

APPENDIX 2

SOUTH AUBURN TRAFFIC AND TRANSPORT ACCESSIBILITY STUDY



TRAFFIC, TRANSPORT AND ACCESSIBILITY STUDY
Planning Proposal to Rezone Land at Auburn Road and
Susan Street, Auburn

Hyder Consulting Pty Ltd
ABN 76 104 485 289
Level 5, 141 Walker Street
Locked Bag 6503
North Sydney NSW 2060
Australia
Tel: +61 2 8907 9000
Fax: +61 2 8907 9001
www.hyderconsulting.com

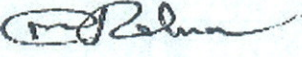


AUBURN CITY COUNCIL

SOUTH AUBURN PLANNING PROPOSAL

Traffic, Transport and Accessibility Study

Traffic, Transport and Accessibility Study

Author	Mukit Rahman, Mansee Sachdeva	
Checker	Mukit Rahman	
Approver	Mukit Rahman	
Report No		
Date	20August 2013	

This report has been prepared for Auburn City Council in accordance with the terms and conditions of appointment for South Auburn Planning Proposal dated June 2013. Hyder Consulting Pty Ltd (ABN 76 104 485 289) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

CONTENTS

1	Introduction	2
1.1	Study Purpose.....	2
1.2	Background	2
1.3	Study Aims and Objectives.....	4
1.4	Core Area	4
1.5	Reference Traffic Data and Model.....	6
1.6	Report Structure	6
2	The Proposal	7
3	Transport and Accessibility Assessment	9
3.1	Journey to Work (JTW)	9
3.2	Public Transport	13
4	Traffic Impact Assessment	15
4.1	Traffic Generation.....	15
4.2	Impact on Road Network	17
5	Conclusions	21

APPENDICES

Appendix A Traffic Generated by South Auburn PP and Detailed SIDRA RESULTS

TABLES

Table 3-1	Residence of People Working in South Auburn.....	9
Table 3-2	Workplace Destination of People Residing in South Auburn	11
Table 3-3	Existing Bus Services in South Auburn	13
Table 4-1	RMS's Standard Trip Generations Rates	15
Table 4-2	Forecast Trip Generation.....	15
Table 4-3	LoS Criteria for Intersection Capacity Analysis.....	18
Table 4-4	Performance Results for Existing (2013) Conditions	19
Table 4-5	Forecast Level of Service with South Auburn PP –Scenario 2	19

FIGURES

Figure 1-1	South Auburn PP.....	3
Figure 1-2	Definition of Core and Wider Areas and Key Intersections.....	5
Figure 2-1	South Auburn Planning Proposal Zoning Map (Sourced from Council).....	8
Figure 3-1	Travel Zone Boundary for South Auburn PP	10
Figure 3-2	Transport Mode Share for South Auburn.....	12
Figure 3-3	Existing Bus Stops in South Auburn	13
Figure 3-4	Existing Walking Facilities in South Auburn.....	14
Figure 4-1	Assumed Trip Distribution to and from Site	16

Executive Summary

Auburn City Council is proposing to amend the land use zoning, height of building and floor space ratio (FSR) controls for land in Auburn bounded by Auburn Road, Helena Street, Susan Street, and Beatrice Street (the site). The proposed amendments will form part of a planning proposal referred to as the South Auburn Planning Proposal (PP).

An Urban Design Study prepared by MG Planning and Group GSA identified that if the proposed increase in residential and mixed use development permitted by the amended controls were achieved there would be an additional 750 dwellings and 13,960 m² of mixed use podium gross floor area (GFA) for employment uses. The additional development is forecast to generate in the order of 480 to 530 additional vehicle trips in one peak hour.

Hyder has developed the concept of the "core area" which aims to report traffic impact in those parts of the network that are of critical significance to the site. Within the core area four key intersections have been assessed as follows (see Figure 1-2):

- *Auburn Road / Beatrice Street;*
- *Helena Street / Auburn Road;*
- *Beatrice Street/ Susan Street and*
- *Helena Street / Susan Street.*

The intersection capacity analysis shows that currently all four intersections within the core area operate with good level of service A and B. The Auburn Road / Beatrice Street traffic signalled intersection will be the most significantly impacted, with a forecast level of service C for post development conditions. The remaining three intersections at Auburn Road / Helena Street, Susan Street/ Beatrice Street and Susan Street/ Helena Street will operate with good level of service A for post development conditions, to the year 2021. The proposed development will not adversely impact road and intersection operations in either the morning or afternoon peak periods.

The current public transport near the vicinity of site provides good amenity to its working and residential population. The site is within one km of Auburn Train Station. Auburn Train Station is serviced by the Western Line and ranks 22nd in terms of number of passengers served. Three bus stops are located within 800m walking radius of the site, which provide access to two bus services; routes 908 and 911 operated by Veolia.

The location of the site in close proximity to public transport (particularly the Auburn Train Station) is appropriate in integrating land use and transport provision in a sustainable manner.

1 Introduction

1.1 Study Purpose

The following document provides a Traffic, Transport and Accessibility Study (hereafter referred to as "the Study") of a planning proposal to amend the land use zoning, height of building and floor space ratio (FSR) controls on a small parcel of land in Auburn bounded by Auburn Road, Helena Street, Beatrice Street and Susan Street (herein referred to as "the site"). The Study has been commissioned by Auburn City Council ('Council') to investigate the potential traffic implications of South Auburn PP on the road network.

The overall outcome of the Study is a Traffic and Transport assessment which determines the impact on the road network arising from the planning proposal.

1.2 Background

Council is currently undertaking a series of studies designed to test the impact of proposed increases to height of building and floor space ratio (FSR) controls contained within the *Auburn Local Environmental Plan (LEP) 2010*. Hyder previously undertook traffic, transport and modelling assessment for the following two projects for Council:

- *Auburn LGA Traffic and Transport Study (Auburn LGA Study)* in a draft form, Hyder Consulting Pty Ltd, December 2012. The study identifies existing transport and traffic issues and strategic responses for the Auburn Local Government Area.
- *Increased Floor Space Ratio Controls for Certain Land Zoned B4 Mixed Use and R4 High Density Residential within the Auburn LGA (FSR PP Study)*, Hyder Consulting, August 2013. The FSR PP Study determines traffic impact on the strategic road network arising from the proposed increase in FSR in Auburn, Lidcombe, Berala and Regents Park.
- *Increased Floor Space Ratio Controls for Certain Land Zoned B4 Mixed Use & R4 High Density Residential within the Auburn LGA (FSR PP Study), Transport and Accessibility Study, Auburn City Council, August 2013*. Council has prepared the transport and accessibility elements of the study.

Similar to FSR PP Study, Council is preparing a planning proposal to amend the zoning, height and FSR controls for the site. The proposed zoning amendments are from R3 Medium Density Residential to part B4 Mixed Use and part R4 High Density under the *Auburn LEP 2010*. Council requires a Traffic, Transport and Accessibility Study to assess the impact of the planning proposal.

This report references relevant traffic and modelling data, and accessibility assessments from the FSR PP study reports undertaken by Hyder and Council, and should be read in conjunction with this report.

Figure 1-1 below shows the South Auburn PP site in the context of broader FSR PP sites in Auburn.

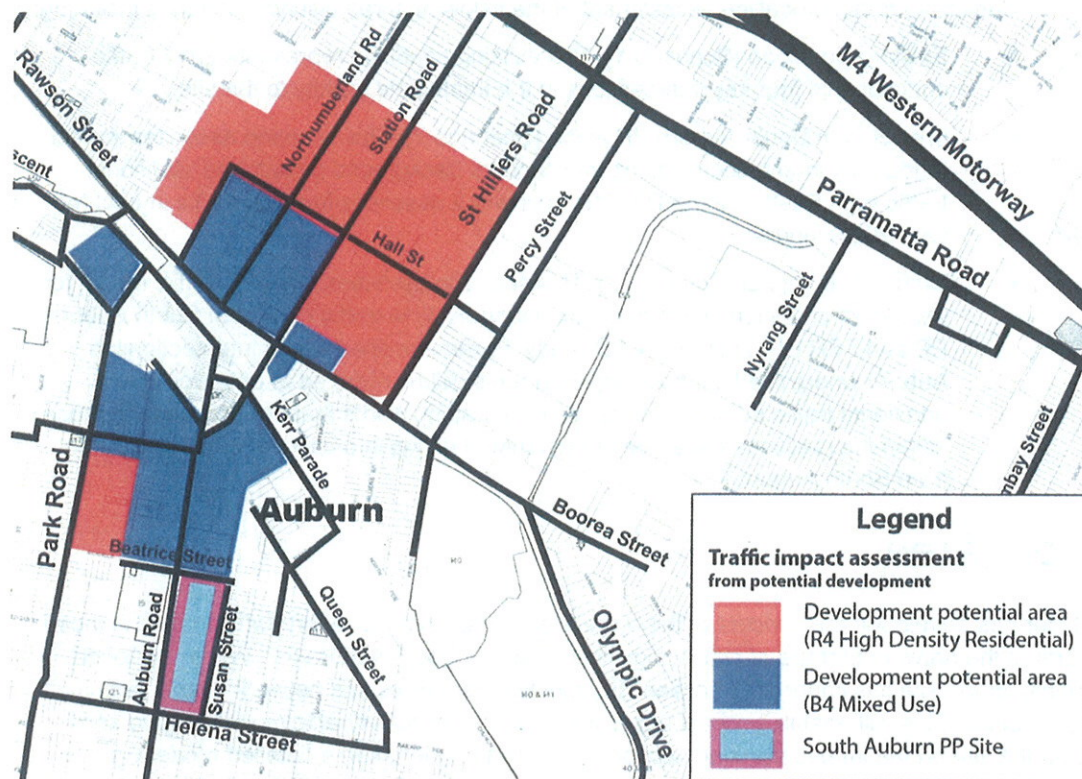


Figure 1-1 South Auburn PP

1.3 Study Aims and Objectives

The main purpose of this study is to assess the impact of the proposed amendments to zoning, height and FSR controls on the road network surrounding the site and provide any mitigation measures if required to accommodate the additional traffic generated by the South Auburn PP. The study has assumed 2021 as the future horizon year for its assessment.

Key objectives include:

- Identify any transport issues that the proposed control amendments are likely to cause.
- Identify accessibility of the site considering bus services, bicycle and pedestrian infrastructure.
- Undertake traffic modelling assessment of the following three distinct scenarios including:
 - Existing Condition (Scenario 1). The existing condition represents 2013 traffic conditions to four key intersections in the immediate vicinity to the site.
 - Impact from South Auburn PP alone (Scenario 2). This scenario assesses impact to four key intersections taking into account background growth and additional traffic from South Auburn PP. The scenario 2 assesses forecast traffic impact for year 2021 condition.
 - Cumulative Impact (Scenario 3). This scenario assesses forecast traffic impact for year 2021 condition taking into account cumulative traffic from both South Auburn PP and FSR PP. In the FSR PP Study, Hyder identified seven intersections in Auburn where road capacity improvements will be required to cater for the additional traffic demand. Intersection upgrading works that are proposed to those seven intersections have been re-examined taking into account additional traffic from South Auburn PP.

1.4 Core Area

Hyder has developed the concept of the "core area" which aims to report traffic impact in those parts of the network that are of critical significance to the South Auburn PP. Within the local vicinity of the site it is important to assess intersection capacities and network connectivity in some detail. This will enable a robust assessment of the impact of traffic movements to and from the site on the immediate road network. Hyder has undertaken a detailed modelling assessment of the "core area of impact". This forms the base-line for this level of assessment. The approximate core area is shown in Figure 1-2.

The core area includes four key intersections as follows:

- Auburn Road / Beatrice Street (I-40);
- Helena Street / Auburn Road (I-53);
- Beatrice Street/ Susan Street (I-54) and
- Helena Street / Susan Street (I-55).

In conjunction with the core area defined above, Hyder has also assessed impact of South Auburn PP within the "wider area" where intersection upgrading works are proposed arising from the FSR PP. The following seven intersections are reassessed within wider area including:

- Park Road / Wellington Road (I-9);

- Park Road / Vaughan Street (I-10);
- Olympic Drive / Vaughan Street (I-13);
- Station Road / Rawson Street (I-22);
- Rawson Street / South Parade (I-39);
- Station Road / Kerr Parade / Civic Road (I-47); and
- Queen Street / Auburn Road / Civic Road (I-49).

Hyder's analysis has found that impact of South Auburn PP to wider area is very small.

Figure 1-2 also shows location of key intersections within the wider area where intersection upgrades are proposed as part of FSR PP study.



Figure 1-2 Definition of Core and Wider Areas and Key Intersections

1.5 Reference Traffic Data and Model

For the purpose of this study, Hyder undertook a data gap analysis based on available data in relevant studies. Traffic survey was previously conducted in July 2012 for the FSR PP study. Counts at the Auburn Road / Beatrice Street intersection from July 2012 survey were used in Auburn PP study.

The data gap analysis suggested that new traffic counts were required at three key intersections as follows (see previous Figure 1-2):

- Helena Street / Auburn Road (I-53);
- Beatrice Street/ Susan Street (I-54) and
- Helena Street / Susan Street (I-55).

The new traffic survey was undertaken by Skyhigh in June 2013 for both AM and PM peak periods. For modelling intersections Hyder used SIDRA software (version 5.1.13.2093).

1.6 Report Structure

The report has the following chapters:

- Section 1 provides an overview of the Study, background information, study objectives, traffic investigation area, traffic data and software used.
- Section 2 provides an overview of the existing and the potential capacity of residential and mixed use podium GFA proposed at South Auburn.
- Section 3 details transport and accessibility assessment of the site. This section details travel patterns, and examines public transport, walking and cycling facilities relevant to the site.
- Section 4 provides an assessment of forecast traffic impact to road network.
- Section 5 provides conclusions of the Study.

2

The Proposal

The proposal is to rezone the site from its current zoning of R3 medium Density Residential to B4 Mixed Use and R4 High Density Residential. Figure 2-1 shows the proposed zoning map for the site. MG Planning and Group GSA determined the existing and potential future maximum yield for site based on the South Auburn PP. Currently the site contains 93 dwellings and approximately 2,444 m² of mixed use podium gross floor area (GFA) for employment uses. Using the RMS Guide to Traffic Generating Developments, Issue 2.2, October 2002, it is estimated that currently the site generates between 71 and 84 trips in one peak hour.

MG Planning and Group GSA have identified potential yields of the site. Two options were examined as follows:

- Option 1A - additional 855 dwellings and 6,980 m² of mixed use podium gross floor area (GFA) for employment uses; and
- Option 1B - additional 750 dwellings and 13,960 m² of mixed use podium gross floor area (GFA) for employment uses.

When trip generation was considered, Option 1B will provide the maximum traffic impact to road network. The additional development yield of 750 dwellings and 13,960m² of mixed use podium gross floor area (GFA) in Option 1B have been used for traffic impact assessment purpose.

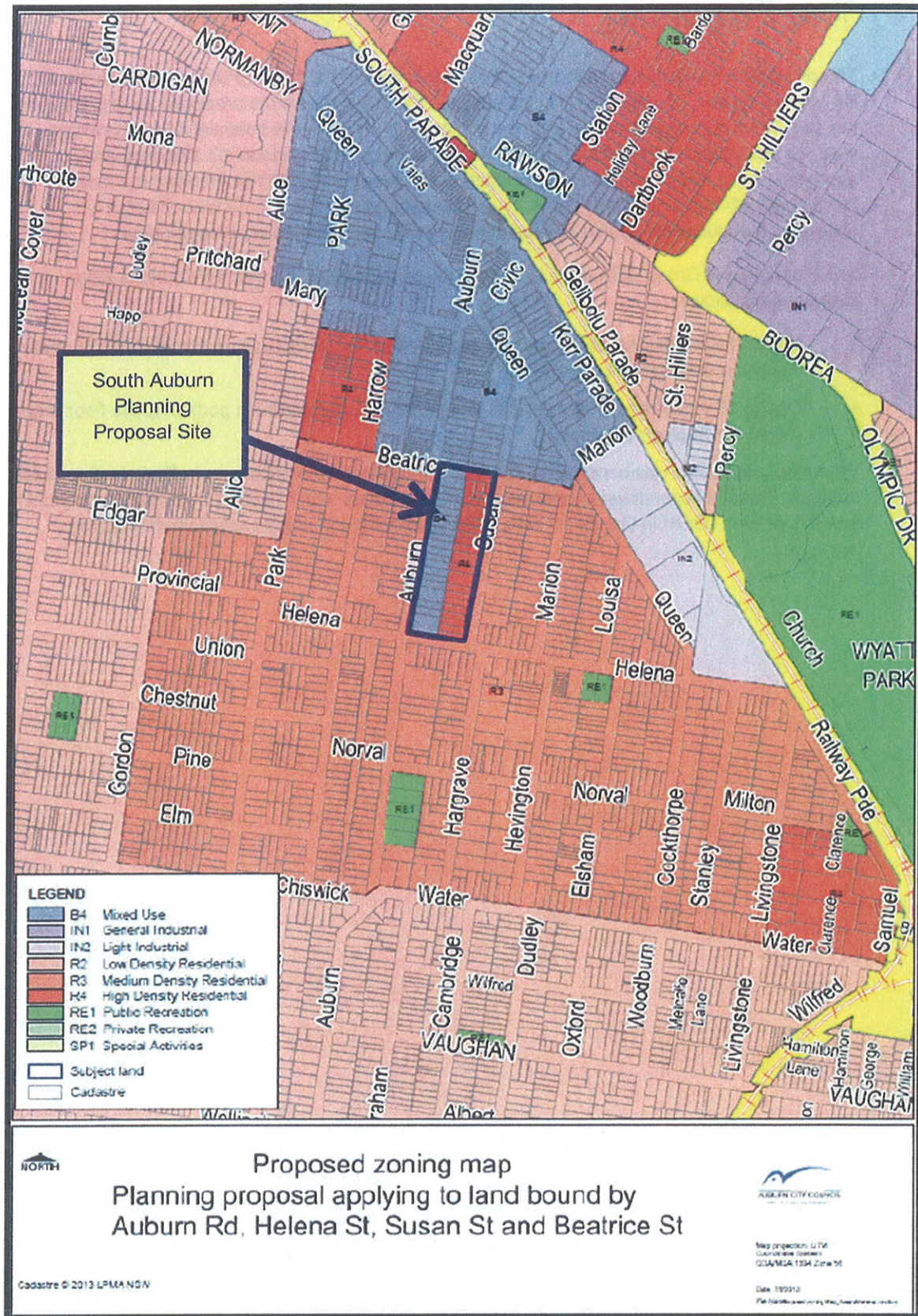


Figure 2-1 South Auburn Planning Proposal Zoning Map (Sourced from Council)

3 Transport and Accessibility Assessment

3.1 Journey to Work (JTW)

Data from the Australian Bureau of Transport Statistics (BTS) was used to examine the travel patterns of South Auburn residents. Journey to work data is collected by the Australian Bureau of Transport Statistics as part of the Australian national census. The latest Journey to Work (JTW) for 2011 has been used. The dataset estimates trip purposes. Work trip origin and destinations are coded to the 2011 travel zones. For JTW trips, the study area was determined by the travel zone boundary of 1311 as shown in Figure 3-1.

South Auburn as Workplace

Table 3-1 shows location of residence of people who work in South Auburn. The data shows that majority of the people working in South Auburn live in nearby places such as Auburn, Parramatta, Blacktown and Bankstown. Approximately 26% of residents commuting to South Auburn reside in Auburn, 10% in Merrylands and about 7% in Parramatta.

Table 3-1 Residence of People Working in South Auburn

Place of Residence	Percentage
Auburn	26%
Merrylands – Guildford	10%
Parramatta	7%
Bankstown	6%
Blacktown	5%
Strathfield - Burwood – Ashfield	5%
Fairfield	4%
Baulkham Hills	3%
Mount Druitt	3%
Canada Bay	2%

Source: JTW2011



Figure 3-1 Travel Zone Boundary for South Auburn PP

South Auburn as Residence

Journey to work analysis also revealed that majority of people residing in South Auburn work within Auburn (about 24%). Approximately 18% of South Auburn residents work in City and about 6% in Parramatta (Table 3-2).

Table 3-2 Workplace Destination of People Residing in South Auburn

Workplace	Percentage
Auburn	24%
Sydney Inner City	18%
No usual address	6%
Parramatta	6%
Bankstown	5%
Strathfield - Burwood - Ashfield	5%
Merrylands - Guildford	5%
Ryde - Hunters Hill	4%
Chatswood - Lane Cove	3%
Canada Bay	2%

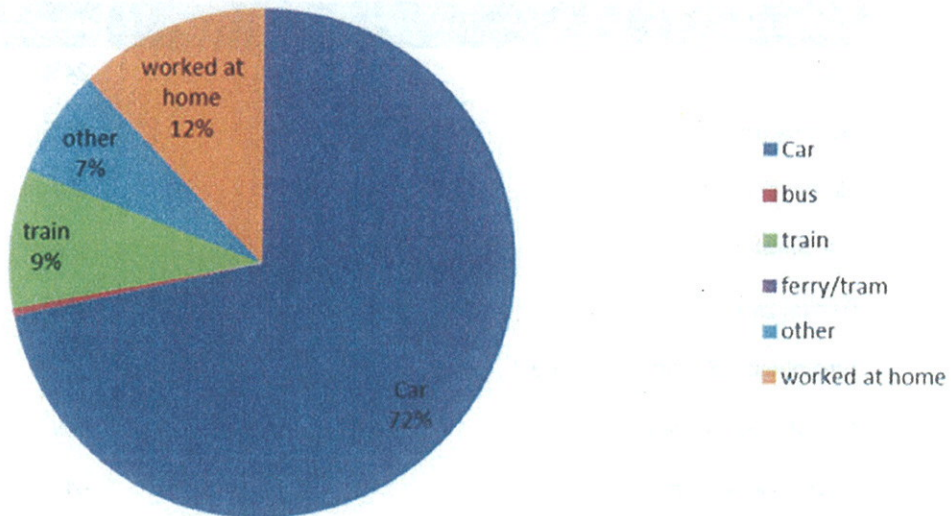
Source: JTW2011

3.1.1 Mode Share

In order to establish an approximation of the existing transport mode share of South Auburn residents, the JTW dataset was also analysed for transport mode. Figure 3.-2 show the mode share for work related trips in the South Auburn Area.

The analyses showed that majority of work related trips to/from South Auburn were made by private car (approximately 56 % to 72 %). About 26% of trips from South Auburn were made by train. In comparison only 9% of trips to South Auburn were made by train. Bus accounted for less than 1% trips. The data indicates that private cars and train are the two dominant mode of transport for work related trips to and from South Auburn area.

Mode Share South Auburn as Workplace



Mode Share South Auburn Residents

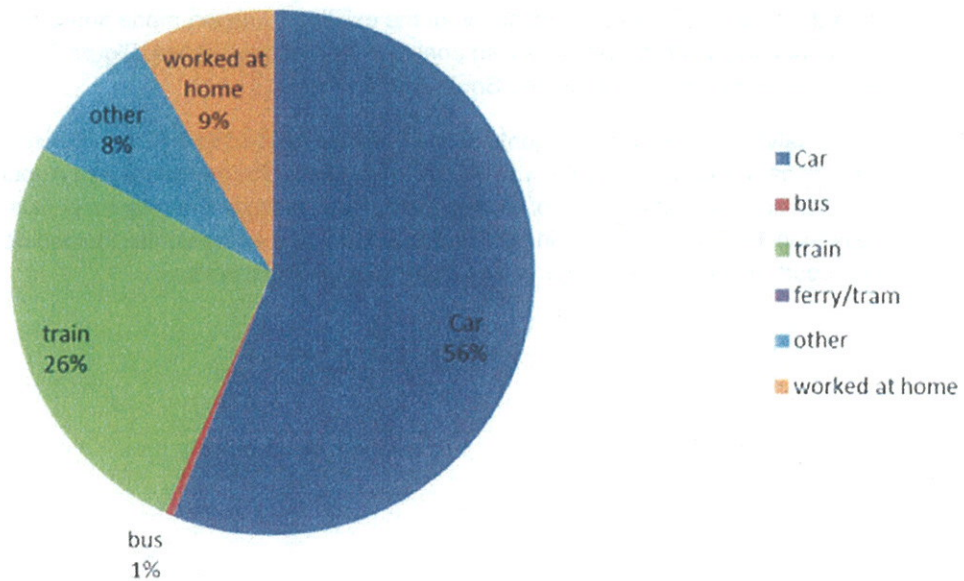


Figure 3-2 Transport Mode Share for South Auburn

3.2 Public Transport

3.2.1 Bus Service

The site is located within 1 km of Auburn Town Centre and Auburn Train Station. The site has good access to existing Auburn Train Station and bus services. The study area is serviced by two bus services; 908 and 911 operated by Veolia. The buses operate in every 30 minutes to one hour in morning and afternoon peak period (Table 3-3) from South Auburn to Auburn Train Station, Auburn Town Centre and Auburn Hospital.

Three bus stops are located within an 800m walking radius of the site (Figure 3-3). Bus stops are located on Auburn Road and Beatrice Street.

Table 3-3 Existing Bus Services in South Auburn

Route No.	Service Description	Frequency Weekdays	
		AM Peak	PM Peak
908	Bankstown to Merrylands via Regents Park, Auburn and South Granville	Every 1 hour	Every 1 hour
911	Auburn to Bankstown via Chester Hill & Bass Hill Plaza	Every 30 minutes	Every 30 minutes

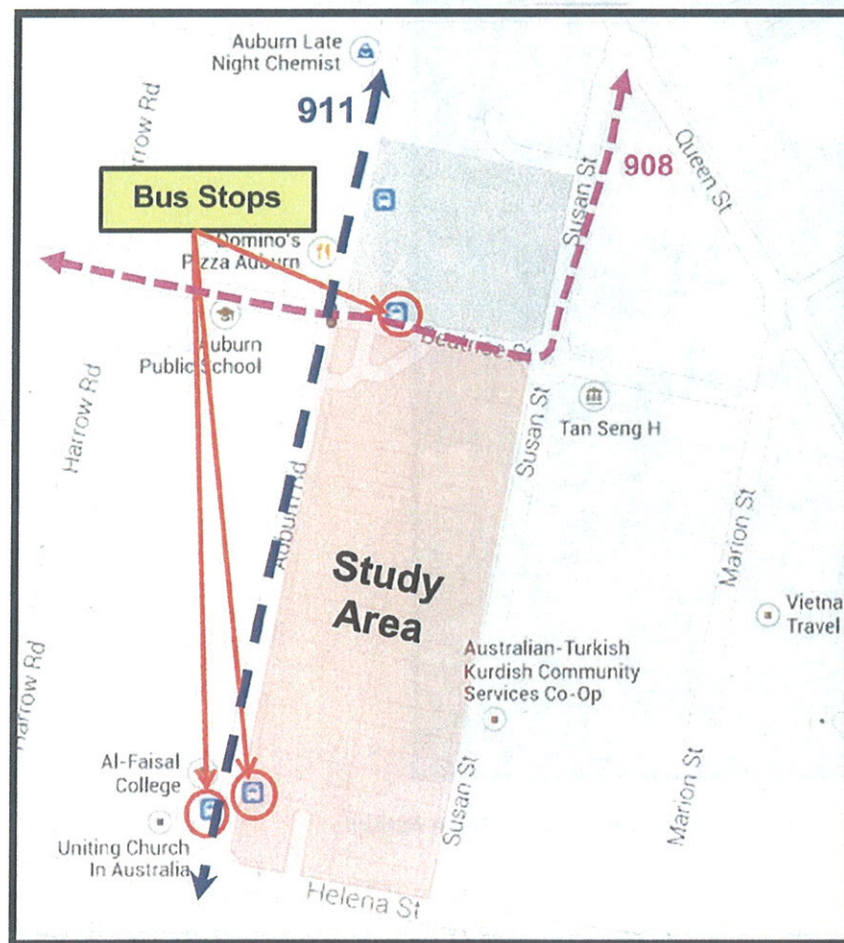


Figure 3-3 Existing Bus Stops in South Auburn

3.2.2 Rail Service

The site is within 1 km of Auburn Train Station. Auburn Train Station is serviced by the Western Line and ranks 22nd in terms of number of passengers served (sourced from FSR PP). It provides significant facility for passengers travelling to work in Sydney's CBD locations. The analysis also found that walking was the dominant mode for access to Auburn Train Station as utilisation of other modes such as bus and bicycle was extremely limited.

3.2.3 Cycling and Walking

There are no dedicated on or off road cycling facilities provided within the South Auburn Area. Footpaths are provided on all streets within the subject South Auburn area. Pedestrian crossing is provided at the Auburn Road / Beatrice Road traffic signals on all approaches as shown in Figure 3-4. In the vicinity of the site, no new bicycle route is proposed.



Figure 3-4 Existing Walking Facilities in South Auburn

4 Traffic Impact Assessment

4.1 Traffic Generation

The impact assessment is based on estimated yields of 750 dwellings and 13,960 m² of mixed use podium GFA. The trip generation has been estimated using the RMS Guide to Traffic Generating Developments, Issue 2.2, October 2002. Table 4-1 below summarises RMS's trip generation rate and associated assumptions used in this Study.

Table 4-1 RMS's Standard Trip Generations Rates

Land Use	RTA trip generations rates
Residential:	High density dwelling: 0.29 peak hour trips per dwelling.
Employment use: Retail	For Auburn Town Centre, for retail development PM peak trip generation is 4.6 vehicle trips per hour per 100 m² of GLFA. This rate is proposed for retail GLFA higher than 30,000 m².
Employment use: Office and commercial	Trip generation is 2 vehicle trips per hour per 100 m ² of GFA.

Notes: In AM peak retail trip generation is expected to be significant lower than in PM peak. In AM peak retail trip generation rate is assumed to be about 40% lower than PM peak. About 100 m² of GFA is equal to 75 m² of Gross Leasable Floor Area (GLFA).

Table 4-2 summarises forecast trip generation from proposed site at South Auburn.

Table 4-2 Forecast Trip Generation

Area	Dwellings	Mixed use podium GFA (m ²)	AM Peak 1 Hour (Vehicles)			PM Peak 1 Hour (Vehicles)		
			In	Out	Two Way	In	Out	Two Way
South Auburn	750	13960	238	243	481	264	270	534

Of the total GFA, about 65% is assumed to be retail and 35% to be office and commercial use (source: Auburn Town Centre Retail and Economic Study 2008).

The additional development proposed for the site is forecast to generate in the order of 480 to 535 vehicle trips in one peak hour. The afternoon peak hour trip generation is about 11% higher than morning peak due to higher proportion of retail trips.

For the purpose of this assessment, it was assumed that traffic generated by zone B4 (west side) will use Auburn Road / Beatrice Street traffic signal and Auburn Road / Helena Street roundabout to enter and exit the B4 zone. All traffic generated by the R4 Zone (east side) will use the Susan Street / Beatrice Street and Susan Street/ Helena Street to enter and exit the R4 zone. Figure 4-1 below shows assumed trip distribution to and from site.

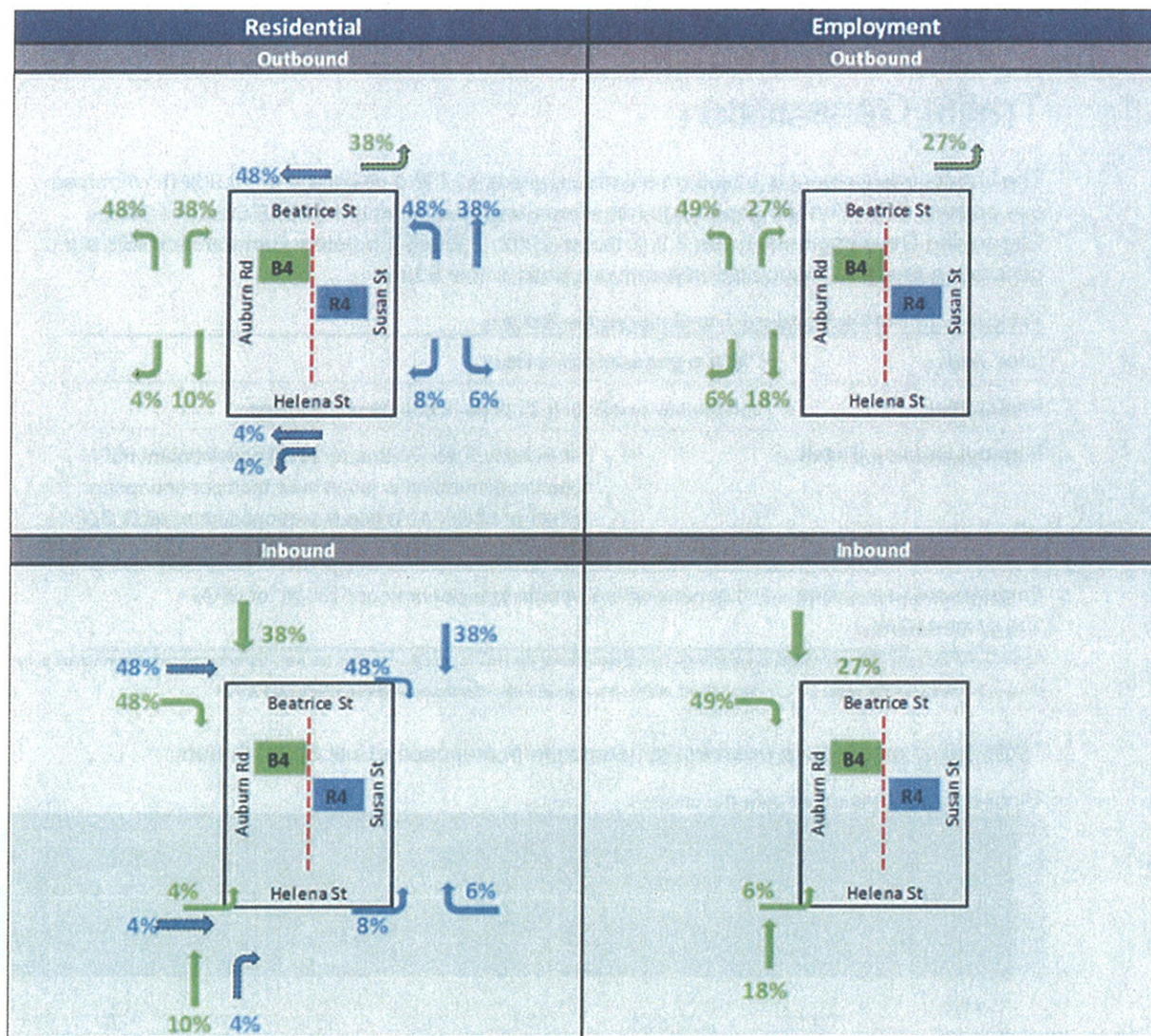


Figure 4-1 Assumed Trip Distribution to and from Site

4.2 Impact on Road Network

The future development capacity of the B4 and R4 zones will be determined by the spare capacity available at key intersections providing access to the site. The potential development capacity identified in South Auburn PP will impact four intersections within the core area as follows.

- Auburn Road / Beatrice St;
- Auburn Road / Helena Street;
- Susan Road / Beatrice Street; and
- Helena Street / Susan Street.

The previous Figure 1-2 shows 4 key intersections in the core area.

In general, network impacts from potential development will decline with greater distance from site. The following three scenarios were assessed including:

- Existing Condition (Scenario 1). The existing condition represents 2013 traffic conditions to four key intersections in the immediate vicinity to the site.
- Impact from the South Auburn PP alone (Scenario 2). This scenario assesses impact to four key intersections taking into account background growth and additional traffic from South Auburn PP. The scenario 2 assesses forecast traffic impact for year 2021 condition.
- Cumulative Impact (Scenario 3). The scenario 3 assesses forecast traffic impact for year 2021 condition taking into account cumulative traffic from both South Auburn PP and FSR PP. In FSR PP Study, Hyder identified seven intersections in Auburn where road capacity improvements will be required to cater for the additional traffic demand. Intersection upgrading works that are proposed to those seven intersections have been re-examined taking into account additional traffic from South Auburn PP.

Appendix A included existing turning volumes at four intersections within the core area.

4.2.1 Assessment Criteria

Intersection Levels of Service (LoS) was assessed using the standard RMS Level of Service criteria for intersections (see Table 4-3 below).

Table 4-3 LoS Criteria for Intersection Capacity Analysis

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing

Source: RMS Guide to Traffic Generating Developments

4.2.2 Existing (2013) Conditions –Scenario 1

Table 4-4 shows forecast AM and PM peak LoS results for "existing" scenario for year 2013. Detailed SIDRA results are included in Appendix A.

Table 4-4 Performance Results for Existing (2013) Conditions

ID	Ref	Intersection	Control Type	Existing AM (2013)			Existing PM (2013)		
				DoS	LoS	Avg Delay (sec)	DoS	LoS	Avg Delay (sec)
1	I-40	Auburn Road / Beatrice St	Signal	0.6	B	26	0.7	B	27
2	I-53	Auburn Road / Helena St	Roundabout	0.3	A	8	0.3	A	7
3	I-54	Susan St/ Beatrice St	Roundabout	0.3	A	8	0.2	A	7
4	I-55	Susan St / Helena St	Priority	0.1	A	4	0.2	A	2

Source: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Existing_2013.sip

The intersection capacity analysis results in Table 4-4 shows that currently all four intersections within the core area operate with good level of service A and B. The results indicate that (under the current layout and control) all four intersections will have spare capacity for future growth.

4.2.3 Impact from South Auburn PP- Scenario 2

The additional traffic generated from the South Auburn PP has been assigned to the road network. Consistent with FSR PP study a background traffic growth of 0.5 % per annum is used. All four intersections were assessed for year 2021 taking into account both background traffic growth and additional traffic from South Auburn PP. The analysis was undertaken for both AM and PM peak traffic conditions.

Table 4-5 shows the intersection performance results for year 2021 for post development traffic condition. Detailed SIDRA results are included in Appendix A.

Table 4-5 Forecast Level of Service with South Auburn PP –Scenario 2

ID	Ref	Intersection	Control Type	AM			PM		
				DoS	LoS	Avg Delay (sec)	DoS	LoS	Avg Delay (sec)
1	I-40	Auburn Road / Beatrice St	Signal	0.7	C	34	0.84	C	36
2	I-53	Auburn Road / Helena St	Roundabout	0.2	A	8	0.25	A	8
3	I-54	Susan St/ Beatrice St	Roundabout	0.1	A	8	0.19	A	8
4	I-55	Susan St / Helena St	Priority	0.1	A	9	0.2	A	10

Source: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Scenario2.sip

The level of service analysis in Table 4-5 indicates that all four intersections assessed will accommodate additional traffic generated by the proposed development. The Auburn Road with Beatrice Street traffic signals will have maximum impact and level of service is forecast C for post development condition. The remaining three intersections at Auburn Road / Helena Street, Susan Street/ Beatrice Street and Susan Street/ Helena Street will operate with good level of service A for post development condition for year 2021.

The modelling results of four intersections for post development condition do not suggest the need for any potential upgrading works. The additional development traffic to and from site will have small impact to road and intersection operation within the core area.

4.2.4 Cumulative Impact – Scenario 3

The previous Section 4.2.3 has showed small impact to four intersections within the core area. The 7 intersections within the wider area have been re-examined for improved intersection condition taking into account cumulative traffic from both South Auburn PP and FSR PP. The modelling analysis has found that impact from proposed site will decline with greater distance from the core area. The proposed intersections improvements identified in FSR PP study would accommodate additional traffic generated by the South Auburn PP.

5 Conclusions

This Traffic, Transport and Accessibility Study has been prepared by Hyder Consulting Pty Ltd (Hyder) to support the conditions of the gateway determination of a Planning Proposal to rezone a parcel of land in Auburn bounded by Auburn Road, Helena Street, Beatrice Street and Susan Street. The main purpose of this Study is to assess the impact of the proposed rezoning on the road network and provide any required mitigation measures to accommodate the additional traffic generated by the South Auburn PP. The Study has assumed 2021 as the future horizon year for its assessment. The MG Planning and Group GSA Urban Design Study identified that if the proposed increase in residential and mixed use densities were achieved there would be an additional 750 dwellings and 13,960 m2 of mixed use podium gross floor area (GFA) for employment uses.

The current public transport near the vicinity of proposed site provides good level of access for the working and residential population of the site. The site is within 1 km of Auburn Train Station. Auburn Train Station is serviced by the Western Line and ranks 22nd in terms of number of passengers served.

The catchment area of proposed site is serviced by two bus services; 908 and 911 operated by Veolia. The buses operate every 30 to 60 minutes in morning and afternoon peak period from South Auburn to the Auburn Train Station, the Auburn Town Centre and Auburn Hospital. . Three bus stops are located within an 800m walking radius of the site.

The location of site in close proximity to public transport (particularly the Auburn Train Station) is appropriate in integrating land use and transport provision in a sustainable manner.

Hyder has developed the concept of the "core area" which aims to report traffic impact in those parts of the network that are of critical significance to the South Auburn PP. Within the core area four key intersections have been assessed as follows (see Figure 1-2):

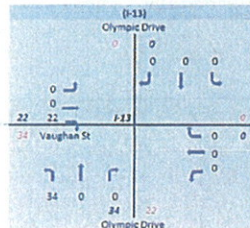
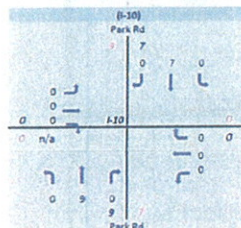
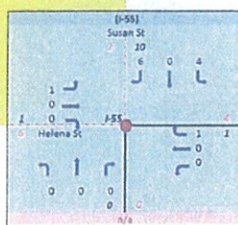
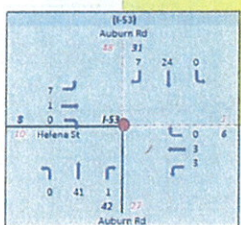
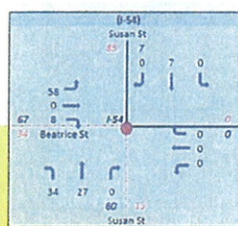
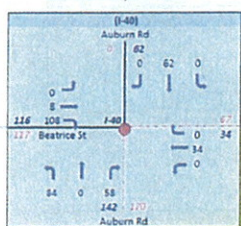
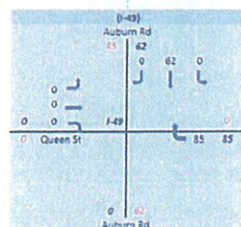
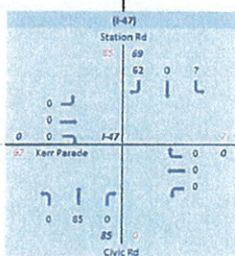
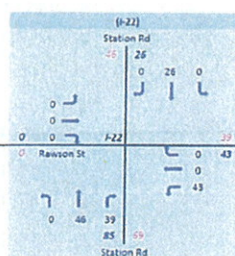
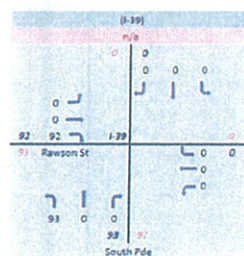
- Auburn Road / Beatrice Street (I-40);
- Helena Street / Auburn Road (I-53);
- Beatrice Street/ Susan Street (I-54) and
- Helena Street / Susan Street (I-55).

The intersection capacity analysis shows that currently all four intersections within the core area operate with good level of service A and B. The potential development of the Planning Proposal will have the forecast impact of reducing the level of service of the Auburn Road with Beatrice Street intersection to C. The remaining three intersections at Auburn Road / Helena Street, Susan Street/ Beatrice Street and Susan Street/ Helena Street will operate with good level of service A.

The modelling results of four intersections for potential development conditions do not suggest the need for any potential upgrading works. The additional traffic to and from site will only have small impact on the road and intersection operation within the core area. Beyond the core area, traffic analysis has identified only a minor impact from the South Auburn PP.

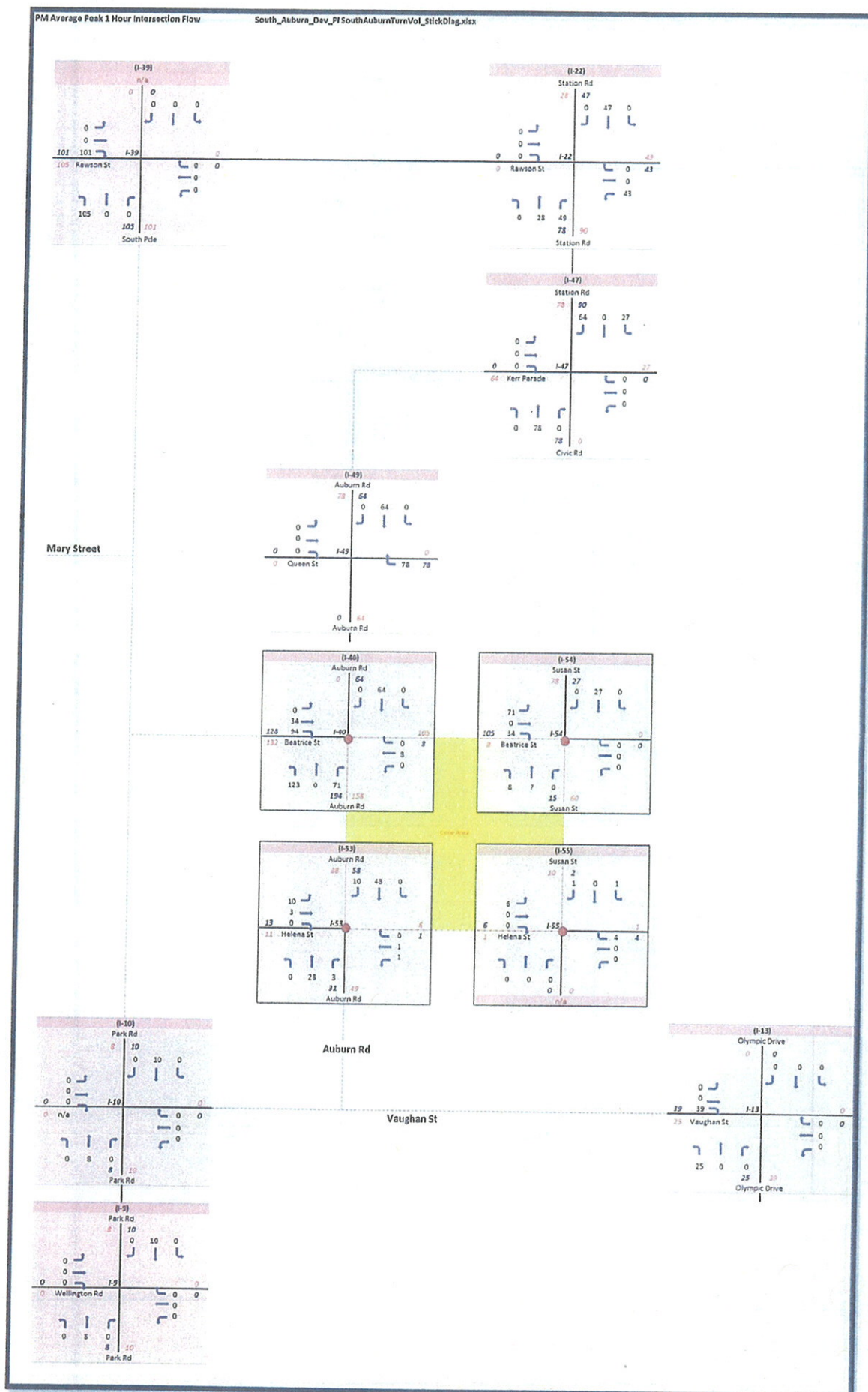
APPENDIX A

TRAFFIC GENERATED BY SOUTH AUBURN PP AND DETAILED SIDRA RESULTS



Auburn Rd

Vaughan St



DETAILED SIDRA RESULTS

EXISTING 2013

AUBURN ROAD / BEATRICE STREET

MOVEMENT SUMMARY

Site: 2013_Existing_I-40
AuburnRoad/BeatriceSt_AM

I-40

Auburn Rd/Beatrice St

Signals - Fixed Time Cycle Time = 55 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV Deg. Satn %	v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Auburn Rd(S)											
1	L	108	0.0	0.321	28.6	LOS C	2.7	18.6	0.91	0.77	29.6
2	T	124	0.8	0.623	25.2	LOS B	4.8	34.4	0.98	0.83	29.3
3	R	53	6.0	0.623	31.8	LOS C	4.8	34.4	0.98	0.85	29.2
Approach		285	1.5	0.623	27.7	LOS B	4.8	34.4	0.95	0.81	29.4
East: Beatrice St (E)											
4	L	33	3.2	0.127	26.7	LOS B	1.1	7.7	0.85	0.74	30.8
5	T	168	0.0	0.590	23.5	LOS B	5.0	35.2	0.95	0.79	30.2
6	R	37	0.0	0.590	30.2	LOS C	5.0	35.2	0.96	0.83	30.0
Approach		238	0.4	0.590	25.0	LOS B	5.0	35.2	0.94	0.79	30.2
North: Auburn Rd (N)											
7	L	54	0.0	0.159	27.7	LOS B	1.3	8.9	0.88	0.73	30.0
8	T	88	2.4	0.512	24.3	LOS B	3.5	24.8	0.96	0.76	29.7
9	R	44	0.0	0.512	30.7	LOS C	3.5	24.8	0.96	0.80	29.5
Approach		186	1.1	0.512	26.8	LOS B	3.5	24.8	0.93	0.76	29.7
West: Beatrice St (W)											
10	L	42	0.0	0.591	28.1	LOS B	2.7	18.9	0.89	0.82	30.6
11	T	233	1.4	0.591	22.7	LOS B	5.1	36.2	0.94	0.78	30.6
12	R	29	7.1	0.591	29.7	LOS C	5.1	36.2	0.96	0.84	30.3
Approach		304	1.7	0.591	24.1	LOS B	5.1	36.2	0.93	0.79	30.6
All Vehicles		1014	1.2	0.623	25.8	LOS B	5.1	36.2	0.94	0.79	30.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue		Prop. Queued	Effective Stop Rate per ped
					Pedestrian ped	Distance m		
P1	Across S approach	53	21.8	LOS C	0.1	0.1	0.89	0.89
P3	Across E approach	53	21.8	LOS C	0.1	0.1	0.89	0.89
P5	Across N approach	53	21.8	LOS C	0.1	0.1	0.89	0.89
P7	Across W approach	53	21.8	LOS C	0.1	0.1	0.89	0.89
All Pedestrians		212	21.8	LOS C			0.89	0.89

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Processed: 26 July 2013 11:39:17 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

South Auburn Planning Proposal—Traffic, Transport and Accessibility Study

Hyder Consulting Pty Ltd-ABN 76 104 485 289

Page 1

o:\strategy\urban planning\jorge alvarez\planning proposals\south auburn pp - pp-3 2013\planning proposal\cover letter to dp&l\appx 2 - south auburn traffic and transportand study.docx

MOVEMENT SUMMARY

Site: 2013_Existing_I-40
AuburnRoad/BeatriceSt_PM

I-40

Auburn Rd/Beatrice St

Signals - Fixed Time Cycle Time = 65 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV Deg. Satn %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Auburn Rd(S)										
1	L	34	0.0	0.143	LOS C	0.9	6.2	0.85	0.71	29.1
2	T	119	0.0	0.365	LOS B	3.7	26.2	0.91	0.72	29.7
3	R	12	9.1	0.365	LOS C	3.7	26.2	0.91	0.81	29.5
Approach		164	0.6	0.365	LOS B	3.7	26.2	0.89	0.73	29.6
East: Beatrice St (E)										
4	L	34	0.0	0.156	LOS B	1.5	10.4	0.78	0.75	31.4
5	T	292	1.1	0.721	LOS B	10.0	70.7	0.95	0.86	29.4
6	R	55	0.0	0.721	LOS C	10.0	70.7	0.97	0.92	29.0
Approach		380	0.8	0.721	LOS B	10.0	70.7	0.94	0.86	29.5
North: Auburn Rd (N)										
7	L	58	0.0	0.169	LOS C	1.7	12.0	0.86	0.74	29.0
8	T	111	2.9	0.681	LOS C	6.3	45.0	0.98	0.86	27.5
9	R	91	0.0	0.681	LOS C	6.3	45.0	0.98	0.88	27.4
Approach		259	1.2	0.681	LOS C	6.3	45.0	0.95	0.84	27.8
West: Beatrice St (W)										
10	L	109	1.0	0.614	LOS B	2.8	20.1	0.81	0.80	30.0
11	T	151	1.4	0.404	LOS B	4.7	33.6	0.88	0.72	30.7
12	R	22	0.0	0.404	LOS C	4.7	33.6	0.88	0.82	30.4
Approach		282	1.1	0.614	LOS B	4.7	33.6	0.85	0.76	30.4
All Vehicles		1085	1.0	0.721	LOS B	10.0	70.7	0.91	0.81	29.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	26.8	LOS C	0.1	0.1	0.91	0.91
P3	Across E approach	53	26.8	LOS C	0.1	0.1	0.91	0.91
P5	Across N approach	53	26.8	LOS C	0.1	0.1	0.91	0.91
P7	Across W approach	53	26.8	LOS C	0.1	0.1	0.91	0.91
All Pedestrians		212	26.8	LOS C			0.91	0.91

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Processed: 26 July 2013 11:39:40 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

AUBURN ROAD / HELENA STREET

MOVEMENT SUMMARY

Site: 2013_Existing_I-53
Auburn Road/Helena
Street_AM

Auburn Road_Helena Street: Roundabout: 2013

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV Deg. Satn %	Avg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Auburn Road (S)											
1	L	35	3.0	0.229	7.2	LOS A	1.4	10.2	0.48	0.61	41.6
2	T	136	0.8	0.229	6.3	LOS A	1.4	10.2	0.48	0.55	41.8
3	R	68	3.1	0.229	10.5	LOS A	1.4	10.2	0.48	0.74	39.8
Approach		239	1.8	0.229	7.6	LOS A	1.4	10.2	0.48	0.61	41.2
East: Helena Street (E)											
4	L	28	7.4	0.199	7.4	LOS A	1.2	8.7	0.48	0.61	42.2
5	T	108	1.9	0.199	6.3	LOS A	1.2	8.7	0.48	0.55	42.4
6	R	67	1.6	0.199	10.5	LOS A	1.2	8.7	0.48	0.74	40.5
Approach		204	2.6	0.199	7.8	LOS A	1.2	8.7	0.48	0.62	41.7
North: Auburn Road (N)											
7	L	48	2.2	0.214	7.7	LOS A	1.3	9.3	0.54	0.65	38.4
8	T	121	0.0	0.214	6.7	LOS A	1.3	9.3	0.54	0.59	38.5
9	R	38	2.8	0.214	11.0	LOS A	1.3	9.3	0.54	0.77	36.2
Approach		207	1.0	0.214	7.7	LOS A	1.3	9.3	0.54	0.64	38.0
West: Helena Street (W)											
10	L	97	0.0	0.318	7.7	LOS A	2.1	14.9	0.56	0.66	30.5
11	T	153	2.8	0.318	6.9	LOS A	2.1	14.9	0.56	0.61	30.7
12	R	64	0.0	0.318	11.0	LOS A	2.1	14.9	0.56	0.77	28.5
Approach		314	1.3	0.318	8.0	LOS A	2.1	14.9	0.56	0.66	30.1
All Vehicles		964	1.6	0.318	7.8	LOS A	2.1	14.9	0.52	0.64	38.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: 26 July 2013 11:40:06 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Existing_2013.sip
8000014, HYDER CONSULTING, FLOATING

MOVEMENT SUMMARY

Site: 2013_Existing_I-53
Auburn Road/Helena
Street_PM

Auburn Road_Helena Street: Roundabout: 2013

Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV Deg. Satn %	v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Auburn Road (S)											
1	L	29	0.0	0.142	7.6	LOS A	0.8	5.8	0.52	0.64	41.5
2	T	82	1.3	0.142	6.7	LOS A	0.8	5.8	0.52	0.58	41.6
3	R	24	0.0	0.142	10.9	LOS A	0.8	5.8	0.52	0.76	39.5
Approach		136	0.8	0.142	7.7	LOS A	0.8	5.8	0.52	0.63	41.2
East: Helena Street (E)											
4	L	42	0.0	0.271	7.2	LOS A	1.7	12.4	0.50	0.63	42.3
5	T	202	1.6	0.271	6.4	LOS A	1.7	12.4	0.50	0.57	42.4
6	R	38	0.0	0.271	10.5	LOS A	1.7	12.4	0.50	0.76	40.5
Approach		282	1.1	0.271	7.1	LOS A	1.7	12.4	0.50	0.60	42.1
North: Auburn Road (N)											
7	L	23	0.0	0.191	7.1	LOS A	1.1	8.1	0.46	0.60	38.7
8	T	113	0.9	0.191	6.2	LOS A	1.1	8.1	0.46	0.54	38.9
9	R	63	1.7	0.191	10.4	LOS A	1.1	8.1	0.46	0.74	36.6
Approach		199	1.1	0.191	7.7	LOS A	1.1	8.1	0.46	0.61	38.1
West: Helena Street (W)											
10	L	23	0.0	0.189	6.6	LOS A	1.2	8.2	0.38	0.57	31.8
11	T	146	0.7	0.189	5.7	LOS A	1.2	8.2	0.38	0.50	32.4
12	R	44	2.4	0.189	9.9	LOS A	1.2	8.2	0.38	0.74	29.6
Approach		214	1.0	0.189	6.7	LOS A	1.2	8.2	0.38	0.56	31.7
All Vehicles		831	1.0	0.271	7.2	LOS A	1.7	12.4	0.46	0.60	39.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: 26 July 2013 11:40:27 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Existing_2013.sip
8000014, HYDER CONSULTING, FLOATING

SUSAN STREET / BEATRICE STREET

MOVEMENT SUMMARY

Site: 2013_Existing_I-54
Susan Street/Beatrice Street-
AM_AdjCounts

Beatrice Street_Susan Street: Roundabout: 2013

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV Deg. Satn %	Average Delay v/c	Level of Service	95% Back of Queue Vehicles	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Susan Street (S)										
1	L	24	0.0	0.257	LOS A	1.6	11.4	0.50	0.64	38.9
2	T	235	2.2	0.257	LOS A	1.6	11.4	0.50	0.58	39.1
3	R	3	33.3	0.257	LOS A	1.6	11.4	0.50	0.82	36.7
Approach		262	2.4	0.257	LOS A	1.6	11.4	0.50	0.59	39.0
East: Beatrice Street (E)										
4	L	14	0.0	0.145	LOS A	0.8	5.8	0.38	0.58	32.2
5	T	120	0.0	0.145	LOS A	0.8	5.8	0.38	0.51	32.8
6	R	25	4.2	0.145	LOS A	0.8	5.8	0.38	0.75	29.9
Approach		159	0.7	0.145	LOS A	0.8	5.8	0.38	0.55	32.2
North: Susan Street (N)										
7	L	1	0.0	0.102	LOS A	0.6	4.2	0.29	0.51	35.0
8	T	25	0.0	0.102	LOS A	0.6	4.2	0.29	0.44	35.8
9	R	94	0.0	0.102	LOS A	0.6	4.2	0.29	0.66	32.2
Approach		120	0.0	0.102	LOS A	0.6	4.2	0.29	0.61	32.9
West: Beatrice Street (W)										
10	L	258	2.4	0.348	LOS A	2.4	17.3	0.58	0.66	30.2
11	T	42	2.5	0.348	LOS A	2.4	17.3	0.58	0.61	30.3
12	R	46	4.5	0.348	LOS A	2.4	17.3	0.58	0.75	28.3
Approach		346	2.7	0.348	LOS A	2.4	17.3	0.58	0.66	29.9
All Vehicles		887	1.9	0.348	LOS A	2.4	17.3	0.48	0.61	34.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: 26 July 2013 11:40:46 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Existing_2013.sip
8000014, HYDER CONSULTING, FLOATING

MOVEMENT SUMMARY

Site: 2013_Existing_I-54
Susan Street/Beatrice Street-
PM_AdjCounts

Beatrice Street_Susan Street: Roundabout: 2013

Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow	HV Deg.	Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Susan Street (S)											
1	L	16	0.0	0.169	8.1	LOS A	1.0	6.9	0.57	0.68	38.6
2	T	136	0.0	0.169	7.2	LOS A	1.0	6.9	0.57	0.63	38.7
3	R	2	0.0	0.169	11.4	LOS A	1.0	6.9	0.57	0.81	36.1
Approach		154	0.0	0.169	7.4	LOS A	1.0	6.9	0.57	0.64	38.6
East: Beatrice Street (E)											
4	L	16	0.0	0.222	7.2	LOS A	1.3	9.5	0.48	0.63	31.8
5	T	207	0.5	0.222	6.4	LOS A	1.3	9.5	0.48	0.57	32.1
6	R	6	0.0	0.222	10.5	LOS A	1.3	9.5	0.48	0.78	29.5
Approach		229	0.5	0.222	6.5	LOS A	1.3	9.5	0.48	0.58	32.0
North: Susan Street (N)											
7	L	1	0.0	0.162	6.1	LOS A	1.0	6.9	0.29	0.51	35.1
8	T	42	0.0	0.162	5.3	LOS A	1.0	6.9	0.29	0.44	35.8
9	R	157	0.0	0.162	9.5	LOS A	1.0	6.9	0.29	0.66	32.3
Approach		200	0.0	0.162	8.6	LOS A	1.0	6.9	0.29	0.61	32.9
West: Beatrice Street (W)											
10	L	134	1.6	0.194	6.6	LOS A	1.2	8.7	0.40	0.56	31.5
11	T	57	1.9	0.194	5.7	LOS A	1.2	8.7	0.40	0.49	32.1
12	R	28	0.0	0.194	9.9	LOS A	1.2	8.7	0.40	0.71	29.3
Approach		219	1.4	0.194	6.8	LOS A	1.2	8.7	0.40	0.56	31.4
All Vehicles		802	0.5	0.222	7.3	LOS A	1.3	9.5	0.43	0.59	33.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: 26 July 2013 11:41:13 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Existing_2013.sip
8000014, HYDER CONSULTING, FLOATING

SUSAN STREET / HELENA STREET

MOVEMENT SUMMARY

Site: 2013_Existing_I-55
Susan Street/Helena
Street_AM

Helena Street_Susan Street: Roundabout: 2013

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV Deg. Satn %	Avg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Helena Street (E)											
5	T	153	0.7	0.136	1.0	LOS A	0.8	5.7	0.39	0.00	43.9
6	R	80	1.3	0.136	7.4	LOS A	0.8	5.7	0.39	0.72	41.2
Approach		233	0.9	0.136	3.2	NA	0.8	5.7	0.39	0.25	42.9
North: Susan Street											
7	L	36	2.9	0.048	7.4	LOS A	0.1	0.9	0.29	0.60	28.7
9	R	25	0.0	0.054	11.7	LOS A	0.2	1.4	0.53	0.76	34.6
Approach		61	1.7	0.054	9.1	LOS A	0.2	1.4	0.39	0.66	32.2
West: Helena Street (W)											
10	L	153	0.7	0.139	6.4	LOS A	0.0	0.0	0.00	0.71	30.8
11	T	107	3.9	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		260	2.0	0.139	3.8	NA	0.0	0.0	0.00	0.42	37.5
All Vehicles		554	1.5	0.139	4.1	NA	0.8	5.7	0.21	0.37	40.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: 26 July 2013 11:41:52 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Existing_2013.sip
8000014, HYDER CONSULTING, FLOATING

MOVEMENT SUMMARY

Site: 2013_Existing_I-55
Susan Street/Helena
Street_PM

Helena Street_Susan Street: Roundabout: 2013

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow	HV Deg.	Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Helena Street (E)											
5	T	233	0.9	0.163	0.8	LOS A	1.0	7.1	0.36	0.00	44.5
6	R	63	0.0	0.163	7.2	LOS A	1.0	7.1	0.36	0.74	41.4
Approach		296	0.7	0.163	2.2	NA	1.0	7.1	0.36	0.16	43.8
North: Susan Street											
7	L	42	0.0	0.055	7.1	LOS A	0.1	1.0	0.26	0.59	28.9
9	R	53	6.0	0.122	12.9	LOS A	0.5	3.4	0.57	0.83	33.6
Approach		95	3.3	0.122	10.4	LOS A	0.5	3.4	0.43	0.72	32.3
West: Helena Street (W)											
10	L	91	1.2	0.106	6.4	LOS A	0.0	0.0	0.00	0.75	30.8
11	T	111	0.0	0.106	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		201	0.5	0.106	2.9	NA	0.0	0.0	0.00	0.34	40.1
All Vehicles		592	1.1	0.163	3.7	NA	1.0	7.1	0.25	0.31	41.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: 26 July 2013 11:42:16 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Existing_2013.sip
8000014, HYDER CONSULTING, FLOATING

SCENARIO 2 RESULTS

AUBURN ROAD / BEATRICE STREET

MOVEMENT SUMMARY

Site: 2021_S2_I-40
AuburnRoad/BeatriceSt_AM

I-40
Auburn Rd/Beatrice St
Signals - Fixed Time Cycle Time = 90 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV Deg. Satn %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Auburn Rd(S)										
1	L	191	0.0	0.636	LOS C	7.0	49.3	0.86	0.80	26.6
2	T	123	0.8	0.708	LOS C	10.1	72.0	0.98	0.88	24.6
3	R	110	2.7	0.708	LOS D	10.1	72.0	0.98	0.89	24.5
Approach		424	0.9	0.708	LOS C	10.1	72.0	0.93	0.85	25.5
East: Beatrice St (E)										
4	L	32	3.1	0.097	LOS B	0.9	6.6	0.68	0.70	30.4
5	T	201	0.0	0.429	LOS B	8.3	58.2	0.83	0.70	29.4
6	R	37	0.0	0.429	LOS C	8.3	58.2	0.83	0.84	28.9
Approach		270	0.4	0.429	LOS B	8.3	58.2	0.82	0.72	29.4
North: Auburn Rd (N)										
7	L	53	0.0	0.134	LOS C	1.8	12.4	0.79	0.73	27.7
8	T	150	1.3	0.539	LOS C	7.8	55.0	0.94	0.78	25.9
9	R	44	0.0	0.539	LOS C	7.8	55.0	0.94	0.83	25.7
Approach		247	0.8	0.539	LOS C	7.8	55.0	0.91	0.77	26.2
West: Beatrice St (W)										
10	L	42	0.0	0.689	LOS C	3.5	24.7	0.72	0.87	28.6
11	T	239	1.3	0.689	LOS C	12.6	89.6	0.88	0.78	27.5
12	R	137	1.5	0.689	LOS C	12.6	89.6	0.94	0.87	26.7
Approach		418	1.2	0.689	LOS C	12.6	89.6	0.88	0.82	27.3
All Vehicles		1359	0.9	0.708	LOS C	12.6	89.6	0.89	0.80	26.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	39.2	LOS D	0.1	0.1	0.93	0.93
P3	Across E approach	53	39.2	LOS D	0.1	0.1	0.93	0.93
P5	Across N approach	53	39.2	LOS D	0.1	0.1	0.93	0.93
P7	Across W approach	53	39.2	LOS D	0.1	0.1	0.93	0.93
All Pedestrians		212	39.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Processed: 29 July 2013 11:48:11 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 2021_S2_I-40
AuburnRoad/BeatriceSt_PM

I-40

Auburn Rd/Beatrice St

Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV Deg. Satn %	Avg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Auburn Rd(S)											
1	L	157	0.0	0.754	38.2	LOS C	5.7	39.8	0.86	0.90	26.0
2	T	118	0.0	0.658	33.9	LOS C	7.7	53.8	0.97	0.84	26.0
3	R	82	1.2	0.658	40.4	LOS C	7.7	53.8	0.97	0.86	25.9
Approach		357	0.3	0.754	37.3	LOS C	7.7	53.8	0.92	0.87	26.0
East: Beatrice St (E)											
4	L	33	0.0	0.146	26.6	LOS B	1.4	10.0	0.73	0.74	30.8
5	T	298	1.0	0.678	28.4	LOS B	12.0	84.6	0.93	0.81	28.3
6	R	54	0.0	0.678	35.4	LOS C	12.0	84.6	0.95	0.87	27.9
Approach		385	0.8	0.678	29.2	LOS C	12.0	84.6	0.92	0.81	28.4
North: Auburn Rd (N)											
7	L	57	0.0	0.197	32.1	LOS C	2.6	18.2	0.82	0.76	28.5
8	T	173	1.7	0.793	37.0	LOS C	10.0	70.4	0.97	0.92	25.0
9	R	90	0.0	0.793	45.5	LOS D	10.0	70.4	1.00	0.97	24.4
Approach		320	0.9	0.793	38.5	LOS C	10.0	70.4	0.95	0.91	25.4
West: Beatrice St (W)											
10	L	109	0.9	0.683	31.2	LOS C	3.4	24.0	0.75	0.83	28.6
11	T	183	1.1	0.843	40.6	LOS C	13.2	93.1	1.00	1.05	23.9
12	R	116	0.0	0.843	47.1	LOS D	13.2	93.1	1.00	1.05	23.9
Approach		408	0.7	0.843	39.9	LOS C	13.2	93.1	0.93	0.99	25.0
All Vehicles		1470	0.7	0.843	36.2	LOS C	13.2	93.1	0.93	0.90	26.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue		Prop. Queued	Effective Stop Rate
					Pedestrian ped	Distance m		per ped
P1	Across S approach	53	34.2	LOS D	0.1	0.1	0.93	0.93
P3	Across E approach	53	34.2	LOS D	0.1	0.1	0.93	0.93
P5	Across N approach	53	34.2	LOS D	0.1	0.1	0.93	0.93
P7	Across W approach	53	34.2	LOS D	0.1	0.1	0.93	0.93
All Pedestrians		212	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Processed: 29 July 2013 11:48:54 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Scenario2.sip
8000014, HYDER CONSULTING, FLOATING

AUBURN ROAD / HELENA STREET

MOVEMENT SUMMARY

Site: 2021_S2_I-53 Auburn
Road/Helena Street_AM

Auburn Road_Helena Street: Roundabout: 2013

Roundabout

Movement Performance - Vehicles										
Mov ID	Turn	Demand Flow	HV Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec	veh	m		per veh	km/h
South: Auburn Road (S)										
1	L	34	2.9	0.269	7.3	LOS A	1.7	12.3	0.50	41.6
2	T	176	0.6	0.269	6.4	LOS A	1.7	12.3	0.50	41.7
3	R	69	2.9	0.269	10.6	LOS A	1.7	12.3	0.50	39.8
Approach		279	1.4	0.269	7.5	LOS A	1.7	12.3	0.50	41.2
East: Helena Street (E)										
4	L	31	6.5	0.208	7.5	LOS A	1.3	9.1	0.51	42.1
5	T	110	1.8	0.208	6.5	LOS A	1.3	9.1	0.51	42.2
6	R	67	1.5	0.208	10.7	LOS A	1.3	9.1	0.51	40.3
Approach		208	2.4	0.208	8.0	LOS A	1.3	9.1	0.51	41.6
North: Auburn Road (N)										
7	L	48	2.1	0.244	7.7	LOS A	1.5	10.9	0.55	38.3
8	T	144	0.0	0.244	6.8	LOS A	1.5	10.9	0.55	38.4
9	R	44	2.3	0.244	11.0	LOS A	1.5	10.9	0.55	36.2
Approach		236	0.8	0.244	7.8	LOS A	1.5	10.9	0.55	38.0
West: Helena Street (W)										
10	L	104	1.0	0.338	8.1	LOS A	2.3	16.1	0.61	30.2
11	T	152	2.6	0.338	7.3	LOS A	2.3	16.1	0.61	30.3
12	R	64	0.0	0.338	11.4	LOS A	2.3	16.1	0.61	28.1
Approach		320	1.6	0.338	8.4	LOS A	2.3	16.1	0.61	29.8
All Vehicles		1043	1.5	0.338	7.9	LOS A	2.3	16.1	0.55	38.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: 29 July 2013 11:56:31 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Scenario2.sip
8000014, HYDER CONSULTING, FLOATING

MOVEMENT SUMMARY

Site: 2021_S2_I-53 Auburn
Road/Helena Street_PM

Auburn Road_Helena Street: Roundabout: 2013

Roundabout

Movement Performance - Vehicles										
Mov ID	Turn	Demand Flow	HV Deg.	Satn	Average Delay	Level of Service	95% Back of Queue	Prop.	Effective	Average
		veh/h	%	v/c	sec		Vehicles Distance	Queued	Stop Rate	Speed
							veh m		per veh	km/h
South: Auburn Road (S)										
1	L	29	0.0	0.176	7.7	LOS A	1.1 7.4	0.54	0.65	41.4
2	T	110	0.9	0.176	6.9	LOS A	1.1 7.4	0.54	0.60	41.5
3	R	27	0.0	0.176	11.0	LOS A	1.1 7.4	0.54	0.78	39.5
Approach		166	0.6	0.176	7.7	LOS A	1.1 7.4	0.54	0.64	41.1
East: Helena Street (E)										
4	L	43	0.0	0.288	7.7	LOS A	1.9 13.3	0.56	0.66	42.0
5	T	201	1.5	0.288	6.9	LOS A	1.9 13.3	0.56	0.61	42.1
6	R	38	0.0	0.288	11.0	LOS A	1.9 13.3	0.56	0.78	40.2
Approach		282	1.1	0.288	7.5	LOS A	1.9 13.3	0.56	0.64	41.8
North: Auburn Road (N)										
7	L	23	0.0	0.246	7.2	LOS A	1.6 11.0	0.49	0.62	38.6
8	T	160	0.6	0.246	6.3	LOS A	1.6 11.0	0.49	0.56	38.8
9	R	73	1.4	0.246	10.5	LOS A	1.6 11.0	0.49	0.75	36.5
Approach		256	0.8	0.246	7.6	LOS A	1.6 11.0	0.49	0.62	38.1
West: Helena Street (W)										
10	L	33	0.0	0.206	6.8	LOS A	1.3 9.0	0.43	0.59	31.5
11	T	147	0.0	0.206	5.9	LOS A	1.3 9.0	0.43	0.52	32.0
12	R	44	2.3	0.206	10.2	LOS A	1.3 9.0	0.43	0.74	29.5
Approach		224	0.4	0.206	6.9	LOS A	1.3 9.0	0.43	0.58	31.3
All Vehicles		928	0.8	0.288	7.4	LOS A	1.9 13.3	0.51	0.62	39.4

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: 29 July 2013 11:29:22 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Scenario2.sip
8000014, HYDER CONSULTING, FLOATING

SUSAN STREET / BEATRICE STREET

MOVEMENT SUMMARY

Site: 2021_S2_I-54 Susan
Street/Beatrice Street-AM
_AdjCounts

Beatrice Street_Susan Street: Roundabout: 2013

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV Deg. Satn %	Avg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Susan Street (S)											
1	L	58	0.0	0.311	7.4	LOS A	2.0	14.5	0.52	0.65	38.8
2	T	260	1.9	0.311	6.6	LOS A	2.0	14.5	0.52	0.59	38.9
3	R	3	33.3	0.311	11.6	LOS A	2.0	14.5	0.52	0.82	36.6
Approach		321	1.9	0.311	6.8	LOS A	2.0	14.5	0.52	0.60	38.9
East: Beatrice Street (E)											
4	L	14	0.0	0.146	6.8	LOS A	0.8	5.8	0.40	0.59	32.1
5	T	119	0.0	0.146	5.9	LOS A	0.8	5.8	0.40	0.52	32.6
6	R	25	4.0	0.146	10.2	LOS A	0.8	5.8	0.40	0.75	29.8
Approach		158	0.6	0.146	6.7	LOS A	0.8	5.8	0.40	0.56	32.1
North: Susan Street (N)											
7	L	1	0.0	0.108	6.2	LOS A	0.6	4.5	0.31	0.52	35.0
8	T	32	0.0	0.108	5.4	LOS A	0.6	4.5	0.31	0.44	35.6
9	R	93	0.0	0.108	9.5	LOS A	0.6	4.5	0.31	0.66	32.2
Approach		126	0.0	0.108	8.4	LOS A	0.6	4.5	0.31	0.61	33.0
West: Beatrice Street (W)											
10	L	314	1.9	0.421	8.1	LOS A	3.1	22.1	0.64	0.69	29.8
11	T	42	2.4	0.421	7.3	LOS A	3.1	22.1	0.64	0.65	29.8
12	R	54	3.7	0.421	11.5	LOS A	3.1	22.1	0.64	0.77	27.9
Approach		410	2.2	0.421	8.5	LOS A	3.1	22.1	0.64	0.69	29.5
All Vehicles		1015	1.6	0.421	7.7	LOS A	3.1	22.1	0.52	0.63	34.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: 29 July 2013 11:57:36 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Scenario2.sip
8000014, HYDER CONSULTING, FLOATING

MOVEMENT SUMMARY

Site: 2021_S2_I-54 Susan
Street/Beatrice Street-
PM_AdjCounts

Beatrice Street_Susan Street: Roundabout: 2013

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Susan Street (S)											
1	L	24	0.0	0.184	8.1	LOS A	1.1	7.6	0.58	0.69	38.6
2	T	141	0.0	0.184	7.3	LOS A	1.1	7.6	0.58	0.63	38.6
3	R	2	0.0	0.184	11.4	LOS A	1.1	7.6	0.58	0.81	36.1
Approach		167	0.0	0.184	7.4	LOS A	1.1	7.6	0.58	0.64	38.6
East: Beatrice Street (E)											
4	L	16	0.0	0.233	7.6	LOS A	1.4	10.0	0.53	0.66	31.4
5	T	206	0.5	0.233	6.8	LOS A	1.4	10.0	0.53	0.61	31.7
6	R	6	0.0	0.233	11.0	LOS A	1.4	10.0	0.53	0.80	29.1
Approach		228	0.4	0.233	7.0	LOS A	1.4	10.0	0.53	0.61	31.6
North: Susan Street (N)											
7	L	1	0.0	0.191	6.4	LOS A	1.2	8.3	0.35	0.54	34.7
8	T	69	0.0	0.191	5.5	LOS A	1.2	8.3	0.35	0.47	35.3
9	R	155	0.0	0.191	9.7	LOS A	1.2	8.3	0.35	0.68	32.1
Approach		225	0.0	0.191	8.4	LOS A	1.2	8.3	0.35	0.61	33.0
West: Beatrice Street (W)											
10	L	204	1.0	0.280	6.7	LOS A	1.9	13.6	0.43	0.57	31.2
11	T	56	1.8	0.280	5.8	LOS A	1.9	13.6	0.43	0.51	31.7
12	R	62	0.0	0.280	10.0	LOS A	1.9	13.6	0.43	0.70	29.1
Approach		322	0.9	0.280	7.2	LOS A	1.9	13.6	0.43	0.58	30.8
All Vehicles		942	0.4	0.280	7.5	LOS A	1.9	13.6	0.46	0.61	33.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: 29 July 2013 11:58:44 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Scenario2.sip
8000014, HYDER CONSULTING, FLOATING

SUSAN STREET / BEATRICE STREET

MOVEMENT SUMMARY

Site: 2021_S2_I-55 Susan
Street/Helena Street_AM

Helena Street_Susan Street: Roundabout: 2013

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV Deg. Satn %	Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Helena Street (E)											
5	T	151	0.7	0.135	1.0	LOS A	0.8	5.7	0.39	0.00	43.9
6	R	80	1.3	0.135	7.4	LOS A	0.8	5.7	0.39	0.72	41.2
Approach		231	0.9	0.135	3.2	NA	0.8	5.7	0.39	0.25	42.9
North: Susan Street											
7	L	40	2.5	0.053	7.4	LOS A	0.1	1.0	0.29	0.60	28.7
9	R	31	0.0	0.066	11.7	LOS A	0.2	1.7	0.53	0.77	34.6
Approach		71	1.4	0.066	9.2	LOS A	0.2	1.7	0.39	0.67	32.4
West: Helena Street (W)											
10	L	153	0.7	0.138	6.4	LOS A	0.0	0.0	0.00	0.71	30.8
11	T	106	3.8	0.138	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		259	1.9	0.138	3.8	NA	0.0	0.0	0.00	0.42	37.5
All Vehicles		561	1.4	0.138	4.3	NA	0.8	5.7	0.21	0.38	40.1

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: 29 July 2013 11:30:08 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Scenario2.sip
8000014, HYDER CONSULTING, FLOATING

MOVEMENT SUMMARY

Site: 2021_S2_I-55 Susan
Street/Helena Street_PM

Helena Street_Susan Street: Roundabout: 2013

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec	veh	m		per veh	km/h
East: Helena Street (E)										
5	T	231	0.9	0.165	0.8	LOS A	1.0	7.2	0.36	44.4
6	R	67	0.0	0.165	7.2	LOS A	1.0	7.2	0.36	41.4
Approach		298	0.7	0.165	2.3	NA	1.0	7.2	0.36	43.7
North: Susan Street										
7	L	43	0.0	0.056	7.2	LOS A	0.2	1.1	0.26	28.9
9	R	54	5.6	0.125	13.0	LOS A	0.5	3.4	0.57	33.6
Approach		97	3.1	0.125	10.4	LOS A	0.5	3.4	0.44	32.3
West: Helena Street (W)										
10	L	95	1.1	0.108	6.4	LOS A	0.0	0.0	0.00	30.8
11	T	110	0.0	0.108	0.0	LOS A	0.0	0.0	0.00	50.0
Approach		205	0.5	0.108	3.0	NA	0.0	0.0	0.00	39.8
All Vehicles		600	1.0	0.165	3.8	NA	1.0	7.2	0.25	41.1

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: 29 July 2013 11:30:20 AM
SIDRA INTERSECTION 5.1.13.2093

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA
INTERSECTION

Project: F:\AA005093\SouthAuburnPP\Modelling\SIDRA\Scenario2.sip
8000014, HYDER CONSULTING, FLOATING

