street / Auburn Road when linked to Park Road currently operates at an existing Level of Service F in the PM peak hour.

There is no change to the Level of Service when modelled with the increased traffic from the proposed site and Potts Hill Development Site for development Scenario 1.

For Scenario 1 aside from the two linked intersections all other intersections are operating at Level of Service A.

As stated in Section 4.2 it is possible to ameliorate the capacity problems by minor road works, thus demonstrating that a base staging development of 2:1 is sustainable prior to the intersection upgrade works at Carlingford Road / Park Road / Auburn Road and Amy Road / Auburn Road.

4.2 Minor Upgrade Road Works

In order to increase capacity prior to the intersection upgrade works of Carlingford Road / Park Road / Auburn Road and Amy Street / Auburn Road Intersections, the following works are recommended.

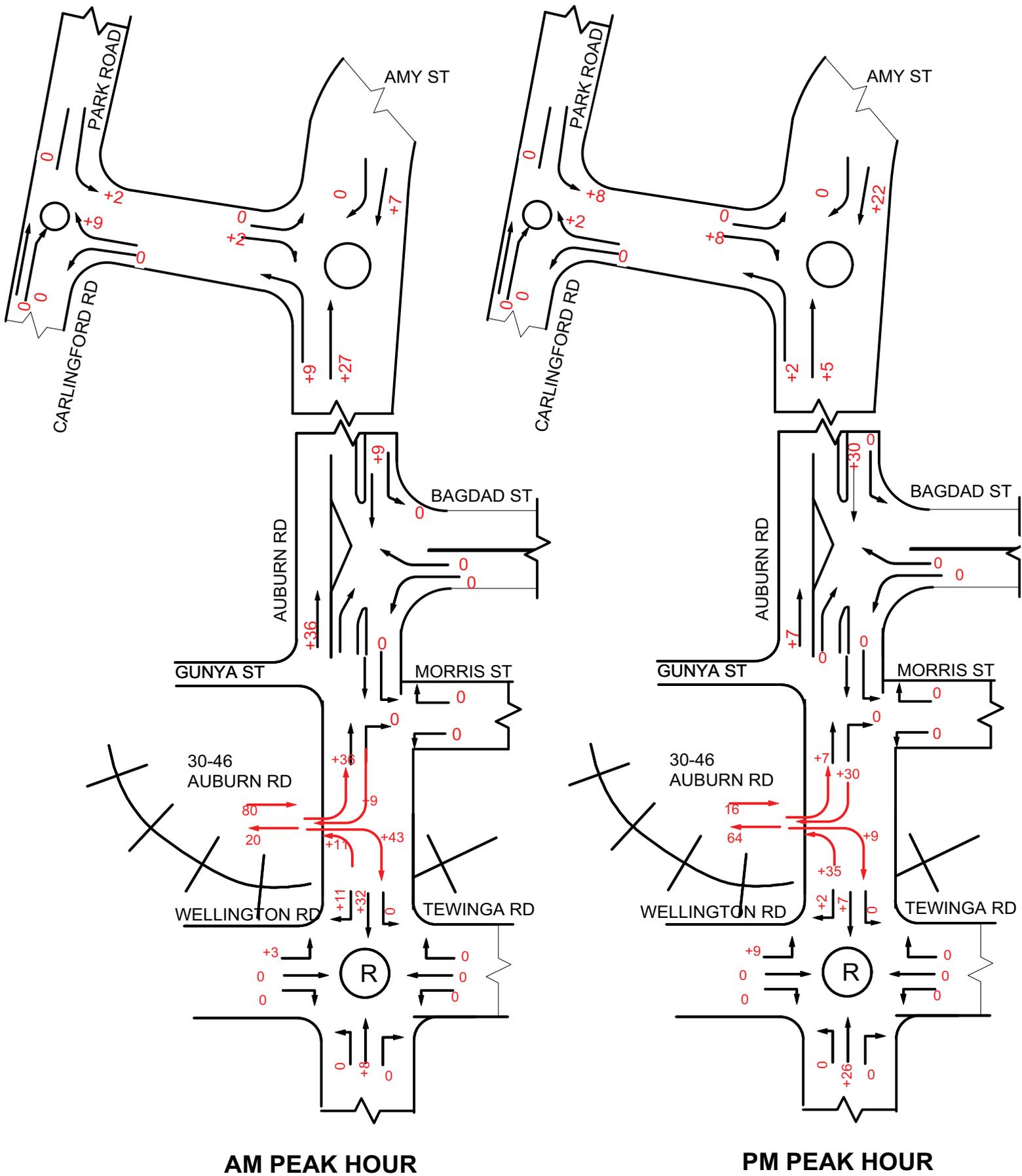
1. Lane delineation to Bagdad Street Intersection.

The road width is sufficient in Bagdad Street westbound to create a right turn and left turn lane to increase capacity at this intersection. This involves the relocation of the double barrier centre lines. This has been already modelled in our previous report.

2. Creation of a separate left turn lane in Park Road on the north approach to the intersection of Park Road / Carlingford Road and Auburn Road. The creation of the lane will alleviate the through movement of queued vehicles in Park Road. A separate analysis using SIDRA 6 for the linked roundabout intersections has been modelled for this option. The modelling demonstrates that with the creation of a short left lane of 15 metres this will increase capacity at this intersection and reduce the Degree of Saturation. The movement summaries are included in **Appendix C** of this report

5.0 SUMMARY AND CONCLUSIONS

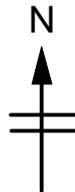
- This report reviews **five** development scenario outcomes and the impact of these development scenarios on the proposed road network in Auburn Road Regents Park.
- The traffic generation was calculated for the **five** development scenarios for the site at 30-46 Auburn Road and the scenarios consisted of **Scenario 1** for an **FSR of 2.1:1** with 514 dwellings , **Scenario 2**, with an **FSR of 2.7:1** with 625 dwellings and **Scenario 3** with an **FSR of 3:1** with 700 dwellings, **Scenario 4** with an **FSR of 3.5:1** and 800 dwellings and **Scenario 5** with an **FSR of 4:1** and 900 dwellings. The unit mix consisted of 10% 1 bedroom units, 80% 2 bedroom units and 10% 3 bedroom units.
- The proposed intersection upgrade works at Auburn Road/ Amy Street and Auburn Road/ Carlingford Road and Park Road roundabouts include road widening at the railway bridge to include 2 lanes on all approaches to these intersections. The intersection upgrade works are in the final stages of design development by Auburn Council in association with Transport for NSW.
- The intersections of Amy Street/ Auburn Road and Auburn Road/ Carlingford Road and Park Road were modelled for different conditions to include the existing intersection and post intersection upgrades works for all development scenarios using the computer program **SIDRA 6**. These two intersections are able to be linked in the program to analyse any network impacts.
- Masterplans have been prepared by Stanisic Architects for various floor space ratios of **3:1** up to an **FSR of 4:1**.
- The **Ultimate FSR of 4:1** can be supported by the road network and the **SIDRA** modelling demonstrates that the traffic generated by an **FSR of 4:1** will *not change the Level of Service* of the intersections modelled with the proposed upgrades to the Auburn Road/ Amy Street and Auburn Road/ Carlingford Road and Park Road roundabouts.
- The outcomes for the maximum development (FSR 4:1) in scenario 5 is that the intersections will perform at **Level of Service A** in both **AM** and **PM peak hours**. We support the Maximum Development **Scenario 5 Option C** of **FSR 4:1** on traffic grounds.



LEGEND

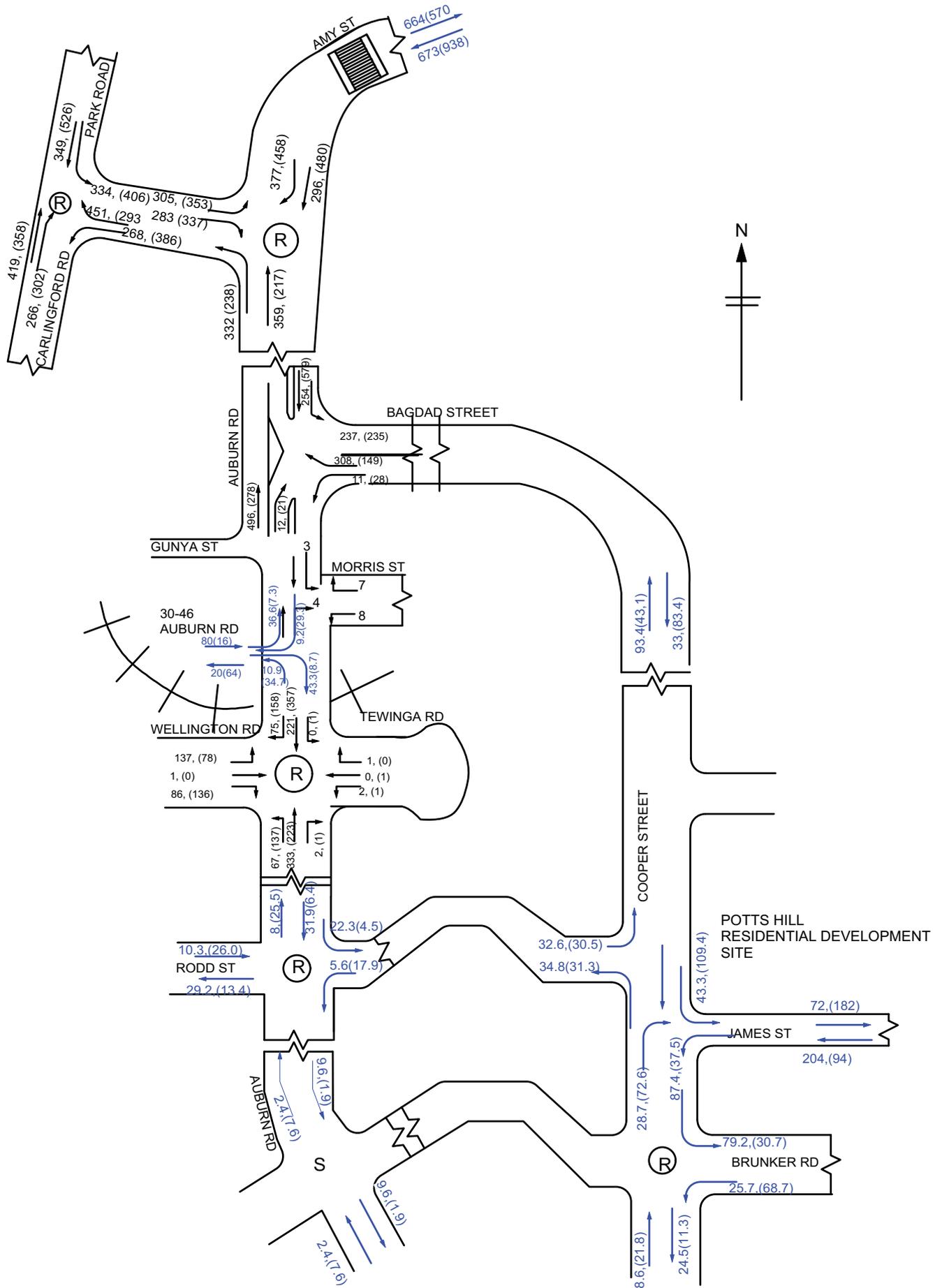
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ADDITIONAL PEAK HOUR VOLUMES
GENERATED BY
THE PROPOSED SITE AT 30-46 AUBURN
ROAD

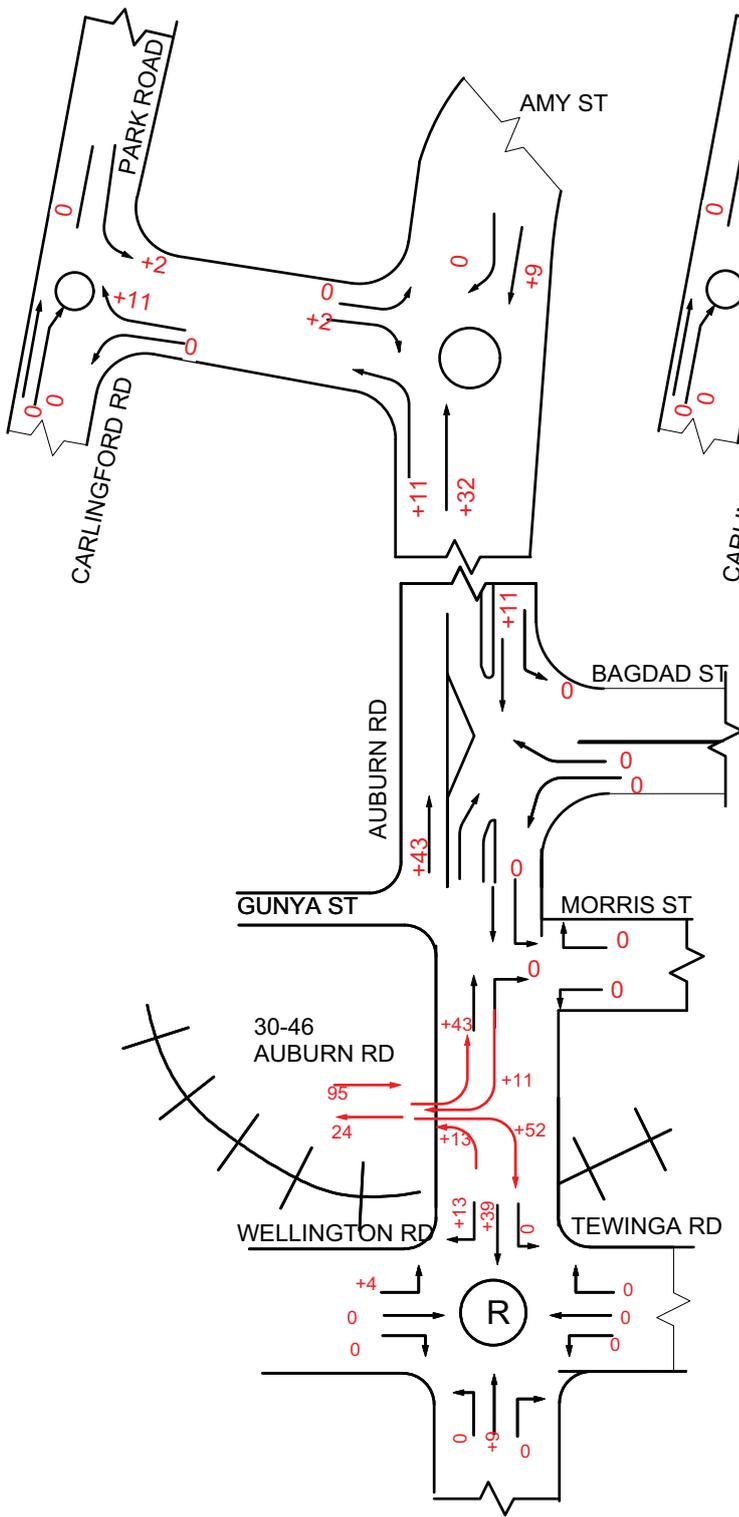


**DEVELOPMENT
SCENARIO 1**

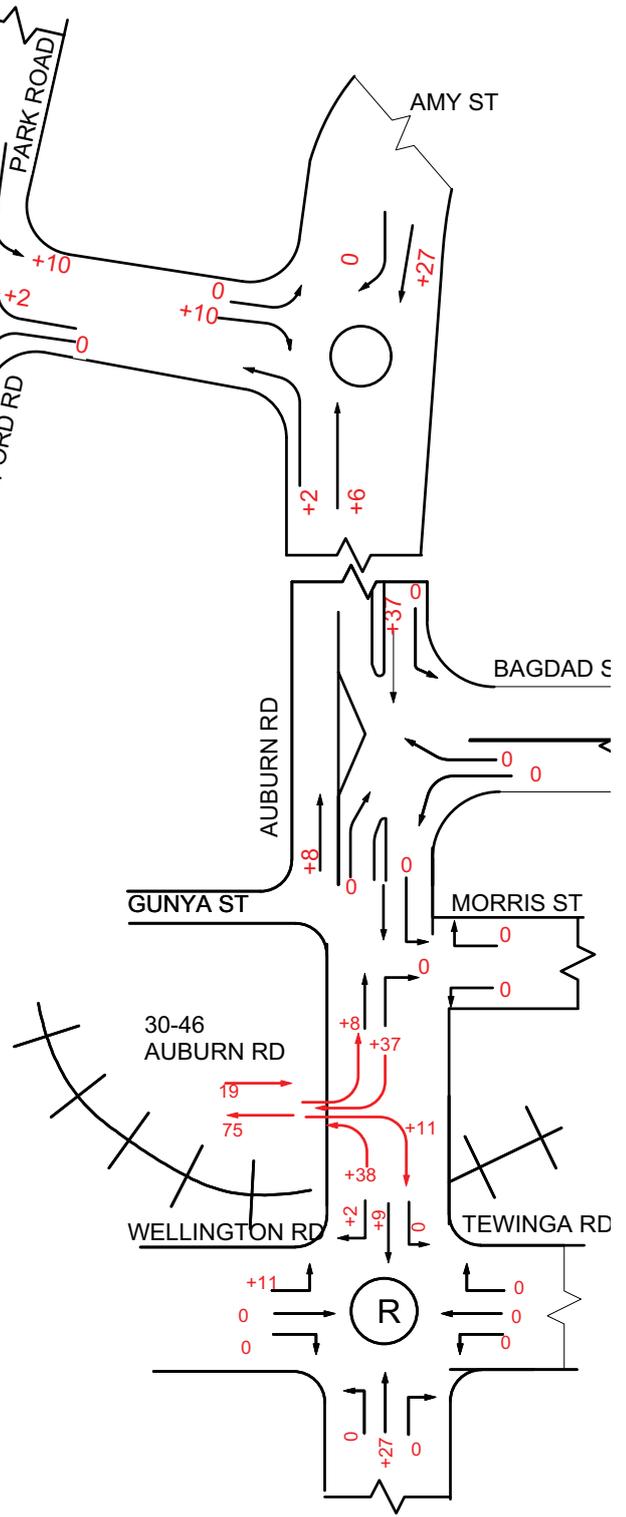
FIGURES 3A + 3B



LEGEND		FUTURE PEAK HOUR VOLUMES, EXISTING PLUS DEVELOPMENT 30-46 AUBURN ROAD PLUS POTTS HILL RESIDENTIAL DEVELOPMENT	FIGURE 5
8-9AM PEAK HOUR	204		
4:30-5:30PM PEAK HOUR	(94)		

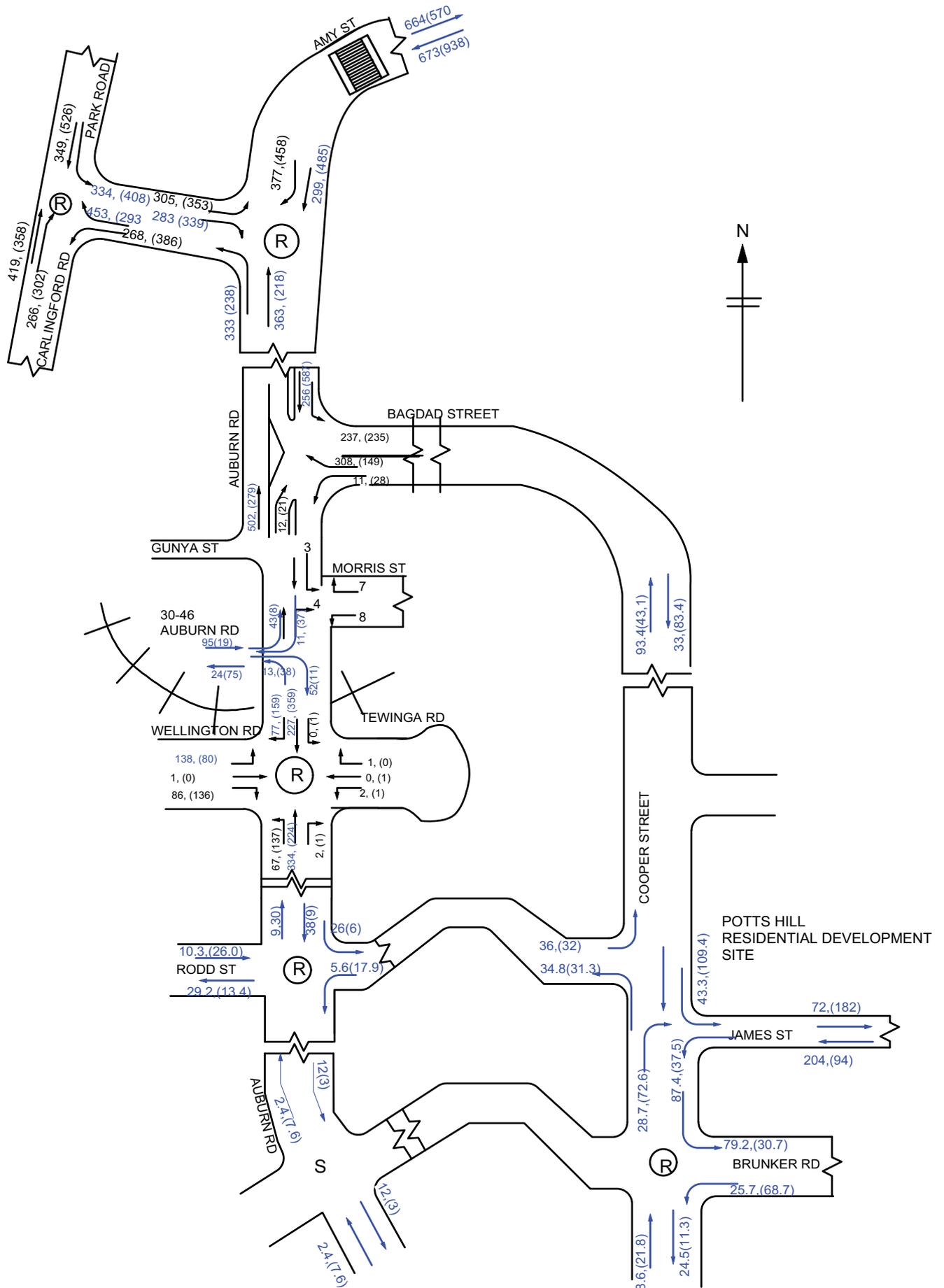


AM PEAK HOUR

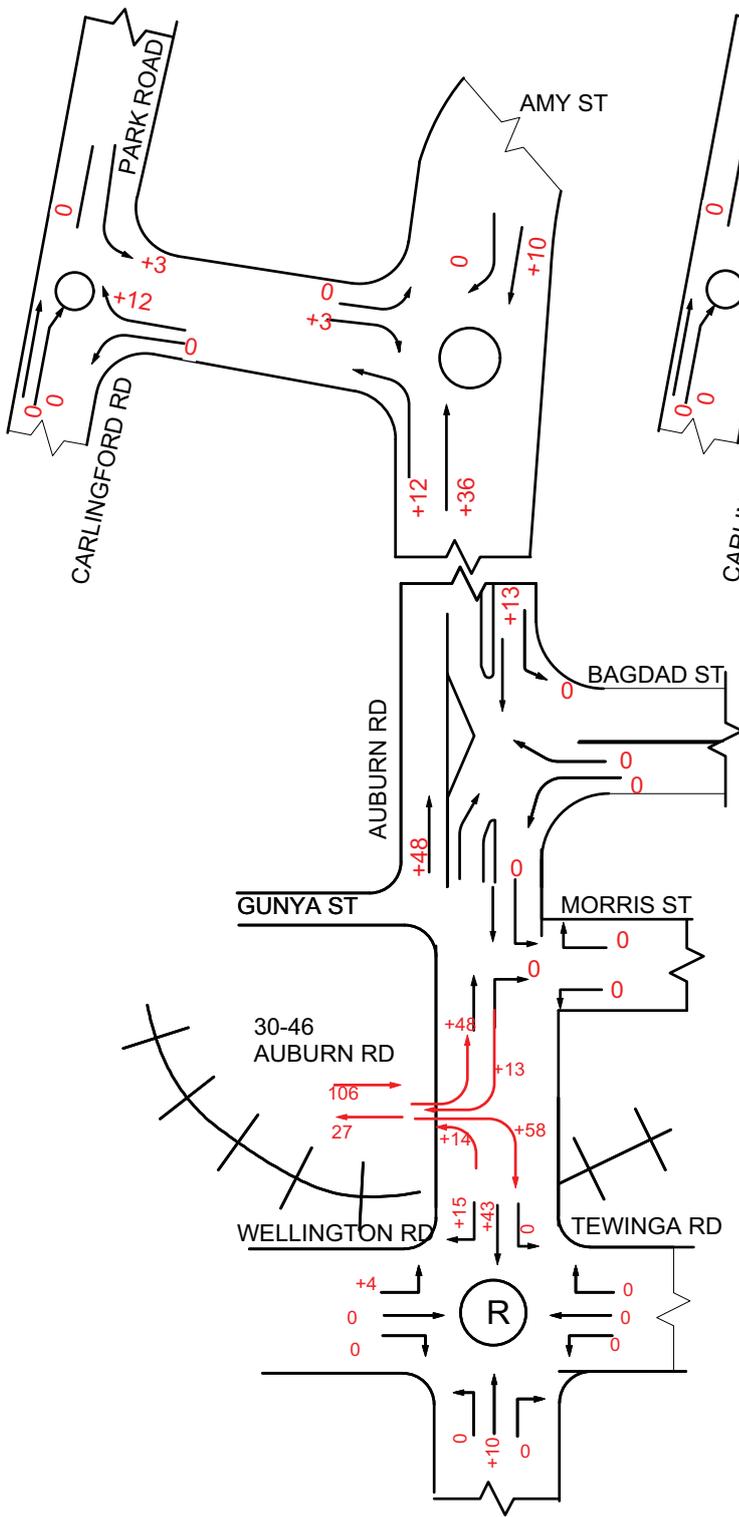


PM PEAK HOUR

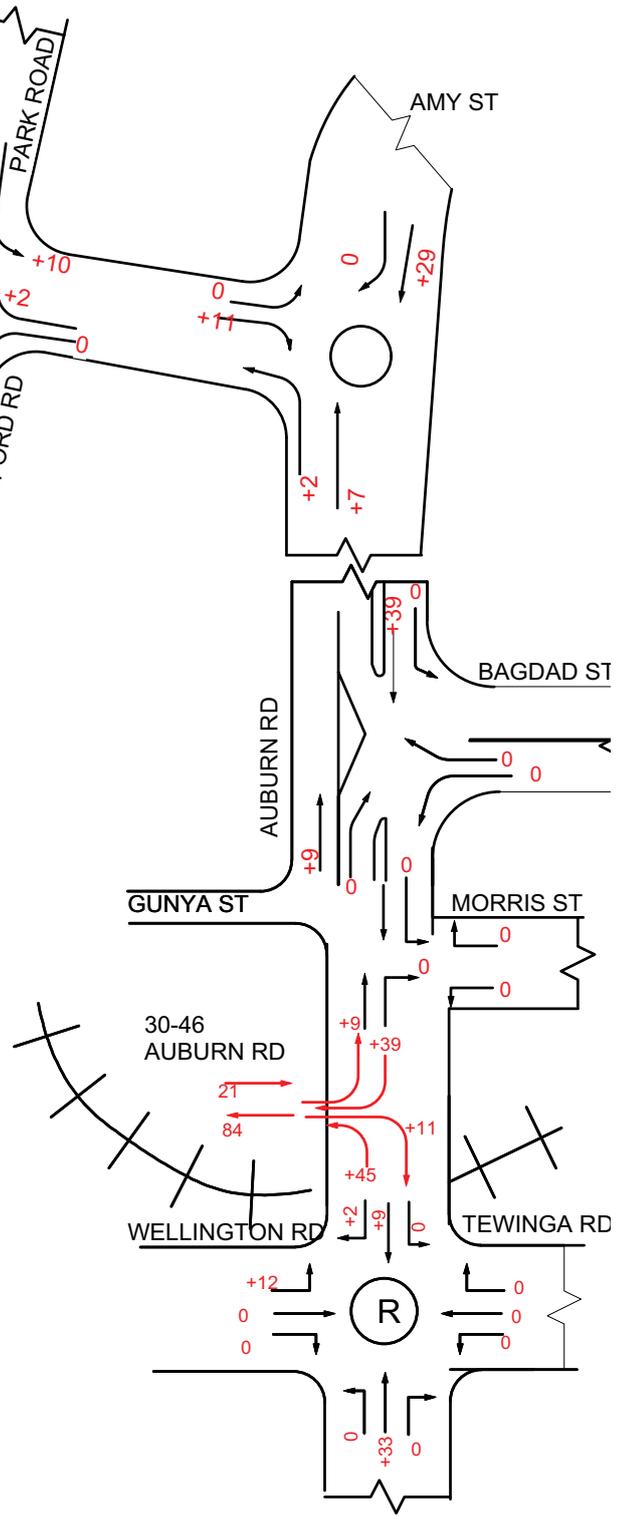
<p>+43</p>	<p>LEGEND ADDITIONAL PEAK HOUR VOLUMES GENERATED BY THE PROPOSED SITE AT 30-46 AUBURN ROAD</p>	<p>N</p> 	<p>DEVELOPMENT SCENARIO 2 FIGURES 6A + 6B</p>
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LEGEND		FUTURE PEAK HOUR VOLUMES, EXISTING PLUS SCENARIO 2 DEVELOPMENT FSR 2.7:1 30-46 AUBURN ROAD PLUS POTTS HILL RESIDENTIAL DEVELOPMENT	FIGURE 7
8-9AM PEAK HOUR	204		
4:30-5:30PM PEAK HOUR	(94)		

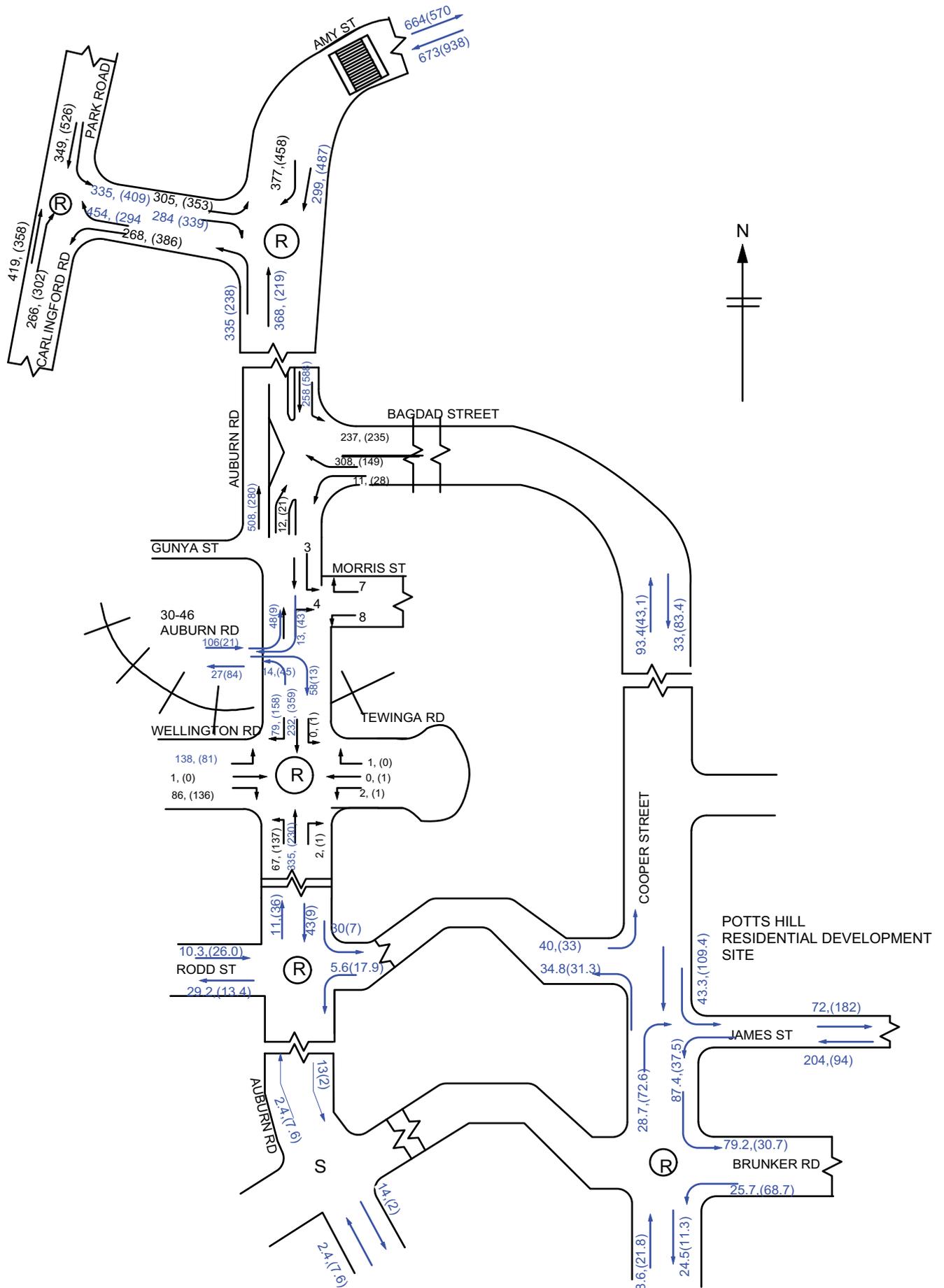


AM PEAK HOUR



PM PEAK HOUR

<p>+50</p>	<p>LEGEND ADDITIONAL PEAK HOUR VOLUMES GENERATED BY THE PROPOSED SITE AT 30-46 AUBURN ROAD</p>	<p>N</p>	<p>DEVELOPMENT SCENARIO 3 FIGURES 8A + 8B</p>
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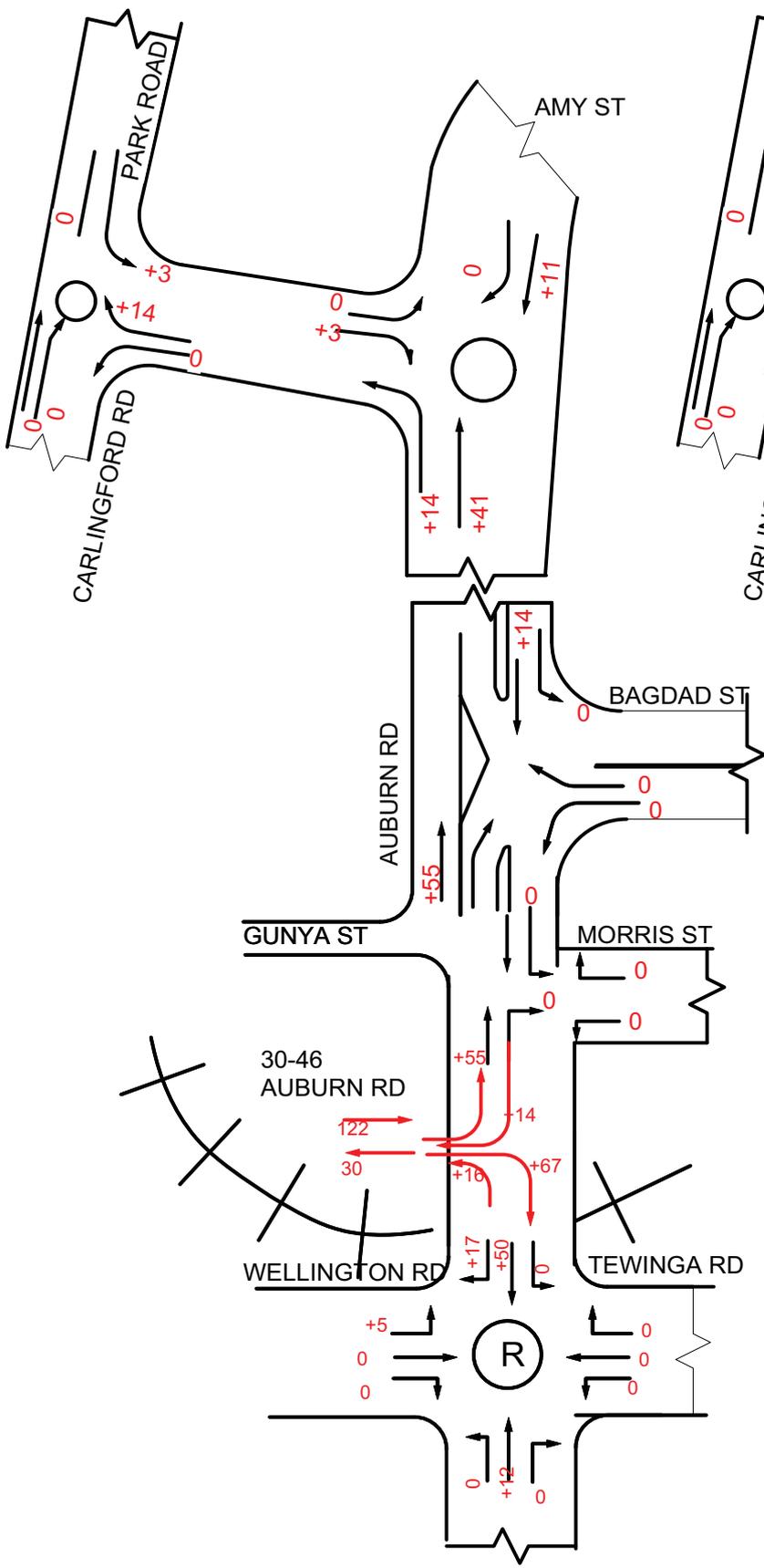


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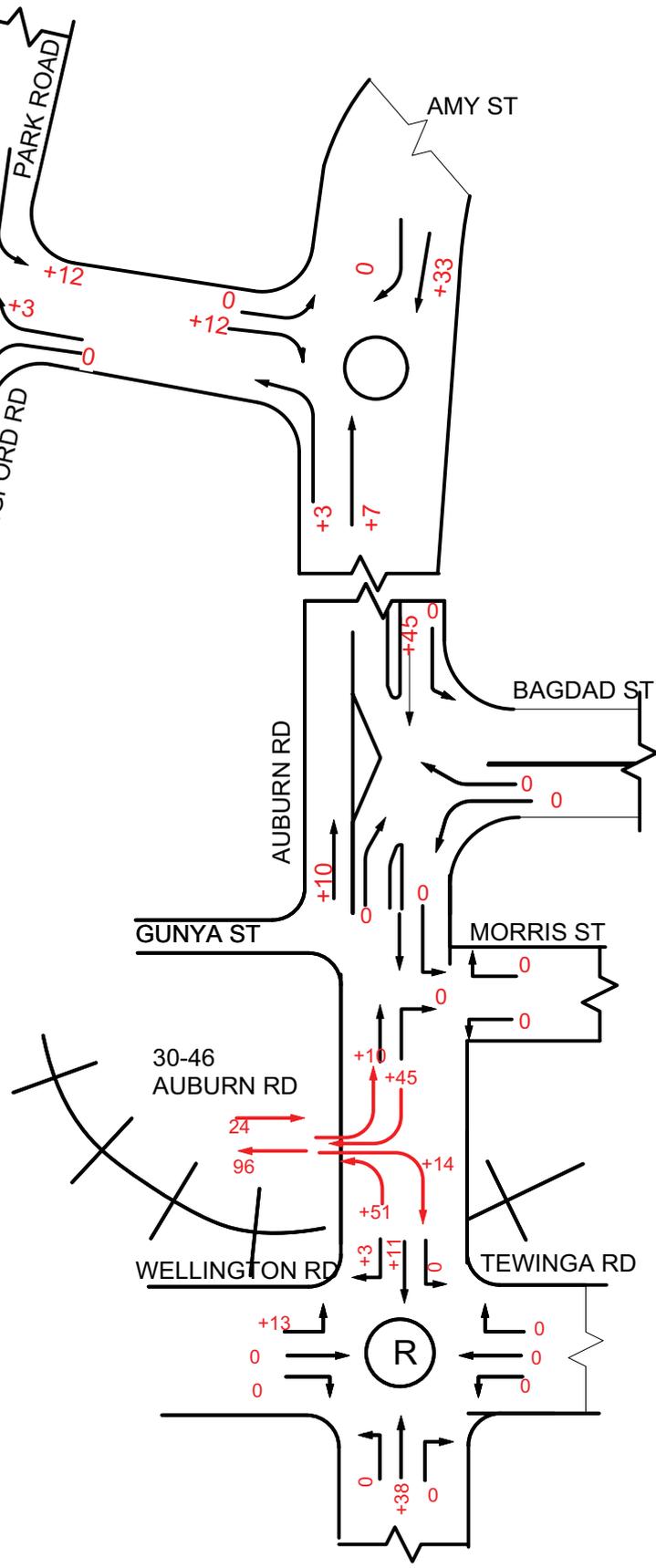
8-9AM PEAK HOUR 204
 4:30-5:30PM PEAK HOUR (94)

FUTURE PEAK HOUR VOLUMES,
 EXISTING PLUS SCENARIO 3
 DEVELOPMENT FSR 3:1
 30-46 AUBURN ROAD
 PLUS POTTS HILL RESIDENTIAL
 DEVELOPMENT

FIGURE 9



AM PEAK HOUR

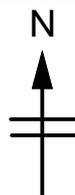


PM PEAK HOUR

LEGEND

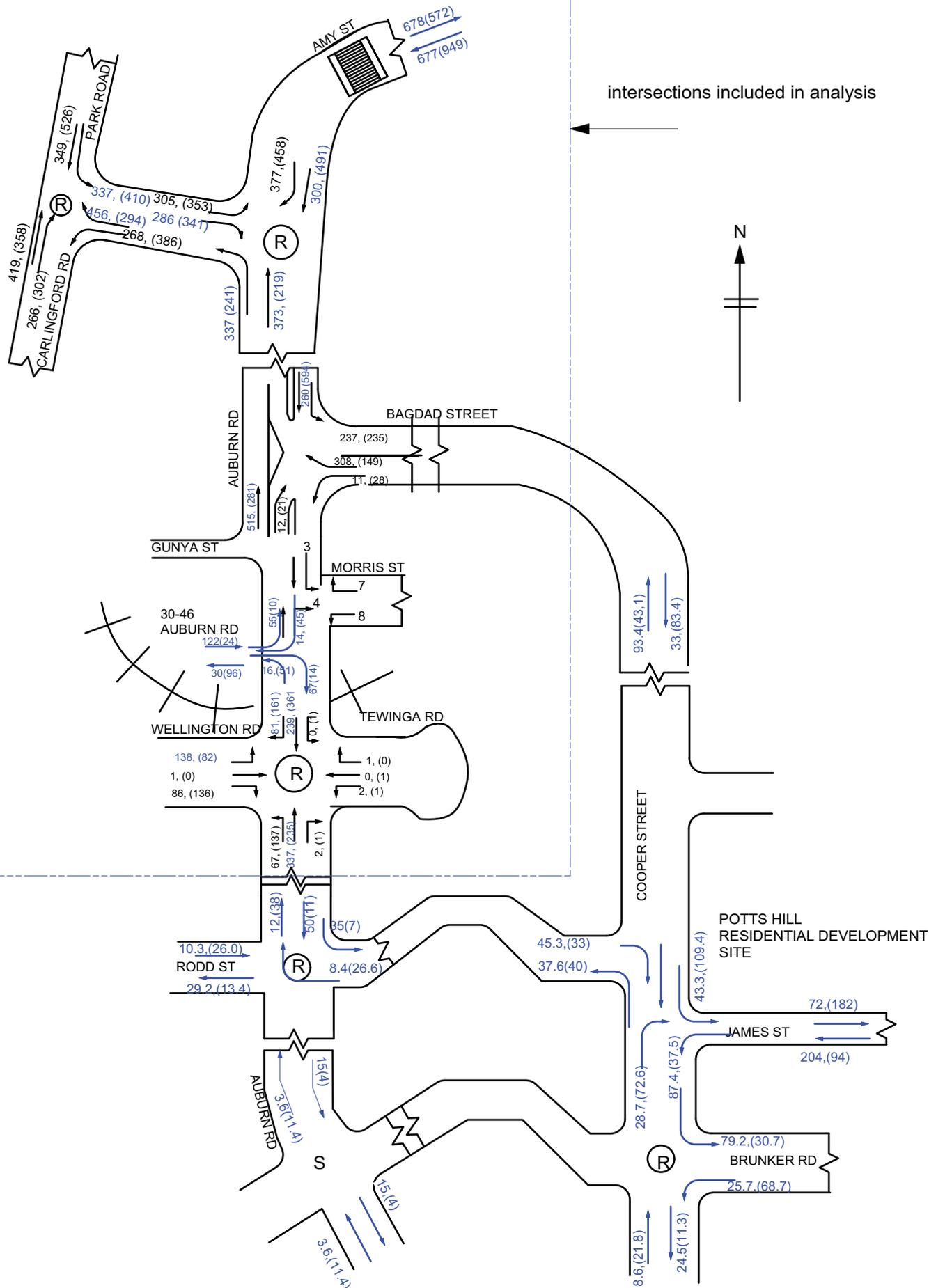
+55

ADDITIONAL PEAK HOUR VOLUMES
GENERATED BY
THE PROPOSED SITE AT 30-46 AUBURN
ROAD



**DEVELOPMENT
SCENARIO 4**

FIGURES 10A + 10B

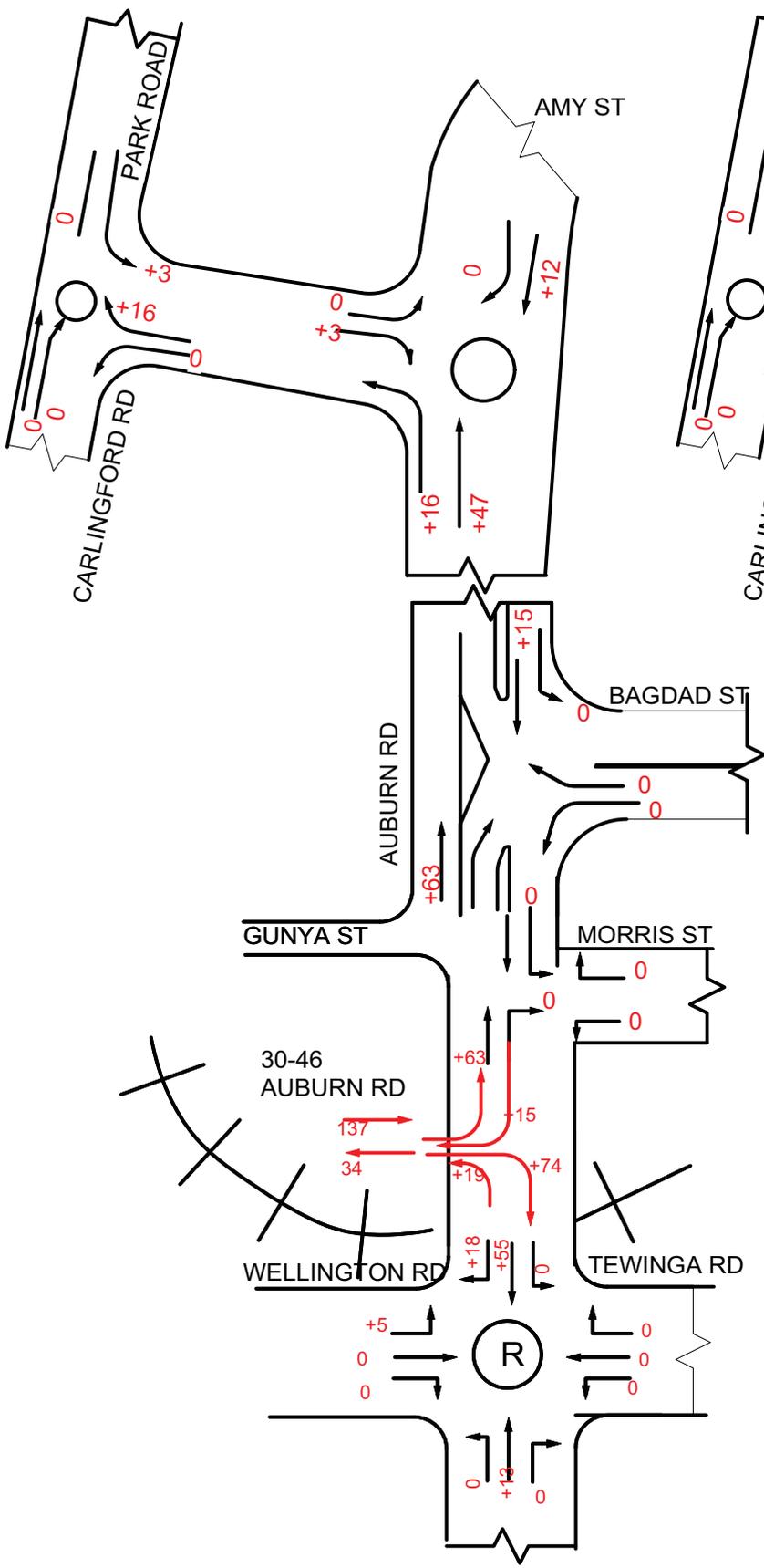


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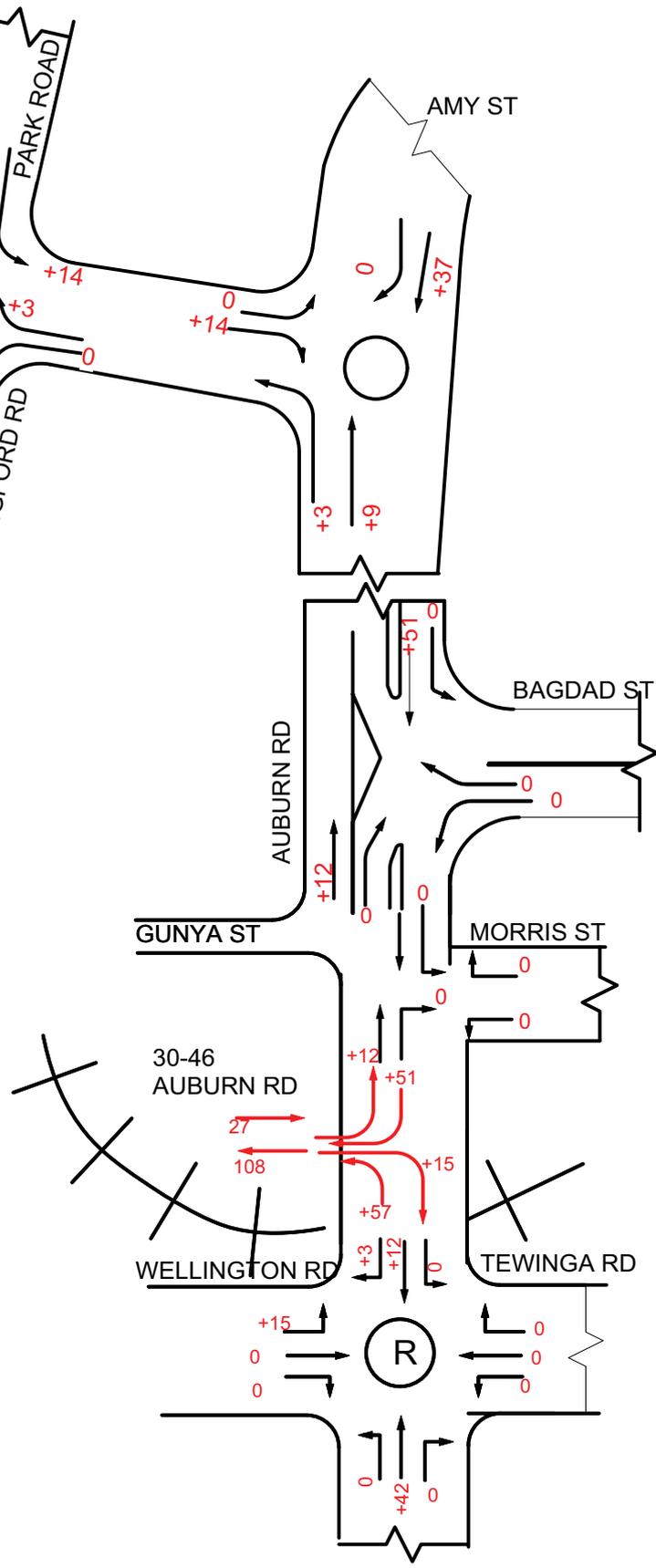
8-9AM PEAK HOUR 204
4:30-5:30PM PEAK HOUR (94)

FUTURE PEAK HOUR VOLUMES,
EXISTING PLUS SCENARIO 4
DEVELOPMENT FSR 3.5:1
30-46 AUBURN ROAD
PLUS POTTS HILL RESIDENTIAL
DEVELOPMENT

FIGURE 11
800 dwellings



AM PEAK HOUR

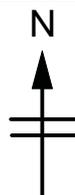


PM PEAK HOUR

LEGEND

+74

ADDITIONAL PEAK HOUR VOLUMES
GENERATED BY
THE PROPOSED SITE AT 30-46 AUBURN
ROAD

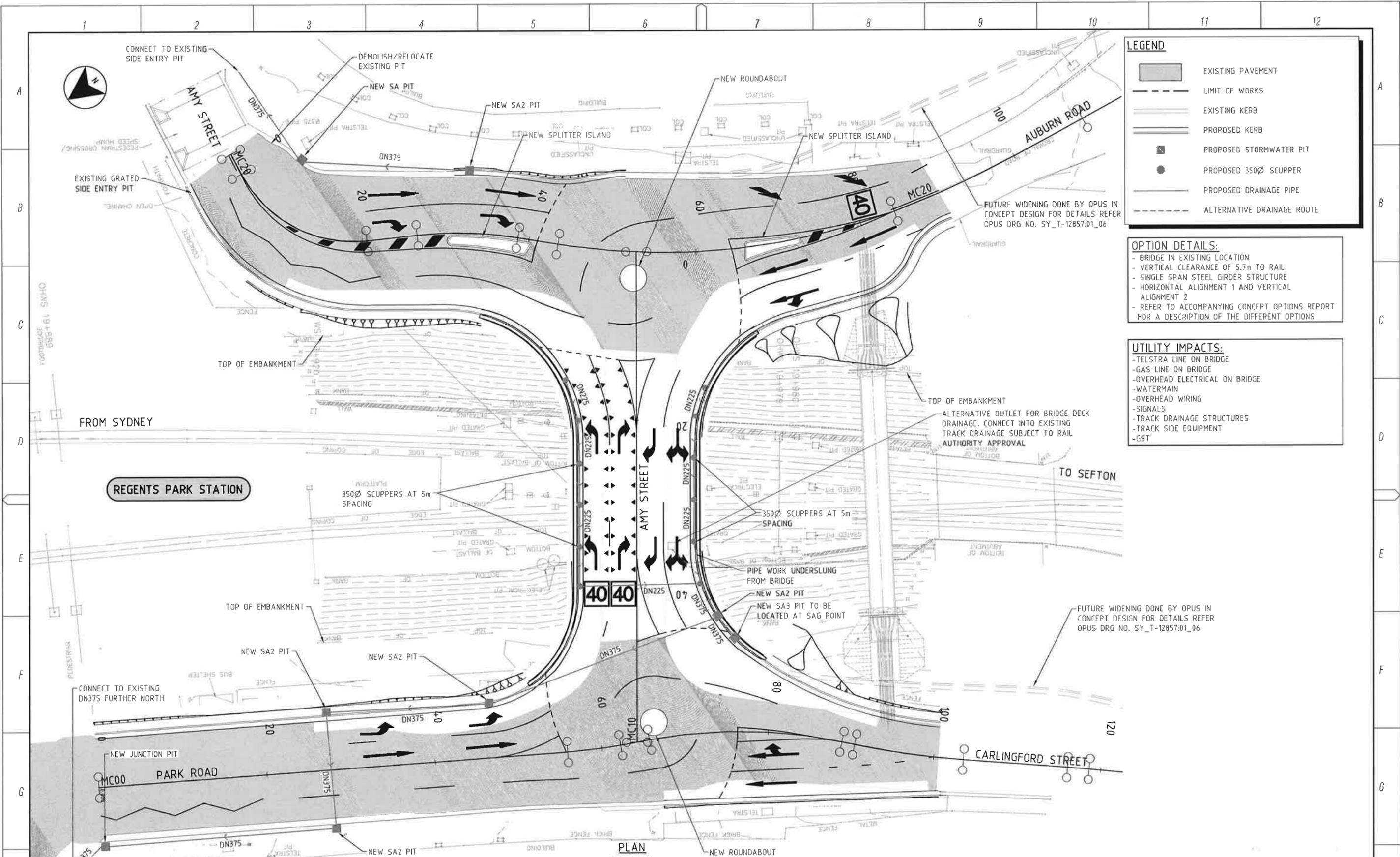


**DEVELOPMENT
SCENARIO 5**

FIGURES 12A + 12B

APPENDICES

APPENDIX A



LEGEND

- EXISTING PAVEMENT
- LIMIT OF WORKS
- EXISTING KERB
- PROPOSED KERB
- PROPOSED STORMWATER PIT
- PROPOSED 350Ø SCUPPER
- PROPOSED DRAINAGE PIPE
- ALTERNATIVE DRAINAGE ROUTE

OPTION DETAILS:

- BRIDGE IN EXISTING LOCATION
- VERTICAL CLEARANCE OF 5.7m TO RAIL
- SINGLE SPAN STEEL GIRDER STRUCTURE
- HORIZONTAL ALIGNMENT 1 AND VERTICAL ALIGNMENT 2
- REFER TO ACCOMPANYING CONCEPT OPTIONS REPORT FOR A DESCRIPTION OF THE DIFFERENT OPTIONS

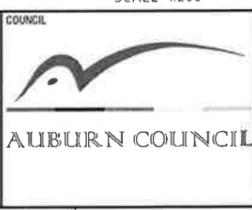
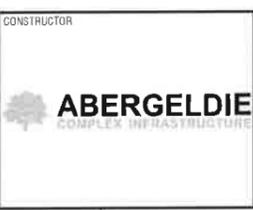
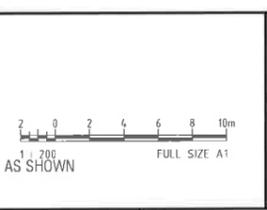
UTILITY IMPACTS:

- TELSTRA LINE ON BRIDGE
- GAS LINE ON BRIDGE
- OVERHEAD ELECTRICAL ON BRIDGE
- WATERMAIN
- OVERHEAD WIRING
- SIGNALS
- TRACK DRAINAGE STRUCTURES
- TRACK SIDE EQUIPMENT
- GST

PLAN
SCALE 1:200

REV	BY	DATE	DESCRIPTION	V.S.	APPD.
A1	MWM	17/12/2014	ISSUED FOR SYSTEM CONCEPT REVIEW		

Co-ordinate System: MGA Zone 56
Height Datum: A.H.D.
Scale:



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DRAWN	B. QUINN	17/12/2014
DESIGNED	J. MITCHELL	17/12/2014
DRG CHECK	M. MORENO	17/12/2014
DESIGN CHECK	T. WRIGHT	17/12/2014
APPROVED	V. SCOLARD	17/12/2014

REGENTS PARK
MAIN SOUTH LINE 19.859km
AMY STREET INTERSECTION UPGRADE
OPTION HA1:VA2
GENERAL ARRANGEMENT PLAN

FILE No.	SHEET: 1 OF 1	A1
STATUS: SYSTEM CONCEPT REVIEW		
DRG No. ASIU-BECA-RE-000301	A	EDMS No.

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APPENDIX B

Erica Marshall

From: Sykes, Kevin <KEVIN.SYKES2@transport.nsw.gov.au>
Sent: Friday, 20 March 2015 10:32 AM
To: 'Erica Marshall'
Cc: Matt Daniel
Subject: RE: Amy Street Intersection Upgrade Works- Regents Park

Erica,

The Amy Street bridge replacement is an Auburn Council project. RailCorp agreed in 2013 to contribute to the cost of replacing the existing two lane bridge on a like for like basis, i.e. RailCorp would fund the cost of a two lane bridge and Council would fund the balance of the cost of constructing a four lane bridge.

Council is responsible for construction of the bridge.

I am unable to comment on the timing of construction as Council is currently seeking a waiver from the ASA for aspects of the bridge design.

Regards

Kevin Sykes
General Manager Property
Property Division
Finance and Corporate Services
Sydney Trains

T 02 8575 0666 | F 02 8575 0315 | M 0417 482 266
Level 2 East 36-46 George Street, Burwood NSW 2134
Sydney Trains is a NSW Government agency



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From: Erica Marshall [<mailto:em.lylemarshall@ozemail.com.au>]
Sent: Thursday, 19 March 2015 5:23 PM
To: Sykes, Kevin
Cc: Matt Daniel
Subject: FW: Amy Street Intersection Upgrade Works- Regents Park

Dear Kevin,

I am just following up from our conversation and email in relation to the Amy Street Bridge Works. Could you please indicate a time frame for delivery of the project this would greatly assist us at this stage.

Regards,

Erica

From: Erica Marshall [<mailto:em.lylemarshall@ozemail.com.au>]
Sent: Tuesday, 17 March 2015 4:16 PM
To: Kevin Sykes (kevin.sykes2@transport.nsw.gov.au)

Cc: Matt Daniel (m.daniel@statewideplanning.com.au)

Subject: Amy Street Intersection Upgrade Works- Regents Park

Dear Kevin,

Please find attached letter requesting information on this project.

We appreciate your time.

Regards,

Erica

Erica Marshall-McClelland

B.Sc Arch. B. Arch. Hons I, M. Eng. Sc. Transport. RAIA.

Architect Registration No 6513 RAIA NSW

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APPENDIX C

Carlingford Road / Park Road / Auburn Road

Scenario 1

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.913	16.8 (26.8)	B (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.034	43.1 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 1						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.924	17.7 (29.0)	B (Worst: C)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.030	44.1 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 1 (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.792	8.9 (14.6)	A (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	0.643	7.9 (10.2)	A (Worst: A)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.986	21.2 (37.6)	B (Worst: C)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.032	49.9 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.818	9.4 (16.2)	A (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	0.652	8.0 (10.3)	A (Worst: A)		RT from Auburn Rd

NOTES:

- (1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- (3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.

Carlingford Road / Park Road / Auburn Road

Scenario 2

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.913	16.8 (26.8)	B (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.034	43.1 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 2						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.927	18.0 (29.6)	B (Worst: C)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.028	44.3 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 2 (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.794	9.0 (14.7)	A (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	0.643	7.9 (10.2)	A (Worst: A)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 2 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.959	21.6 (38.5)	B (Worst: C)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.034	50.2 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 2 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.820	9.5 (16.3)	A (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	0.652	8.0 (10.3)	A (Worst: A)		RT from Auburn Rd

NOTES: Refer to first table

Carlingford Road / Park Road / Auburn Road

Scenario 3

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.913	16.8 (26.8)	B (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.034	43.1 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 3						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.929	18.2 (30.1)	B (Worst: C)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.030	44.9 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 3 (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.796	9.0 (14.8)	A (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	0.644	7.9 (10.2)	A (Worst: A)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 3 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.962	21.9 (39.4)	B (Worst: C)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.035	50.6 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 3 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.822	9.5 (16.4)	A (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	0.653	8.0 (10.3)	A (Worst: A)		RT from Auburn Rd

NOTES: Refer to first table

Carlingford Road / Park Road / Auburn Road

Scenario 4

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.913	16.8 (26.8)	B (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.034	43.1 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 4						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.963	22.1 (39.9)	B (Worst: C)	Round-about	Straight from Park Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.036	50.8 (>70)	D (Worst: F)		LT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 4 (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.824	9.5 (16.5)	A (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	0.653	8.0 (10.3)	A (Worst: A)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 4 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.975	23.9 (44.5)	D (Worst: C)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.045	52.7 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 4 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.833	9.8 (17.2)	A (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	0.655	8.0 (10.3)	A (Worst: A)		RT from Auburn Rd

Carlingford Road / Park Road / Auburn Road

Scenario 5

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.913	16.8 (26.8)	B (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.034	43.1 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 5						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.966	22.5 (40.8)	B (Worst: C)	Round-about	Straight from Park Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.039	51.1 (>70)	D (Worst: F)		LT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 5 (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.826	9.6 (16.7)	A (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	0.653	8.0 (10.3)	A (Worst: A)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 5 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.981	24.8 (20.5)	B (Worst: D)	Round-about	RT from Auburn Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	1.047	53.1 (>70)	D (Worst: F)		RT from Auburn Rd
FUTURE PERFORMANCE – SCENARIO 5 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.838	9.9 (17.6)	A (Worst: B)	Round-about	RT from Carlingford Rd
Carlingford Rd / Park Rd / Auburn Rd	PM	0.655	8.0 (10.3)	A (Worst: A)		RT from Auburn Rd

Auburn Road / Amy Street

Scenario 1

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Auburn Rd / Amy St	AM	0.678	8.6 (10.8)	A (Worst: A)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.622	7.7 (9.8)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 1						
Auburn Rd / Amy St	AM	0.719	9.2 (11.7)	A (Worst: A)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.634	7.8 (9.9)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 1 (widened railway bridge)						
Auburn Rd / Amy St	AM	0.389	6.9 (8.1)	A (Worst: A)	Round-about	RT from Amy St
Auburn Rd / Amy St	PM	0.480	7.0 (8.5)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL						
Auburn Rd / Amy St	AM	0.828	11.6 (15.6)	A (Worst: B)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.690	8.6 (11.0)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL (widened railway bridge)						
Auburn Rd / Amy St	AM	0.408	7.1 (8.5)	A (Worst: A)	Round-about	RT from Auburn Rd (W)
Auburn Rd / Amy St	PM	0.518	7.2 (8.8)	A (Worst: A)		RT from Amy St

NOTES: Refer to first table

Auburn Road / Amy Street

Scenario 2

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Auburn Rd / Amy St	AM	0.678	8.6 (10.8)	A (Worst: A)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.622	7.7 (9.8)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 2						
Auburn Rd / Amy St	AM	0.727	9.4 (11.9)	A (Worst: A)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.637	7.8 (10.0)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 2 (widened railway bridge)						
Auburn Rd / Amy St	AM	0.389	6.9 (8.1)	A (Worst: A)	Round-about	RT from Amy St
Auburn Rd / Amy St	PM	0.481	7.0 (8.6)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 2 + POTTS HILL						
Auburn Rd / Amy St	AM	0.834	11.8 (15.9)	A (Worst: B)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.693	8.6 (11.1)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 2 + POTTS HILL (widened railway bridge)						
Auburn Rd / Amy St	AM	0.413	7.1 (8.5)	A (Worst: A)	Round-about	RT from Auburn Rd (W)
Auburn Rd / Amy St	PM	0.524	7.2 (8.9)	A (Worst: A)		RT from Amy St

NOTES: Refer to first table

Auburn Road / Amy Street

Scenario 3

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Auburn Rd / Amy St	AM	0.678	8.6 (10.8)	A (Worst: A)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.622	7.7 (9.8)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 3						
Auburn Rd / Amy St	AM	0.735	9.5 (12.1)	A (Worst: A)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.638	7.8 (10.0)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 3 (widened railway bridge)						
Auburn Rd / Amy St	AM	0.389	6.9 (8.1)	A (Worst: A)	Round-about	RT from Amy St
Auburn Rd / Amy St	PM	0.482	7.0 (8.6)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 3 + POTTS HILL						
Auburn Rd / Amy St	AM	0.843	12.1 (16.4)	A (Worst: B)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.694	8.7 (11.1)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 3 + POTTS HILL (widened railway bridge)						
Auburn Rd / Amy St	AM	0.420	7.1 (8.6)	A (Worst: A)	Round-about	RT from Auburn Rd (W)
Auburn Rd / Amy St	PM	0.529	7.2 (8.9)	A (Worst: A)		RT from Amy St

NOTES: Refer to first table

Auburn Road / Amy Street (Network)

Scenario 4

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Auburn Rd / Amy St	AM	0.678	8.6 (10.8)	A (Worst: A)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.622	7.7 (9.8)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 4						
Auburn Rd / Amy St	AM	0.850	12.3 (16.9)	A (Worst: B)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.696	8.7 (11.2)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 4 (widened railway bridge)						
Auburn Rd / Amy St	AM	0.424	7.1 (8.6)	A (Worst: A)	Round-about	RT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.531	7.3 (8.9)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 4 + POTTS HILL						
Auburn Rd / Amy St	AM	0.896	14.5 (21.3)	A (Worst: B)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.701	8.8 (11.4)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 4 + POTTS HILL (widened railway bridge)						
Auburn Rd / Amy St	AM	0.458	7.2 (8.8)	A (Worst: A)	Round-about	RT from Auburn Rd (W)
Auburn Rd / Amy St	PM	0.553	7.3 (9.0)	A (Worst: A)		RT from Amy St

NOTES: Refer to first table

Auburn Road / Amy Street (Network)

Scenario 5

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Auburn Rd / Amy St	AM	0.678	8.6 (10.8)	A (Worst: A)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.622	7.7 (9.8)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 5						
Auburn Rd / Amy St	AM	0.867	12.9 (18.3)	A (Worst: B)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.700	8.8 (11.3)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 5 (widened railway bridge)						
Auburn Rd / Amy St	AM	0.434	7.2 (8.7)	A (Worst: A)	Round-about	RT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.536	7.3 (9.0)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 5 + POTTS HILL						
Auburn Rd / Amy St	AM	0.908	15.0 (22.1)	B (Worst: B)	Round-about	LT from Auburn Rd (S)
Auburn Rd / Amy St	PM	0.712	9.0 (11.5)	A (Worst: A)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 5 + POTTS HILL (widened railway bridge)						
Auburn Rd / Amy St	AM	0.465	7.3 (8.8)	A (Worst: A)	Round-about	RT from Auburn Rd (W)
Auburn Rd / Amy St	PM	0.563	7.4 (9.2)	A (Worst: A)		RT from Amy St

Auburn Road / Bagdad Street

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Auburn Rd / Bagdad St	AM	0.248	1.9 (5.8)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.383	1.5 (7.0)	A (Worst: A)		RT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 1						
Auburn Rd / Bagdad St	AM	0.267	1.9 (5.8)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.399	1.5 (7.2)	A (Worst: A)		RT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL						
Auburn Rd / Bagdad St	AM	0.271	2.2 (5.9)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.446	1.8 (7.8)	A (Worst: A)		RT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 2						
Auburn Rd / Bagdad St	AM	0.271	1.9 (5.8)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.403	1.5 (7.3)	A (Worst: A)		RT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 2 + POTTS HILL						
Auburn Rd / Bagdad St	AM	0.273	2.2 (6.0)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.450	1.8 (7.9)	A (Worst: A)		RT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 3						
Auburn Rd / Bagdad St	AM	0.275	1.9 (5.8)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.406	1.5 (7.3)	A (Worst: A)		RT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 3 + POTTS HILL						
Auburn Rd / Bagdad St	AM	0.275	2.1 (6.0)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.453	1.8 (8.0)	A (Worst: A)		RT from Auburn Rd (S)

NOTES: Refer to first table

FUTURE PERFORMANCE – SCENARIO 4						
Auburn Rd / Bagdad St	AM	0.278	2.1 (6.0)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.454	1.8 (8.0)	A (Worst: A)		RT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 4 + POTTS HILL						
Auburn Rd / Bagdad St	AM	0.297	2.1 (6.0)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.471	1.9 (8.2)	A (Worst: A)		RT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 5						
Auburn Rd / Bagdad St	AM	0.282	2.1 (6.0)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.457	1.8 (8.0)	A (Worst: A)		RT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 5 + POTTS HILL						
Auburn Rd / Bagdad St	AM	0.302	2.1 (6.0)	A (Worst: A)	Give Way "Seagull"	RT from Auburn Rd (S)
Auburn Rd / Bagdad St	PM	0.473	1.8 (8.3)	A (Worst: A)		RT from Auburn Rd (S)

Auburn Road / Wellington Road / Tewinga Road

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.304	4.7 (9.1)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.436	5.4 (9.9)	A (Worst: A)		RT from Tewinga Rd
FUTURE PERFORMANCE – SCENARIO 1						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.316	4.8 (9.2)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.444	5.4 (10.0)	A (Worst: A)		RT from Tewinga Rd
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.317	4.8 (9.2)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.442	5.4 (10.0)	A (Worst: A)		RT from Tewinga Rd
FUTURE PERFORMANCE – SCENARIO 2						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.318	4.8 (9.2)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.364	5.4 (9.3)	A (Worst: A)		RT from Tewinga Rd
FUTURE PERFORMANCE – SCENARIO 2 + POTTS HILL						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.318	4.8 (9.2)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.454	5.4 (10.1)	A (Worst: A)		RT from Tewinga Rd
FUTURE PERFORMANCE – SCENARIO 3						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.320	4.8 (9.2)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.447	5.4 (10.0)	A (Worst: A)		RT from Tewinga Rd
FUTURE PERFORMANCE – SCENARIO 3 + POTTS HILL						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.321	4.8 (9.2)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.459	5.4 (10.1)	A (Worst: A)		RT from Tewinga Rd

NOTES: Refer to first table

FUTURE PERFORMANCE – SCENARIO 4						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.323	4.8 (9.2)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.448	5.4 (10.0)	A (Worst: A)		RT from Tewinga Rd
FUTURE PERFORMANCE – SCENARIO 4 + POTTS HILL						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.335	4.9 (9.3)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.456	5.4 (10.1)	A (Worst: A)		RT from Tewinga Rd
FUTURE PERFORMANCE – SCENARIO 5						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.325	4.8 (9.2)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.451	5.4 (10.1)	A (Worst: A)		RT from Tewinga Rd
FUTURE PERFORMANCE – SCENARIO 5+ POTTS HILL						
Auburn Rd / Wellington Rd / Tewinga Rd	AM	0.337	4.9 (9.3)	A (Worst: A)	Round-about	RT from Wellington Rd
Auburn Rd / Wellington Rd / Tewinga Rd	PM	0.458	5.4 (10.1)	A (Worst: A)		RT from Tewinga Rd

Railway Bridge Roundabouts Network (AM Peak Period)

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.945	22.9 (39.6)	B (Worst: C)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	1.074	>70 (>70)	F (Worst: F)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.977	31.0 (56.6)	C (Worst: E)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	1.168	>70 (>70)	F (Worst: F)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.818	9.4 (16.2)	A (Worst: B)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	0.408	7.1 (8.5)	A (Worst: A)		RT from Auburn Rd (W)
FUTURE PERFORMANCE – SCENARIO 2 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.979	31.4 (57.6)	C (Worst: E)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	1.176	>70 (>70)	F (Worst: F)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 2 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.820	9.5 (16.3)	A (Worst: B)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	0.413	7.1 (8.5)	A (Worst: A)		RT from Auburn Rd (W)
FUTURE PERFORMANCE – SCENARIO 3 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.982	32.2 (59.4)	C (Worst: E)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	1.185	>70 (>70)	F (Worst: F)		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 3 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.822	9.5 (16.4)	A (Worst: B)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	0.420	7.1 (8.6)	A (Worst: A)		RT from Auburn Rd (W)

NOTES: Refer to first table

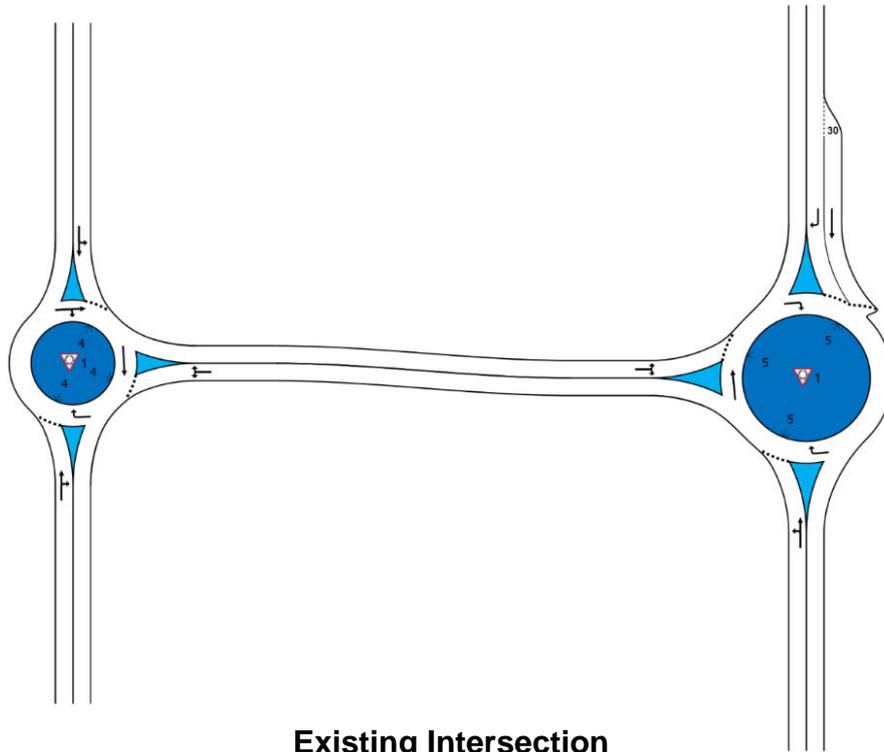
FUTURE PERFORMANCE – SCENARIO 4 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.995	36.2 (67.5)	C (Worst: E)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	1.237	112.5 (>200)	F		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 4 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.833	9.8 (17.2)	A (Worst: B)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	0.458	7.2 (8.8)	A (Worst: A)		RT from Auburn Rd (W)
FUTURE PERFORMANCE – SCENARIO 5 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	AM	1.000	37.4 (70.2)	C (Worst: E)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	1.251	117 (>200)	F		LT from Auburn Rd (S)
FUTURE PERFORMANCE – SCENARIO 5 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.838	9.9 (17.6)	A (Worst: B)	Round-about	RT from Carlingford Rd
Auburn Rd / Amy St	AM	0.465	7.3 (8.8)	A (Worst: A)		RT from Auburn Rd (W)
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL (Left Turn Lane)						
Carlingford Rd / Park Rd / Auburn Rd	AM	0.99	30.4 (Worst: 68.4)	C (Worst: E)	Round-about	RT from Carlingford Road
Auburn Road / Amy Street	AM	1.11	69.2 (Worst: 168.3)	E (Worst: F)	Round-about	LT from Auburn Road (S)

Railway Bridge Roundabouts Network (PM Peak Period)

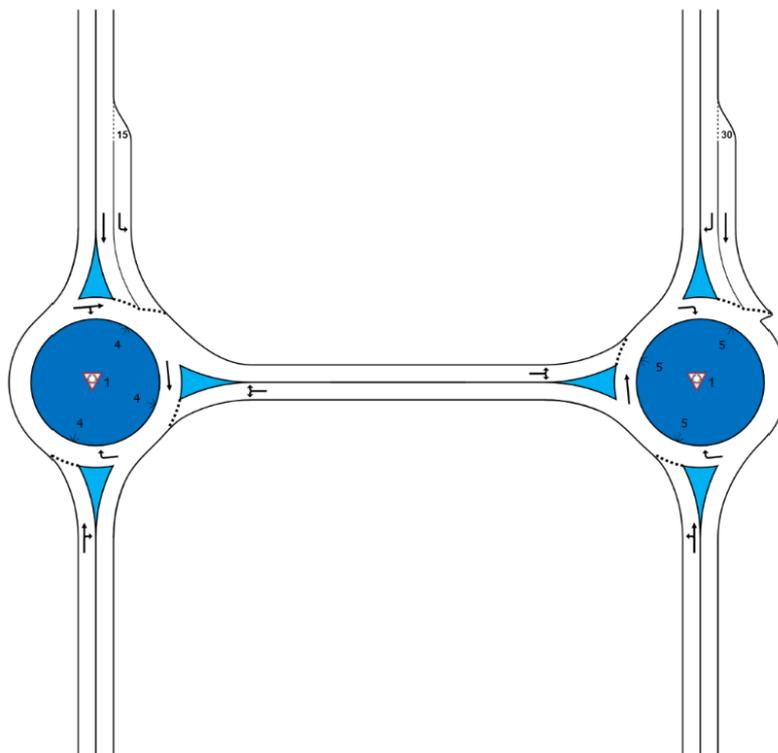
Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Carlingford Rd / Park Rd / Auburn Rd	PM	1.041	52.9 (>70)	D (Worst: F)	Round-about	LT from Park Rd
Auburn Rd / Amy St	PM	1.036	>70 (>70)	F (Worst: F)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	PM	1.106	>70 (>70)	F (Worst: F)	Round-about	LT from Park Rd
Auburn Rd / Amy St	PM	1.114	>70 (>70)	F (Worst: F)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	PM	0.652	8.0 (10.3)	A (Worst: A)	Round-about	RT from Auburn Rd
Auburn Rd / Amy St	PM	0.518	7.2 (8.8)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 2 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	PM	1.109	>70 (>70)	F (Worst: F)	Round-about	LT from Park Rd
Auburn Rd / Amy St	PM	1.117	>70 (>70)	F (Worst: F)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 2 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	PM	0.652	8.0 (10.3)	A (Worst: A)	Round-about	RT from Auburn Rd
Auburn Rd / Amy St	PM	0.524	7.2 (8.9)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 3 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	PM	1.111	>70 (>70)	F (Worst: F)	Round-about	LT from Park Rd
Auburn Rd / Amy St	PM	1.119	>70 (>70)	F (Worst: F)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 3 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	PM	0.653	8.0 (10.3)	A (Worst: A)	Round-about	RT from Auburn Rd
Auburn Rd / Amy St	PM	0.529	7.2 (8.9)	A (Worst: A)		RT from Amy St

NOTES: Refer to first table

FUTURE PERFORMANCE – SCENARIO 4 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	PM	1.124	79.4 (>140)	F	Round-about	LT from Park Rd
Auburn Rd / Amy St	PM	1.129	93.9 (>250)	F		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 4 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	PM	0.655	8.0 (10.3)	A (Worst: A)	Round-about	RT from Auburn Rd
Auburn Rd / Amy St	PM	0.553	7.3 (9.0)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 5 + POTTS HILL						
Carlingford Rd / Park Rd / Auburn Rd	PM	1.134	82.9 (>150)	F	Round-about	LT from Park Rd
Auburn Rd / Amy St	PM	1.133	94.4 (>250)	F		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 5 + POTTS HILL (widened railway bridge)						
Carlingford Rd / Park Rd / Auburn Rd	PM	0.655	8.0 (10.3)	A (Worst: A)	Round-about	RT from Auburn Rd
Auburn Rd / Amy St	PM	0.563	7.4 (9.2)	A (Worst: A)		RT from Amy St
FUTURE PERFORMANCE – SCENARIO 1 + POTTS HILL (Left Turn Lane)						
Carlingford Rd / Park Rd / Auburn Rd	PM	1.00	29.2 (Worst: 59.4)	C (Worst: E)	Round-about	RT from Auburn Road
Auburn Rd / Amy St	PM	1.12	89.6 (Worst: 288.6)	F (Worst: F)	Round-about	RT from Amy Street



Existing Intersection



Intersection with 15m Long Left Turn Lane

APPENDIX D

FIGURE 2A: DESIGN STUDIES SUMMARY

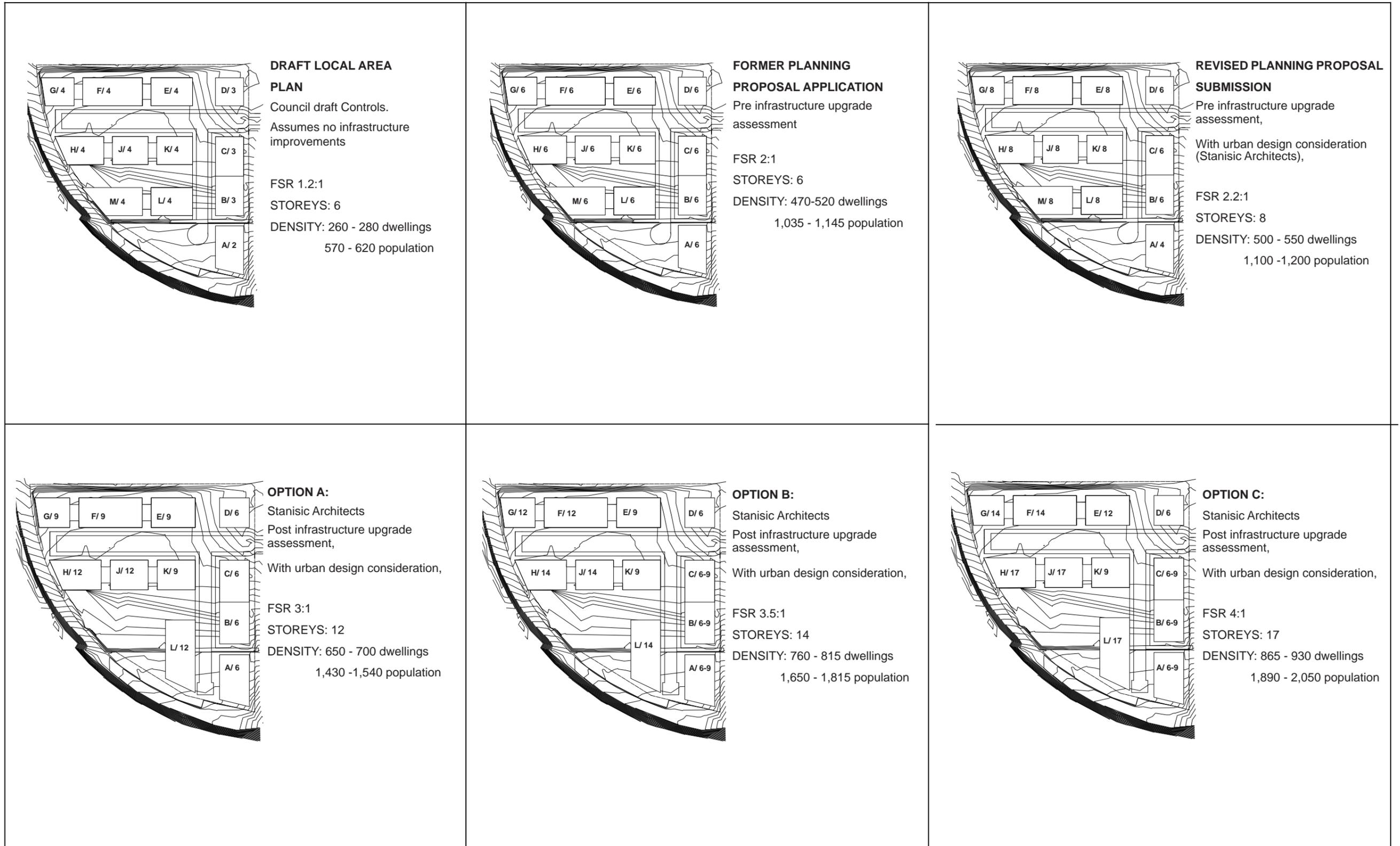
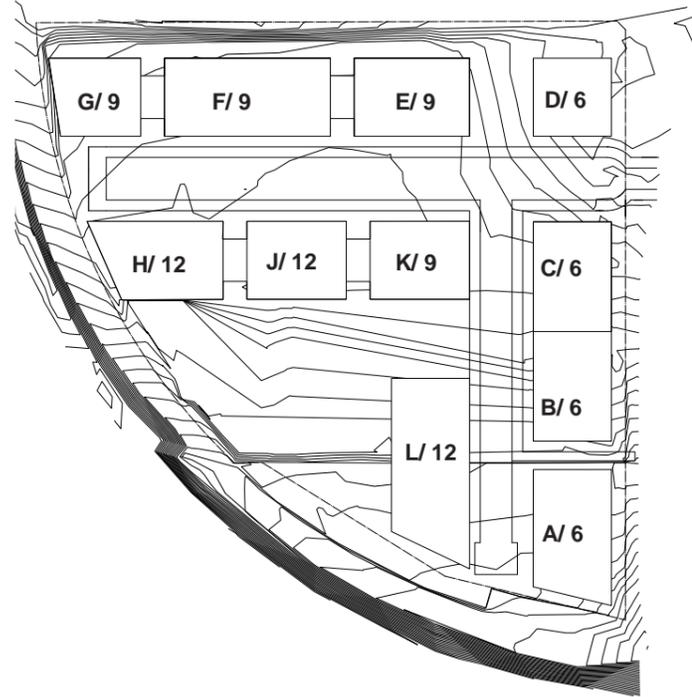


FIGURE 2B: DESIGN OPTIONS STUDY

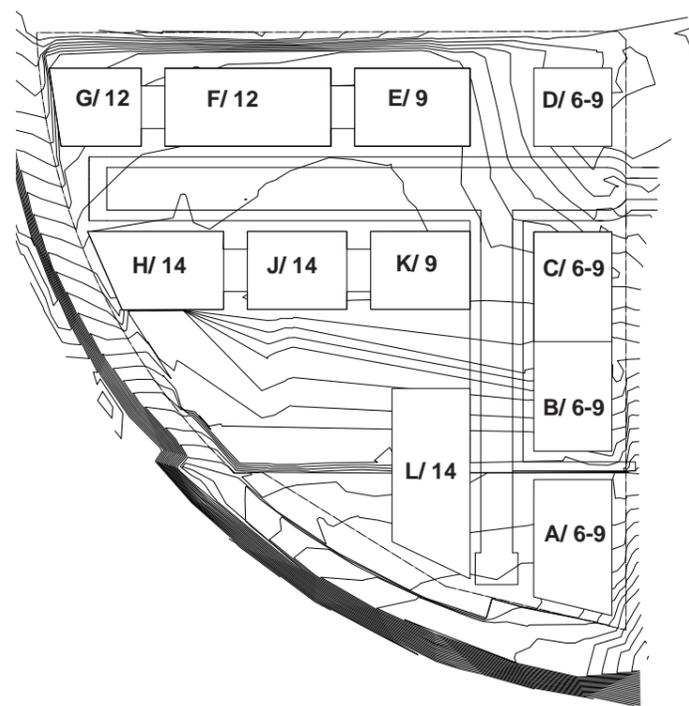
OPTION A: FSR 3:1



FSR: 3:1
 STOREYS: 6 - 12
 DENSITY: 650 - 700 dwellings
 1,430 -1,540 population

- Medium density development,
- Positive response to the future housing needs of South-west Sydney
- Level of population will create a 'new neighbourhood' character,
- 6 storeys along Auburn Road compatible with Councils intentions for Auburn Road and Magney Reserve,
- Taller scaled buildings set back from Auburn Road reducing visual impact and creating a layered streetscape,
- Varying building heights allow for flexible modelling of mass,
- 2 hours of daylight achieved to common open space,
- Overshadowing does not impact on surrounding neighbourhood,
- Proposal consistent with NSW Residential Flat Design Code 2002,
- Able to meet the requirements of SEPP 65 in terms of solar access, cross ventilation and open space,
- *3:1 FSR can be achieved with a maximum storey height of 10 storeys. Further interrogation would be required at Part 4 stage to ensure compliance with SEPP65 and RFDC.*

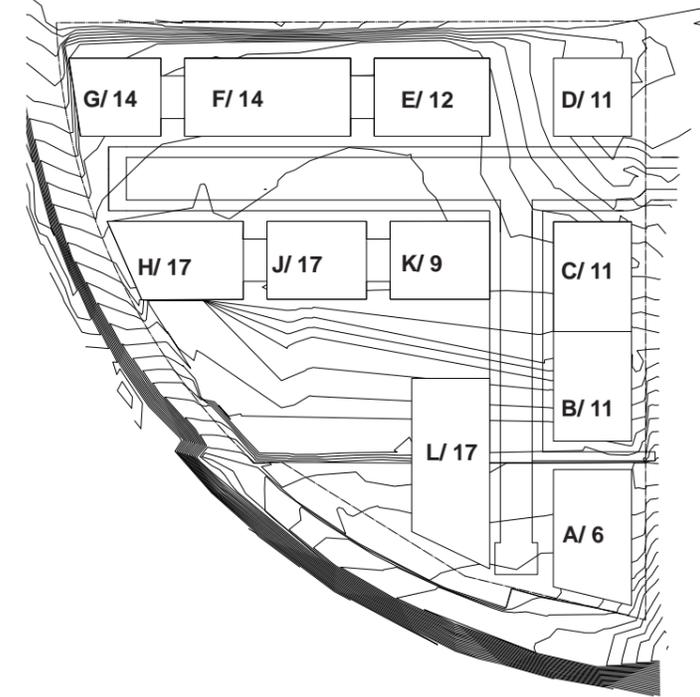
OPTION B: FSR 3.5:1



FSR: 3.5:1
 STOREYS: 6 - 14
 DENSITY: 760 - 815 dwellings
 1,650 - 1,815 population

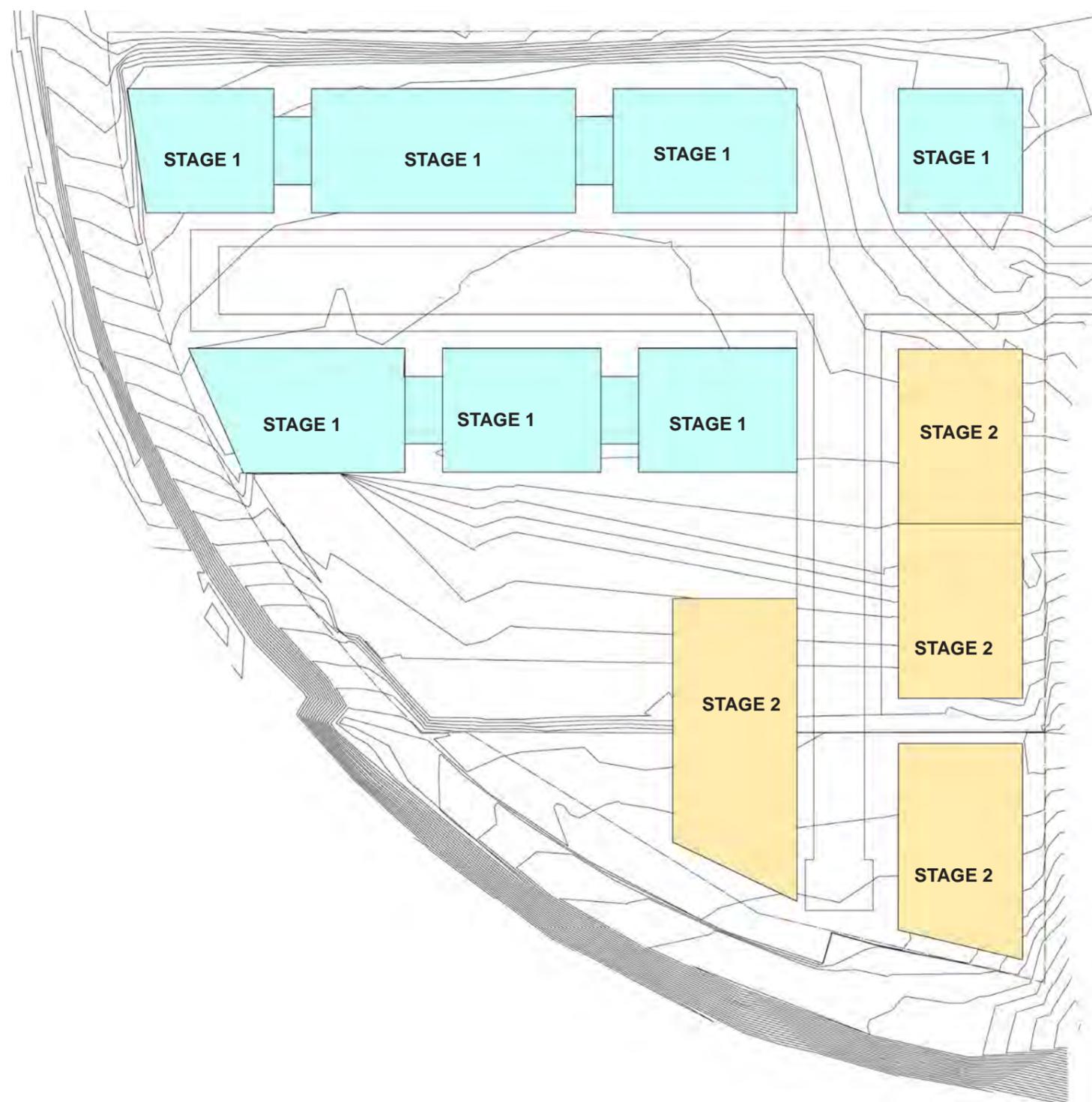
- Medium density development,
- Positive response to the future housing needs of South-west Sydney
- Level of population will create a 'new neighbourhood' character,
- 6-9 storeys along Auburn Road establishes a 'street wall' giving definition to Regents Park precinct.
- 6-9 storeys buildings act as a visual 'buffer' to higher buildings beyond,
- Varying building heights allows for more flexible modelling of mass,
- Opportunities to set back floors over 6 storeys to reduce visual impact,
- Proposal consistent with NSW Residential Flat Design Code 2002,
- May meet the requirements of SEPP 65 in terms of solar access, cross ventilation and open space,

OPTION C: FSR 4:1



FSR: 4:1
 STOREYS: 6 - 17
 DENSITY: 865 - 930 dwellings
 1,890 - 2,050 population

- High density development,
- Positive response to the future housing needs of South-west Sydney
- Level of population will create a 'new neighbourhood' character,
- Varying building heights allows for more flexible modelling of mass,
- Opportunities to set back floors over 6 storeys to reduce visual impact,
- Proposal consistent with NSW Residential Flat Design Code 2002,



STAGING PLAN

The development of the site will be undertaken in two stages:

STAGE 1: Limits site density such that additional capacity does not adversely impact on existing road conditions and considerations of buildability, refer to Appendix A: *Supplementary Traffic Impact Assessment* prepared by Lyle Marshall & Associates Pty Ltd.

FSR 2.0:1
 DENSITY 470 - 520 dwellings
 1,035 - 1,145 population

STAGE 2: Remaining works to be undertaken on completion of road improvements works.

FSR 1.0:1
 DENSITY 235 - 260 dwellings
 520 - 570 population

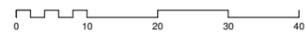
FIGURE 2C: STAGING PLAN

FIGURE 3: CONCEPT PLAN



□ SITE

scale bar



1:1000

